



World Environment Report

Published by

The Center for International Environment Information



World Environment Report

INDEX

VOLUME 4, 1978

JULY-DECEMBER

A

Acid Precipitation

Sulphuric rain threat to Taj Mahal, Nov. 20, p. 1

Adm. Avner

On Israel's use of waste water, July 31, p. 3

Africa

Conference on Housing in Monrovia, Sept. 11, p. 3
Desert locust remains threat, Sept. 11, p. 4
Regional UNHHSF/UNEP housing meeting, Nov. 20, p. 2
Solar power discussed at Nairobi and Bamako, Oct. 9, p. 6

Agriculture (see also Animal Fodder; Irrigation)

Agri-sylviculture approach to forestry urged, Sept. 11, p. 5; Nov. 20, p. 6; Dec. 18, p. 8
European Community policy changes urged, Dec. 4, p. 2
Greenhouse farming in Israel, July 31, p. 4
Indian crop choices to be aided by soil maps, Dec. 4, p. 8
Jajoba tree farming to replace whale oil, Oct. 9, p. 7
Salt-resistant desert crops in India, July 17, p. 7
Waste digester produces biogas in Australia, July 17, p. 8

Air Pollution (see also Acid Precipitation; Smoking)

Ankara restricted to low-sulphur coal, Sept. 11, p. 7
Auto emissions in Singapore, Aug. 28, p. 7
Auto lead emissions in Britain, July 17, p. 5
Auto lead emissions in Sweden, Aug. 14, p. 1
Bombay, and respiratory disease, Sept. 11, p. 7
Carbon monoxide (Singapore, Lima), Aug. 28, p. 7; Dec. 4, p. 8
Colombia closes Medellin asphalt factory, Sept. 11, p. 8
Colombian progress in control reported, Aug. 14, p. 6
ECE auto emission limits and monitoring, Nov. 6, p. 7
ECE seminar to focus on chemical industry, Sept. 11, p. 8
German rules enforced by chimney sweeps, Sept. 25, p. 4
Greek oilseed refinery sued, July 17, p. 8
Greek steel mill violations lead to closing, July 17, p. 2
Health Damage Compensation Law in Japan, Nov. 6, p. 6
Hong Kong legislation, July 31, p. 7; Nov. 6, p. 8
Hydrocarbons, Aug. 28, p. 7
Japan relaxes NOx standards, Aug. 14, p. 1; Sept. 25, p. 6
Lima, Peru, Aug. 14, p. 5; Dec. 4, p. 8
Malaysian Clean Air Standards, Dec. 4, p. 8
Nitrogen oxides, Aug. 14, p. 1; Sept. 25, p. 6
Research coordination among nine EC nations, Dec. 18, p. 6
Santiago, Chile, July 3, p. 8
Sri Lankan public sector castigated, Aug. 28, p. 5
Sulphur (Santiago; Lima), July 3, p. 8; Dec. 4, p. 8
Sulphur trioxide episode over Piraeus, Nov. 20, p. 3
Sulphuric acid absorption by phosphate possible, Nov. 20, p. 8
Taipei automobiles, July 31, p. 7
Tokyo to study related ailments, July 17, p. 3

Amazon River and Basin

Amazon Pact provisions and reaction, July 31, p. 5
Jari forestry-industrial-agricultural project, Oct. 9, p. 3

Animal Fodder

Mycotoxin contamination in Kenya, Oct. 23, p. 8
Pineapple peels used in Malaysia, Aug. 28, p. 7
Sugarcane, rice, coconut wastes as forage, Aug. 14, p. 7

Antarctic

Jurisdictional vs. environmental issues at conference, Aug. 28, p. 1

Arctic

Ice floe expedition, Nov. 20, p. 4

Argentina

Nuclear power aid to Bolivia and Peru, July 3, p. 7
Sale of nuclear reactor to Peru, Sept. 11, p. 6

Asbestos

Australian mine aids lung-diseased workers, Sept. 25, p. 7

Asia

Forest habitats endangered, July 17, p. 4; July 31, p. 5
Nuclear fuel reprocessing centers discussed, Nov. 6, p. 7

Australia

Alumina project proceeds, Sept. 11, p. 3; Nov. 20, p. 6
Asbestos mine aids lung-diseased workers, Sept. 25, p. 7
Farm waste digester produces biogas, July 17, p. 7

Herbicides 24D, 245T banned as cause of birth defects, Sept. 11, p. 8
Nuclear waste burial method developed, Aug. 28, p. 4
Oil drilling harms Great Barrier Reef, Aug. 14, p. 1
Solar collectors of steel power medical center, Aug. 14, p. 7
Uranium mining legislation passed, July 31, p. 8
Uranium mining rights, Aug. 28, p. 6; Dec. 18, p. 2
Western Australian national parks, Aug. 28, p. 8; Dec. 18, p. 2

B

Baltic Sea

Clean-up progresses, agreement signed, Sept. 25, p. 4

Barrett, Sylvester

Irish official cautions on chemical pollution, Aug. 14, p. 4

Belgium

Lead polluting industry at Hoboken, July 17, p. 4
Nuclear waste dumping on Irish coast, July 3, p. 1
Solar power for home heating, Oct. 9, p. 5

Benavides, Felipe

PRODNA head organizes ECO in Peru, Nov. 20, p. 1

Bio-gas

Australian farm waste digester, July 17, p. 7
Malaysian interest in, Oct. 9, p. 7

Black Sea

Bulgarian anti-pollution measures, Nov. 20, p. 4
Romanian "Petroabs" oil cleanup method, Nov. 6, p. 1

Blum, Barbara

At joint U.S.-Japanese meeting, Oct. 23, p. 6
At toxic substances conference, July 17, p. 2

Bolivia

Amazon Pact approval, July 31, p. 5
Nuclear power plans aided by Argentina, July 3, p. 7

Brazil

Amazon-Jari forestry-industrial-agricultural project, Oct. 9, p. 3
Amazon Pact approval, July 31, p. 5
Coastal pollution and cholera alert at Sao Paulo, July 17, p. 5
Oceanographic base proposed by FBCN, July 3, p. 6

Brundtland, Gro Harlem

On Norwegian energy conservation, Dec. 18, p. 7
Speaker at International Environment Forum, Aug. 28, p. 1

Brunner, Guido

EEC energy R&D budget proposals, Sept. 25, p. 5
Proposal for appliance efficiency labeling, Oct. 23, p. 5

Bulgaria

Anti-pollution drive, Sept. 25, p. 8
Clean-up of Danube, Black Sea waters, Nov. 20, p. 4

Burke, Richard

EEC proposal for appliance efficiency labeling, Oct. 23, p. 5

C

Canada

Arctic ice floe and North Pole expeditions, Nov. 20, p. 4
International Development Agency activities, Dec. 4, p. 3

Carcinogens

Nitrite in meat regulated in Denmark, Sept. 25, p. 4

Caribbean

BOPEC terminal, flamingos coexist in Bonaire, Sept. 25, p. 3
Fishing conflict between Trinidad, Venezuela, Dec. 4, p. 7

Chad

Saharan aquifer project, Oct. 23, p. 7; Dec. 4, p. 2

Chemical Pollution (see also Carcinogens; Fertilizers; Herbicides; Lead; Pesticides; Toxic Chemicals)

Chinese Liaoyuan Works find answers, July 3, p. 2
EEC considers impact of legislation, July 17, p. 1
Irish report on prevention and handling of, Aug. 14, p. 4

Chile

Air pollution in Santiago, July 3, p. 8
ODEPLAN stresses poverty relief over environment, July 3, p. 4

China

Aerial low-volume pesticide spraying, July 31, p. 7
Canton planting trees to absorb toxic gases, Oct. 23, p. 7
Chemical wastes recycled at Liaoyuan Works, July 3, p. 2
Coal dust, slag and soot recycled, July 3, pp. 2, 7
Deforestation, Nov. 20, p. 7
Duck Lake fish farm saved from pollution, Aug. 28, p. 8
"Green Wall" forest project, July 31, p. 5
Industrial polluters warned, Dec. 18, p. 8
Joins WMO weather prediction experiment, July 17, p. 6
Methane power station opened, July 17, p. 8
Oil refinery praised for cleanliness of effluents, Aug. 14, p. 6
Peking industry to be moved out, Oct. 23, p. 8
Radioactive fallout on Korea caused, July 31, p. 6

Coal

Coke briquettes promising, Sept. 25, p. 8; Oct. 9, p. 4
Dust and cellulose waste make clean fuel, Oct. 9, p. 4
Dust recovered from smokestacks in China, July 3, p. 2
German reserves, production, and uses, Nov. 6, p. 3
Prospecting in Northern Ireland, Dec. 18, p. 8
Slag and soot recycled in China, July 3, p. 7
Transportation problems at Israeli power station, July 17, p. 6

Coastal Water Pollution (see also Oil Spills)

Cholera alert in Sao Paulo bay, July 17, p. 5
Mediterranean, Nov. 20, p. 4
Thai controls, July 31, p. 7

Colombia

Amazon Pact approval, July 31, p. 5
Asphalt factory closed for air pollution, Sept. 11, p. 8
Bauxite runoff pollutes rivers, Oct. 23, p. 7
Cali reports progress in pollution control, Aug. 14, p. 6
Conservation education made obligatory, July 17, p. 8
Credit for pollution control equipment, Aug. 14, p. 8
Crop spraying causes disease, damage, Sept. 25, p. 1; Nov. 20, p. 7
Fine for illegal tree cutting Nov. 6, p. 7
Giant pine tree saved by insurance, Dec. 18, p. 7
IFI loan for soda plant pollution control, Dec. 4, p. 7
Park reserve protects Andes, Nov. 20, p. 7
Pesticide spraying and storage laws, Nov. 6, p. 7; Nov. 20, p. 7
Reservoirs planned for forestation projects, Aug. 28, p. 8
San Agustín necropolis endangered, Dec. 18, p. 6
Wild animal code flouted by traffickers, Sept. 11, p. 5

Conservation (see also Parks; Wildlife)

Andes rivers headwaters, Colombia, Nov. 20, p. 7
Central American associations strategy meeting, Dec. 4, p. 8
Costa Rican education program aided by USAID, Dec. 4, p. 2
Loss of fight with ALCOA in Australia, Sept. 11, p. 3; Nov. 20, p. 6

Conservation Foundation

Toxic substances conference, July 17, p. 1

Corey, German

Deplores air pollution in Santiago, July 3, p. 8

Costa Rica

Conservation education program aided by USAID, Dec. 4, p. 2
Hosts Trade in Endangered Species meeting, Dec. 4, p. 7

Costa, Douglas M.

On NATO CCMS cooperation, Dec. 4, p. 4
Toxic chemicals control his goal, July 3, p. 7
U.S.-Mexican environmental cooperation agreement, Aug. 28, p. 5

Crocchia, Paulo

FBCN oceanographic proposal discussed, July 3, p. 6

Center for International Environment Information

300 East 42nd Street, New York, N.Y. 10017

Czechoslovakia

- Bonn protests border factory stench, Sept. 11, p. 6
- Forests damaged by industrial pollution, Sept. 11, p. 8
- Waste water plant on Elbe River, July 17, p. 7

D**Danube River**

- Bulgarian anti-pollution measures, Nov. 20, p. 4

David, Hubert

- European Environment Bureau chairman, Nov. 20, p. 5

Deforestation

- Aerial spraying as cause in Colombia, Sept. 25, p. 1
- China, Nov. 20, p. 7
- FAO meetings, Sept. 11, p. 4; Nov. 20, p. 6
- Himalayas, as cause of flooding, Nov. 6, p. 5
- Southeast Asia's forests, UNEP report, July 17, p. 4; July 31, p. 5

Denmark

- Arctic ice floe expedition, Nov. 20, p. 4
- Dry-cleaning fumes called hazardous, Aug. 28, p. 8
- Ecology college planned, Sept. 11, p. 6
- Facility for solid, chemical, oil waste disposal, Dec. 5, p. 6
- Nitrite in meat regulated, Sept. 25, p. 4
- Noise pollution study ordered, July 31, p. 7
- Wind as alternate energy source for phones, Dec. 18, p. 6

Desalination

- Arab Center planned in Kuwait, Nov. 20, p. 8
- Israeli technology, July 31, p. 4
- Krupp Atlas technology, Nov. 20, p. 7
- Membrane filtration technique in Holland, Nov. 6, p. 6
- Mexico-Panama cooperation in project, Aug. 28, p. 6
- Solar power used in Mexico, India, Oct. 9, p. 5

Desertification

- UN Conference action plan, July 3, p. 4
- UNEP unit head Hogel describes projects, Dec. 4, p. 1

Detergents

- Nickel content causes allergies, Oct. 9, p. 4
- South Korea bans hard-type synthetics, Sept. 11, p. 8
- Washing machine return flow savings, July 3, p. 6

Dick, Alfrad

- Anti-noise campaign for Bavarian drivers, Aug. 14, p. 4
- Electric taxi announced, July 17, p. 7
- Laser beam project for water protection noted, July 31, p. 4

Disease (see also Carcinogens; Health)

- Allergies caused by nickel, Oct. 9, p. 4
- Cholera alert in Brazilian Bay, July 17, p. 5
- Crop spraying as cause in Colombia, Sept. 25, p. 1; Nov. 20, p. 7
- Incidence in asbestos mine in Australia, Sept. 25, p. 7
- Malaria control problems, Dec. 18, p. 4
- Respiratory, from Bombay air pollution, Sept. 11, p. 7

E**Economic Commission for Europe (ECE)**

- African conferences on solar power organized, Oct. 9, p. 6
- Auto emission limits and monitoring discussed, Nov. 6, p. 7
- Chemical air pollution seminar planned, Sept. 11, p. 8
- Coke briquettes reported promising, Oct. 9, p. 4
- Fertilizer symposium planned, Oct. 9, p. 8
- Industrial energy waste scored, Aug. 14, p. 7
- Noise curbing rules for motor vehicles, Oct. 9, p. 7

Economy

- Chile's ODEPLAN stresses poverty over environment, July 3, p. 4
- Environmental investment seen as benefit, July 17, p. 6
- Vs. environment, debate in Ireland, Oct. 23, p. 6

Ecuador

- Amazon Pact approval, July 31, p. 5

Egypt

- Housing problems in Cairo, Sept. 11, p. 3
- IRS Focal Points training course hosted, Dec. 18, p. 7
- Saharan aquifer project, Oct. 23, p. 7; Dec. 4, p. 2
- Wildlife preserve plans, Dec. 18, p. 4

Electric Power (see also Hydroelectric Power)

- Geothermal generation in U.S. and Japan, July 31, p. 1
- Geothermal project in Kenya, Oct. 9, p. 1
- Methane plant in China, July 17, p. 8
- Solar-generated, cost found prohibitive in Germany, Nov. 6, p. 3
- Solar-generated, Japanese pilot plants, Nov. 6, p. 4
- Solar generation plant, in Indonesia, Aug. 14, p. 7
- South Korea plans tidal power plant, Aug. 28, p. 8
- Wind generation of, in Sweden, July 3, p. 1

El-Hinnawi, Essam

- UNEP energy task force chief interviewed, Nov. 20, p. 3

Energy (see also Fuel; Geothermal Energy; Nuclear Energy; Solar Energy; Tidal Power; Wind Power)

- EEC-LDC cooperation in alternative sources, Sept. 25, p. 5
- EEC R&D budget for 1979-83, Sept. 25, p. 5
- German sources, R&D for new sources, Nov. 6, p. 3
- Irish energy use criticized by OECD, Sept. 25, p. 7
- Irish national policy discussions, Sept. 11, p. 2
- Lending agency policies surveyed by IJED, Dec. 4, p. 3
- Mediterranean nations agree on collaboration, Nov. 6, p. 4
- NATO CCMS studies, Dec. 4, p. 4
- Natural Energy Systems (NES) promotes renewable sources, Oct. 9, p. 7
- Organic sources, Sweden, July 3, p. 1
- Sweden revives old mini-hydropower mills, Oct. 9, p. 2
- Swedish policy and budget allocations, July 3, p. 1
- UNEP task force chief el-Hinnawi interviewed, Nov. 20, p. 3
- World Conference planned in Munich in 1980, Nov. 20, p. 7

Energy Conservation

- In British breweries, July 17, p. 6
- British progress called uneven, Nov. 6, p. 2
- EEC proposal for appliance efficiency labeling, Oct. 23, p. 5
- Home insulation grants in Britain, Oct. 23, p. 6
- Norwegian investment incentives, Dec. 18, p. 7
- Waste by industry scored, economies discussed, Aug. 14, p. 7

Environmental Impact Statements

- Asked for new iron and steel plants, Nov. 20, p. 5
- EEC guidelines, Nov. 20, p. 5
- Hong Kong legislation, Nov. 6, p. 8
- Indian requirements for major projects, Oct. 23, p. 1
- Philippine requirements, July 31, p. 6; Oct. 23, p. 7
- U.S. urges international treaty, Aug. 28, p. 2

European Development Fund

- Environmental procedures survey asked, Dec. 4, p. 3

European Economic Community (EEC) (Common Market)

- Air and water pollution research coordinated, Dec. 18, p. 6
- Common Agricultural Policy (CAP) change urged, Dec. 4, p. 2
- Energy R&D Budget 1979-83, Sept. 25, p. 5
- Environmental measures on water and lead, July 17, pp. 1, 5
- Environmental research budget increased, Aug. 28, p. 2
- European Environment Bureau lobby, Nov. 20, p. 5
- Ispra system for hydrogen fuel production, Sept. 11, p. 1
- Man's effect on weather to be studied, Dec. 4, p. 6
- Radiation grants to Ireland, Oct. 9, p. 8
- Radiation Protection Program, 1977 report, July 31, p. 8
- Radiation protection steps delayed by CIPR findings, Oct. 9, p. 7
- Shipping Safety Conventions supported, July 31, p. 4; Dec. 18, p. 2
- Solar energy R&D, Sept. 25, p. 5; Nov. 20, p. 3
- Urges alternative energy sources for LDCs, Sept. 25, p. 5
- Waste recycling R&D to be funded, Oct. 23, p. 5

European Environment Bureau (EEB)

- Successful lobby at EC, Nov. 20, p. 5; Dec. 4, p. 2

Evert, Militades

- Greek Minister of Industry and Energy, Oct. 23, pp. 2, 5

F**Fertilizers**

- Cause of disease in Colombia, Sept. 25, p. 1
- EEC Symposium in Geneva planned, Oct. 9, p. 8

Fisheries

- Afro-Asian seas, TEMA conference, July 3, p. 2
- Damaged by crop spraying in Colombia, Sept. 25, p. 1
- Duck Lake fish farm in China saved from water pollution, Aug. 28, p. 8
- Irish royal salmon face extinction, Nov. 6, p. 5
- Norwegian roe bank to aid salmon, Nov. 6, p. 5
- Offshore oil wells as benefit to, July 31, p. 6
- Salmon may re-enter Thames River, Sept. 25, p. 6
- Trees along shores promote hatching, Oct. 23, p. 7
- Trinidad-Venezuela controversy, Dec. 4, p. 7
- Tuna conservation pact discussed, Nov. 6, p. 6

Flood Control

- Indian policy initiative, Nov. 6, p. 5; Dec. 4, p. 8

Fluorocarbons

- EEC countries intensify research, July 17, p. 1

Food (see also Fisheries)

- Mycotoxin contamination in Kenya, Oct. 23, p. 8
- Nitrite in meat regulated in Denmark, Sept. 25, p. 4
- Preservation by irradiation in India, Sept. 11, p. 8
- Solar dryers for Philippine producers, Dec. 4, p. 7
- Whey protein gained by membrane filtration, Nov. 6, p. 6

Food and Agriculture Organization (FAO)

- Desert locust campaign in Africa aided, Sept. 11, p. 4
- Worldwide imbalance of wood supply and demand seen, Sept. 11, p. 4; Nov. 20, p. 6

Forestry (see also Deforestation; Reforestation)

- Amazon-Jari project of D.K. Ludwig, Oct. 9, p. 3
- "Green Wall" project of China, July 31, p. 5
- Jakarta World Forestry Conference, Nov. 20, p. 6
- Malaysia drafts forestry code, Sept. 25, p. 7
- Philippine protection efforts, Oct. 9, p. 8; Nov. 20, p. 8
- Pollution damages Bohemian forests, Sept. 11, p. 8
- Reservoirs planned for Colombian projects, Aug. 28, p. 8
- Rome meeting of FAO airs problems, Sept. 11, p. 4
- Thai problems, July 17, p. 4; July 31, p. 5; Sept. 25, p. 8

Fuel (see also Coal; Gasoline; Oil)

- Bio-gas produced by farm waste digester, July 17, p. 7
- Biomass and biogas considered in Malaysia, Oct. 9, p. 7
- Coke briquettes, Sept. 25, p. 8; Oct. 9, p. 4
- Hydrogen car developed in Australia, Sept. 25, p. 8
- Hydrogen system developed by EEC's Ispra Center, Sept. 11, p. 1
- LPG replaces diesel in Pakistani buses, Aug. 28, p. 4
- Methane power station in China, July 17, p. 8
- Methanol introduced in Mexico, banned in Sweden, Sept. 11, p. 6

G**Gallon, Gary T.**

- World Environment Day plans, Dec. 18, p. 7

Garbage (see also Solid Waste Disposal)

- Lima, Peru, Aug. 14, p. 5
- "Trailer bin" collection method in Sierra Leone, Oct. 9, p. 6

Gasoline

- British driving habits called wasteful, July 31, p. 8
- Lead level reduction in Sweden, Aug. 14, p. 1
- Lead levels attacked in British suit, Oct. 23, p. 4
- Lead levels restricted by EEC, July 17, pp. 1, 5
- Methanol-gasoline mixture for Mexican cars, Sept. 11, p. 6

Geothermal Energy

- EEC R&D budget allocation, Sept. 25, p. 5
- Development incentives in Philippines, Sept. 11, p. 6
- Furthered by NATO CCMS studies, Dec. 4, p. 4
- German R&D, Nov. 6, p. 3
- Kenyan OI Karia project, Oct. 9, p. 1
- U.S.-Japanese agreement on development, July 31, p. 1

Germany (West)

- Air pollution rules enforced by chimney sweeps, Sept. 25, p. 4
- Alternative energy sources R&D, Nov. 6, p. 3
- Anti-noise campaign focuses on drivers, Aug. 14, p. 4
- Electric taxi put into use, July 17, p. 7
- Energy collaboration with Kuwait, July 3, p. 6; Dec. 4, p. 8
- Environmental hot line in Munich, Sept. 25, p. 2
- Krupp Atlas desalination method, Nov. 20, p. 7
- Laser beam tracing of "overfeeding" of algae, July 31, p. 4
- Protest against Czech border factory stench, Sept. 11, p. 6
- Solar energy, July 3, p. 6; Nov. 6, p. 3; Dec. 4, p. 4
- Toxic substances control discussed with U.S., July 17, p. 1

Ghana

- Pesticide warning, Aug. 14, p. 6

Great Britain

- ACOPS criticism of coastal oil pollution, July 3, p. 6
- Amerind plantlore medicine preserved by BoTec, Aug. 28, p. 4
- Automotive lead pollution, July 17, p. 5
- Breweries' energy saving program, July 17, p. 6
- Coal prospecting in Northern Ireland, Dec. 18, p. 8
- Dynair thermal clutch fan saves fuel, Sept. 25, p. 7
- Energy conservation progress called uneven, Nov. 6, p. 2
- Gasoline lead levels attacked in court, Oct. 23, p. 4
- Gasoline wasted by driving habits, July 31, p. 8
- Home insulation grants available, Oct. 23, p. 6
- Industrial noise harmful to workers, Aug. 14, p. 7
- Kent motorway opposed, Nov. 6, p. 7
- Nuclear waste dumping on Irish coast, July 3, p. 1
- Oil spill contingency plans, Dec. 18, p. 5
- Plutonium contamination at Aldermarston plant, Sept. 11, p. 2
- Thames now clean enough for salmon, Sept. 25, p. 6
- Toxic waste treatment conference, Nov. 6, p. 8

Greece

- Geothermal energy plans, Dec. 4, p. 4
- Oilseed refinery sued for air pollution, July 17, p. 8
- Polluting industries fined, closed, moved, Oct. 23, p. 2
- Solid waste conversion to power and steam, Oct. 23, p. 5
- Steel mill closed for air pollution, July 17, p. 2
- Sulphur trioxide air pollution episode, Nov. 20, p. 3

Green, Fitzhugh

- A Change in the Weather*, July 3, p. 3

Greenland

- Arctic research land base, Nov. 20, p. 4

Guyana

- Amazon Pact approval, July 31, p. 5

H

- Habitat**
Low-cost asphadobe project in Khartoum, Sept. 25, p. 4
Nairobi Center, July 3, p. 4; July 17, p. 3
- Hafez, Haassam A.**
On Egyptian wildlife preserve plans, Dec. 18, p. 4
- Health (see also Carcinogens: Disease)**
Air pollution effects in Elefsis, Greece, July 17, pp. 2, 8
Air pollution effects in Lima, Peru, Dec. 4, p. 8
Amerind plantlore medicine preserved by BoToc, Aug. 28, p. 4
Birth defects blamed on pollution in Greece, July 17, p. 2
Birth defects caused by herbicides 24D, 245T, Sept. 11, p. 8
Lead poisoning charge in Belgium, July 17, p. 4
Lead pollution threats in Britain, July 17, p. 5
Pollution by Delhi hospitals presents hazards, Oct. 9, p. 8
Tokyo to study air pollution related ailments, July 17, p. 3
- Heating Systems**
District mass heating planned in Ireland, Nov. 20, p. 8
Heat pump, Nov. 6, p. 3
Solar, Oct. 9, p. 5; Nov. 6, pp. 3, 4; Nov. 20, p. 6
- Herbicides**
Australia bans 24D, 245T as cause of birth defects, Sept. 11, p. 8
Colombia crop spraying with 24D, 245T, Nov. 20, p. 7
- Himalayas**
Deforestation as cause of Indian flood, Nov. 6, p. 5
- Hogel, Jens**
On UNEP projects to fight desertification, Dec. 4, p. 1
- Hong Kong**
Construction noise regulations, Oct. 9, p. 7
Environmental legislation, July 31, p. 7; Nov. 6, p. 8
Government-industry cooperation on legislation, Aug. 28, p. 6
Oil spill fine raised, Sept. 25, p. 7; Dec. 4, p. 8
Overhead power lines opposed, Aug. 28, p. 8
Shatin New Town pollution control rules, Dec. 4, p. 7
Solar power collectors to be exported cheaply, Sept. 11, p. 8
- Housing**
African conference held in Monrovia, Sept. 11, p. 3
Low-cost asphadobe project in Khartoum, Sept. 25, p. 4
UNHHSF African regional meeting, July 17, p. 3; Nov. 20, p. 2
World Bank loan to Kenya, July 31, p. 6
- Howell, Denis**
Report on British lead pollution, July 17, p. 5
- Human Settlements (see also Habitat)**
Architects' "Declaration of Mexico," Nov. 20, p. 8
Philippine agency created, Aug. 28, p. 7
Regional meetings planned by UN, July 17, p. 3; Nov. 20, p. 2
- Hydroelectric Power**
Conduit from Mediterranean to Dead Sea, July 3, p. 7
Sweden revives old mini-hydropower plants, Oct. 9, p. 2
- I**
- India**
Board for Ocean Science and Technology formed, Nov. 20, p. 8
Bombay air pollution, and respiratory disease, Sept. 11, p. 7
Bombay sewage project gets IDA credit, Aug. 28, p. 7
Delhi hospitals as polluters, Oct. 9, p. 8
Ecological clearance requirements for projects, Oct. 23, p. 1
Flooding blamed on deforestation, Nov. 6, p. 5; Dec. 4, p. 8
Food preservation by irradiation, Sept. 11, p. 8
Fuel-saving auto engine developed, Dec. 18, p. 8
Industrial air and water pollution in South, Oct. 23, p. 8
Jamuna River at Delhi polluted, Sept. 25, p. 7
New Delhi industries prosecuted for water pollution, Aug. 28, p. 7
Oil production from shrubs studied, July 3, p. 8
Salt-resistant crops for desert farming, July 17, p. 7
Soil maps to aid crop choices, Dec. 4, p. 8
Solar power research and uses, Oct. 9, p. 5
Taj Mahal threatened by "sulphuric rain," Nov. 20, p. 1
- Indonesia**
Forest management, Sept. 11, p. 5; Nov. 20, p. 6
Helio-thermochemical system generates power, Aug. 14, p. 7
Malacca Strait cleanup role, Sept. 11, p. 7
Man-made forest as pollution buffer, Nov. 8, p. 20
Water quality code, Oct. 9, p. 8
- Industrial Wastes**
Jamuna River at Delhi polluted, Sept. 25, p. 7
Palm oil effluent in Malaysian rivers, July 31, p. 7
Recycling at Chinese chemical plant, July 3, p. 2
Sri Lankan air and water pollution, Aug. 28, p. 5

Industry

- Air and water pollution in South India, Oct. 23, p. 8
Asphalt factory closed in Colombia, Sept. 11, p. 8
Chinese steps against polluters, Oct. 23, p. 8; Dec. 18, p. 8
Colombia forces pollution controls, Aug. 14, p. 6
Energy waste scored in ECE report, Aug. 14, p. 7
Greek actions against polluters, July 17, p. 2; Oct. 23, p. 2; Nov. 20, p. 3
Hong Kong environmental laws, Aug. 28, p. 6; Dec. 4, p. 7
Malaysian copper mine polluter asked for compensation, Aug. 14, p. 8
Manila factory expansion halted, Dec. 18, p. 8
Mexican Chromates factory closed, Oct. 23, p. 4
Noise level harmful to British workers, Aug. 14, p. 7
Prosecution of New Delhi' polluters, Aug. 28, p. 7
Thailand forces improved working conditions, Oct. 23, p. 8
- Insect Control (see also Pesticides)**
Malaria control runs into problems, Dec. 18, p. 4
- Inter-American Development Bank**
Environmental office created, Dec. 4, p. 3
- Intergovernmental Maritime Consultative Organization (IMCO)**
Convention on Maritime Safety, Aug. 14, p. 5
Convention supported by EEC, July 31, p. 4; Dec. 18, p. 2
- International Council for Research in Agroforestry (ICRAF)**
Goals outlined by Director-General King, Dec. 18, p. 8
- International Energy Agency (IEA)**
Alternatives to oil urged, July 3, p. 5
Solar power development agreements, Aug. 28, p. 3
- International Environment Forum (IEF)**
September 1978 meeting, Aug. 28, p. 1
- International Institute for Environment and Development (IIED)**
Survey of lending agency policies, Dec. 4, p. 3
- International Organization for Standardization (ISO)**
Guide on vibration effects, July 31, p. 2
- International Radiation Protection Commission (ICRP)**
Research forces revision in protection programs, Oct. 9, p. 7
- International Referral System for Sources of Environmental Information (IRSI)**
Focal Points course offered, Dec. 18, p. 7
- International Whaling Commission (IWC)**
Peru to join; quota resisted by others, July 17, p. 7
- Ireland**
Anti-nuclear group formed, Sept. 25, p. 2
Chemical pollution a concern in official report, Aug. 14, p. 4
Coastline pollution survey urged, July 17, p. 2
Dangerous cargo monitoring by EEC urged, Dec. 4, p. 6
Development at archeological site opposed, Oct. 23, p. 4
District mass heating installation planned, Nov. 20, p. 8
Energy use criticized in OECD review, Sept. 25, p. 7
Environment vs. industrial development debate, Oct. 23, p. 6
Explosives transportation controls asked, Nov. 6, p. 8
Killarney Lakes water pollution, Nov. 20, p. 7
National energy policy formulation, Sept. 11, p. 2
Nuclear dump off Irish coast criticized, July 3, p. 1
Radiation grants given by EEC, Oct. 9, p. 8
Royal salmon face extinction, Nov. 6, p. 5
Waste heat used for crop growing, July 3, p. 7
Water pollution booklet published by WPAC, Aug. 28, p. 6
- Irrigation**
Drip irrigation in Israel, July 31, p. 3
Waste water reuse in Israel, July 31, p. 3
- Israel**
Bedouin focks overgraze, Aug. 14, p. 8
Coal transportation to power station a problem, July 17, p. 6
Iraqia 78 meeting on water technology, July 31, p. 3
Mediterranean-to-Dead Sea conduit for hydro power, July 3, p. 7
Negev threatened by military bases, Dec. 18, p. 4
Solar pond water heating, Nov. 20, p. 6
Wildlife sanctuaries set up in Sinai, Dec. 18, p. 4
- J**
- Japan**
Anti-pollution equipment sales, July 31, p. 8; Nov. 6, p. 6
Environmental cooperation with U.S., Oct. 23, p. 6
Geothermal power-development pact with U.S., July 31, p. 1
Malacca Strait cleanup fund payments, Sept. 11, p. 7
Nationwide environmental resource survey, July 17, p. 8
NOx emission standards relaxed, Aug. 14, p. 1; Sept. 25, p. 6
Solar power pilot plants and home use, Nov. 6, p. 4
Tokyo to study air pollution related ailments, July 17, p. 3
- Jellinek, Steven D**
Discussions on toxic chemicals, July 3, p. 7; July 17, p. 2

Johansson, Olof

On Swedish energy sources, July 3, p. 1

K

Karlstrom, Lars

On environmental investment as aid to economy, July 17, p. 6

Kenya

Geothermal power project at Ol Karia, Oct. 9, p. 1
Housing problems in Nairobi, Sept. 11, p. 2
Mycotoxin contamination of food and fodder, Oct. 23, p. 8
World Bank loan for urban housing, July 31, p. 6

Kiann, Gikonyo

Kenyan Minister chairs UNHHSF/UNEP meeting, Nov. 20, p. 2

Kilicer, Turkut

Turkey's first Under-Secretary of Environmental Affairs, Sept. 11, p. 5

King, K.F.S.

FAO Asst. Director-General sees wood shortages, Sept. 11, p. 4
ICRAF head a pioneer of agroforestry, Dec. 18, p. 8

Koch, Ejler

Noise pollution study in Denmark, July 31, p. 7

Kuwait

Arab Center for Desalination planned, Nov. 20, p. 8
Energy cooperation with Germany, July 3, p. 6; Dec. 4, p. 8
Persian Gulf pollution research project, July 3, p. 8

L

Land Reclamation

Nieuwduinen and other Dutch projects, Oct. 23, p. 3
Waterlogged land in Pakistan, Aug. 28, p. 8; Nov. 20, p. 5

Land Use

Peking to be freed of industry, Oct. 23, p. 8
Urban park space per resident, comparisons, Nov. 6, p. 7

Latin America

Bishops' conference paper on ecology as religious subject, Oct. 23, p. 6
Conservation Conference in Guatemala City, Dec. 4, p. 8
Naval Conference discusses oil spills, Nov. 6, p. 8

Lead

Automobile emissions in Britain, July 17, p. 5; Oct. 23, p. 4
Charge against polluting plant in Belgium, July 17, p. 4
EEC restricts levels in gasoline, July 17, pp. 1, 5
Second International Symposium planned, Nov. 6, p. 8
Sweden checks pottery for lead levels, Sept. 25, p. 7
Sweden restricts level in gasoline, Aug. 14, p. 1

Lee, James E.

On World Bank environmental loans, Aug. 14, p. 3

Legislation

Australian uranium mining, July 31, p. 8
Effective in Dutch water pollution control, July 3, p. 8
Hong Kong comprehensive pollution controls, July 31, p. 7; Aug. 28, p. 6; Nov. 6, p. 8
Indonesian water quality code, Oct. 9, p. 8
Japan's Pollution Health Damage Compensation Law, Nov. 6, p. 6
Malaysia Clean Air Standards, Dec. 4, p. 8

Leido, Jose, Jr.

On Philippine EIS requirement, July 31, p. 6

Liberia

Housing discussed at Monrovia conference, Sept. 11, p. 2

Libya

Saharan aquifer project, Oct. 23, p. 7; Dec. 4, p. 2

Litigation

Greece sues oilseed refinery, July 17, p. 8
New Delhi industries prosecuted for water pollution, Aug. 28, p. 7

Lourd, Philippe Le

Malta Oil Spill Combating Center, Oct. 9, p. 2

Ludwig, Daniel K.

Amazon-Jari project, Oct. 9, p. 3

Lumber and Lumber Industry (see also Wood)

Colombia fines illegal tree cutting, Nov. 6, p. 7
Philippine restrictions, Nov. 20, p. 8

M

Malaysia

Biomass and biogas fuel, Oct. 9, p. 7
Clean Air Act of 1978, Dec. 4, p. 8
Compensation demanded from polluting copper mine, Aug. 14, p. 8

- Control of waste discharge into local water, Sept. 25, p. 8
 Deforestation, UNEP report, July 17, p. 4; July 31, p. 5
 Forestry code drafted, Sept. 25, p. 7
 Malacca Strait cleanup, Sept. 11, p. 7; Dec. 4, p. 7
 Oil-recovery equipment replaces dispersants, Sept. 11, p. 7
 Palm oil industry pollutes rivers, July 31, p. 7
 Pineapple peels for cattle fodder, Aug. 28, p. 7
- Malta**
 Center for Mediterranean energy collaboration, Nov. 6, p. 4
 Oil Spill Combating Center, Oct. 9, p. 2
- Marine Pollution (See also Coastal Water Pollution; Oil Spills)**
 Baltic Sea clean-up progresses, Sept. 25, p. 4
 Philippine control rules and fines, Nov. 20, p. 7
- Marine Sciences (see also Oceanography)**
 TCMA conference underscores value, July 3, p. 2
- Matthiasen, Niels**
 Noise pollution study in Denmark, July 31, p. 7
- Mauritius**
 Newsprint plant warnings disregarded, Dec. 4, p. 4
 Oil pollution on beach a mystery, Dec. 18, p. 7
- Mediterranean**
 Malta meeting starts energy collaboration, Nov. 6, p. 4
 Oil Spill Combating work off to slow start, Oct. 9, p. 2
 Pollution and UNEP program scored by Spain, Nov. 20, p. 4
 Regional Program and Action Plan, July 3, p. 4
 UNEP Action Plan evaluated, Dec. 18, p. 5
- Mercury**
 Venezuelan petrochemical workers poisoned, Nov. 20, p. 8
- Metals Industries (see also Steel Industry)**
 Lead poisoning charged to Belgian plant, July 17, p. 4
- Mexico**
 Chromate factory closed, Oct. 23, p. 4
 Cuernavaca park zones as buffer against Mexico City, Sept. 11, p. 7
 Desalination project with Panama, Aug. 28, p. 6
 Environmental cooperation agreement with U.S., Aug. 28, p. 5
 Gasoline-methanol mixture for cars, Sept. 11, p. 6
 Green space scarce in Mexico City, Nov. 6, p. 7
 Housing developments use solar power, Oct. 9, p. 5
 Population distribution plan, July 17, p. 8
 Population pressure on Mexico City, Aug. 14, p. 4
 Public transportation a Mexico City priority, Nov. 6, p. 8
 Tourism damages Pacific islands wildlife, Sept. 25, p. 8
- Mikhail, Ramses**
 UNEP official on weather modification, July 31, p. 8
- Mining**
 ALCOA mine wins in Australia, Sept. 11, p. 3; Nov. 20, p. 6
 Asbestos mine in Australia, and lung disease, Sept. 25, p. 7
 Bauxite runoff pollutes Colombian rivers, Oct. 23, p. 7
 Swedish ASA asks uranium mining permit, Dec. 4, p. 1
 Swedish copper mine attacked for pollution, Sept. 25, p. 6
 Uranium, Australia, July 31, p. 8; Aug. 28, p. 6; Dec. 18, p. 2
- Monitoring**
 Auto emissions measurement discussed by ECE, Nov. 6, p. 7
 Philippine technique to use nuclear energy, Aug. 14, p. 8
 South Korean program, Oct. 23, p. 7
- Motor Vehicles**
 Anti-noise campaign in Bavaria, Aug. 14, p. 4
 Dynair thermal clutch fan saves fuel, Sept. 25, p. 7
 ECE pollution limits and monitoring, Nov. 6, p. 7
 Electric taxi in use in Germany, July 17, p. 7
 Fuel-saving high-compression engine, Dec. 18, p. 8
 Hydrogen-powered car developed in Australia, Sept. 25, p. 8
 Lead pollution controversy in Britain, July 17, p. 5
 Noise curbed by ECE regulations, Oct. 9, p. 7
 Pakistani buses switch from diesel to LPG, Aug. 28, p. 4
 Singapore auto emissions exceed permissible levels, Aug. 28, p. 7
- Mueller, Riccardo E.**
 On Swiss solar energy uses and plans, Aug. 28, p. 3
- Muhoho, George Kamau**
 UNEP Information Chief, Oct. 23, p. 7
- N**
- Nepal**
 Deforestation aggravates floods in India, Nov. 6, p. 5
 Solar energy powers telecommunications, Sept. 11, p. 7
- Netherlands**
 Land reclamation projects, Oct. 23, p. 3
 Membrane filtration for water purification, Nov. 6, p. 6
 Rozka-filter for water pollution offered, Aug. 28, p. 6
- Washing machine return flow device, July 3, p. 6
 Water pollution controls deemed effective, July 3, p. 8
 Wind-Energy Program, Dec. 18, p. 3
- New Zealand**
 Voting on environmental issues and party, Dec. 18, p. 1
- Noise Pollution**
 Anti-noise campaign for Bavarian drivers, Aug. 14, p. 4
 British workers' exposure harmful, Aug. 14, p. 7
 Danish study ordered, July 31, p. 7
 ECE regulations for motor vehicles, Oct. 9, p. 7
 Hong Kong construction sites regulated, Oct. 9, p. 7
 Hong Kong legislation, July 31, p. 7; Nov. 6, p. 8
 Philippine control measures, July 3, p. 6
- North Atlantic Treaty Organization (NATO)**
 CCMS energy studies produce results, Dec. 4, p. 4
- Norway**
 Arctic ice floe expedition, Nov. 20, p. 4
 Energy-saving investments, Dec. 18, p. 7
 Roe bank to aid salmon, other fish, Nov. 6, p. 5
 Water pollution combated successfully, Dec. 4, p. 5
- Nuclear Energy (see also Radioactive Wastes)**
 Anti-nuclear group formed in Ireland, Sept. 25, p. 2
 Bolivian project aided by Argentina, July 3, p. 7
 Fuel reprocessing centers studied for Asia, Nov. 6, p. 7
 German plants for Kuwait, July 3, p. 6
 Peru buys equipment from Argentina, July 3, p. 7; Sept. 11, p. 6
 Swedish debate continues, July 3, p. 1; Dec. 4, p. 1
 UNEP task force chief el-Hinnawi's views, Nov. 20, p. 3
 Use for pollution measurement studied in Philippines, Aug. 14, p. 6
- O**
- Oceanography (see also Marine Sciences)**
 Board for Ocean Science formed in India, Nov. 20, p. 8
 Research Center urged by Brazil's FBCN, July 3, p. 6
- Offshore Oil**
 Great Barrier Reef endangered by drilling, Aug. 14, p. 1
 Wells benefit fisheries at Singapore, July 31, p. 6
- O'Halloran, John**
 Protest against nuclear dumping off Irish coast, July 3, p. 1
- Oil**
 BOPEC terminal in Bonaire ultra-protected, Sept. 25, p. 3
 Chinese refinery praised for cleanliness, Aug. 14, p. 6
 Laser extraction from tar belt studied in Venezuela, Aug. 14, p. 8
 Production from shrubs studied in India, July 3, p. 8
- Oil Spills**
 Baltic Sea nations sign agreement, Sept. 25, p. 4
 British contingency plan inadequate, Dec. 18, p. 5
 Discussed at Interamerican Naval Conference, Nov. 6, p. 8
 Dispersion benefits discussed, July 31, p. 6
 Hong Kong raises fine, Sept. 25, p. 7; Dec. 4, p. 8
 Malacca Strait cleanup plans, Sept. 11, p. 7; Dec. 4, p. 7
 Mediterranean Center off to slow start, Oct. 9, p. 2
 Oil recovery vs. dispersion, July 31, p. 6; Sept. 11, p. 7
 "Petroabs" absorbant patented in Romania, Nov. 6, p. 1
 Pollution off British coast rising, July 3, p. 6
- O'Malley, Des**
 Irish Energy Minister urges national policy, Sept. 11, p. 2
- Organization for Economic Cooperation and Development (OECD)**
 International Energy Agency report, July 3, p. 5
 Irish energy use gets critical review, Sept. 25, p. 7
 Toxic chemicals regulation discussed, July 3, p. 7
 Use of waste materials in road building urged, July 3, p. 5
- P**
- Pakistan**
 Diesel buses to be converted to LPG, Aug. 28, p. 4
 Marine resource development advocated, July 3, p. 2
 Pure water a priority of Five-Year Plan, Oct. 23, p. 8
 Waterlogged land to be reclaimed, July 3, p. 7, Aug. 28, p. 8; Nov. 20, p. 5
- Panama**
 Canal stocked with weed-eating fish, Dec. 18, p. 5
 Desalination project with Mexico, Aug. 28, p. 6
- Paper and Pulp**
 Consumption increase aired at FAO Forestry meeting, Sept. 11, p. 5
- Parks**
 Colombian reserve in Andes, Nov. 20, p. 7
 Cuernavaca-Mexico City buffer, Sept. 11, p. 7
 Donana wildlife refuge in Spain, Nov. 6, p. 1
 Egypt and other nations plan reserves, Dec. 18, p. 4
 Urban green space per resident, comparisons, Nov. 6, p. 7
 Western Australian reserves, Aug. 28, p. 8; Dec. 18, p. 2
- Pell, Claiborne**
 Work for treaties for peace and environment, Aug. 28, p. 2
- Perian Gulf**
 Pollution study uses mathematical model, July 3, p. 8
- Peru**
 Air pollution in Lima, Aug. 14, p. 5; Dec. 4, p. 8
 Amazon Pact approval, July 31, p. 5
 Ecological Front (ECO) organized, Nov. 20, p. 1
 Environmental survey given by Vizcarra, Dec. 4, p. 4
 International Whaling Commission to be joined, July 17, p. 7
 Jungle fauna research project, Oct. 9, p. 7
 Nuclear power projects, July 3, p. 7; Sept. 11, p. 6
 Trolley reintroduction in Lima contemplated, Oct. 9, p. 6
- Pesticides**
 Aerial low-volume spray used in China, July 31, p. 7
 Cause of disease and damage in Colombia, Sept. 25, p. 1; Nov. 20, p. 7
 Colombia decrees control on spraying, storage, Nov. 6, p. 7
 Ghana warns against overuse, Aug. 14, p. 6
 Lack in malaria control, Dec. 18, p. 4
 Philippine restrictions, Aug. 14, p. 8; Sept. 11, p. 6
 Safe coconut oil-based pesticide made in Philippines, Dec. 18, p. 7
 U.S. EPA notification program for exports, July 31, p. 2
- Philippines**
 Deforestation, UNEP report, July 17, p. 4; July 31, p. 5
 EIS requirements, July 31, p. 6; Oct. 23, p. 7
 Forest protection efforts, Oct. 9, p. 8; Nov. 20, p. 8
 Geothermal energy promotion, Sept. 11, p. 6
 Human Ecology and Settlements Dept. created, Aug. 28, p. 7
 Ipi-ipi charcoal for anti-pollution filters, Aug. 14, p. 8
 Marine pollution control rules and fines, Nov. 20, p. 7
 NES to promote natural renewable energy, Oct. 9, p. 7
 Noise pollution control measures, July 3, p. 6
 Nuclear energy use studied to measure pollution, Aug. 14, p. 6
 Pesticide restrictions, Aug. 14, p. 8; Sept. 11, p. 6
 Restrictions on Manila factories, Dec. 18, p. 8
 Safe coconut oil-based pesticide developed, Dec. 18, p. 7
 Solar dryers for food producers, Dec. 4, p. 7
 Solar-powered ice plant for fish storage, July 17, p. 7
- Poland**
 Baltic Sea clean-up progresses, Sept. 25, p. 4
 ECE seminar on chemical air pollution planned, Sept. 11, p. 8
- Population**
 Mexican problem leads to distribution plans, July 17, p. 8; Aug. 14, p. 4
 Geothermal energy plans, Dec. 4, p. 4
 Greenbelt park to be replaced by school, Oct. 23, p. 5
- Publications**
 "Banking on the Biosphere?" (IIED survey), Dec. 4, p. 3
A Change in the Weather (Green), July 3, p. 3
 "Environmental considerations for the Industrial Development Sector" (World Bank), Oct. 9, p. 8
 EURATOM Report 5972 on radiation protection, July 31, p. 8
 ISO 2631, guide on vibration effects, July 31, p. 2
 "Repairs, Reuse, Recycling" (Worldwatch Inst.), Oct. 23, p. 5
 "Water Is Life" (WPAC of Ireland), Aug. 28, p. 6
- Q**
- Quintana, Cesar**
 UNHHSF Administrator, Nov. 20, p. 2
- R**
- Radiation**
 CIPR findings force revision protection measures, Oct. 9, p. 7
 EEC 1977 Radiation Protection Report, July 31, p. 8
 EEC grants to Ireland, Oct. 9, p. 8
 Use for food preservation in India, Sept. 11, p. 8
- Radioactive Wastes**
 Dumping off Irish coast, July 3, p. 1
 Safe burial method claimed in Australia, Aug. 28, p. 4
- Radioactivity**
 Fallout from China affects Korsan plants, July 31, p. 6
 Plutonium contamination at British research plant, Sept. 11, p. 2
- Ramachandran, Arcot**
 UNCHS Executive Director, Oct. 23, p. 8
- Ramirez Vazquez, Pedro**
 Mexican Urban Development Plan, July 17, p. 8
- Recycling**
 Chemical wastes recovered in China, July 3, p. 2

Coal dust, cellulose waste make clean fuel in Turkey, Oct. 9, p. 4
 Coal dust slag and soot, China, July 3, pp. 2, 7
 Farm, timber wastes yield biomass, biogas fuels, Oct. 9, p. 7
 Farm waste digester produces biogas, July 17, p. 7
 Farm wastes yield cattle fodder, Aug. 14, p. 7; Aug. 28, p. 7
 Oil and chemical waste facility in Denmark, Dec. 4, p. 6
 Paper, in Thailand, Nov. 20, p. 7
 Sewage waste treatment benefits Venezuelan gardens, Aug. 14, p. 6
 Waste recycling R&D funded by EEC, Oct. 23, p. 5

Reed, Stuart
 Hong Kong Environmental Protection Advisor, July 31, p. 7; Aug. 28, p. 6; Nov. 6, p. 8

Reforestation
 Canton planting trees to absorb toxic gases, Oct. 23, p. 7
 Indian programs, Nov. 6, p. 5; Dec. 4, p. 8
 Sri Lankan tree planting campaign, Aug. 28, p. 7
 Thai program to be aided by World Bank, Sept. 25, p. 8
 Venezuelan efforts, July 17, p. 6
 Vietnamese program, July 17, p. 8

Ringwood, Alfred
 Safe burial method for nuclear waste claimed, Aug. 28, p. 4

Rockefeller Foundation
 Energy research grants announced, Oct. 23, p. 8

Romania
 Oil absorbant "Petroabs" patented, Nov. 6, p. 1

Roque, Celso
 On Philippine EIS requirement, July 31, p. 6

Rural Electrification
 Indonesian helio-thermochemical system, Aug. 14, p. 7

S

Sahara Desert
 Groundwater project, Oct. 23, p. 7; Dec. 4, p. 2

Saouma, Edouard
 FAO Director at World Forestry Conference, Nov. 20, p. 6

Sens, P. F.
 Dutch wind-energy project director, Dec. 18, p. 3

Sewage Disposal (see also Waste Water Purification)
 Bombay project secures IDA credit, Aug. 28, p. 7
 Flowform biological treatment system, Dec. 4, p. 5
 Tel Aviv treatment plant, July 31, p. 3
 Venezuelan town pioneers treatment, Aug. 14, p. 6

Shared Natural Resources
 International impact of weather modification, July 31, p. 8
 Regional Seas Program, July 3, p. 4; Dec. 18, p. 5

Sierra Leone
 Refuse collection by "trailer bins," Oct. 9, p. 6

Singapore
 Auto emissions exceed permissible levels, Aug. 28, p. 7
 Chemical engineering conference planned, Dec. 18, p. 8
 Farm waste recycling yields cattle fodder, Aug. 14, p. 7
 Malacca Strait cleanup role, Sept. 11, p. 7
 Offshore oil drilling good for fisheries, July 31, p. 6

Smoking
 Ban on domestic flights in Taiwan, July 31, p. 8

Soil Erosion
 India, Nov. 6, p. 5; Dec. 4, p. 8

Solar Energy
 ECE conferences held in Africa (Nairobi, Bamako), Oct. 9, p. 6
 EEC emphasis and funding, Sept. 25, p. 5; Nov. 20, p. 3
 Electric power pilot plants in Japan, Nov. 6, p. 4
 Electricity generated by Indonesian helio-thermochemical system, Aug. 14, p. 7
 German R&D and uses, Nov. 6, p. 3; Dec. 4, p. 4
 Home heating use in Belgium, Oct. 9, p. 5
 Hong Kong solar collectors to be exported cheaply, Sept. 11, p. 8
 Housing developments in Mexico, Oct. 9, p. 5
 IEA international development agreements, Aug. 28, p. 3
 Indian research and uses, Oct. 9, p. 5
 Israeli technology, July 31, p. 4
 Japanese activities survey, Nov. 6, p. 4
 Kuwaiti research projects, July 3, p. 6; Dec. 4, p. 8
 Mediterranean nations status and collaboration, Nov. 6, p. 4
 Philippine ice plant for fish storage, July 17, p. 7
 Solar dryers for food producers, Dec. 4, p. 7
 Solar pond method, Nov. 20, p. 6
 Steel collectors power Australian medical center, Aug. 14, p. 7
 Swedish projects, July 3, p. 1
 Swiss achievements and plans, Aug. 28, p. 3
 To be promoted by Natural Energy Systems (NES), Oct. 9, p. 7

UNEP task force chief cautions on optimism, Nov. 20, p. 3
 Use for telecommunications in Nepal, Sept. 11, p. 7
 Varese Conference preparations, Oct. 9, p. 6
 Water heating in Israel, Nov. 20, p. 6
 Water heating in Taiwan, Aug. 28, p. 7
 Water heating, Mediterranean and Japan, Nov. 6, p. 4

Solid Waste Disposal
 Danish central facility, Dec. 4, p. 6
 Greeks plan power and steam producing plant, Oct. 23, p. 5
 Hong Kong legislation, July 31, p. 7; Nov. 6, p. 8
 "Trailer bin" collection method in Sierra Leone, Oct. 9, p. 6

South Korea
 Coke briquettes, Sept. 25, p. 8
 Environment Preservation Association formed, Nov. 6, p. 7
 Hard-type synthetic detergents banned, Sept. 11, p. 8
 Industries lax in pollution control, Sept. 25, p. 8
 Phosphate found to absorb sulphuric acid from air, Nov. 20, p. 8
 Pollution monitoring program, Oct. 23, p. 7
 Tidal power plant planned, Aug. 28, p. 8
 Vegetation affected by Chinese nuclear fallout, July 31, p. 6

Spain
 Donana wildlife refuge may hold oil, Nov. 6, p. 1
 Environmental rally in Madrid, Dec. 18, p. 8
 Mediterranean pollution and UNEP scored, Nov. 20, p. 4

Sri Lanka
 Environmental policy, Dec. 4, p. 5
 Public sector called biggest polluter, Aug. 28, p. 5
 Tree planting campaign, Aug. 28, p. 7

Steel Industry
 Coke briquettes as blast furnace fuel of future, Oct. 9, p. 4
 Greek plant closed for air pollution, July 17, p. 2
 UNEP workshop asks eco-evaluation for new mills, Nov. 20, p. 5

Sudan
 Institute of Environmental Studies at Khartoum, Dec. 18, p. 7
 Low-cost Habitat project in Khartoum, Sept. 25, p. 4
 Saharan aquifer project, Oct. 23, p. 7; Dec. 4, p. 2

Surinam
 Amazon Pact approval, July 31, p. 5

Swenson, Gale
 Chairman of UNHHSF quoted on regional conferences, July 17, p. 3

Sweden
 Copper mine attacked for pollution, Sept. 25, p. 6
 Energy alternatives to nuclear power, July 5, p. 1
 Flowform biological sewage treatment, Dec. 4, p. 5
 Lead content of gasoline reduced, Aug. 14, p. 1
 Methanol banned in auto products, Sept. 11, p. 6
 Old mills revived as mini-hydropower plants, Oct. 9, p. 2
 Pottery checked for lead and cadmium levels, Sept. 25, p. 7
 Uranium mining debate, Dec. 4, p. 1

Switzerland
 Ski trails opposed by Alpine Club, Oct. 9, p. 1
 Solar energy promotion, Aug. 28, p. 3

T

Taiwan (Republic of China)
 Cars as Taipei's chief air polluters, July 31, p. 7
 Smoking ban on domestic flights, July 31, p. 8
 Solar water heaters, Aug. 28, p. 7

Thailand
 Coastal sea pollution dilemma, July 31, p. 7
 Deforestation, UNEP report, July 17, p. 4; July 31, p. 5
 Industry forced to improve working conditions, Oct. 23, p. 8
 Log poaching damages forests, Sept. 25, p. 8
 Paper recycling, Nov. 20, p. 7
 Rain-Making Unit funded, Oct. 9, p. 7
 Reforestation to be aided by World Bank, Sept. 25, p. 8

Tidal Power
 South Korea plans power plant, Aug. 28, p. 8

Tolba, Mostafa K.
 Reports to UNEP Governing Council, July 3, p. 4

Toxic Chemicals (see also Carcinogens; Herbicides; Lead; Mercury; Pesticides)
 IRPTC (UNEP Register), July 3, p. 4
 Liquid wastes treatment, U.K. conference, Nov. 6, p. 8
 OECD agreements for regulation discussed, July 3, p. 7
 Pottery checked for cadmium, lead in Sweden, Sept. 25, p. 7
 U.S.-German discussions for control, July 17, p. 1

Train, Russell E.
 Toxic substances control discussed, July 17, p. 2

Transportation (see also Motor Vehicles)
 Public transport a Mexico City priority, Nov. 6, p. 8
 Trolley reintroduction in Lima contemplated, Oct. 9, p. 6

Treaties and Conventions
 Amazon Cooperation Treaty, July 31, p. 5
 Baltic Sea, Sept. 25, p. 4
 IMCO Convention on Maritime Safety, July 31, p. 4; Aug. 14, p. 5; Dec. 18, p. 2
 International EIS treaty urged by U.S., Aug. 28, p. 2
 Malacca Strait cleanup agreement, Sept. 11, p. 7
 Solar energy development, IEA, Aug. 28, p. 3
 Trade in Endangered Species, July 3, p. 4; Dec. 4, p. 7
 U.S.-Japanese pact on geothermal power development, July 31, p. 1
 U.S.-Mexican environmental cooperation agreement, Aug. 28, p. 5

Turkey
 Ankara restricted to low-sulphur coal, Sept. 11, p. 7
 Coal dust and cellulose waste make clean fuel, Oct. 9, p. 4
 Environmental efforts, World Environment Day, July 3, p. 3
 Izmit Bay pollution protested, Aug. 14, p. 2
 Killcer as Under-Secretary of Environmental Affairs, Sept. 11, p. 5
 R&D center for solar power research, Nov. 6, p. 4

U

UN Center for Human Settlements (UNCHS)
 Establishment and Executive Director, Oct. 28, p. 8

UN Development Program (UNDP)
 Anti-desertification activities, Dec. 4, p. 1
 Environmental procedures survey asked, Dec. 4, p. 3
 Housing meeting in Nairobi sponsored, Nov. 20, p. 2
 Kenyan geothermal project aided, Oct. 9, p. 1
 Mediterranean energy meeting and program, Nov. 6, p. 4

UN Educational Scientific & Cultural Organization (UNESCO)
 Peruvian jungle fauna research agreement, Oct. 9, p. 7

UN Environment Program (UNEP)
 Deforestation reported in Southeast Asia, July 17, p. 4
 Desertification fight projects, Dec. 4, p. 1
 Eco-evaluation for new steel mills asked, Nov. 20, p. 5
 Energy task force chief el-Hinnawi interviewed, Nov. 20, p. 3
 IRPTC (Toxic Chemicals Register), July 3, p. 4
 Mediterranean Action Plan evaluated, Dec. 18, p. 5
 Mediterranean energy meeting and program, Nov. 6, p. 4
 Mediterranean program criticized by Spain, Nov. 20, p. 4
 Muhoho appointed Information Chief, Oct. 23, p. 7
 Peruvian jungle fauna research agreement, Oct. 9, p. 7
 Regional meetings on human settlements, July 17, p. 3; Nov. 20, p. 2
 Regional Seas Program, July 3, p. 4; Dec. 18, p. 5
 Sixth Annual Session of Governing Council, July 3, p. 4
 Tour of USSR parks and research sponsored, Aug. 28, p. 6
 Warning re Asian-Pacific habitat, July 31, p. 5
 Weather modification rules discussed, July 31, p. 8

UN Fund for Population Activities (UNFPA)
 Anti-desertification activities, Dec. 4, p. 1

UN Habitat and Human Settlements Foundation (UNHHSF)
 Gote Swenson as chairman, July 17, p. 3
 Low-cost asphadobe housing in Khartoum, Sept. 25, p. 4
 Regional conferences, July 17, p. 3; Nov. 20, p. 2
 Underfunded, Oct. 23, p. 8

United States
 Arctic ice floe expedition, Nov. 20, p. 4
 Environmental cooperation with Japan, Oct. 23, p. 6
 Environmental cooperation pact with Mexico, Aug. 28, p. 5
 European water purification process to be tested, Oct. 23, p. 2
 Exports of hazardous products criticized, July 31, p. 1
 Geothermal power development pact with Japan, July 31, p. 1
 International EIS's urged by Senate, Aug. 28, p. 2
 OECD agreements on toxic chemicals furthered, July 3, p. 7
 Toxic substances control discussed with Germany, July 17, p. 1

U.S. Agency for International Development (USAID)
 African housing conferences sponsored, Sept. 11, p. 3; Nov. 20, p. 2
 Aids conservation education in Costa Rica, Dec. 4, p. 2
 Regional training seminars, Dec. 4, p. 7

Ural, Engin
 Turkish environmental foundation led by, July 3, p. 3

Uranium
 Australian mining legislation passed, July 31, p. 8
 Australian mining rights, Aug. 28, p. 6; Dec. 18, p. 2
 Swedish deposits, and mining debate, Dec. 4, p. 1

USSR
 UNEP sponsored tour of parks and reserves, Aug. 28, p. 6

V

Venezuela

- Amazon Pact approval, July 31, p. 5
- Environmental education program, July 31, p. 6
- Mercury poisoning at petrochemical complex, Nov. 20, p. 8
- Oil extraction from tar belt by laser studied, Aug. 14, p. 8
- Sewage and waste treatment pioneered at Lagunillas, Aug. 14, p. 6
- Tree planting efforts, July 17, p. 6

Vibration

- ISO International Standard 2631 (guide), July 31, p. 2

Vietnam

- Reforestation program, July 17, p. 8

Vizcarra, Manuel

- Peruvian Environment Director interviewed, Dec. 4, p. 4

W

Waste Heat

- Used for crop growing in Ireland, July 3, p. 7

Waste Matter (see also Garbage; Industrial Wastes; Radioactive Wastes; Recycling; Solid Waste Disposal)

- Daily tonnage in EEC nations, and R&D funding, Oct. 23, p. 5
- Farm wastes yield biogas, biomass fuel, July 17, p. 7; Oct. 9, p. 7
- Use in road construction urged by OECD, July 3, p. 5
- Venezuelan town pioneers treatment, Aug. 14, p. 6

Waste Water Purification

- Czech plant on Elbe River, July 17, p. 7
- Dutch treatment capacity, July 3, p. 8
- European process to be tested in U.S., Oct. 23, p. 2
- Israeli efficiency, July 31, p. 3
- Membrane filtration technique in Holland, Nov. 6, p. 6

Water Pollution (see also Coastal Water Pollution; Marine Pollution; Oil Spills)

- Bauxite runoff in Colombia, Oct. 23, p. 7
- Bulgarian clean-up program, Nov. 20, p. 4

- Duck Lake (China) cleaned to save fish farm, Aug. 28, p. 8
- Dutch legislation deemed effective, July 3, p. 8
- Dutch Rozka-filter offered, Aug. 28, p. 6
- EEC control measures adopted, July 17, p. 1
- Hong Kong legislation, July 31, p. 7; Aug. 28, p. 6; Nov. 6, p. 8
- Irish Killarney Lakes, Nov. 20, p. 7
- Irish WPAC publishes "Water Is Life," Aug. 28, p. 6
- Jamuna River at Delhi, Sept. 25, p. 7
- Malaysia will regulate waste discharge, Sept. 25, p. 8
- Mathematical models used in Persian Gulf study, July 3, p. 8
- New Delhi industries face litigation, Aug. 28, p. 7
- Norwegian clean-up progress, Dec. 4, p. 5
- Palm oil mill wastes in Malaysian rivers, July 31, p. 7
- Research coordination among nine EC nations, Dec. 18, p. 6
- Sri Lankan public sector castigated, Aug. 28, p. 5
- Turks protest Izmit Bay pollution, Aug. 14, p. 2

Water Resources and Supply (see also Waste Water Purification)

- Dual-flush toilet cuts water use, July 31, p. 3
- Indonesian code expected, Oct. 9, p. 8
- Israqua '78 conference, July 31, p. 3
- Laser beam tracing of "overfeeding" of algae, July 31, p. 4
- Pakistan's tube well plan, July 3, p. 7
- Pure water a priority of Pakistani Five-Year Plan, Oct. 23, p. 8
- Saharan aquifer project, Oct. 23, p. 7; Dec. 4, p. 2

Weather

- A Change in the Weather (Green) reviewed, July 3, p. 3
- Global Experiment FGGE, July 17, p. 6; Oct. 23, p. 1
- Man's role in climate change of concern to EC, Dec. 4, p. 6
- Modification agreement discussed at UNEP/WMO meeting, July 31, p. 8
- Thailand funds rain making, Oct. 9, p. 7

Wildlife

- Damaged by aerial spraying in Colombia, Sept. 25, p. 1
- Egypt and other nations plan preserves, Dec. 18, p. 4
- Peru to join Whaling Commission, July 17, p. 7
- Tourist damage on Mexican Pacific isles, Sept. 25, p. 8
- Trade in Endangered Species meeting planned, Dec. 4, p. 7
- Wild animal traffickers flout Colombian code, Sept. 11, p. 5

Wind Power

- Dutch Wind-Energy Program, Dec. 18, p. 3
- Emergency power for Danish phones, Dec. 18, p. 6
- German uses and potential, Nov. 6, p. 3
- Swedish projects, July 3, p. 1

Wood and Wood Residues (see also Lumber)

- Imbalance of supply and demand seen by FAO, Sept. 11, p. 4; Nov. 20, p. 6
- Thai restriction of logging discussed, Sept. 25, p. 8

World Bank

- Aid to Pakistani anti-waterlogging project, Nov. 20, p. 5
- Aid to Thai reforestation program, Sept. 25, p. 8
- Environmental guidelines booklet, Oct. 9, p. 8
- Environmental procedures initiated, Dec. 4, p. 3
- Environmental rehab loan to Sarajevo, Aug. 14, p. 3
- IDA credit for Bombay sewage project, Aug. 28, p. 7
- IDA credit for urban housing in Kenya, July 31, p. 6
- Kenyan geothermal project to be financed, Oct. 9, p. 1

World Climate Conference

- Global Weather Experiment (FGGE) Input, Oct. 23, p. 1

World Environment Day

- 1979 theme and program, Dec. 18, p. 7

World Health Organization (WHO)

- Malaria control problems, Dec. 18, p. 4
- Nickel-caused allergies discussed, Oct. 9, p. 4

World Meteorological Organization (WMO)

- Global Weather Experiment, July 17, p. 6; Oct. 23, p. 1
- Weather modification rules discussed, July 31, p. 8

World Wildlife Fund (WWF)

- PRODNA organizes ECO in Peru, Nov. 20, p. 1

Y

Yamada, Hizanari

- World Bank loan for Sarajevo environmental rehab, Aug. 14, p. 3

Z

Zosa, Miguel M.

- Pesticide restrictions in Philippines, Aug. 14, p. 8

World Environment Report . . .

Is the first and only publication of its kind: an eight-page, biweekly newsletter that keeps you informed of significant happenings on today's world environment scene. *WER's* staff of 65 correspondents posted around the world monitors the environmental activities of governments, corporations, international organizations, scientists, universities, and citizens groups. It is published by the Center for International Environmental Information, a private, non-profit organization established by the UN Association of the USA with the support of the UN Environment Program. The Center alone is responsible for all material presented in *WER*.



World Environment Report

Man
17
1977-78

VOL. 4, NO. 26

Copyright © 1978. Center for International Environment Information.

DECEMBER 18, 1978

8 JAN 1979

From the Editor

The next *World Environment Report* (January 1, 1979) will be a special issue—in several respects. We have redesigned *WER*, and we think you will find its new format not only more attractive and readable, but that it gives you more for your money. The new *WER* will be special also in that most of this first issue will be a Special Report, a global look at nuclear plans, policies and politics. In June 1975, *WER* presented its first world-wide nuclear roundup. A great deal has changed since then. There has been increasing debate over nuclear energy and its environmental impact, both in the United States and in other countries. More people than ever before now consider the decision to use nuclear power—and what to do with its wastes—too important to be the sole province of governments and power companies. *WER* will give you an exclusive report on nuclear events now in 40 countries.

L.B.

New Zealand's Ecology Party Wins Support As It Loses Votes

WELLINGTON—Ecologists who form political parties to implement their ideas find the parties languishing but the ideas taking hold. This has been the experience in New Zealand where one of the most promising and imaginative attempts to base a political party on environmental reform was voted down last month by a community which had already adopted many of the party's attitudes. The snub came to the fledgling Values Party, which polled only 2.2 percent of the vote after claiming 5.2 percent at the last elections three years ago.

On both occasions Values fielded a full card of candidates—92 this time. The reverse took Values back to the elections of 1972 when it managed 2 percent while fielding candidates in only half the electorates. That was

its first bid to question unqualified economic growth and population increase.

The campaign thrust this time was largely on cooperative enterprises for all monopoly activities: a Values government would have introduced conversion of major banks, finance houses, insurance companies into cooperatives, to end the old power struggle between capital and labor. But Values never seriously suggested it might become the government, or that it might get one seat in Parliament.

The main political parties, which were the winners, had environmental issues well covered, at least on paper. The National Party government will continue to maintain the independence of a Commission for the Future, expand urban renewal programs, implement new legislation for better planning of urban areas, expand national and forest parks where appropriate, limit felling of native forests to communities depending on some of this timber, emphasize indigenous and renewable sources of energy, and continue to support in the UN prohibitions in all environments of nuclear testing.

Values founder Tony Brunt, a Wellington city councillor now mainly involved in regional issues, acknowledges that the only progress being made by the party in getting policies like the cooperatives moving is to bring them before the community, to get them discussed. "Our value remains as a catalyst, in getting radical ideas talked about, by the community first and later by the politicians. I don't think the Government takes notice till it feels the community is taking notice. There is still a tremendous amount of support for our ideas, but we might have a credibility problem in being accepted as a political party capable of winning a seat in Parliament."

Said Brunt: "Elections may not be crucial for such a party. Electoral politics demands a charade of aggression we can't project."

JOHN KELLEHER



In This Issue

Australian Uranium Mining	2
Europe May Adopt IMCO Ship Standards	2
Special Report: Dutch Windmill Energy	3
Egyptian & Israeli Wildlife Sanctuaries	4
Mediterranean Plan Appraised	5
Carp Clean Panama Canal	5
In Brief	7

Australia to Mine Uranium in Aboriginal Land and National Park

PERTH—After dramatic and protracted negotiations with the traditional Aboriginal owners of the Ranger uranium site, the Australian government and the Aboriginal Northern Land Council signed a final agreement last month turning the land over to federal authorities. Uranium mining will begin next year.

The government owns all mineral rights in Australia, and usually permission to mine is granted to those companies that can best exploit the reserves. But in this case, because of the special, virtually sacred aspects their land has to the Aborigines, the issue was complicated. In addition, environmentalists and anti-nuclearists had opposed the project. But, when the agreement was finally signed, there was little comment from the Australian public in view of repeated statements from the government that uranium mining would proceed despite protestations from Aboriginal or other groups opposed to mining on conscientious or ecological grounds.

It was the end of a long and pain-wracked trial for Australia. Although it holds 16 percent of the world's known uranium reserves, none has been mined here for 10 years pending environmental studies and the government's continuing attempts to seek non-proliferation safeguards from potential buyers.

The Ranger deposit in the Northern Territory has proven reserves of 100,350 tonnes of uranium ore, nearly one-third of the known national total. Half the Ranger interests lie with the federal Atomic Energy Commission; the rest is divided between miners Peko Wallsend Ltd. and EZ Industries Ltd.

The new settlement is believed much the same as the old one, which provided a 4.25 percent royalty to the Aborigines from the total income derived. This could mean as much as \$280 million in royalties (and other associated payments) within the next 30 years.

Work will begin after the wet season early next year, and the mine is expected to last for 21 years. Uranium for export should be ready by 1981. Contracts have already been completed for the sale of 11,500 tonnes to Japan, West Germany and Great Britain.

The agreement also provided for the creation of Kakadu National Park, which will ensure the Aborigines some say in the development of a proposed townsite to service the mining activity.

In a related development, the Western Australian state government has approved mining in the state's biggest national park.

The 15,600-square-kilometer Rudall River national park was created a top-priority reserve last year. But the state's premier, Sir Charles Court, said there was no need to exclude mineral exploration for gold and uranium and mining.

Prospective explorers will have to submit a detailed environmental review to the Environmental Protection Authority which recommended the creation of the re-

serve last year. But final approval of mining rests with the state Mines Department and no input is required from the Department of Conservation and the Environment.

Generally, the integrity of the park must be maintained: vegetation may not be unduly tampered with, and miners are forbidden to explore or mine within 300 meters of the river itself. JANE NACZYNSKI-PHILLIPS

IMCO Ship Inspection Standards May Soon Become Law in Europe

BRUSSELS—Ship inspection standards adopted by the Inter-Governmental Maritime Consultative Organization (*WER*, Aug. 14, p. 5) may soon become law in the nine member states of the European Community (EC).

The EC Commission has just sent the Council a proposal urging that the IMCO standards, which are only recommendations and not legally binding, be incorporated into Community law as soon as possible through a formal decision of the Council. The proposal is the latest in a series of steps taken by the EC to assure that the chances of another Amoco Cadiz-like disaster are minimized.

Two additional proposals intended to increase sea safety are linked to the IMCO-based proposal. One would raise the qualification requirements of deep-sea pilots working on the North Sea and the English Channel. The other would require oil, gas and chemical tankers 1600 tons and over to give advance notification to Community port authorities of "relevant details," including cargo type, estimated time of arrival or departure and factors that could affect "the normal safe maneuverability of the ship."

GARY YERKEY

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$150 per year. \$20 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Libby Bassett
Circulation Manager Jan De Pinto
Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit private organization which seeks to foster public understanding in the United States and Canada of global environment programs, how they affect the quality of life in North America, and the role of international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

SPECIAL REPORT: Rational Dutch Research Wind Energy

PETTEN, The Netherlands—The wind blows hard in this coastal town 30 miles north of Amsterdam. So hard, say the scientists at the Netherlands Energy Research Foundation (ECN), that if it and the rest of the wind along the 250-mile Dutch coastline were harnessed, it would yield electricity equal to 15 percent of the electrical power now produced in this country by other means.

So, in these times of energy rethinking, the scientists began to study something indigenous to The Netherlands—the windmill. They believe they have the most rational, if not the most financially ambitious, wind-energy research project in the world.

"So far, the results of the five-year National Research Program on Wind Energy are limited," says P.F. Sens, who heads the Project Office. "But in the first phase—March 1976 to March 1977—we did discover something that doesn't seem important but is, namely that insufficient data exists for the successful design and construction of large wind turbines. So we decided to build medium-size vertical and horizontal axis experimental turbines and work our way up."

In June, 1977, then-Economics Minister Ruud Lubbers flipped the switch on the vertical-axis model, based on a 1929 design. The two-bladed machine, measuring 5.3 meters across and built by Fokker Aircraft, was set spinning near Amsterdam's Schiphol Airport.

This fall, the horizontal-axis wind turbine—much larger, with a blade-tip-to-blade-tip diameter of 25 meters—will be ready to whirl.

The vertical-axis turbine, called the Darrieus rotor, resembles the familiar old Dutch windmill in name only. The old windmill stood some five stories high, and had four "sails," each 30-40 feet long. In its halcyon days, in the mid-19th century, there were about 9,000 windmills all over The Netherlands. About 950 remain today, but only about 100 are still in working order. They were used primarily for draining water from below-sea-level land, grinding corn, pressing oil from seeds, and sawing timber.

"Although the Darrieus rotor was built originally nearly 50 years ago," Mr. Sens points out, "little has been learned since about its true potential. We built the current one to help us gain know-how."

At stake in the 15-million-guilder (about \$7.5 million) program, which the Dutch government funds entirely, may be the future of large-scale wind-energy use in The Netherlands.

In the United States, the emphasis in wind-energy experimentation has often been on size. In the early 1970s, for instance, William Heronemus proposed the construction of 15,000 towers on the Great Plains that would generate together 189,000 megawatts of power, or half the capacity of electricity power plants operating in the U.S.

Many scientists have criticized the push for bigness. "The technological base for large wind-energy converters

is extremely meager," wrote Kurt H. Hohenemser in the January-February issue of *Environment Magazine*. "The next step probably should be a thorough exploration of all problems for units in the 100-kilowatt range..."

Establishing that "technological base" is the goal of the Dutch program. The Darrieus rotor in operation is small, about 2-kilowatts. The horizontal-axis machine will have an output of 150 kilowatts.

But that base may only be the basis of problems for the Dutch scientists. They must still determine the economic feasibility of large-scale wind-energy use and deal with what Mr. Sens calls the problem of "siting."

"In the second phase of the program, which runs until January 1979, we are examining what may be the main obstacle in utilizing wind-energy on a large scale in The Netherlands—finding areas suited to erecting huge wind-energy conversion systems that could occupy thousands of acres of land."

In order to capture the available wind energy, it would be necessary to build more than 5,000 wind turbines with a rotor diameter of 50 meters all along the Dutch coastline. Unlike the U.S., with its population density of 60 persons per square mile (as low as 20 in Nebraska and 27 in Kansas), The Netherlands has more than 900 people per square mile.

"It may turn out," says Mr. Sens, "that there are no regions where wind turbines will not conflict with existing and planned land use." But he thinks, "the combined use of land for agricultural purposes and for the production of energy from the wind seems like it might be a good—perhaps the *only*—solution."

But that would mean rewriting existing regional planning laws. Today, only buildings and other structures directly related to the agricultural use of land are permitted.

"Although the old Dutch windmills are accepted, and even appreciated, in rural areas, wind-energy turbines of modern design could meet with heavy opposition from the local population and from public authorities," Mr. Sens says.

An alternative under consideration is to build the mass of wind turbines at sea. But that would increase costs significantly. There would also be other restrictions: navigational, fishing, offshore oil drilling and naval defense.

In the third phase of the Dutch Wind-Energy program, which will run from January 1979 until February 1981, the scientists will design, build and test a vertical-axis turbine of the same rotor diameter and rated energy output as the horizontal-axis turbine scheduled to begin operation this fall.

"By working our way up in size," says Mr. Sens, "we will gather sufficient information to determine which type of wind turbine, the vertical- or the horizontal-axis, is most suitable for our purposes. It will take time. But we think that is the most rational way to proceed."

GARY YERKEY

26 Nations Say They Will Set Aside One-Tenth of Their Land for Reserves

CAIRO—Egypt and 25 other nations have endorsed a proposal that they allocate at least 10 percent of their land for the establishment of natural sanctuaries. The proposal was adopted at the end of a recent four-day workshop on wildlife management in arid lands held here under the direction of the Egyptian Academy of Scientific Research and Technology.

The conference urged that each country set up a policy-making body to ensure that "the important benefits accruing to man from the development and utilization of wild species found in arid lands" be incorporated into land-use planning.

The 100 delegates to the workshop asked international funding agencies to promote a multi-disciplined approach to conservation "taking fully into account the improvement of productivity which results from the development and utilization of wild flora and fauna."

Dr. Hassan A. Hafez, Under Secretary of State in the Ministry of Agriculture, believes Egypt will eventually allocate 10 percent of its land, about 63,000 square kilometers, to natural parks and preserves. At present, there are no protected wildlife areas in Egypt, and some of the country's desert animals are consequently in danger of dying out. Even though there are laws against poaching, Dr. Hafez says it has increased in the past two years because the desert is too vast to be properly patrolled.

Dr. Hafez expects the first preserves may be set up next year, probably in the Qattara Depression in the western desert and along the Egypt-Sudan border. During the past year, Egypt has cooperated with the U.S. Department of Fish and Wildlife Services to survey the movement of wild animals.

Dr. Hafez believes that protected animals could be used, under controlled conditions, as "a second line of protein production," for, he explained, unlike domestic animals, they do not overgraze the land.

Israeli authorities are believed to have established eight wildlife sanctuaries in the Sinai Desert, captured in the 1967 War. When Israel withdraws from Sinai, as envisioned in the Camp David accords, Egypt, says Dr. Hafez, will continue to maintain the restricted areas.

NATHANIEL HARRISON

Relocated Military Bases Threaten Ecology of Israel's Negev Desert

JERUSALEM—The planned Israeli pullback from the Sinai peninsula in the framework of an Egyptian-Israeli peace treaty is causing great concern among Israeli ecologists over the fate of the Negev, the semi-arid

expanse which constitutes 60 percent of the country's territory.

The ecologists fear that the Negev will become a vast armed base and training area as the military facilities which have been developed over the past 11 years in Sinai are transferred there. These include large air force bases and thousands of tanks.

Dr. Dan Baharav, a biologist from Haifa's Technion, has proposed that a committee of experts be organized to draw up plans to save the area's flora and fauna. He called for small sanctuaries to be established in areas free of military activity. "No one disputes the need for airfields and camps," he said. "No one suggests they be kept out for the sake of gazelles, but if properly planned with concern for the wilderness, they need not destroy the ecosystem."

ABRAHAM RABINOVICH

New Pesticide Research Diminishes Drastically As Malaria Cases Double

GENEVA—The number of malaria cases in the world has more than doubled in the last five years. At the same time, the World Health Organization reports that malaria-carrying mosquitoes have become increasingly resistant to insecticides currently in use.

The unhappy truth is that industry appears to have lost interest in developing effective, cheaper and safer insecticides for public health use. The number of insecticides offered to WHO for field testing has now dropped to zero.

A WHO spokesman said this is due partly to technical reasons but in greater part because the chemical industry prefers to develop its products for the more profitable market of agriculture. This is a critical problem since other methods—such as genetic control or the use of fish that eat mosquito larvae—are either still in the early stages of development or are only partially effective.

Actually, the early success of malaria control nurtured the seeds of its own defeat. The most malarious areas were originally underpopulated because of the disease, even though they might have had water and rich soil. DDT came along like a miracle, and the economic potential of the areas attracted the attention of both governments and farmers. Water regulation, repopulation and intensive cultivation began, and the irrigation systems, often badly maintained, created a perfect breeding ground for the anopheles mosquitoes. The new settlers had little or no resistance. The insecticides used to boost crop output also built up resistance in the mosquitoes.

Meanwhile, the cost of insecticides more than doubled, and so did costs for everything else involved in malaria control—while the U.S. dollar plunged. This meant there was less available to fight an increasingly resistant mosquito.

WILLIAM G. MAHONEY

Mediterranean Action Plan's Pilot Stage Being Evaluated

NEW YORK—The Mediterranean Action Plan is now more than halfway through its pilot stage, and it is being evaluated. The pilot stage is environmental, a cooperative research and assessment effort in support of environmental management goals that involves most Mediterranean countries, several international organizations, and the European Community (EC). The Plan as a whole was formally constituted and approved by 16 countries in 1975. In the spring of 1977, participating governments and agencies began the formal two-to-three-year period of evaluating administrative and funding arrangements, scope, and direction.

Its technical aspects involve continued monitoring of environmental conditions and coordinating the scientific procedures used internationally. Pollution research programs involve 100 laboratories in 15 countries continually assessing environmental conditions through studies and coastal monitoring. In order to assure relative accuracy of data, the labs are trying to coordinate training, equipment, calibration, and standards. There has been some progress in assuring accurate data gathering procedures, and the supply of uniform equipment (made possible by United Nations Environment Program funding) is helping to eliminate mechanical variance which would hinder data comparison between laboratories. But, at least as important as the technical cooperation within the Plan, is the development of communications lines regarding institutional and legal matters between governments.

Although the northern tier and southern tier countries fall neatly into place along accepted North-South dialogue lines, Dr. Baruch Boxer, author of "Mediterranean Action Plan: An Interim Evaluation" (*Science*; vol. 202; No. 4365; pp. 585-590), believes the issues are more complex than that: "The North-South dichotomy is made too much of," he states. "There are as many specific differences in expectations and goals among the industrialized countries, or among the developing countries, as there are between the industrialized and developing countries in the Mediterranean region." The countries included in the Plan represent wide differences in politics, religion, social and economic structures, and industrialization, yet the degree of cooperation achieved is impressive.

Up to now UNEP has coordinated the Plan, and it has been financed by the UN Environment Fund. But, there is doubt that UNEP will continue in the role of funder after the pilot phase. The participating countries are unanimous in wanting UNEP to continue as coordinator, and participating governments are currently planning to absorb funding responsibilities. So far, independent (of national interest) funding has been essential in assuring flexibility in response to Plan needs, and this flexibility must continue in future funding plans in order to ensure continued success.

In overview, the greatest value of the Plan may not be in achievements specific to the Mediterranean region, but in the model for other such cooperative plans already underway elsewhere. Within the region, many problems remain unresolved, and it is unlikely that they will soon be legislated out of existence, yet discussing shared environmental problems has helped the participants develop a sensitivity to the region's ecological complexity. If something like a formula for international environmental cooperation has been developed, then the experience gained here by the UNEP Regional Seas Program will prove extremely valuable in comparable programs in the Caribbean, Persian (Arabian) Gulf, West African waters, and southeast and southwest Pacific.

RICHARD L. PENBERTHY

English Report Says Coast Still Unprotected Against Oil Spills

LONDON—The whole of Britain's south coast is left virtually unprotected against oil spillages at sea, says a strongly critical report by a Select Committee of Members of Parliament. "The probability of a major disaster occurring in the (English) Channel is far higher than the preparation level of the Department of Trade," it states.

Current plans deal with oil spills totalling 6,000 tons over the whole of the south coast. At the present rate of tanker traffic, the Committee thinks spills exceeding this amount could occur at one point alone, and the traffic will increase, it believes.

"The whole danger, the whole risk and hazard must be taken more seriously," the report says.

The Committee's investigations resulted from criticism of the handling of the wreck of the Greek oil tanker Eleni V, which foundered in May, 1977 causing pollution to the East Anglian coast.

BARBARA MASSAM

Weed-Eating Fish for Panama Canal May Eliminate Need for Herbicides

PANAMA CITY—The Panama Canal is being stocked with weed-eating fish in hopes they will eliminate the need to use chemicals in fighting aquatic plants that threaten ship traffic.

Georges Bouche, of the Panama Canal Company Dredging Division, said the company used 261,000 pounds of copper sulfate in the waterway in fiscal 1977 as part of the weed-control effort, and final figures are expected to show twice that amount was used in fiscal 1978.

"The copper sulfate has been the only feasible way to control the weed problem," Bouche said. "We had used arsenic but we got away from that years and years ago."

The engineer said that since February the company has brought 475,000 white amur carp from a hatchery in Arkansas in hopes they will eat back the weeds and eliminate the use of chemicals. Hydrilla, a submerged weed, and water hyacinth, a floating weed, thrive in the canal, tangling ship propellers, causing motor damage and hindering recreational sports.

"The white amur has pharyngeal teeth in its throat that grind up weeds like a child sucks spaghetti," said Bouche.

At maturity the fish weighs 60 to 70 pounds, measures one meter, and consumes 130 percent of its body weight in weeds daily.

Bouche said that the Canal Company has been pleased with the program so far and feels that this "non-chemical, non-toxic method of weed removal will have a minimum effect on the environment and will be a great cost saver."

ELLIE FENTON

The EC Nine Are Coordinating Air and Water Pollution Research

BRUSSELS—The nine member nations of the European Communities (EC) have decided to coordinate scientific research on air and water pollution worth some \$19 million.

The associated projects, previously worked on separately by laboratories in the various countries, will continue to focus on two main areas of interest—the analysis of organic micropollutants in water and of the physicochemical behavior of atmospheric pollutants. Administrative costs connected with coordinating the four-year research program, paid by the Commission, are expected to reach about \$9 million. The member states will continue to pay the estimated \$19 million for the research itself, divided equally between the two main areas of interest.

The EC Commission will oversee the entire coordinated research program, setting up a management committee, organizing workshops, and publishing reports of the work of the scientists. **GARY YERKEY**

Danes Design Windmill as Alternate Energy Supply for Telephone System

COPENHAGEN—The Jutland Telephone Company has designed a windmill to be used as an energy source for its small telecommunication stations when powerlines are down during heavy winter snowfalls.

Trials of the 22-kilowatt windmills began in May of

this year and, according to research director Bent Mortensen, they are progressing satisfactorily.

The mill already provides electrical power for the telephone exchange and light and heating for the building. Surplus electricity is sold to the local power company.

Mortensen says, "There is no economic incentive to produce electrical energy with windmills. The price... cannot be compared without a clear advantage for the conventional method of power production. But the system should be able to reduce telephone breakdowns resulting from breakdowns in the public power service, provided there is enough windpower at the right moment."

He emphasized that results of the field trials cannot be expected quickly. Operational experience is needed and data must be evaluated. **CONSTANCE CORK**

Man and Nature Destroy Pre-Columbian Relics

BOGOTA—A treasure-trove of pre-Columbian relics and statues from the San Agustin necropolis in southern Colombia are in danger. Not only have modern-day grave robbers stolen about 20,000 ceramics and large statues, but those that remain are being destroyed by nature and man.

One of the most important archeological sites in South America and Colombia's only large pre-Columbian excavation, the 257-acre park is populated by hundreds of large, rough-hewn stone figures of men, animals and gods, remnants of a mysterious culture about which nothing is known.

Many of the statues have been damaged by rain and humidity; others by detergent pollution of the park's waters used by peasants for washing. Attempts at conservation have caused even further erosion, said anthropologist Ramon Gomez, who reported that the statues are cleaned with steel brushes or doused in gasoline and set afire. Gomez said that, given the current conditions, it is preferable to follow a deliberate policy of not excavating the estimated 5,500 statues still buried in San Agustin. "Why excavate them if they are going to be stolen or left to rot at the mercy of the weather?"

Delegates to a recent seminar on San Agustin agreed that the only way to stop the destruction is through the creation of an inter-disciplinary body charged with taking an inventory of the park's antiquities—the first ever—restoration of the statues and the establishment of stricter controls over access to the park.

The only problem with the scheme is that there is no money to finance it. The annual budget of the Institute of Anthropology for the entire country is only \$325,000, and this is supposed to cover a number of other parks as well as all archeological investigation in the country.

PENNY LERNOUX

In Brief...

New Philippine Pesticide

The National Institute of Science and Technology (NIST) in the Philippines reported it has succeeded in producing a low cost, pollution-free pesticide from coconut oil.

The NIST said while most of the conventional pesticides are known to pose pollution hazards to man, the coconut oil-based pesticide is perfectly safe as it easily degrades with no harmful effects on other living species. The new pesticide was applied on the leaves of plants like tomato, onion, and leafy vegetables and was found active against insects such as corn borer, aphids and moth larvae.

At present, experimentation is being conducted at the Molino experimental farm in Bacoor, Cavite.

Colombia's Tree Policy

In Colombia, Bogota's Urban Development Institute has been forced to reroute a road construction project around a giant pine tree in the city's northern suburbs after discovering that the tree had been insured for \$50,000 by a well-to-do family.

Mystery Oil Hits Mauritius

The Indian Ocean island of Mauritius has been lucky—its pristine white beaches were never blackened by the oil globules that affect so many other shores. But two months ago, for the first time, its beaches were covered with a thick layer of crude oil. Then, just one month later, another wave of crude

hit the beaches, this time about 15 centimeters (6 inches) deep.

An inquiry was opened by the Ministry of Environment, but its budget is close to zero. Not only is Mauritius ill-equipped to fight this sort of pollution, it has not even been able to trace its source—there are no planes, only one helicopter.

Mauritians know pollution doesn't come from tankers leaving Port-Louis harbor. They wonder whether tanker routes in their area have been changed, bringing the superships closer to the island. Because they have limited means of inquiry, they are asking for help from World Environment Report readers connected with the oil business.

Energy Saving in Norway

Since the Norwegian government introduced financial support for energy-saving investments, industry has invested some \$44 million in energy-saving projects, the Ministry of Environmental Affairs reported. The Government supported the projects with \$31 million in loans or loan guarantees.

Environment Minister Gro Harlem Brundtland said that when all installations are completed, industry's annual oil consumption can be reduced by 38,000 tons and electricity consumption by 620 million kilowatt-hours on an annual basis.

Egypt Hosts IRS Course

The Egyptian Academy of Scientific Research and Technology in Cairo will be the site of a four-day training course, Dec. 23-28, for persons working in International Referral System (IRS) Focal Points.

The workshop will offer training in methods of registering environmental information, dealing with

queries and administering Focal Points. IRS, which is part of UNEP, operates a world-wide network of National Focal Points which supplies the IRS Directory with potential sources of environmental information.

Those interested in attending should contact IRS headquarters, P.O. Box 30552, Nairobi, Kenya; Cable: Uniterra, Nairobi; Telex: 22068; Telephone: 333930.

Africa's First Eco-Institute

An Institute of Environmental Studies—the first of its kind in Africa and the Middle East—is to be affiliated to the Faculty of Science at the University of Khartoum, Sudan, in 1979. Although it will cooperate with individuals and organizations involved in environmental issues both within and outside Sudan, the new institute is expected to be a focus for research on the Sudan's serious problems, especially the advancing desert, estimated to be "creeping" at three or four miles a year.

World Environment Day

World Environment Day on June 5, 1979, will have the theme: Only one future for our children—Development without Destruction.

The Environment Liaison Center in Nairobi has already launched a program for World Environment Day, urging that its member non-government organizations plan their own activities in line with the theme.

The UN has declared 1979 the International Year of the Child and World Environment Day will link with this.

Gary Gallon, the liaison center manager, says: "We view World Environment Day as not just a one-day event, but a focus for continued, year-round action."

China Warns Factories

China recently said that expanding industry in the country has brought serious pollution problems and warned almost 170 factories to clean up or close up. The New China News Agency singled out iron and steel works, an oil refinery and a petrochemical works as examples of serious offenders that have been ordered to control pollution by 1982 at the latest.

Funds and equipment will be provided to control industrial waste. No new enterprises will be allowed to go into production without pollution control measures, the Agency added.

Conference in Singapore

A conference on the progress of chemical and process engineering in Asia will be held in Singapore from Jan. 16-19. The conference, organized by ChemAsia, is supported region-wide by professional associations including the Instrument Society of America, Singapore Branch; the Institute of Chemical Engineers, Australia; the Institute of Engineers, India; and the Society of Chemical Engineers, Japan.

Agroforestry Center

The International Council for Research in Agroforestry (ICRAF), established in 1977 with support from donors in Canada, the Netherlands and Switzerland, has set up its headquarters in Nairobi. Before moving to Nairobi, it was temporarily housed by the Royal Tropical Institute in Amsterdam.

An autonomous, non-profit institute, ICRAF aims to improve the social, economic and nutritional well-being of people in developing countries by (a) promoting agro-

forestry systems to achieve better land-use, and by (b) encouraging and supporting research and training in agroforestry systems.

Its director-general, Dr. K.F.S. King, is a former Minister of Economic Development in his native Guyana, and a former Assistant Director-General of the U.S. Food and Agriculture Organization (FA). He has been a pioneer of the concept of agroforestry for improved land management in the tropics.

Agroforestry, he explains, moves away from the conventional practice of separating agriculture and forestry; it aims to produce both food and wood at the same time, to give better land management in many areas.

Manila Halts Expansion

Factories located within 50 kilometers of Manila will not be allowed to expand their operations unless they have permits to do so, if a draft requirement proposed by the Human Settlement Regulatory Commission of the Philippines is approved.

Coal in Northern Ireland

The British government is to spend about £250,000 (\$487,500) annually for a number of years on coal prospecting in three of its six Northern Ireland counties, so as to give the North some self-sufficiency in energy.

At present, Northern Ireland is totally dependent on imported coal and oil. It is not connected with the British North Sea natural gas grid. Gas costs three times as much in the North as in Britain, and coal and electricity are also markedly more expensive.

High energy costs in the North are reckoned to be a disincentive to industrial development. Usable coal

reserves in the area could be quite deep (some have been mined for over 300 years) and would require heavy capital investment to mine.

Eco-March in Madrid

Ignoring rain in Spain and impatient motorists, 30,000 Madrilenos joined a 13-mile march through the capital to demand a cleaner, less congested city.

The rally, significantly backed by city hall, was duplicated in the Catalan capital of Barcelona as another 20,000 Spaniards brought out roller skates, tricycles and bicycles to join a demonstration asking for more green space, bicycle lanes and stricter controls on pollution.

A timely, if exaggerated, example of Spain's pollution problems—spawned in the boom years of the '50s and '60s—came the same week. In the city of Huelva, municipal officials announced that the level of sulphur oxides in the atmosphere had risen to 6,000 micrograms per cubic meter. The permitted ceiling in Spain is 400 micrograms—already higher than most European equivalents.

Indian Fuel-Saving Engine

Premier Automobiles in Bombay has assured the government that it can produce a high-compression engine which cuts down fuel consumption by one-sixth. The company estimates that if all new cars had this engine, it could save India \$100 million a year in oil consumption and imports. The catch is that such an engine has to run on high-octane gas and cannot use the standard grade sold at most filling station. Filling station operators are reluctant to set up high-octane pumps unless enough cars are produced.



World Environment Report

VOL. 4, NO. 25

Copyright © 1978. Center for International Environment Information.

DECEMBER 4, 1978

Environmentalists Dig In Against Mining Swedish Uranium Reserves

STOCKHOLM—Sweden has a natural treasure she has barely scratched because of opposition from environmentalists and anti-nuclearists.

An estimated 80 percent of Europe's uranium reserves, probably between 15 and 20 percent of the world's reserves, lies in the hills of southwest Sweden near the town of Skoevde. The deposits are found in alum shale, much of it close to the surface and ideal for strip mining. A pilot processing plant is located at Randstad and some 200 tons of uranium were extracted between 1965 and 1969 in an area estimated to contain at least one million tons.

But since then, any mention of exploiting Randstad has been like waving a red flag before a bull to environmentalists, who claim the pastoral landscape would be converted into a desert, and anti-nuclearists who fear a proliferation of nuclear arms would result.

The politically sensitive controversy reached a fever pitch in late 1977 when state owned LKAB and Boliden, both mining companies, formed a joint company called ASA (Swedish Alum Shale Extraction Company) to exploit the ore. ASA asked the government for permission to begin mining a million tons of shale a year and to extract 200 tons of uranium annually over a period of ten years. The request was met with protests and demonstrations by environmental organizations and finally by a veto of the project from the three communal councils most directly involved.

The government still hasn't acted to overrule the veto and give ASA a go-ahead. This could only be done if the project were declared in the national interest and parliament changed the law which makes a local veto possible. It could be years before that happens.

The shale not only contains uranium but also nickel, phosphorous, aluminum oxide, vanadium, sulfur, molybdenum, limestone and kerogen, an energy-giving element similar to coal.

The non-socialist coalition government, which collapsed in October over the issue of expanding Sweden's nuclear power facilities, in any case provided \$10 million this year for further research at the Randstad center into ways not only of extracting uranium but also other metals.

The government funding also provides for prospecting in other parts of Sweden for uranium from the far south

to the slopes of the mountain ranges in the far north where mining would not conflict to such an extent with the need to protect the environment. Pitchblende, a source of uranium, is said to exist in the north.

Roland Rittman, a leader in the "Environmental Alliance" has appealed for a continued fight against both military and civilian use of nuclear power and stressed the responsibility that Sweden's anti-nuclear movement has to see to it that the country's uranium doesn't come into use.

More and more voices, however, are making themselves heard, such as that of the moderate party leader and former Minister of the Economy Goesta Bohman, that it is "irresponsible" not to capitalize on the valuable resources Sweden has in connection with nuclear power and that in the future it should not only export its nuclear power techniques but also mine and export uranium.

SPECIAL TO WER

UNEP Sets Up International Unit To Guide Desertification Fight

NAIROBI—A year after the United Nations Conference on Desertification (UNCOD) focused world attention on the problem, a unit has been set up at United Nations Environment Program (UNEP) headquarters here to guide and direct a world-wide fight to overcome desertification.

Heading the unit is Danish administrator, Jens Hogel, who spent five years in Upper Volta with the UN Development Program (UNDP). Hogel said his unit is already working jointly with the UNDP and the UN Fund for Population Activities (UNFPA) as a joint venture. Together they face a giant task. "The full

In This Issue

Europe's Environmental CAP	2
Special Report: EIS on Lending Agencies	3
Peru's Environment	4
Mauritius' Newsprint Plant	4
Sculpture and Sewage	5
Denmark's Centralized Wasteland	6
In Brief	7

magnitude and nature of the desertification problem was not fully appreciated before UNCOD, and even now it is only beginning to dawn on some of the authorities involved."

Pilot projects will establish methodologies and practical ways of reversing the spread of the desert. The projects were selected to demonstrate how international cooperation can work on different aspects of the problem. There are two green belts, north and south of the Sahara; a regional aquifer project for the Sudan, Egypt, Chad and Libya; two monitoring projects, in southern South America and South-East Asia; and a rangeland management project in the Sudano-Sahelian Zone. The monitoring projects will use satellite imagery, airborne photography and ground observation to measure changes in the deserts. The rangeland management project is designed to show how cattle can be handled efficiently in marginal areas which, if allowed to deteriorate, will quickly become desert.

Most of the pilot projects are in Africa because most of the world's poorest countries are in this continent. Difficulties on the political side are immense, Hogel said. Practically all measures to combat desertification involve a conflict with traditions: "To reverse desert trends you must reverse traditional patterns of cattle raising, agriculture, and so on," and he pointed out, it has taken thousands of years to develop existing deserts; they cannot be restored in a few years.

A consultative group has been established to consider financing specific projects, and the group is due to meet in the first half of 1979. CHARLES HARRISON

Costa Rica Gets Major Grant For Developing Conservation Education

SAN JOSE—The Costa Rican Association for Nature Conservation (ASCONA) is getting a \$240,000 USAID grant to develop a national education program for natural resource conservation. U.S. funding is dependent on raising an equivalent amount in counterpart funds from the nation's private sector and the government, which has already budgeted approximately \$36,000 for ASCONA for next year.

These funds will enable ASCONA to embark on a saturation education program at all levels. Qualified people will be hired to produce it, and ASCONA has already obtained promises of cooperation from the Ministry of Public Education and from both the government and private sector radio and television stations and national newspapers.

Since Costa Rica already has one of the most outstanding national parks programs in the Hemisphere and one of the highest literacy rates, ASCONA and, apparently AID, expect the conservation education program to be a pilot for non-governmental organizations in other nations. MURRAY SILBERMAN

Lobby Wants Environmental Policy For European Community Agriculture

BRUSSELS—Europe's environmental lobby has asked the European Community to amend its so-called Common Agricultural Policy (CAP) to take account of environmental concerns, as part of regular policy. So far, CAP, whose basic features were first adopted in 1962, has neglected to include environmental considerations in continuing decision-taking.

Noting that throughout the EC agriculture is "the chief rural activity, providing a way of life for almost 9 million people" (about 9 percent of the Community's working population), the European Environment Bureau said, "The spread of intensive agricultural techniques and the development of industrialized farming have largely displaced traditional methods of cultivation and livestock farming, bringing about major changes in the landscape and in some cases threatening the structure and fertility of the soil, the purity of water supplies, the quality of food, the survival of wildlife and the ecological stability of arable production."

It stressed the while none of the original objectives of CAP is unacceptable to the EEB, which represents 38 national environmental groups at the EC, the need "to redress the present imbalance" between economic and environmental priorities is becoming increasingly urgent. The massive use of chemical fertilizers and other agri-chemicals that disregard conservation, may adversely affect agriculture in the future and even survival itself, the EEB warned. GARY YERKEY

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$150 per year, \$20 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
 Editor-in-Chief Libby Bassett
 Circulation Manager Jan De Pinto
 Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit private organization which seeks to foster public understanding in the United States and Canada of global environment programs, how they affect the quality of life in North America, and the role of international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

SPECIAL REPORT: EIS of International Lending Agencies

LONDON—A dynamic new perspective on the difficulties faced by international financing agencies trying to stimulate development in the Third World is seen in a survey by the International Institute for Environment and Development (IIED).

The survey, funded by the United Nations Environment Program and the Canadian International Development Agency, studies the environmental practices and procedures of nine agencies* which separately lend billions of dollars annually.

Based on interviews with officials and a study of a limited amount of documents, it looks at administration and decision-making processes within the agencies and the assumptions, both explicit and implicit, on which these are based.

It concludes that environmental procedures are haphazard, uncoordinated or non-existent, and that an increasing number of officials are concerned about this, recognizing that "development of the kind actively promoted by their organizations has benefited relatively few people."

"They tend also to accept that this pattern is not sustainable in the future, particularly for developing countries, based as it is on extensive use of dwindling resources, pre-eminently oil," the report continues.

This seems to confirm the fears of concerned observers that the wealth of such organizations is not reaching those most in need, particularly in rural areas.

The survey explains that the "industrial ladder" was for a long time unquestioned as the best means of development. This meant a transplant of the Western centralized industrial structure which was supposed to reach out to the poor by raising the general standard of productivity and wealth. Many governments of poor countries still insist on this as the only means of establishing independence from an imperialist past.

However, in a situation of dwindling resources, pollution and population growth, such a policy may have the opposite effect, the report suggests. Of the four sectors of the environment studied—human settlement, water resources, energy and forestry—energy policy is shown to demonstrate this most clearly.

Many projects, says the report, assume money spent on centralized production of electricity will raise productivity. But this increases dependence on imported fuels with spiralling costs, and does nothing to get energy to the rural poor, still the majority in many developing countries. They can only further deplete and destroy an

exhausted environment by cutting timber or using dung for energy. Investment in a renewable source, such as solar energy, would not only meet a basic need but enable them to build up a sustainable form of development. But this type of investment is given a low priority by both agencies and receiving governments, the report adds.

A few hopeful initiatives, which could be built on, are outlined—mostly taken by the World Bank. They come within the spirit of survey's 11 general recommendations to the agencies. They include suggestions for incorporating environmental perspectives into most aspects of their internal and external activities.

It concludes that environmental procedures are haphazard, uncoordinated or non-existent, and that an increasing number of officials are concerned about this.

Discussing the study with *WER*, Brian Johnson, its co-editor based in the IIED London office, said that the discussions and exchange of ideas during the course of the survey had already stimulated some new initiatives.

The Inter-American Development Bank is setting up an environmental office. The U.N. Development Program has asked for a series of meetings next year with IIED to discuss what changes they could make in their systems as a result of the report's comments. The European Development Fund wants IIED to carry out a more specific study on its activities, suggesting guidelines and proposed procedures for the environment.

Johnson thinks the survey a timely response to an increased public concern about the environment. This survey, he thinks, demonstrates that what is good for the environment is also good for the poorest people, at present forced into the greatest destruction of the environment.

Because the results of this survey were so constructive, the IIED has been asked to do a similar survey of six national (or bilateral) aid agencies, focusing on environmental policy and programs. Affiliated national research teams began their studies this past July of U.S., Canadian, West German, Swedish and Dutch aid programs. The national teams will make their final reports next June, and the coordinated survey will be complete in September, 1979.

The report on international agencies, edited by Robert E. Stein and Brian Johnson, is to be published in book form this month under the title "Banking on the Biosphere?" by the Lexington Press of Boston.

BARBARA MASSAM

*The International Bank for Reconstruction and Development (World Bank), The Inter-American Development Bank, The Asian Development Bank, The Caribbean Development Bank, The African Development Bank, The Arab Bank for Economic Development of Africa, The European Development Fund, The United Nations Development Program, The Organization of American States.

Peruvian Environment Chief Calls For Immediate Corrective Measures

LIMA—It sounds almost “lyrical” to be talking of atmospheric control in a country battling with an economic crisis and trying to develop its natural resources, says Manuel Vizcarra, Director of Environmental Control. Yet by the very fact that the country is underdeveloped, measures to prevent pollution should be “little less than obligatory.”

Vizcarra wants immediate corrective measures to be taken in Greater Lima; La Oroya, where one of South America's oldest metallurgical complexes is located; Ilo, a traditional mining center; and Chimbote, the steel plant and fishmeal center. “But we should also be concentrating on preventive measures now.”

The pollution problem in Lima is aggravated by the trend to migrate from the interior of the country to the capital on the coast. Peasants from the Andes migrate in huge numbers every year seeking a higher standard of living in the capital. This in turn creates a problem in urban development which instead of being planned becomes “instant” with shanty towns springing up overnight.

There is also a lack of education on the relation between man and his environment. Daily features of Lima life—like vast open markets where waste is left uncollected, or the free use of streets and parks as latrines—are not only unaesthetic, he said, but contribute to biological contamination and can lead to disease.

On a number of levels, action has to be taken urgently. Vizcarra proposes:

- legislation passed at the highest level which is not only punitive as far as industrial culprits are concerned but which offers incentives to “be clean”

- transform one of the numerous inter-sectorial commissions which already exists into a body that can deal with pollution

- seek greater international cooperation especially among Andean countries

- widen university courses so that they include education on protection of the environment.

LORETTA McLAUGHLAN

NATO's Environmental Studies Produce Positive and Practical Results

BRUSSELS—The U.S. delegation to NATO's Committee on the Challenges of Modern Society reported encouraging results from its studies into geothermal and solar energy, rational uses of energy, and improved auto propulsion systems.

Douglas Costle, who heads the U.S. Environmental Protection Agency, said, “As models of effective inter-

national cooperation, these have been among the most successful studies completed during the nine years of NATO's CCMS pilot study program,” not only because all NATO members participated but because two dozen other nations contributed as well.

As a result of the CCMS pilot study program on geothermal energy, the Greek and Portuguese governments have decided to build geothermal energy plants. West Germany reported that it had saved one year on its solar R&D program as a result of the CCMS information exchange.

CCMS participants established a System Performance Reporting Format which nations can use as standard guidelines for exchanging data on performance results of solar heating and cooling, and domestic hot water heating.

GARY YERKEY

Mauritius Told Newsprint Plant May Harm Environment, But Few Care

PORT-LOUIS, Mauritius—A newsprint plant that ecologists believe will damage this Indian Ocean island's environment may well be built because many residents, the government and, to a lesser extent, the private sector seem unconcerned about the pollution problem.

The plant's promoters, Mauritius Paper Ltd., and its principal shareholder SYBETRA, a Belgian group, want to produce newsprint from bagasse — the juiceless remains of sugar cane. Karl-Johan Biorstad, an expert in bagasse newsprint, made a study of the project for the U.N. Industrial Development Organization, the executing agency for the U.N. Development Program. Biorstad stated that the technology suggested has not been practiced on a large-enough scale yet and that, from his point of view, the project is not viable. Even more importantly, he warned about the dangers of pollution. In the dry season, he contended, the water taken into the mill as process water will be the only water flowing down into a lagoon next to the site. This lagoon also receives water coming from a power station further upriver.

He believed fibers and chemicals in the process water would affect fishing in the lagoon and might well hurt tourism. Biorstad suggested that a solution would be to have the effluent piped past the lagoon and the reefs where it would be absorbed by the Indian Ocean. SYBETRA did not mention how it will cope with this pollution problem.

At the moment, the only major “lobbyist” against the project is the sugar industry, which does not want to give up its bagasse. Sugar mills use it as a cheap source of energy. However, the newsprint plant promoters have offered to exchange fuel oil for it.

The Biorstad report seems to have been forgotten, and the government appears to be willing to go ahead with the project — even though it may well do more harm than good in the long run.

JEAN-PIERRE LENOIR

Briton Treats Sewage Waste With Sculpture, and It Works

SUSSEX, England—Sculpture and sewage treatment might seem worlds apart, but they have been uniquely combined in Verbela Flowform Cascades, an artistic biological system for effluent treatment.

There are many ways in which water is aerated, naturally and mechanically. The Flowform Method lies between the two. Devised by sculptor A. John Wilkes, it utilizes a channel of varying width to induce oscillations in streaming water. An intimate relationship is created between the water and the designed surfaces, which transform the oscillations into a figure-of-eight flow path of meandering vortexes.

Wilkes created his first Flowform system in Jarna, a town just south of Stockholm. It has been running since 1973 and cleansing waste water for a community of 200 people. Residents can stroll through their park and see beautiful sculpture, the intricate, swirling patterns of water cascades, ponds, plants and wildlife. There is no obtrusive smell to remind them that this haven of artistic and natural beauty is also their sewage treatment system. Four ponds are used; the last two ponds are parallel for experimental purposes — animal on one side, plant on the other. Raw sewage enters the first pond and two cascades are used to support the biological processes, which in the third and fourth ponds are capable of supporting manifold wildlife. Higher plants, fish and birds thrive in the environment.

Wilkes, who studied at the Royal College of Art in London in the 1950s, now heads the sculpture department at Emerson College in Sussex. He became more involved with water treatment while assisting in research work at the Institute for Flow Sciences in the German Black Forest.

Wilkes stressed that it is not yet possible to make specific claims regarding the effect of Flowforms. Although the biological plant in Sweden works efficiently, no comparative tests have been possible there. But further investigations will be made at Warmonderhof near Tiel in Holland where an installation is being built with the support of Artec and a government grant. Research is also going on in Germany and England in connection with plant growth, stimulated with treated water. And there are inquiries from around the world showing interest in connection with many aspects of water use. A number of small communities, mainly in Europe, are planning incorporation of the Flowform method within biological systems and post-treatment of discharge to accelerate integration with river water.

Installations being built will gradually provide data on results of the system in widely varying circumstances. The method and apparatus is patented, and development of design and research is organized and carried through the Flow Research Group at Emerson College.

ALAN MASSAM

Sri Lanka's New Constitution Has Strong Environment Policy

COLOMBO—The new Sri Lanka Constitution imposes a special obligation on the government to "protect, preserve, and improve the environment for the benefit of the community." Although there were sharp differences within the country's political spectrum about some aspects of the Constitution, adopted September 7, the environmental dictum found unanimous acceptance.

Since the 1977 election, when President Junius Richard Jayewardene and his government came to power, he has instituted measures to stop encroachment and logging in the country's last remaining primeval rain forest, the Sinharaja, and in the national parks of this lush Indian Ocean island. Potato nurseries have been relocated from Horton Plains, the source of many of the island's rivers, to protect water quality. Efforts have been made to control poaching in the island's territorial waters by foreign fishing vessels. And lime kilns on the eastern and southern coasts have been closed down to stop the destruction of reef coral, which had been burned to make saleable lime.

Although the proposed creation of a Cabinet post for a Minister of Environment was thwarted by political rivalry, reassignment of responsibilities among the existing Cabinet posts has helped strengthen government controls over environmental quality. MANIK DE SILVA

Norwegian Government Reports Success Fighting Water Pollution

OSLO—The Norwegian government reports considerable progress in fighting water pollution.

In a report to The Storting, Norway's parliament, the government concluded that over the past few years pollutants from industry, cities and towns, and from farms, have been considerably reduced thanks to strict regulation of sewage and wastes into the country's fjords, lakes and rivers.

In this nation of four million people, the government said that more than \$400 million has been invested to reduce pollution from industry and more than \$200 million has gone into building municipal sewage cleansing plants.

The government has also helped finance projects to combat toxic runoff from farms in the rich agricultural areas on the coast south of Stavanger.

The Government stressed that although it usually takes several years to see the effects of such measures, "already the water in Lake Mjoesa is of much better quality both in 1977 and 1978 than it was in 1976, when we had a mass invasion there of seaweed. Our experiences show that it is possible to reduce pollution problems, and the fight against water pollution will continue." SPECIAL TO WER

European Communities May Study Man's Effect on the Weather

BRUSSELS—Weather and man's effect on it will be the subject of a major new study by the nine member states of the European Communities (EC) and unnamed associated countries—if the EC Council approves the proposal at its December meeting. It is expected that the study, which has been worked out in detail during the past two years, will begin January 1.

The five-year, \$10 million study has been prompted, according to the EC Commission, by "recent climate anomalies"—droughts, severe extremes of cold and heat, heavy snows and rain—that have weighed heavily on vital resources such as water and agriculture. Moreover, the Commission has been aware of "growing concern that maybe man himself is contributing to increased climatic variability, or even to some major climatic changes through chemical and thermal pollution of the atmosphere."

Therefore, the aim of the proposed study is twofold: to learn more about "the mechanism of climate" and the causes of variability; and to evaluate the impact of climate variability on "basic European resources," and the role man himself may be playing in the process.

The study, if approved, would be carried out in cooperation with other international organizations such as the World Meteorological Organization and the European Center for Medium Range Weather Forecast.

GARY YERKEY

Denmark Centralizes Waste Disposal, and Its Facility Is Profitable

COPENHAGEN—Denmark has centralized the disposal of the nation's oil and chemical wastes. The oil is recycled, and the operation shows a profit — \$160,000 in 1977.

The organization, Kommunekemi A/S, on the island of Funen, was set up in 1971 by the Danish municipalities. Waste is collected at 20 outstations and sent to the central plant.

The first such operation in Europe, it has attracted interested visiting technicians from all over Europe, Japan, China and the United States.

Director Willy Brauer said they are adding a second incinerator to the plant, and are studying the possibility of generating electricity from the waste. They will know by 1979 whether it is feasible.

Kommunekemi handles annually approximately 25,000 tons of waste oils, 12,000 tons of solvent waste, 10,000 tons of organic chemical waste, 1,000 tons of halogen-containing waste, 15,000 tons of inorganic waste, and 15,000 tons of solid waste.

Communal collection points, about 40 miles apart, are distributed throughout the country. They are open every day during normal working hours and intended mainly for commercial users. These collection areas have railway tracks for receiving waste delivered in sludge suckers, tankers or drums.

The collection points in this category are used jointly by several communities, and their location, distribution and operating expenses are generally planned by a select committee of municipal engineers. Industry is not required to deliver waste to a municipal collection point if it can be delivered direct from the firm to Kommunekemi.

Local collection points are set up in each municipality for private households and smaller firms. They have no railway tracks and can receive waste in packages no bigger than drums that would hold 200 kilograms.

The Kommunekemi treatment plant, located at Nyborg, extends over an area of 5 hectares (12.35 acres). Waste oil has water and other contaminating components removed to produce an excellent fuel oil used at present by asphalt manufacturers. The separated water and sludge (about 15,000 tons a year) is fed to the incineration plant where the sludge is burned in the rotary kiln and the water sprayed into the post-incineration chamber.

Seventy million kroner (\$13 million) has been invested in the Nyborg plant. Another \$2 million is being spent on collection points.

Officials say that the investment of \$15 million in Kommunekemi would probably equal an investment of \$150 million if such treatment was carried out at individual firms.

CONSTANCE CORK

Ireland Wants to Monitor Movements Of Dangerous Cargoes Off Its Coast

DUBLIN—A European-wide pollution monitoring network to control the movement of potentially dangerous cargoes at sea has been called for in Ireland.

The call came after the Greek tanker *Christos Bitos* created a major pollution alert when she grounded off the British coast, leaked oil and threatened to sink.

As a result, the Irish Cabinet began discussing the amount of control it should have over shipping activities off the Irish coast. There is a strong feeling now that there must be a greater degree of information about shipping movements off Ireland.

"It is now essential to have EEC monitoring and control over the movement of potentially dangerous cargoes in European waters," said John O'Leary, Ireland's Minister of State for the Environment.

There were reports that when the *Christos Bitos* first struck rocks off the Welsh coast, the British government ordered it to sail away. In the narrow Irish Sea, that meant the tanker would be sailing closer to Ireland and important tourist beaches.

TOM MacSWEENEY

In Brief...

AID's Asian Eco-Seminars

The U.S. Agency for International Development (AID) is conducting its first regional training seminars on the environment—these for its Asian missions—starting December 5 in Bangkok, Thailand. The two seminars, which will run back-to-back, will train 50 Americans and their Asian counterparts in how to analyse environmental activities. An AID spokesman said he anticipated similar seminars would be held by other regional offices, in Africa, Latin America and the Caribbean, and the Near East.

Colombian Eco-Investment

Colombia's Institute of Industrial Development (IFI) has announced a \$10.5 million investment for pollution control in the state-owned soda plant in the Caribbean port city of Cartagena. A semi-autonomous government agency, IFI is part owner of the soda plant, which recently was closed for contaminating the Cartagena bay with mercury. The investment is the largest ever made in Colombia for pollution control.

Solar Dryers for Philippines

The Ministry of Energy in the Philippines will soon distribute 15 solar dryers to fishermen and farmers. A ministry official said this move is part of an Asia-wide project designed to introduce solar dryer technology to grassroots producers to raise their income by improving the quality of their dried fish, fruit and tobacco.

By January 1979, the Philippines

will embark on a \$500,000 program to distribute more solar dryers to farmers and fishermen. This project, under the aegis of the national Electrification Administration, will work with farming and fishing cooperatives and biogas production projects.

Hong Kong Controls Industry

The government of Hong Kong has drawn up strict pollution control measures for the rapidly growing industrial area of Shatin New Town to ensure that its 500,000 residents will enjoy a virtually pollution-free environment.

Control provisions are being included in leases for all industrial development at Shatin. The lease conditions stipulate that only gas, LP gas, natural gas and electricity can be used by factories. The government is also ensuring through lease conditions that any industry which emits poisonous wastes such as mercury, lead, acids or strong alkali must have approved pollution-control equipment installed to eliminate wastes at the source.

Swedish Sewage Plants

Sweden's National Environment Protection Board distributed more than 53 million crowns (\$12 million) in subsidies in November toward the cost of 43 communal sewage plants. Most of these have already been built. Since 1968, nearly 1.6 billion crowns (\$350 million) have been shared out in state support for this purpose, benefitting virtually the entire population of eight million.

The Board estimated that investments in sewage plants, treatment of waste and noise abatement during the five year period from 1977 to 1983 would amount to approximately 2.7 million crowns (\$622 million).

Malaysian Oil Cleanup Plans

The Malaysian government is buying \$10 million worth of equipment to control pollution from oil spills in the Straits of Malacca.

The Director of the Water Pollution Control Division of the Environment Ministry, Mr. A. Maheswaran, said six oil booms, two skimmers and six oil barges have already been bought. Other equipment including high-speed patrol boats and a telecommunications network will be acquired by the end of the year, he said.

Endangered Species

Costa Rica will host the second Conference of the Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora from March 19-30, 1979. For further information, write to IUCN, 1110 Morges, Switzerland.

Caribbean Fishing Conflict

Fishermen from Trinidad complain that Venezuelan gunboats have stepped up patrols in the nine mile wide Serpent's Tooth Straits between the two nations, and that they have threatened to shoot Trinidadians who don't stay out of Venezuelan waters.

Venezuelan authorities ordered an investigation of the charges of rough treatment in the disputed but rich shrimping grounds.

A new fishing treaty worked out between the two nations after years of negotiations has not been ratified yet. It would allow fishermen from both countries to fish in stipulated areas of each other's territorial waters under certain conditions: One of them is written permission from Venezuelan authorities.

Central American Conservation

A conference to promote communication and cooperation between Central American conservation associations, and to establish strategies for the regional environmental movement, is being held this week (Dec. 3-7) in Guatemala City. The First Regional Conference of Central American Nongovernmental Conservation Associations is being sponsored by groups in Costa Rica and Guatemala. Principal financing is coming from USAID's regional office for Central America and Panama.

Desai Orders: "Plant Trees!"

"Take up tree planting on a massive scale," India's Prime Minister Morarji Desai wrote to the chief ministers of 23 states. "Work out concrete programs for soil and water management, afforestation and other activities to protect and strengthen India's ecological endowment.

In the lengthy letter he observed, "The main contributing reasons for the recent floods were deforestation, shifting cultivation, overgrazing, improper cropping of undulating land, bunding (embankments) without vegetative cover, plugging of natural drains, failure to provide scientific drainage, and the poor soil and water management."

Kuwait Trying Solar Energy

The Kuwait Institute for Scientific Research is carrying out experiments using solar energy in cooling and heating systems, agricultural production and for electrical power. In agriculture, the Institute is experimenting with cooling growing plants; the idea is to maintain a suitable environment in various seasons and

temperatures. They are also experimenting with "sweetening" water. In its project to transform solar energy into electrical power, the Institute is cooperating with West German scientists.

Hong Kong Ups Spill Fine

A new bill to increase the maximum fine for oil pollution in Hong Kong waters from \$4,255 to \$42,553 will shortly be introduced.

The new bill, called the Shipping and Port Control Bill of 1978, has already been read for the second time at the Legislative Council. The higher fine was considered more appropriate in view of the seriousness of such offenses and the potential damage from oil pollution, Secretary for Economic Services David Jeaffreson said.

India to Make Soil Maps

In New Delhi, the National Bureau of Soil Survey and Land Use Planning proposes to prepare extensive soil maps of agroecological regions in 10 states. Land productivity will be assessed under different kinds of management to work out soil moisture and textural relationships for crop manipulation.

The maps will facilitate the choice of crops, and surveys will be conducted to prepare resource inventories, so research and development programs can be begun for soil conservation, water use management and improved dry land farming.

The Bureau is collaborating with the Indian Space Research Organization and utilizing remote sensing techniques for a crop census.

Surveys have been completed in some areas. By interpreting soil moisture and evapotranspiration characteristics, the Bureau has worked out irrigation requirements for different crops in different soils.

Lima's Polluted Air

Atmospheric pollution has now surpassed the permissible levels in Lima. The levels of carbon monoxide, sulphur dioxide, sulphur dioxide anhydride and ammonia are now similar to levels found in Buenos Aires and Sao Paulo, two of the most polluted cities in South America.

Tests have shown that the average content of carbon monoxide in Lima is 40 particles per million (ppm) while the maximum permitted is 30 ppm. In some of the downtown experiments, however, the level reached a staggering 180 ppm.

The number of people who suffer pollution-related illnesses like bronchitis, asthma, conjunctivitis and other allergies has increased considerably in the past 20 years, said Dr. Pedro Pablo Castillo at the IV Peruvian Congress in Immunology.

The Congress recommended that the newly elected constituent assembly introduce a policy for the defence and preservation of the environment—something which has been totally lacking to date.

Kuala Lumpur's Clean Air Act

The Malaysian Minister of Science, Technology and Environment, Tan Sri Ong Kee Hui, said pollution in Kuala Lumpur is as bad as in New York and his Ministry has enforced the Clean Air Regulation 1978 to solve the pollution problem.

The regulation controls the location of new factories near residential areas, the burning of solid wastes and the emission of smoke. Under the regulation, there are three standards—A, B, and C. Standard C is the most stringent and must be complied with by all industries within a time limit. New industries would have to conform to Standard C immediately while existing industries have been given a three-year grace period to meet Standard B and a two-year grace period for Standard A, Tan Sri Ong said.



World Environment Report

27 NOV 1978

VOL. 4, NO. 24

Copyright © 1978. Center for International Environment Information.

NOVEMBER 20, 1978

India's Taj Mahal in Danger of Corrosion If Refinery Opens

BOMBAY—One of the most spectacular monuments in the world and India's prize possession, the Taj Mahal, is in danger, thanks to the amazing shortsightedness of officials and technologists. In just two years, an oil refinery is scheduled to open a mere 40 kilometers away from the Taj at an ancient town called Mathura.

At a recent seminar in Delhi, speakers warned that unless the site of the refinery was shifted, irreparable damage would be done to the Taj in a matter of years. The sulphur dioxide emitted would mix with rain and descend on the monument, causing massive corrosion. According to an expert from Andhra Pradesh university, the refinery would discharge — every day — 100 tons of carbon monoxide, 60 tons of sulphur dioxide, 50 tons of hydrocarbons, four tons of nitrogen oxides and 10 tons of particulates.

Besides the Taj in Agra, which thousands of Indians and foreign tourists visit every year, other ancient sites like the abandoned township of Fatehpur Sikri and the Agra fort are also being threatened by the refinery.

As early as in 1976, Indian members of parliament expressed their concern about the threat, and the petroleum minister at the time appointed a committee to look into the problem. Considering that the committee was headed by a leading petrochemicals technologist in the country, it isn't surprising that it only recommended certain precautions to supposedly guard against pollution. As one indignant MP put it: "We can have the refinery elsewhere but we can't put up a new Taj."

The Indian government engaged an Italian firm, Tecneco, because Italy had experience in dealing with such problems. Tecneco ruled out the possibility of damage to the Taj and surrounding monuments. Around the same time, the Indian Meteorological Department undertook studies of the ground-level sulphur dioxide pollution in the area and found it would be too low to cause any alarm, given prevailing wind conditions.

Both findings were hotly contested by other experts and technical agencies on the ground that they were based on the wrong data and pertained to conditions in the West. As Dr. G. Torracco, who is associated with the UNESCO-sponsored International Center for Conservation in Rome, observed: "Even a small quantity of gas is enough to corrode marble." Significantly enough, the Tecneco and IMD findings haven't been published for

verification by other scientists.

The most concerned official body is the respected Archaeological Survey of India. Its own findings and those of the National Environmental Engineering Research Institute show that the devices the refinery authorities propose to install at Mathura will not be sufficient to guard against the "sulphuric rain."

The ASI believes that the marble can be protected by applying a coat of preservative fluid every few years. But this will require the erection of scaffolding which will disfigure the monument, and deter the 20,000 to 40,000 people that visit it daily.

The refinery management is anxious to play down the pollution dangers and claims that it will use low-sulphur feedstock, obtained from India's off-shore facility near Bombay. But this crude oil will run out in 15 years and the refinery will be forced to turn to other polluting fuels.

The real irony is that there is no sound economic or social reason for siting the \$250 million refinery in Mathura. Its advocates obviously eye the jobs that will be created when ancillary industries in the petro-chemical complex near the refinery spring up. DARRYL D'MONTE

Peru Forms Its First Environmental Information and Lobbying Group

LIMA—A new movement called ECO, the Peruvian Ecological Front, is being organized by Felipe Benavides OBE, president of Prodena, the local branch of the World Wildlife Fund. The group will be the first of its kind to deal with environmental issues in Peru.

Signatures are being collected to gauge potential support for the organization. ECO organizers estimate that they will collect 5,000 almost immediately. The next step is to create regional committees throughout the country — in the Andes, the jungle, and the coast — to

In This Issue

Housing in Africa	2
UNEP's Energy Chief	3
EC: \$78 Million Solar Incentive	3
Spain's Radical Alternative	4
European Environment Bureau	5
World Forestry Conference	6
In Brief	7

deal with various issues. The headquarters are likely to be founded in Pucallpa, a strategic town in terms of conservation of the jungle.

Benavides announced that the collected signatures will go to the committee for natural resources working within the newly elected constitutional assembly.

The idea is to make the public ecologically aware of the side effects of development: endangered species, industrial pollution, the need for reforestation in the jungle, and stricter control of oil exports to prevent possible oil spillages.

In its manifesto, ECO states that conservation is the collective responsibility of government, private organizations, industry and individuals. ECO is calling for the government to:

- give priority to conservation of wildlife and natural resources;
- pass appropriate laws to protect the environment;
- ensure that ecological principles are considered in all development projects;
- include conservation in education programs at all levels and encourage university research to protect the environment;
- and cooperate in international conservation programs.

ECO will be under Prodena's wing only temporarily; it is to become an independent non-profit organization soon, financed by donations. LORETTA McLAUGHLAN

Africans Draw Up Practical Recommendations for Housing

NAIROBI—Recommendations for better housing in Africa were drawn up by representatives of 27 countries at a regional meeting on Human Settlements Finance and Management. The African meeting, held in Nairobi, was the first of a series of regional meetings to be held throughout the world. (WER, July 17, p. 3)

Cesar Quintana, administrator of the United Nations Habitat and Human Settlements Foundation (UNHHSF), told the Nairobi meeting: "The concepts and goals of the UN Conference on Human Settlements, held in Vancouver in 1976, have been at risk lately. Ideas die when men let them die, when the fire is not kept burning."

Kenya's Minister for Water Development, Dr. Gikonyo Kiano, who chaired the meeting, said, "We face a gigantic task to achieve a fair balance in the quality of life between the urban and rural areas of Africa. To do this we will have to have much greater regional and international cooperation."

Africa's urban population is expected to rise from 75 million in 1970 to 333 million by the year 2000. Between 30 and 50 percent of the people living in Africa's towns are in squatter areas lacking fundamental environmental needs, delegates to the meeting were told. And vast populations in rural areas are deprived of such basic

needs as acceptable shelter, clean water and sanitation.

African governments were asked to drastically revise their present processes of planning, financing and managing human settlements. At the meeting's conclusion, the following recommendations were made:

- Each African government should form a human settlement commission for tackling these problems in a coordinated way;
- Governments should make credit facilities more accessible to low-income groups;
- More effort should be made to use local raw materials, industrial and agricultural wastes, and recycled materials in the manufacture of building materials;
- More multilateral and bilateral aid should be sought;
- Land distribution systems should be reformed to enable people at all levels to acquire land;
- Self-help and communal building schemes should be encouraged, to cut cost;
- Governments should work more with non-government bodies (such as the African Co-operative Savings and Credit Association, trade unions, etc.) to get financing at the local level;
- Building codes should be revised to more realistic levels to permit cheaper buildings and the use of cheaper materials than are now permitted in many towns.

Ghana's A.E. Boateng commented: "If a reasonable proportion of these recommendations are followed up by governments, millions of Africans can be saved from the misery, squalor and poverty they now face."

The International Union of Local Authorities (IULA), the United Nations Environment Program (UNEP), the UN Development Program (UNDP), the United States Agency for International Development (USAID) and the Kenya Government all collaborated in staging the Nairobi meeting.

CHARLES HARRISON

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$150 per year. \$20 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
 Editor-in-Chief Libby Bassett
 Circulation Manager Jan De Pinto
 Correspondents covering more than 50 countries.

The **Center for International Environment Information** is a non-profit private organization which seeks to foster public understanding in the United States and Canada of global environment programs, how they affect the quality of life in North America, and the role of international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

Sulphur Trioxide Cloud Casts Pall Over Piraeus and Greek Policy

ATHENS—A yellow cloud of sulphur trioxide enveloped the port city of Piraeus recently and, though it lasted only half an hour, it caused respiratory difficulties, dizziness and vomiting in many residents.

The Ministry of Industry and Environment said the cloud was caused by a leak in a sulphur trioxide pipeline at a nearby fertilizer factory. The ministry immediately ordered the plant's operations interrupted.

Because so many residents complained, a district attorney ordered an investigation into the causes of the incident. If factory authorities are found guilty, they face stiff fines and, possibly, jail for dangerously polluting the atmosphere.

Factory operators said it was an "accidental event" and added there was no danger to human life "since sulphur trioxide is not a poisonous element." It can, however, be very dangerous if combined with other elements to form, for example, sulphuric acid.

The opposition immediately attacked the government for failing to transfer heavy industries from the cities. Areas around Piraeus and Athens are densely industrialized, and local authorities and residents repeatedly charge factories with polluting the air and sea.

KYRIACOS CONDOULIS

UNEP's Energy Task Force Chief Looks at World Energy Options

NAIROBI—Essam el-Hannawi is involved in the whole range of energy options, from windmills to nuclear policy, as chairman of the United Nations Environment Program's (UNEP) energy task force.

A geochemist with a Ph.D. from Cairo University, he was research professor in the Academy of Scientific Research and Technology in Cairo before joining UNEP in 1975.

The energy task force, which is based here, is a small unit that works with related task forces—water, human settlements, etc.—to bring a multi-disciplinary approach to some of the world's most pressing environmental problems.

A quiet, serious man, el-Hinnawi's main task is to provide information and stimulate thinking on energy systems so that the world moves more to the use of renewable fuels and away from coal and oil.

"Some people see solar energy as the big option for the Third World just because so many Third World countries have plenty of sunshine," he said, "but I don't think so. Today, solar energy is used more in the United States than in any developing country."

He says solar energy has drawbacks for developing

countries because storage systems are costly.

"I am disturbed about all the international meetings that are going on—in the last year there have been more than 20 regional and international meetings on solar energy. Most of them seem to be repetitive. It would be more valuable for the experts to concentrate on the storage of electrical energy, increasing the efficiency of photo cells, and so on," he said.

The world's energy problems, he believes, will only be solved by making use of all available options.

El-Hinnawi is concerned that emotions about the destructive powers of nuclear energy are obstructing its development and adoption for peaceful uses. He is also concerned that reactors are being built faster than solutions are found to the problems of the disposal of radioactive wastes and other hazards.

Much can be done, el-Hinnawi believes, by comparing the achievements of different countries in the energy field and by passing on the large volume of know-how that is available. He commended the Philippines, Thailand and Indonesia for developing national energy policies.

His task force is now studying and reviewing the environmental impacts of the production, transportation and use of all energy resources—fossil fuels, nuclear, and renewable energy sources.

CHARLES HARRISON

\$78 Million in Financial Incentives for European Solar Industries

BRUSSELS—A five-year solar energy demonstration program worth roughly \$78 million could come into effect in the European Community as early as mid-December. The EC Commission has recently sent to the Council a proposal to make law the granting of financial assistance to industries developing solar demonstration projects that may in the long run reduce the Community's dependence on imported energy supplies. The Council is expected to vote on the proposal at its meeting December 11.

"The first results from these solar energy R&D programs (see *WER*, Sept. 25, p. 5) are helping to show those areas where more research may be necessary and where certain applications of solar energy... are at the threshold of economic competitiveness," said a spokesman.

"Many of these applications will need a certain level of financial support in order to encourage industry and public authorities to make investment decisions in favor of solar energy where a great amount of capital investment is required," he added.

The commission proposal suggests that EC support range between 25 and 49 percent of the total estimated cost of each project, or more than 100,000 European Units of Account (\$130,000) per project.

The Commission plans to invite proposals for pilot projects from industries throughout the nine-member

EC. Their suitability for financial assistance will be judged on various criteria, primarily their "importance" in reducing energy dependence and the extent to which "the relevant experience obtained may encourage widespread introduction of the technique, process or product in the Community."

If the Council approves the Commission's proposal, and it is likely to do so, it will become a Community Regulation, meaning it will be binding and have the effect of law in each member state without the intervention of the national parliament of that state. GARY YERKEY

Spanish Criticize UNEP Mediterranean Program and Devise Alternative

VALENCIA—Spanish ecologists meeting in the town of Denia, near Valencia, to discuss Mediterranean pollution have criticized the United Nations Environment Program for the Mediterranean as inadequate and have drawn up what they say is a more radical alternative program.

Citing results of an English study indicating that one of every seven tourists to the Mediterranean risks falling sick as a direct result of pollution, the ecologists noted that numerous beaches in the Barcelona area had to be closed to the public this year. They said pollution has reached extreme levels along the entire coastline from Barcelona to the Italian city of Genoa, where 38 beaches were closed four years ago.

Insisting that only drastic action could overcome the damage in and around the 120 cities of the Mediterranean—cities with a total population of 100 million—the group criticized the development of a "nuclear coast" and urged that nuclear plants at Vandellos and Garona be abandoned and that plans for 14 others along Spain's Eastern coast be shelved. They suggested all coastal development be pushed back several hundred yards inland, roads forced back a distance of several miles, rail traffic encouraged, and legislation drawn up to slow down the proliferation of yacht marinas.

In a lengthy manifesto, the ecologists also urged that territorial waters be extended to 200 miles to help control the dumping of waste and effluents. They demanded strict controls to stop overfishing and to restock disappearing species and suggested that popular organizations launch an investigation into the Mediterranean situation—the destruction of natural habitats, pollution, demographic problems, natural resources and food production—in order to ensure full, impartial enquiries not distorted by private speculative interests.

The group listed three basic principles vital to the success of their proposals: compensation to local labor affected by their application, discouragement of economic activities damaging to the environment and charging clean-up costs to the polluters—not to tax-payers.

JULIE FLINT

Scientists Will Float on Ice Floe And Study Arctic Environment

OSLO—Sixteen scientists from the United States, Canada, Norway and Denmark will carry out comprehensive environment studies on an arctic ice floe north of Greenland next spring.

While the ice floe drifts towards Greenland, the team will carry out oceanographic research, and study maritime geophysics and geology, ice concentrations, air pollution, marine biology, cosmic physics—and polar bears.

A land base will also be operated at the northern tip of Greenland and the ice floe team will cooperate closely with a Canadian expedition that will set up a station closer to the North Pole.

Dr. Kenneth Hunkins of Lamont-Doherty Geological Observatory will head the first part of the program. Scientist Yngve Kristoffersen of the Polar Institute will head the second part of the two-month expedition.

The project is financed by the U.S. Office of Naval Research, Arctic Programs, with a contribution from the Norwegian Polar Institute. The Polar Research Center of the University of Washington in Seattle is responsible for the planning.

SPECIAL TO WER

Bulgaria Acts to Rejuvenate Danube and Black Sea Region Environment

SOFIA—Bulgaria's State Council acted to protect, restore and improve its Black Sea and Danube River area environment last month when it approved two documents of principle.

The Bulgarian Telegraph Agency said that the areas involved "cover nearly two-thirds of the country's total territory."

The agency said that Bulgaria has tried for years to establish harmonious relations between society and nature. A widespread network of new and modern water treatment stations has been constructed, and up-to-date methods for environmental protection are in use.

Special care is being taken to avoid pollution in port areas, industrial sites or animal-breeding farms. Construction of new factories is only permitted on sites far from resort areas and on non-productive soil. Major industry in the big Black Sea and Danubian cities—Varna, Rousse, Bourgas and Vidin—has been transferred to the interior, the agency said.

The quality of Danube water has been declining steadily over the past 10 to 15 years, and the result is diminishing fish stocks. A similar trend can be seen in the Black Sea—although to a lesser degree. The Bulgarian news agency commented that a joint effort by all Danube and Black Sea nations is needed to significantly reduce pollution.

WILLIAM G. MAHONEY

Pakistan Developing Program to Combat Salinity and Waterlogging

ISLAMABAD—A comprehensive program to combat salinity and waterlogging in Pakistan has been developed by the state-owned West Pakistan Water and Power Development Authority (WAPDA). A total of Rs. 797 million (\$63.8 million) has been budgeted for 40 ongoing and new schemes during the current financial year.

A recent WAPDA survey found that 31 percent of the cultivable land in the fertile Punjab was badly affected by salinity. And in Sind province, more than 50 percent of the land is waterlogged. About \$28 million will be spent in each province for drilling new tubewells and putting in tile drainage.

In the North-West Frontier Province, about \$6 million will go for tubewells and new drains in a 40-mile-long area. A very large area near the Mardan scarp in this province may get an additional \$262 million, once the project has been appraised by the World Bank. This two-phase project includes tile drainage for a 110,000 acre area, remodelling the upper Swat Canal, and reclaiming 25,000 acres of land.

MOHAMMED AFTAB

Eco-Evaluation a Must for New Steel Mills Says UNEP Industry Workshop

GENEVA—A United Nations Environment Program workshop on the iron and steel industry met here recently and concluded there should be some form of obligatory environmental impact evaluation for all new major iron and steel facilities. And, the group said, this assessment should be made at the planning stages so that the results can be integrated into the construction and operation of installations.

Government and industry experts from 27 countries and 13 international institutions participated.

A major point of agreement was that all new developments should be fully equipped with modern environmental facilities from the outset. It was acknowledged that problems remain in retrofitting pollution control equipment in old plants.

The experts said a number of emissions required further evaluation as to their impact on human health. They also felt that thermal pollution of water required additional evaluation. And noise, vibration and heat stress were identified as being important for a working environment study. The workshop proposed that special consideration be given by international organizations to the working environment in tropical regions.

A number of new technologies, such as direct reduction and use of charcoal in iron making were examined. But the experts considered it too early to make a

comparative judgment of the environmental aspects of present and future technological routes to steel making.

SPECIAL TO WER

The European Environment Bureau Successfully Lobbies the EC

BRUSSELS—In Washington, there are so many environmental lobbying groups that the EPA was unable to estimate their number. At European Community headquarters here, there is just one, the European Environment Bureau (EEB), the umbrella for 38 national groups.

It has been so successful in its three years of existence that it now is the official liaison between all environmental groups in Europe and the EC.

Hubert David, its Secretary-General and man-about-everything, said, "Naturally, national groups don't have the impact at, say the Commission that pan-European groups have. 'You're only speaking for Italy, or wherever,' they say. So in December of 1974 we decided we'd better join forces."

The impetus had come a few months earlier, when the Sierra Club organized a meeting in England to initiate permanent contact among environmental groups worldwide. David was there, and when he returned to Belgium, he helped organize the first funding meeting for what became the EEB.

The Bureau's success story is remarkable, considering that Europe's environmental movement only began in 1970 and didn't really start to sink in till 1973. David would argue it still hasn't, at least not when compared to the U.S. He is focusing his energies on the 13-member EC Commission, the executive and policy-proposing body of the Community. And, his Bureau has been influential.

"I suppose our greatest success has been the Environmental Impact Statement. But that was an easy victory," he added. "It had the American precedent." The Commission is now studying how appropriate environmental impact procedures might be introduced.

It reportedly supports introducing parallel EIS systems simultaneously in all nine EC states, to solve trans-frontier problems and to avoid unfair competition. The problem is to write guidelines general enough to be acceptable to all but specific enough to have some bite.

In the coming months, the EEB intends to shift its attention to the candidates for election to the European Parliament — the world's first international elections — because they will exert, David believes, "an increasing influence over the development of European policies." Currently, parliamentarians are appointed. When some 175 million eligible voters go to the polls next June, David's opinion is that the key issues before them will be unemployment, women and the environment. He is trying to do everything he can to assure that those issues will be in a different order. "I have nothing against women," he joked, "but the state of Europe's environment is important, don't you agree?" GARY YERKEY

Australia Goes Ahead with Refinery Although There Will Be Eco-Damage

PERTH—The Western Australia state government has given a final go-ahead for construction of an enormous alumina refinery—less than a week after a confidential report was leaked that indicated native forests could not be replaced on the minesites.

The Wagerup refinery, north of Perth, will be the third and biggest built by the Aluminum Company of America (Alcoa) in Western Australia (see *WER*, Sept. 11, p. 3).

The confidential Hunt Report said it was still too early to determine what effect mining and refining would have on the region's water supply. Environmentalists were concerned about increased salinity. But the commission, which has been studying the situation since 1973, stated: "The original native jarrah forest ecosystem can never exist on rehabilitated bauxite pits." Only one percent of the state is forested.

To ameliorate concern, the government set up EPA-like guidelines for the project and will put together a study group, funded by Alcoa, for monitoring changes in the Darling Range ecosystem as mining activities expand.

JANE NACZYNSKI-PHILLIPS

Israeli Scientists Say Their Solar Ponds Are a New Wave

JERUSALEM—Scientists at Israel's prestigious Weizmann Institute in Rehovot have developed a central water heating system based on enclosed solar ponds which they say is a third cheaper than standard solar collectors.

Members of the institute's photo-thermal conversion group believe their system is particularly suited for large housing units, factories and institutions. The ponds can be easily integrated into the rooftop construction of such structures.

Shallow pond collectors contain PVC plastic bags, laid on an insulation bed, which hold water to a depth of 10 centimeters. The upper part of the bag is transparent, the bottom black. The "pond," contained by concrete curbs, is covered by a thin but hard sheet of transparent plastic developed for maximum absorption of light into greenhouses.

The system is being tested on a pilot basis in one of the institute's residential buildings with 30 families. In mid-afternoon, when the water's temperature usually reaches 60 degrees centigrade, the water is emptied into an insulated storage tank which supplies hot water around the clock. The system provides 10,000 liters of water a day with fuel savings of 80 percent compared with oil-powered heating.

This system combines two familiar forms of the rooftop solar pond, used in the U.S. For 20 years

American architects have used passive solar ponds for space heating and cooling, and on a small scale, water has been heated in oil drums and PVC bags on rooftops at scout camps and military installations. The Weizmann Institute hot water system combines the size of the space heating concept with the simpler goal of producing hot water.

ABRAHAM RABINOVICH

World Forestry Conference in Jakarta Plans to Save Planet's Woodlands

JAKARTA—Delegates to the largest international conference on forestry ever held warned world governments that "time is running out" for conserving and making better use of the planet's forests.

More than 2,000 foresters, environmentalists, economists, agri-sylviculturalists and others participated in the 12-day conference held here last month. They came from 104 countries and 14 international organizations.

They produced a seven-page, 26-point document, revolving around the theme "Forests for People," that urged more efficient use of dwindling woodlands as well as effective conservation and reforestation.

The gap between the increasing need for wood and the capacity of the world's forests to supply it can be avoided only, they said; by proper environmental management, more complete and efficient harvesting, full and prudent use of the harvest, and by an enlarged concept of multiple-use forestry that incorporates increased food production, both plant and animal. And they urged that woodlands be given permanent legal protection.

A major concern was the rampant destruction of tropical forests, including those of the host country, Indonesia. Gil Child, of the U.S. delegation, said 10 percent of a total forest area must be protected to conserve it, but only one percent of the world's tropical forests have such protection.

Since most tropical forests are in developing countries, much of the damage is done by the rural poor who increasingly use the timber for housing and fuel and the land for agriculture. The Director General of the Food and Agricultural Organization (FAO), Edouard Saouma, said because millions of people burn crop residues, which are necessary for soil regeneration, the loss of natural fertilizers is estimated at 400 million tons a year in Asia and Africa.

The Congress warned developing countries that "a commitment to rural development on the part of foresters will be of no avail unless there is a firm commitment on the part of governments. Such commitment must include action to reduce inequalities in the countryside, notably in the distribution of land and in access to social and support services.

And the Congress adopted a four-point plan of action asking for international cooperation in inventorying, management and conservation, raising productivity, and creating employment.

PAUL V. ZACH

In Brief...

China Needs Reforestation

China's official newspaper, the People's Daily, has called for immediate protection of the nation's forests. And it called for immediate afforestation.

Both tropical and northern forests have been ravaged. As a result, the climate in some areas has become abnormal and water resources have been depleted. Serious drought, soil erosion and other natural disasters have occurred one after another. The destruction of woodlands also endangered grain production and hindered the development of industrial production and other construction projects.

Clean-up of Irish Lakes

There has been concern for some time that Ireland's famous Killarney Lakes would be seriously endangered unless immediate remedial prevention and development of sewage treatment facilities were undertaken.

So, recently, the Killarney Urban Council approved £336,000 (\$672,000) for the prevention of pollution and the extension of sewage treatment facilities in the town.

Some hotels in the area have been accused of polluting the famous lakes, and the controversy over their present state of endangerment continues.

Crop Spraying Causes Illness

A recent study by the Colombian government Livestock and Agricultural Institute (ICA) and the San Antonio del Guamo Hospital revealed a high incidence of illness due to aerial crop spraying of rice and cotton plantations in Tolima in

central Colombia. Some 170 highly toxic pesticides are used, most based on parathion, according to ICA and the hospital, which is located at Guamo in the heart of the affected region. Also used are pesticides with a 2-4-D and 2-4-5-T base, popularly known as the "orange agent," which was used to destroy forests and plantations during the Viet Nam War.

The hospital reported 95 cases of sickness caused by pesticides between January and June of this year. An ICA study also revealed an increase in abortions and the birth of deformed babies during the past five years, as well as deaths of farm and wild animals.

Colombian ecologists have petitioned the government to enforce legislation controlling aerial crop spraying, not only in Tolima but throughout the nation.

World Energy Conference

The 11th World Energy Conference will be held in Munich, West Germany, in 1980. About 2500 representatives from 76 countries are expected to attend. Reports will be on topics such as energy resources, environment and society.

Philippines to Fine Ships

The coast guard of the Philippines recently told operators of big inter-island vessels that they have to install anti-marine-pollution equipment on their ships by the end of this year or pay a fine.

The vessels affected are those of 1,000 tons and above. The marine pollution control rules require the installation of oily water filtering devices and slop tanks to receive oil residues. Failure to install the devices will mean fines of \$675 for the first offense and \$1,350 for subsequent offenses.

Germans Desalt Beer

A Krupp subsidiary, Krupp Atlas Maschinenbau, will complete work by the end of this year on a water desalination plant for the Beck Brewery of Bremen. The Krupp process is said to require less than half the energy consumed by conventional units, and it has the further advantage of releasing no surplus heat or polluting chemicals. With a capacity of 840,000 liters of water a day, it will be the biggest such unit in Germany. It employs a reverse osmosis technology developed by Krupp. Need for it arose due to seepage of seawater into the brewery's freshwater wells.

Thailand Recycling Paper

The Siam Kraft Paper Company of Thailand is making extensive use of waste paper in its production process. At least five other paper mills in Thailand also use waste paper but Siam Kraft absorbs the most. Company supply and distribution manager Viravat Cholvanich reports that Kraft could use as much as 4,000 tons per month, and has to import waste paper from the U.S. and Hong Kong. In 1975 the company used more than 25,000 tons of local waste paper worth over \$23 million. Apart from saving resources, Viravat said that the collection of waste paper for recycling creates employment.

Colombia Protects Andes

The municipality of Macheta in central Colombia has declared the forest and headwaters of the Macheta and Gutanfourt rivers a park reserve to protect the area from indiscriminate cutting and burning which threaten the ecological balance of the valleys and mountains in Colombia's central Andes chain.

Philippines Limits Logging

The Philippine Ministry of Natural Resources (MNR) will limit the cutting of logs to prevent forest destruction, which continues at an alarming rate despite forest conservation activities initiated by the government.

An MNR official said the allowable log cut of 17 million cubic meters, allocated to more than 200 logging firms, will be reduced to 7 million cubic meters without impairing domestic log supply and log exports. MNR figures show that the estimated rate of deforestation this year is 80,000 hectares; the reforestation rate is only 50,000 to 60,000 hectares.

Meanwhile, about 100 logging firms face closure for continued violation of forestry rules and laws. The MNR has ordered the Bureau of Forest Development to evaluate the compliance of timber concession operators with the law.

Arab Desalinization Center

In Kuwait, the Institute for Scientific Research and the Water Resources Development Center have received Arab-European Dialogue approval for an Arab Center for Water Desalinization and Diversification of Resources to be headquartered in Kuwait. The project is now before the Dialogue's financial group and should soon be submitted to its general committee.

Trees for Indonesian Pollution

Tree planting is now underway in the man-made forest on the western outskirts of Semarang in Indonesia by PT. Tanah Mas Real Estate. The man-made forest is intended to prevent pollution from the industrial estates in the district.

Work on the forest will take three

to five years and cost \$722,892. About 200 houses will have to be pulled down and some paddy fields and fishponds in the area will be levelled, but compensation will be provided.

The company is also dredging and enlarging the Pang-gung River to prevent floods which hit Semarang every year. The dredging covers 1.2 kilometers and costs \$120,482.

Indian Ocean Science Board

A board for Ocean Science and Technology has been formed in New Delhi under the chairmanship of India's Prime Minister, Morarji Desai.

The 12-member board will plan and coordinate work relating to the study of oceanography, ocean atmosphere, waters, flow and oceanic crust and their physical, chemical, geological, environmental and related aspects.

Another objective is to ensure the optimum utilization of facilities in the country and liaise with various agencies for storage, interpretation and dissemination of data pertaining to ocean science and technology.

Korean Solution for H₂SO₄

Two South Korean professors, Chon Mu-Jin and Shim Sang-Chol, said recently that phosphate dissolved in water can absorb from air up to 90 percent of its sulphuric acid gas content, a major pollutant in urban and industrial areas.

The professors said that a compound of phosphate, water and other solvents can rid the air of sulphuric acid gas, discharged in the use of various fuels such as coal, kerosene and gasoline, twice as effectively as limestone, widely used in foreign countries to eliminate the gas. Limestone can get rid of only up to 40 percent of the pollutant gas in air.

Ireland Plans Mass Heating

Ireland is moving away from the concept of individual heating units and studying the idea of centralized group and district heating.

Group heating schemes would apply small building complexes of 150 to 500 houses, while district heating supplies larger complexes including commercial and industrial premises.

The Electricity Supply Board has commissioned a firm of engineering consultants to develop a set of standards and specifications for group and district heating installations.

Architects' Eco-Awareness

The 13th World Congress of Architects, which met recently in Mexico City, issued a declaration that technology must be combined with politics and humanism in building settlements. The "Declaration of Mexico" stated that architects must work both with government officials and the proposed users of the settlements to protect the environment and regenerate a nation's resources. It said other problems to be faced are realizing the limits of growth, economics, and the use of adequate technologies.

Venezuelan Mercury Poisoning

In Venezuela, approximately 30 percent of workers at a government petrochemical complex show signs of mercury poisoning. Dr. Monaco Zerpa, a professor of medicine at the University of Carabobo and a specialist in occupational diseases, made the disclosure and asked for help in solving the problem. The Moron petrochemical complex, on the west coast, is considered a basic industry for Venezuelan development.



World Environment Report

13 NOV 1978

VOL. 4, NO. 23

Copyright © 1978. Center for International Environment Information.

NOVEMBER 6, 1978

Romanians Patent Innovative Method to Clean Up Oil Spills

BUCHAREST—A team of scientists from the Marine Research Institute in Constanta, a Romanian Black Sea resort city and port, have designed and patented "Petroabs," an absorbant that gathers spilled oil "like a sponge," they say.

At a public experiment, researchers deliberately spilled oil off tourist-packed beaches, the weekly Romanian News reported.

As soon as the oil spread on the surface, a ship enclosed the spill with a floating plastic barrier. "Then," the magazine said, "a mechanical sprayer started ejecting particles no larger than pepper grains—Petroabs.

"As soon as they reached the oil stain, it disintegrated, turning into tiny hard particles. In a few minutes the particles were carried by a conveyor belt aboard the ship. And soon, there was no trace of oil floating on the sea water."

The magazine said last spring a Greek tanker spilled an "important" quantity of oil in Constanta port, but Petroabs entirely removed the black tide.

The name "Petroabs" come from "absorbant de petrol," (oil absorbant) said Octavian Serbanescu, who headed the project.

Biologist Radu Mihnea of the same Institute explained:

"First we tried to control oil pollution with special detergents, but the combination of oil with these products was even more toxic than the oil itself. We followed another path and created Petroabs.

"This is formed of little rubber particles, the size of which ranges from 1 to 3 millimeters. Rubber is supplied by factories processing it that have sufficient quantities of waste.

"The rubber is triturated and the particles are mixed with an activating substance designed by us together with a group of researchers from the Faculty of Chemistry in Bucharest."

How does it work?

Mihnea further explained: "When it comes into touch with oil (or any other oily substance) a series of phenomena takes place ending with the fixation of the oil molecules. The absorbed quantity is in a 1 to 3 ratio, i.e., one kilo of Petroabs collects three liters of oil.

"Once the oil is fixed to this product, the reaction becomes irreversible and so, if the means to gather the particles are lacking for a while, the particles can

continue floating without posing any risk. Collected and brought onto the shore, Petroabs imbued with oil undergo a mechanical or chemical treatment, and some of the oil can be recovered," Mihnea said.

"Tests showed that the recoverable quantity may go up to 80 percent. In this case the Petroabs particles can be reused several times," he said.

"Sometimes it might be considered non-economical to go as far as that with the extraction. In such a case, Petroabs containing oil can be used as low-grade fuel in thermopower stations."

Institute researchers claim the pollution controller is very cheap, easy to handle and needs no special precautionary measures since rain or snow do not affect it. The product is equally efficient in any concentration of dissolved salts: it yields the same results in lakes, rivers or seas.

A pilot station at the Institute has produced a large amount of Petroabs, but the formula for the substance that impregnates the rubber particles was not disclosed.

SPECIAL TO WER

Spanish and U.S. Oil Companies Want to Prospect in Wildlife Refuge

MADRID—Spanish and American oil companies have asked the Madrid government for permission to begin petroleum exploration in and around south-western Spain's Coto de Donana, the largest bird refuge in Europe and home of such rare species as the Spanish lynx and imperial eagle.

The Industry and Energy Ministry has until November 25 to make its recommendations on the two petitions by ENI, and Texaco-Chevron. The Spanish cabinet has no

In This Issue

German Alternative Energy	3
Renewable Energy: Mediterranean, Japan	4
Norway's Salmon Roe Bank	5
Deforestation Caused India's Flood	5
Dutch Water Purification	6
Japanese Pollution Equipment	6
In Brief	7

deadline for its final decision, although no move is expected until parliament has finished deliberation on a bill more clearly defining the prerogatives of the refuge, its boundaries and its state overseers.

The ENIEPSA application, the first of the two submitted, seeks exploration permits in three zones covering almost half the 180,000-acre wildlife park, already threatened by pollution and drainage in its rich marshlands and by spreading tourist developments along its southern, Atlantic Ocean border. The Texaco petition, submitted in September, reportedly offers a bigger investment over a greater area, although company officials are declining to give details until the cabinet makes its decision public.

Interest in the Donana area of Spain's desperately poor Andalucia province stems from the recent discovery of large natural gas reserves in the nearby Gulf of Cadiz and hopes that the rich field may extend westward toward Donana. ENIEPSA has already made some small—and reportedly highly encouraging—exploratory tests just outside the Coto, closely watched by ICONA, Spain's state-run institute for nature conservation.

Although experts are for the moment withholding comment on the possible effects of exploration in Donana, and ecological societies—relatively new in Spain—have not yet made prospecting an issue, it is clear that possible development is a big headache for the small, state-subsidized team attempting to minimize the damage done in the park by decades of neglect.

Throughout the century, the Coto has been viewed by the state mainly as a valuable hunting ground for the rich and royal. Photographs in the old lodge, now the headquarters of park conservationists, show proud aristocrats with catches including the rare, and until recently all but extinct, Spanish lynx.

Spurred by a burst of international interest in the Coto, the government of Premier Adolfo Suarez is currently negotiating to buy some 48,000 acres of this privately owned land, but progress has been slow to date.

Juan Garay, an agronomist on the Donana team, believes water is the Coto's biggest problem now—until the oil companies are allowed prospecting rights.

"The rivers entering Donana are polluted," he says, "mainly with refuse and effluent from pyrite mines to the North. Tourist developments," scheduled to include a nudist beach on a stretch of park shore, "are taking away considerable amounts of water, and eucalyptus trees" planted in the Franco days but now being destroyed "are sucking the water from the area surrounding the park," a buffer zone being built to keep tourists from the park's interior.

Another big problem facing the rare species in the park is the hostility of villagers from the small town of El Rocio in Donana's north-western corner. Every year, for example, at least one lynx is found caught in a poacher's trap. "The local people hate the park," says one Donana man. "They see it only as being unproductive, covering a vast area but contributing nothing to the hunting local economy."

JULIE FLINT

British Energy Conservation Called Alarming Uneven

LONDON—Progress in energy conservation in Britain has been "alarming uneven" and positive and consistent leadership is needed from Government, says the Advisory Council on Energy Conservation in its second report to the Secretary of State for Energy, Tony Benn.

"The scope for energy savings remains very large, even four years after the escalation of oil prices," the report continues.

While welcoming measures the government has taken, the Advisory Council considers that further progress will rely more on substantial financial incentives and mandatory regulations than on information and exhortation. Pricing energy according to its economic value and to future energy trends should be part of government energy policy, the council suggests. Estimates of future price levels would also help industrialists in investment decisions.

Some of the report's recommendations have already been published previously by the Council's working groups. Two recommendations—for tax concessions on loans, and grants for energy-saving in domestic and industrial buildings—are covered by the Energy Conservation Scheme and the Homes Insulation Act, which came into effect during the report's preparation (WER, March 13, p. 5).

No action has been taken on recommendations to refuse mortgages and building certificates for homes, offices or factories which waste energy, and to replace the vehicle excise duty by higher taxes on gasoline.

ALAN MASSAM

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address UNASAMER. Subscription Rate: \$150 per year. \$20 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Libby Bassett
Circulation Manager Jan De Pinto
Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit private organization which seeks to foster public understanding in the United States and Canada of global environment programs, how they affect the quality of life in North America, and the role of international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in WER, which in no way represents the official view of UNEP.

Special Report: Germany's Search for Alternative Energy Sources

BONN—The German Ministry for Research and Technology is investing \$33 million this year in its search for alternative energy sources, and will continue spending at that rate for the next three or four years at least.

The main effort is in the fields of solar heating and in the direct conversion of solar energy to electric power. Geothermal heat, tides and winds are getting a lesser share of attention but have not been neglected. A number of private research organizations are carrying out useful work in all these fields, and 23 commercial organizations have recently pooled their talents in the Federal Association of Solar Energy (BLT).

However, even the most optimistic heating contractors and engineers caution that solar heating with existing technology is not economical. The average installation for a five to seven room house runs to about \$5,000 with operating costs of at least \$50 a year. This is far above the cost of a conventional water heating installation. To offset this difference, the federal government offers a subsidy equal to 30 percent of the cost of installation. A proliferation of installations could cut down the country's dependence on fossil fuels for water heating. But the government's own estimates limit the reduction to about 5 percent by the end of this century.

There are a number of test installations in the country for the direct conversion of solar energy into electric power via solar cells, though no responsible agency holds any hope of their becoming competitive with existing methods. A study prepared by a leading German electrical engineering firm found that electric power generated by this method would cost the average household something on the order of \$4,000 a month.

The large-scale use of solar cells to provide power to cities and big industrial installations would be prohibitively wasteful of land. An installation with a capacity of 1300 megawatts—equal to that of a modern nuclear plant—would have to cover an area of 35 square miles, while the nuclear plant or two coal-burning plants of the same capacity would occupy less than 15 acres.

Heat pumps, while not a new technology, are gaining wider acceptance, mainly in conjunction with conventional heating and air conditioning systems. But one major manufacturer cautions in its ads that while a heat pump can theoretically lower fuel bills by 40 percent, actual savings of more than 25 percent cannot be expected because of the electricity needed to drive the pumps and compressors.

Geologists and geographers have searched Germany far and wide for hot springs. But the best they have found are mildly warm springs, most known to the Romans 1900 years ago and used today as they were then to alleviate rheumatism and other ailments.

Extensive borings have been carried out in areas of recent volcanic activity, with the hope of finding deposits of rock hot enough to raise steam from water pumped

underground. Results have been marginal and future prospects are not encouraging.

The ebb and flow of tides involves an enormous discharge of energy which, in confined channels, offers a potential means of driving electric generators. But all of Germany's coastlands are flat and shallow, offering no opportunity of turning tidal power into useful energy.

Finally, there are windmills which are still used in windy locations to generate electricity on isolated farms and in small settlements. The most likely site for harnessing the winds on a large scale is an 18-mile stretch of land facing the North Sea, between Bremerhaven and Cuxhaven. Windmills envisioned for use there would employ 480-foot-high towers with three propellers, each 180 feet in diameter. About 200 windmills could be fitted into the space available. Ideally, they could generate as much power as one nuclear plant. But one of the few prospering businesses in this area is tourism. It takes little imagination to see what effect the row of steel towers, each higher than the spires of Cologne Cathedral and as aesthetic as coalmine winding towers would have on the area's regular seekers after wilderness and beauty.

Despite the drawbacks inherent in the whole field of alternative energy sources, neither government nor industry is writing off the possibility that continued research may lead to breakthroughs that could convert some of today's money losers into winners. It is generally agreed that R&D in the solar field should be continued. Even though the sun's rays in Germany are too weak and unreliable to provide a substantial share of the country's energy requirements, there are other areas in the world where solar energy could play a major role. So why shouldn't German industry with its advanced technology go after those markets?

As for Germany's own energy supply, coal, oil, natural gas and the atom will be the king pins at least into the mid-1980s. Thereafter, as oil and gas prices rise due to diminishing supplies, more coal will be used, both as fuel and as a raw material for the chemical industry. There is enough coal for 200 years, but production today is down 40 percent from the levels of 20 years ago. Developing new mines on a large scale will take a minimum of 10 years. So far, there has been only a modest start since the coal market is in a slump that is now four years old.

Construction of nuclear plants is four years behind schedule. It takes nearly as long to build a nuclear plant as to develop a coal mine so, unless activity picks up in these fields soon, critical energy shortages could develop in early 1990s.

Known or prospective alternative energy sources can provide marginal savings in operating costs or cut back modestly the requirements for fossil fuels. But as far as can be seen today, there is no chance of any or all of them supplanting oil, gas, coal or atoms.

J.M. BRADLEY

WER Expands Coverage

Starting with this issue, World Environment Report brings you increased coverage from our expanding network of correspondents. We welcome our new correspondents in the Caribbean, Ecuador, Egypt, Indonesia, Jordan, Norway, Portugal, Puerto Rico, Romania, South Africa, and Spain.

Mediterranean Nations Agree to Cooperate on Renewable Energy

VALETTA, Malta—The 18 Mediterranean nations share an abundance of sun and sea breezes, and in a regional meeting here last month they came up with a cooperative program for harnessing these renewable resources and for creating energy from animal and plant wastes.

The meeting of government experts from 15 coastal states and the European Community was sponsored by the United Nations Development Program and the United Nations Environment Program.

The cooperative program that was developed will be based on networks that take advantage of activities already underway in each Mediterranean state.

Substantial work is already being done in the uses of solar energy for home and water heating, for pumping and desalting water for drinking and irrigation, for drying and preserving food, and in greenhouses. Malta, for example, has manufactured solar appliances for some time, but recently, a government official said, the emphasis has been on adapting them to make use of local materials.

The five-day regional meeting ended with an agreement to share the experiences of work already being done. This included providing expert technical assistance for assessing the potential of renewable resources in each country, the most suitable equipment and exchange of technical information, manpower training, building and testing prototypes, standardizing specifications for measuring equipment, and further meetings of specialists. They also agreed to work on formulating longer range national energy policies—the appropriate mix of renewable and conventional sources of energy.

Malta and Turkey offered to act as regional centers: Malta as an information exchange, technical assistance and training center, Turkey to use its existing institution for solar research and development. Overall coordination would be assured by UNEP and UNDP and financing for the program will be sought from these agencies and the participating governments.

FREDERICK BARRY

Japan Building Two Pilot Solar Energy Plants

TOKYO—As part of Japan's continuing "Project Sunshine", which was launched in 1974, the country plans to begin construction work before the end of October on two solar power generating plants. Each will boast a 1,000-kilowatt capacity to supply electricity to a small town on the island of Shikoku in southern Japan.

Total cost of the two facilities — clearly serving as pilot plants — will be approximately \$49.7 million. Full-scale operations should begin by 1981 or perhaps the following year.

But until solar construction and power delivery costs are reduced drastically (probably over the next 30 to 50 years), around \$16,000 will have to be spent to obtain each kilowatt of solar power, according to a spokesman for the Power Resources Development Company, which is handling the project for the Ministry of International Trade and Industry (MITI).

"This is roughly 10 times higher than the cost of producing hydroelectric and atomic power and as much as 30 times higher than that involved in obtaining thermal power," the spokesman said. "All the same, by the middle of the 1980s there most likely will be a solar energy plant operating in Japan capable of supplying close to or even more than 300,000 kilowatts of electricity. And by the turn of the century the output figure probably will be up to 2 million kilowatts." He predicted that costs would be reduced by the end of this century, "most probably by drastic amounts" despite present expenses.

Nevertheless, the Japanese public is not standing on the sidelines waiting for the scientists to develop solar energy. The MITI authorities use the sun's rays for heating hot water, and some for cooling in summer.

The only major drawback the Japanese have discovered — as have others throughout the world — is the high initial installation costs, roughly twice as high as those involved in standard coal or oil burning units. Yet solar units require little if any maintenance and fuel bills are greatly reduced.

According to Japanese homeowners, the extra costs involved in installing the solar unit are offset in only five years.

The Japanese are convinced that solar energy is one of the most promising future energy sources, not only for private homes but also for large apartment houses and big office buildings, possibly as early as 1990. The Japanese government is spending millions of dollars on research and development as well as experimentation, but it is not as much as MITI authorities would like.

Some of the slack is being taken up by private Japanese corporations. These include such active firms as the Hiroshima Research Institute of Mitsubishi Heavy Industries, Yazaki Corporation (a major solar heating and cooling developer), Kawasaki Heavy Industries, Kajima Corporation, and Toyo Thermal Engineering Company.

A.E. CULLISON

World's First Roe Bank To Save Norwegian Salmon

OSLO—The world's first roe bank is being built at Sunndaløsera in western Norway to preserve stocks of salmon and other endangered fish.

The breeding material deposited there will ultimately represent some 60 to 70 salmon rivers, and even during its first year of operation, in 1979, some 15 to 20 rivers will be represented, said Trygve Gjerdrem, head of research.

He said the roe bank has three basic objectives:

- to preserve the salmon strains of those rivers where the fish is threatened with extinction,
- to provide a service institution for those engaged in fish cultivation,
- to supply roe to those concerned with breeding.

Funds to finance construction of the roe bank have been provided by the National Agricultural Development Fund. Gjerdrem said the facility will need additional financial support, but added that the sale of roe should help finance other aspects of the work program.

Gjerdrem said the word "bank" should not be taken too literally since it is not yet possible to deep freeze salmon roe with a view to subsequent hatching. The bank will, he said, concentrate on breeding stocks. The first "depositor" agreements have already been concluded with the roe bank, and the majority of depositors are expected to be river owner cooperatives. *SPECIAL TO WER*

Irish Salmon Face Extinction If Uncontrolled Fishing Continues

DUBLIN—The extinction of one of Ireland's noblest fish species — the royal salmon — is predicted unless there is an immediate ban on fishing.

The Salmon and Trout Conservation Council of Ireland has made what it terms a "last-ditch" appeal, to avoid a "doomsday situation" in Irish salmon fishing, to the Minister for Fisheries, Brian Lenihan. They want an immediate ban on both commercial and pleasure fishing until the country's salmon rivers have again reached a self-sustaining stocking level.

The council accuses 3,000 part-time fishermen of having plundered the salmon streams to earn themselves up to £1,000 (\$2,000) a week.

Fishing News reports catches this year have been poor, and the Salmon Council is concerned that salmon could become extinct in Ireland.

Because it has been fetching £2 (\$4) a pound, there is a great pressure on for catches, and there are reports that in Belgium 2 ounces of salmon can cost up to £6 (\$12).

The Council blames part-time fishermen in particular, but is also critical of full-time fishermen who are not conscious of conservation needs. **TOM MacSWEENEY**

Deforestation in Himalayan Region Cause of India's Worst Flood

NEW DELHI—"India has a long history of floods. In ancient times, their impact was not severe because the country was more wooded, and the density of population was far less than at present." India is just beginning to recover from its worst flooding in more than 100 years, and this synopsis of the causes by the former chairman of the Central Water and Power Commission, Dr. Kanwar Sain, points out the problems. But so far, not enough has been done on a national level to come up with solutions.

K.M. Tiwari, Director of Forestry in the Himalayan foothill state of Uttar Pradesh, says, "The effective remedy is massive afforestation." He is sure the genesis of the problem is the combined effect of rapid drainage of the denuded catchment areas and the silting of rivers, which has reduced their carrying capacity. Both factors, he believes, are directly related to the destruction of forests in the region over the last three decades. In Uttar Pradesh alone, more than 16,000 square kilometers of forests have been cleared for cultivation, and 1120 square kilometers for dam, reservoir and road construction. If deforestation continues at this rate, Tiwari predicts that even worse flooding will occur in the Himalayan region and Gangetic valley.

It was only a two-day, non-stop rain. But the results were: 65,712 villages flooded, more than 2,000 people drowned, 40,000 cattle washed away, and uncounted thousands of houses destroyed. In West Bengal, 60 percent of the agricultural land was inundated and the cash value of lost crops was estimated at \$350 million. In Uttar Pradesh, all but two of the 56 districts were flooded, and 50 percent of the croplands were affected, a loss worth \$400 million.

The Indian government is beginning to evolve a national policy to combat future flooding. Up till now, it was the responsibility of each state to take flood control measures. But with rivers flowing through many states from the Himalayan foothills, water experts and ecologists have urged the federal government to evolve an all-India policy, not only to build dams and raise embankments in the plains areas, but also to take stern action against those who disturb the ecological balance of the Himalayas.

As a result of this most recent and devastating flood, the Indian government has budgeted \$1 billion for afforestation and new dams over the next five years. Officials are talking also of building high embankments in flood-prone areas and digging channels to divert water and to irrigate new areas. Whether this will be enough remains to be seen. Nepal, just to the north, has been destroying forests on Himalayan hillsides for years, and this is where the problem starts. The Indian government has sought Nepalese cooperation, but unless both countries embark upon massive reforestation programs, the floods in India can only get worse.

R. MURALI MANOHAR

Dutch Develop New Technique for Purifying and Desalting Waste Water

AMSTERDAM—A new technique—membrane filtration—for purifying industrial waste water and desalting surface and sea water is being developed in the Netherlands. The four-year scientific and industrial project, subsidized by the central government, is a joint effort by the Technical High School Twente at Enschede and the Wafilin firm at Hardenberg.

In a communique they gave some examples of what the new method can do, such as:

- Purifying waste water from potato flour and cornflour mills. In the past, many environmental groups in the northern provinces had protested against the stench of the mills' waste water runoff.

- Desalting surface water used for horticulture. This Rhine River water is salt polluted by French and German industries.

- Desalting sea water for human consumption, which is important for the arid lands of the Middle East and Africa.

- Recycling edible proteins from whey and skim milk. The Netherlands Institute for Dairy Research estimates that five million tons of whey protein could be produced which may play a role in the world food situation.

- Thickening milk before transporting it to butter or cheese mills.

- Removing heavy metals from waste water before it is drained off into sewers or surface water.

The membranes are extremely thin (down to one ten thousandth millimeter) semi-permeable polymer films which let through the water but not the matter dissolved in it. The new method of water purification needs less energy than other methods, which use evaporators.

HENK KERSTING

Pollution Control Equipment Orders Up in Japan, But Less Than Before

TOKYO—Orders for pollution control equipment in fiscal 1978 are up between 7 and 8 percent over last year. But, between fiscal 1977 and 1976 the increase was 27.8 percent. So it is evident that the percentage of gain in orders is nothing like it was even a year ago (WER, Oct. 24, 1977, p.3).

The Japan Society of Industrial Machinery Manufacturers believes that the drop this year is due mainly to the failure of the Japanese economy to recover sufficiently to warrant such costly investments. Last year at this time a great many Japanese executives believed the economic recovery was at last well underway. There also has since developed a feeling in industrial circles that the Environment Agency has decided to show more lenience

in enforcing anti-pollution regulations for the sake of the economy.

The society, which is composed of 177 member companies, noted that it was the first time that annual production for the industry was lower than the preceding year. The organization first began surveying the industry in 1966.

A spokesman for the society disclosed that last year more than 71 per cent of all orders came from central and local government agencies and that only 24.3 percent came from the private sector. Exports accounted for the remainder, it was explained.

While the governmental authorities concentrate their buying generally on devices and equipment for disposing of rubbish, garbage and some industrial waste, and for reducing noise and vibration, it seems that the private companies are more interested in placing orders for facilities designed to cut down air pollution and to eliminating water pollution at plant sites, although industrial waste disposal also is involved to a considerable extent.

Air pollution receives priority attention by private industrial companies. This is primarily due to enforcement throughout the country by the Environment Agency of a set of zone payments depending upon the extent of such pollution. The money thus collected is used to pay compensation to officially recognized victims of pollution under the 1974 Pollution Health Damage Compensation Law. Although firms are penalized in accordance with the type and extent of air pollutants they emit, the "dues" are raised from time to time to meet the requirements to pay compensation in the particular zone involved.

A.E. CULLISON

Note: This article supersedes a similar story that appeared in brief in the July 31, 1978, issue of WER.

Western Hemisphere Nations Discuss Tuna Conservation

BOGOTA—The possibility of a Pacific tuna conservation pact was discussed by delegates from nine hemisphere nations meeting in Bogota last month. Representatives were from the United States, Mexico, Guatemala, Costa Rica, Panama, Colombia, Ecuador, Peru and Chile.

The idea of a tuna fishing agreement dates to the sixties and the "tuna wars" between the Peruvian and Ecuadorian navies and San Diego, California, fishermen. Despite numerous regional meetings, no agreement was ever reached, primarily because of the differences between the United States and the Latin American countries over the latter's claim to 200-mile offshore fishing limits. But now that the United States has changed its own fishing legislation, the tuna-producing nations are back at the conference table.

PENNY LERNOUX

In Brief...

Prayers vs. Cars in England

Prayers for the environment were held during a public inquiry into the building of a major motorway, the M25, through the picturesque Darent valley in the southern English county of Kent. To disrupt the inquiry, demonstrators sang "Rule Britannia", the national anthem and "Where Have All the Flowers Gone?" The local vicar, who began the prayers, was eventually carried out by police to cries of "heathen." The inquiry inspector refused to adjourn, saying that those who had been unable to hear the evidence because of the noise would be given an opportunity later.

Colombian Pesticide Control

Colombia's Ministry of Agriculture has established 10 regional advisory committees for control of pesticides used in aerial crop spraying. Working in collaboration with various government agencies, they will make recommendations to the government on the use of pesticides in spraying, and will report infractions by pilots involved in such work. They also will introduce measures to improve the warehousing of pesticides on local runways and health precautions, both for pilots and the rural population.

Asian Nuclear Study

International Nuclear Fuel Cycle Evaluation, a multi-national group, is currently studying the idea of a regional center to reprocess spent fuel for nuclear power plants in Asia.

The U.S. government proposed over three years ago the creation of

regional reprocessing centers as a means of minimizing the proliferation risks. But the proposal failed to gain sufficient international support because of various unsettled questions, such as where the center would be located and the nature of the institutions that would manage them. The current study will determine whether nuclear power users prefer self-operated reprocessing centers to the regional facilities proposed by the U.S.

Japan is opposed to the regional concept since it plans to use its Tokaimura technology as the basis for building a "nuclear park" that would make Japanese utility companies independent of reprocessing services in other countries. Other countries are unwilling to offer sites for the regional center because of their concern about the risks of nuclear waste disposal. Some experts suggested locating the regional center in a South Pacific island where waste disposal doesn't constitute a hazard to large populations.

New Vehicle Pollution Limits

The U.N. Economic Commission for Europe (ECE) met in Geneva to discuss new vehicle pollutant limits for the period after 1982, as well as a new, highly sophisticated method for measuring quantities of pollutants emitted by vehicles with gasoline engines.

Delegates from 18 member countries and six international organizations considered the problems of changing the international ECE regulation, now applied in 12 European countries.

"The introduction of a new testing method would be a significant step toward the harmonization in measuring motor vehicle air pollutants on a worldwide basis," an ECE spokesman said.

Two new international regulations concerning air pollutants emitted by motorcycles and mopeds have also been prepared by the same group and are expected to go into effect in 1979.

Korean Eco-Protection

The South Korean government has formed a new body for the protection of the environment. The Environment Preservation Association, established in accordance with Article 61 of the Environment Preservation Law, will carry out investigation, research, technological development and educational projects.

Colombian Tree Cutter Fined

Colombia's Regional Corporation of the Cauca Valley (CVC) has slapped a \$52,500 fine on a local rancher for destroying 79 trees belonging to an endangered species of local mahogany. The fine is the largest ever applied against an individual in Colombia for forest destruction.

The owner of the ranch in southwestern Colombia was denied permission earlier by the CVC to cut down the trees. This precedent plus the age of the trees—the majority were over 40 years old—contributed to the harshness of the penalty.

The lumber obtained from the trees was confiscated and turned over to the local municipality of Roldanillo, and the rancher will be obliged to plant 800 new mahogany trees in the same area.

Mexico's Minimal Green Space

Despite its proliferation of parks and boulevards, Mexico City has one of the world's lowest ratios of green space per inhabitant, according to an urban study by Luis Unikel and Gustavo Garza.

Each of the 12 million Mexico City residents has slightly less than one square meter of public park or other open green space, they found, while residents of San Francisco have 47 square meters each; those in New York, 14; inhabitants of Moscow, 11; and of Paris, 7.5.

Hong Kong Pollution Laws

The Hong Kong government is in the final stages of preparing legislation for the control of all forms of pollution, Environmental Protection Adviser Dr. Stuart Reed said recently. The new proposals, drawn up by the Environmental Protection Unit in conjunction with the General Chamber of Commerce, the Chinese Manufacturers' Association and the Federation of Hong Kong Industries, comprise five ordinances controlling air, noise and water pollution, solid waste disposal and requirements for environmental impact analysis. Three completely new areas, the composition of fuels, emissions other than smoke and grit and the control of odors will be introduced in the new legislation.

In the long term, the Environmental Protection Unit is looking for improvements through the natural process of urban and industrial renewal which will have to comply with the new requirements, Dr. Reed added.

Public Transport in Mexico

Mexico City's mayor has ranked public transportation second among his priorities, after adequate water and drainage systems for this city of 12 million inhabitants.

Higher rates at parking lots, wider use of trolley buses, creation of high-speed streets and an extension of the subway system are parts of the program. Rates at parking lots in usually congested business areas already have been doubled.

By May, 1979, the mayor hopes to add 2,000 electric trolley buses to the city's transportation fleet, replacing buses which are noisier and a greater source of atmospheric contaminants. By the same date, one-half of the projected 34 major axis streets will be completed, he said. Work is underway to widen existing streets and change designations from two-way to one-way.

Extension of the subway system also is underway to quadruple by 1980 its present daily capacity of approximately 2 million passengers. New lines are being added to the three-line, 27-mile system that began operating in 1969.

An electric-powered train capable of carrying 130,000 passengers daily will link Mexico City and the industrial city of Toluca 37 miles away, the National Railways office has announced. Besides cutting travel time from two hours to 50 minutes, the creation of the two-way rail lines will eliminate the need for some of the thousands of buses that presently make the highway route between the cities the most congested, polluted and dangerous in Mexico.

So. America Acts on Oil Spills

During the IX Interamerican Naval Conference held in Lima this month, Colombia proposed joint action against pollution at sea especially that caused by maritime accidents.

Vice-Admiral Benjamin Alzate of the Colombian delegation talked of the need for international cooperation to control pollution. He cited a case in 1974 when an oil tanker sank in the Pacific off the coast of Ecuador and Colombia.

The Liberian tanker, named Saint Peter, was only partially insured with a company in the Bahamas. As a result, Ecuador and Colombia had to pay legal fees and the cost of cleaning the shores.

He proposed that action be taken at a regional level to prevent this kind of situation happening again. Basically, control of shipping, especially oil tankers would have to become more stringent in South American waters.

It is hoped that some kind of draft agreement will be reached in the course of the next few months and that a full multilateral agreement will be signed at the next naval conference to be held in Quito in 1980.

Irish Chemical Transport

There has been a national call in the Irish Republic for the introduction of stringent controls on the transportation of highly explosive chemicals by road.

It came from the General Council of County Councils, a national body of local representatives. They issued the call to the Minister for Industry, Commerce and Energy.

Their move reflects growing concern among people who live in areas where vehicles carrying such substances regularly travel. Controls were called for which would force those using the trucks and the chemical companies to pay for greater safety protection, including fire fighting facilities.

Two Meetings to Note:

Joint exhibitions and conferences on effluent and water treatment and on environmental pollution control will be held at the National Exhibition Center, Birmingham, England, from November 13-18. It is expected to be the largest ever held in the United Kingdom. The general theme of the convention will be liquid toxic waste treatment and disposal. For information, contact Howard Phillips, Brintex Exhibitions Ltd., 178-202 Great Portland St., London, W1.

The Second International Symposium on Environmental Lead Research, jointly sponsored by the International Lead Zinc Research Organization, Inc. and the University of Cincinnati, will be held in the Kresge Auditorium at the university's College of Medicine December 5-7. Admission to the three-day symposium is free, and speakers will be from England, Italy, Denmark, Yugoslavia, Australia, and from the United States. Pre-registration is requested. Contact Ms. Ingrid Olson, International Lead Zinc Research Organization, Inc., 292 Madison Ave., New York, N.Y. 10017.



World Environment Report

VOL. 4, NO. 22

Copyright © 1978. Center for International Environment Information.

OCTOBER 23, 1978

Biggest Ever Global Weather Study Begins This December

GENEVA—The World Meteorological Organization (WMO) will launch on December 1, 1978, one of the largest and most complex scientific undertakings ever attempted—the one-year Global Weather Experiment.

Thousands of scientists from virtually every country in the world will use earth satellites, instrumented aircraft, ships, balloons, free-floating ocean buoys and gigantic high-speed computers to subject the entire atmosphere of the earth and sea surface to the most intensive surveillance and study ever made.

The experiment will last for one full year with two separate periods of two months for special observations in the tropics and southern hemisphere.

The purpose of this highly coordinated international effort will be to ascertain the attainable limits of weather forecasting and to investigate the mechanisms underlying climatic change.

Extending the range of accurate weather forecasts and a better understanding of climate variations should have enormous economic and environmental protection value.

The acronym for this massive effort is FGGE, standing for First GARP Global Experiment. GARP is also an acronym: Global Atmospheric Research Program—a successful joint program of WMO and the International Council of Scientific Unions (ICSU).

The build-up of the Experiment began on December 1, 1977, when a year's equipment testing period began. The operational phase of the Experiment starting December 1, 1978, will have two special observing periods: Jan. 5 to March 5 and May 1 to June 30, 1979.

The basic observation system during the Experiment will include the WMO global weather system, the World Weather Watch (WWW). In any 24 hour period WWW collects and transmits to processing centers standard observations from the following impressive array of stations: more than 9,200 land stations making surface observations; nearly a thousand stations making upper-air observations; nine fixed ocean weather ships and some 7,400 merchant ships making surface observations only; reconnaissance and commercial aircraft providing more than 3,000 reports daily.

The Global Experiment will be the first occasion where a truly integrated system of satellites will be used to observe the earth's atmosphere.

The WMO spokesman said that even the enormous

mass of data to be collected is considered inadequate by scientists, but they hope to have enough early input to feed statistics to the World Climate Conference that will open in Geneva in February, 1979.

Following the practice of the WWW, each country participating in the Experiment will look after its own contribution to the program. In addition to the normal contribution of the 147 WMO members, 75 of these states plus five intergovernmental organizations are making special or additional contributions.

It is still too early to estimate the value of possible spin-offs from the Global Weather Experiment. But certainly the input it provides will assist international and national planning in such fields as agriculture, forestry, water use, environmental protection, (including efforts against water and air pollution) and governmental economics.

WILLIAM G. MAHONEY

All Major Projects in India Must Have Ecological Clearance

NEW DELHI—For the first time in the history of India, the government is insisting that all major projects be cleared on ecological grounds.

The National Committee for Environmental Control, at the insistence of India's Planning Commission, has issued guidelines for preserving the ecological balance. In future, dams, power stations, highways, railways, open mines, and similar projects will have to be cleared from the ecological angle.

A committee consisting of scientists and technicians will examine each project and suggest modifications, if necessary. Such steps were found necessary because of the increasing air, water and noise pollution in this country.

In This Issue

U.S. Tests European Waters	2
Special Report: Holland	3
Factories Closed: Athens, Mexico	2,4
British Babies Sue	4
Waste Recycling in Europe	5
Ireland: Industry vs. Ecology	6
In Brief	7

For example, the newly established National Environment Engineering Research Institute (NEERI) will keep a close watch on the Mathura refinery and its effect on the Taj Mahal, India's most important tourist site. At a meeting in Agra recently, scientists and ecologists suggested the Indian government shift the refinery from its present site. And India's Petroleum and Chemicals Minister, H.N. Bahuguna, has gone so far as to promise environmentalists: "We can afford to wind up the refinery and lose over \$250 million, but the nation cannot afford any damage to this great historical monument, which cannot be built again."

R. MURALIMANOHAR

European Water Process Tested In Three American Cities

WASHINGTON—A European process to remove organic contaminants from water will soon be tested by the Environmental Protection Agency in three U.S. cities.

The system, already in use in Rouen, Zurich and 10 other European cities, will be tried out in Shreveport, Philadelphia and Miami for about three years as part of the EPA's program to limit dangerous chemicals in drinking water.

The Shreveport, La., project will study surface water unpolluted by man but containing a great deal of humic matter. Much of the water in the southern U.S. is relatively unpolluted by industrial wastes. By contrast, the study in Philadelphia will treat water from the Delaware River, which is substantially polluted by municipal and industrial wastes. The pilot plant in Miami, Fla., will treat ground water contaminated by industrial and domestic wastes.

The Shreveport plant will utilize granular activated carbon and ozone; the Philadelphia plant will use biologically activated carbon; and the Miami plant will test synthetic resin in place of carbon. The ozone in these systems will oxidize large molecules of organic matter and break them up. The available oxygen also encourages bacterial growth on the surface of the carbon. These flourishing bacterial colonies biodegrade the humic materials. Chlorine is then added to kill the bacteria, but since the humic material has already been removed, less chlorine is needed. Because there is less chlorine, the chances of producing chloroform are much reduced. In addition, the carbon does not have to be activated as frequently as in conventional systems.

EPA officials believe the system results in more complete water purification. The EPA points out that public health regulations require the use of chlorine to kill disease-causing bacteria, and the EPA considers chlorine the most effective drinking water disinfectant generally available.

PETER PHILIPPS

Greek Factories Closed Till They Comply with Environment Rules

ATHENS—Seven factories here have had their operations "interrupted" because they did not comply with the government's environmental protection regulations. Four months ago a major steel plant outside Athens was closed until it installed the required anti-pollution equipment.

Minister of Industry and Energy Miltiadis Evert did not identify the factories he closed temporarily, nor would he name others that have been fined.

A total of 29 industrial plants were fined from \$3,000 to \$6,000 because they polluted the atmosphere, while four others operating in populated areas were ordered transferred to non-populated ones.

Replying to criticism by the opposition in parliament, Evert said, "the government is fully aware of the seriousness of the issue, giving top priority to securing protection of the sea and atmospheric environment."

Evert said his ministry is conducting regular inspection of industrial facilities in the Athens area, and at the same time providing instructions on how they should operate to avoid pollution. The ministry has ordered industries to use oil containing only one percent sulfur, and it regularly measures their emissions.

Evert also said that because the sea in industrial zones near Athens and Piraeus is badly polluted, all factories there were requested to take measures immediately to prevent deterioration of the situation, or otherwise face sanctions.

Finally, Evert announced that a group of experts is drafting a new bill to protect the environment from industrial pollution.

KYRIACOS CONDOULIS

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$150 per year. \$20 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassqw
 Editor-in-Chief Libby Bassett
 Circulation Manager Jan De Pinto
 Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit private organization which seeks to foster public understanding in the United States and Canada of global environment programs, how they affect the quality of life in North America, and the role of international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in WER, which in no way represents the official view of UNEP.

Special Report: Land Reclamation in The Netherlands

THE HAGUE—"While God created Heaven and earth," the saying goes, "the Dutch created The Netherlands."

Indeed, nearly 20 percent of what this country is today was reclaimed from lakes and the sea, beginning in the 17th century when enterprising engineers began draining lakes in the north by windmill. And now, while God may be resting, the Dutch continue to create.

Their latest planned creation—and perhaps their last—is an entire town to be built offshore south of The Hague. Some 3200 acres will be reclaimed from the North Sea and 20,000 new dwellings built, enough for 50,000 people.

The plan, submitted recently to The Hague's city council by a Dutch-owned dredging firm, comes in response to estimates that The Hague will require an additional 20,000 dwellings by 1990. Already this seat of national government is severely cramped for space. About 35 percent of the country's total population, or some 5 million people, live in this area, making it the most crowded section in an overcrowded land—there are 869.9 people per square mile, higher than any other country in the Western world.

The new town is provisionally called Nieuwduinen, which means New Dunes. Its planners, Stevin Groep NV, say it could be completed between 1990 and 1995.

Since 1891, when a Dutch civil engineer, Cornelis Lely, devised a scheme for closing off the Zuyderzee and draining it of water, the Dutch have reclaimed some 407,000 acres, north and east of Amsterdam.

The first step, in the late 1920s, was to stretch a 20-mile-long enclosing dike across the opening of the Zuyderzee to the North Sea, which when closed in 1932 paved the way for turning the sea-water Zuyderzee into the freshwater IJsselmeer. Then the Dutch built the polders of reclaimed land around the IJsselmeer, and since 1966 some 70,000 people have settled on them. More than a dozen villages, mainly agricultural, have sprung up. Dikes—part of a 2000-mile system of dikes throughout the country—protect them from the capricious North Sea.

Now, however, environmentalists have begun to pressure the government into considering very carefully the ecological consequences of completing the fifth and last polder planned for the IJsselmeer—Markerwaard—although an enclosing dike was built just two years ago. They feel that draining the IJsselmeer will affect rainfall for the entire region. It will, of course, leave freshwater fish in the lake high and dry, and it will disrupt the many migratory birds that nest around the meer's shoreline. And environmentalists strongly argue against the government's changed plans for this polder: Rather than being agricultural, planners now want it for a major airport and to absorb expansion from Amsterdam. The environmentalists' campaign has slowed what would have otherwise been swift completion of Markerwaard.

Environmental considerations are also being taken

into account by The Hague's city council in its debate of the Nieuwduinen proposal. But there seems to be general agreement that construction of the new town would improve the environment rather than detract from it. The proposal calls for creating a three-mile long beach as well as sports areas, a small park and a complete range of recreational facilities. The town would be linked to the mainland by tram, road and rail.

Other proposals in recent years by the Dutch for taking some of the sea to create a bigger Holland have included creating a 12,355-acre artificial island 28 miles off the Hook of Holland (a town just south of The Hague) in the North Sea. It has been five years since an international consortium of some 30 companies began studying the feasibility of the idea, which would have included building a petroleum refinery, chemical and petrochemical industries, waste disposal areas, nonferrous plants and tanker-cleaning facilities. The project, said its supporters, would have cost \$3.6 billion and have provided work for 27,000 people. But the Dutch government, influenced by environmental interests, has frequently put off the go or no-go decision, recognizing the significance of establishing such a firm footing in the North Sea and its potentially important ecological impact. A Dutch official said the idea is now gaining favor once again as a means of offsetting unemployment in Holland.

Near Rotterdam, the so-called Delta Project—the damming off of four estuaries at the Zeeland Islands—should be completed on schedule. The last estuary is to be closed off later this year. The project not only makes it possible for surrounding agricultural land to be desalinated but enables the linking together of the formerly isolated islands by roads over dams and their bridging to the mainland, all of which makes them more readily accessible for Rotterdam's overspill population and for recreation.

It appears increasingly likely that the Nieuwduinen project will also go ahead as proposed. At its completion, however, the Dutch may find that there is no further need to reclaim land from the sea, considering population trends. From 1945 to 1965—the period of the country's swiftest growth—half of all Dutch dwellings that currently exist were built. But since 1965, when demographers projected a national population in the year 2000 of 20 million, the birth rate has declined so rapidly that those same demographers now put the population in 2000 at between 14 and 15 million, up only slightly from today's figure of 13,825,000.

So it is highly possible that Nieuwduinen may be the last chance the Dutch will have for continuing a history of creating their own country. There is little doubt, however, that the Dutch will always be engaged in some sort of battle with the sea... to protect what they, if not God, have created.

GARY YERKEY

Mexican Chromate Factory Closed For Third Time

MEXICO CITY—For the third and perhaps last time, a chromate factory in the nearby state of Mexico has been closed by health and environmental authorities for failing to clean up its production process.

After each previous closing of the factory (*WER*, April 25, 1977, p.2), Chromates of Mexico executives promised to install devices to eliminate gases and dust emitted in the production of chrome-plating materials. But, after both reopenings, residents of two towns near the factory, including many factory employees, publicly complained they were still being poisoned by the emissions.

Without admitting that charge, the factory offered to build a new public elementary school away from the plant site and to restructure the potable water system which experts said had become contaminated by the plant emissions. Charges that contaminated air, earth and water had killed 20 residents who died of cancer never were proven.

In late September, the Secretary of Health and Public Assistance closed the factory for its failure to comply with orders issued by the Subsecretariat for Environmental Improvement. A spokesman for the company doubted it would re-open or move to another site.

KATHERINE HATCH

British Tots Sue Ford and Three Big Oil Companies

LONDON—"Baby Takes on Giants of Industry" said one newspaper, headlining an environmental story which has captured popular interest in Britain.

Gulliver Handley, aged 8 months, and Merlyn Alberty-Speyer and Fidel Budden, both aged 2 years, through their parents are suing Britain's three largest oil companies and the Ford Motor Company for damages caused by excessive lead levels in gasoline. The British Petroleum Co. Ltd., Shell UK Ltd., and the Associated Octal Co. Ltd., have, together with Ford, combined assets of over £13 billion (\$24.7 billion).

The families live about 200 yards from the busy Westway thoroughfare in London. They claim that scientific tests show a lead content of 119 parts per million in Merlyn's hair and 72 parts in Gulliver's hair. These levels are way above any accepted safety standards and, they say, have affected their children's behavior and caused brain damage.

The damages they ask for are nominal, and they have said the case will be dropped if the oil companies agree to reduce the lead level in their gasoline. The Ford Motor Company is criticized for its failure to fit cars with filters.

The defendants argue that the claim is a misuse of the

courts, vexatious and without reasonable cause. They say they are acting within legal limits and government regulations and add, if the claimants wish to criticize the government, they should sue through Parliament and the Attorney-General.

Should the claim go to trial and be upheld, thus opening the door to many thousands of parents living in similar conditions, the effect on government policy and the oil companies would be far-reaching.

The parents point out that unlike the United States, West Germany, Russia and Japan, Britain does not exercise strict lead level controls in gasoline (see *WER*, June 19).

BARBARA MASSAM

Developers Clash with Archeologists Over Dublin's Viking Foundation

DUBLIN—Seventeen thousand people marched through the Irish capital to protest plans to build civic offices on a major archeological site. The government and city council told archeologists to leave Wood Quay, where they have been digging out Dublin's Viking foundation.

The controversy has become a classic confrontation between development and preservation of the past. A massive campaign has been mounted, backed by cultural and voluntary organizations and by the nation's main trade unions.

The archeological dig is being conducted by the National Museum, but it has been university professors who have kept the bulldozers at bay for the past year, culminating in a court battle when the site was declared a national monument.

As a result, further exploration of the site was allowed before construction would begin. But the Friends of Dublin, an umbrella group supervising the protest, have now gained such momentum for their campaign that they will not be satisfied with any compromise. They want no civic offices at all on the Wood Quay site. The official attitude is that construction should begin when excavation has been completed.

The site itself is part of the very beginnings of Dublin, with traces of its everyday life. It contains the ghosts of houses and property boundaries, built one upon the other over generations and preserved in outline by the remains of their wattle walls.

Archeologists have found combs, carved pieces of antler, pins, lumps of iron, fish hooks and boat nails, indicating possibly a small fishing industry in the area, bounded by Fishamble Street.

As a compromise, the Irish Hotels Federation suggested a museum be built on the site so it could be preserved to attract tourists and add £3.2 million (\$6.4 million) annually to the national income.

TOM MacSWEENEY

Greece Plans to Use Wastes For Generating Energy

ATHENS—The Greek government is considering using industrial and municipal solid wastes to produce energy.

Minister of Industry Miltiadis Evert has instructed the Public Power Corporation to budget for one or two units that will burn wastes to produce electricity and steam for use by industries, hotels and hospitals.

"With this method we will considerably reduce environmental pollution," Evert said, "and at the same time create a new source of energy for the country's needs."

These units, the first in Greece, will produce 25 megawatts of power. The minister said that paper, glass and metals will be removed mechanically before burning.

At present, all municipal waste is being buried.

KYRIACOS CONDOULIS

Waste Recycling in Europe A Major R&D Study By The EC

BRUSSELS—The European Community depends heavily on outside sources for raw materials while at the same time it produces huge quantities of a potentially rich source of energy—wastes.

To take advantage of this barely tapped resource, the EC's Commission has asked the Community's decision-making body, the European Council of Ministers, to ratify a research and development program to explore methods of recycling municipal, industrial and agricultural wastes. The Commission has asked for 13 million European Units of Accounts (EUA), or \$16.25 million, for the four-year project.

The United States has a number of resource recovery projects under way but generally, experts concede, Europe is a leader in this field. A good assessment of the state of the art has just been published by the Worldwatch Institute, 1776 Massachusetts Ave., N.W. Washington, D.C. 20036. Its excellent paper, number 23, is titled "Repairs, Reuse, Recycling — First Steps Toward a Sustainable Society." It costs \$2.

In Europe, research will go ahead in four areas: household wastes; energy production by thermal treatment of waste; fermentation and hydrolysis of waste; and rubber salvage.

In 1976, the nine nations of the EC produced about 4.2 million tons of waste a day, and every year this amount increases by about 3 percent.

The Commission believes that industry would require financial incentives to improve the technology of waste recycling. But it did not say what action the Community would take to supply these incentives.

GARY YERKEY

To Save Energy, Europe May Label Appliances As To How Much They Use

BRUSSELS—The European Community is considering a proposal to label domestic appliances with "as much information as possible" on their energy consumption. The Community's Commission believes that not only would this lead to improvement in the efficiency of appliances, but also heighten public awareness and thereby cut back consumption.

The proposal was put forward jointly by Commissioners Guido Brunner and Richard Burke. It is expected to be considered and approved by the Community's highest body, the Council of Ministers, in December.

The labeling system would not be compulsory, but would be implemented by the nine member states on a voluntary basis. Other information could be added to the light orange labels, such as water-consumption rates and noise levels.

"The energy-saving potential of the labeling system is significant enough to make it a worthwhile component in the Community's program for the rational use of energy," a spokesman said.

Running domestic electrical appliances accounts for some 4.8 percent of gross energy consumption in the European Community. The Commission estimates that about 1 percent of total energy consumption could be saved by 1990 by improving the efficiency of household appliances.

While the labeling proposal will not in itself result in energy reduction, analysts here say it will certainly heighten consumer awareness and perhaps even prompt an industry-wide movement to develop more appliances that will use less energy.

SPECIAL TO WER

Portuguese Workers Lose Fight To Retain Their Only Park

LISBON—Construction of a school is usually cause for rejoicing in Portugal, where illiteracy runs at 35 percent. So the town council in Loures, a densely populated working man's suburb of Lisbon, was nonplussed when 2,000 persons signed a petition against a new high school. A residents' association protested plans to put the building on a designated greenbelt recreation area, the only open space available to a neighborhood of high-rise apartments. When hundreds of residents tried to bar workmen from starting construction, 10 anti-school demonstrators were injured and others detained in a struggle with police. Local politicians called for negotiations. Loures town council announced that the proposed school would be prefabricated—only temporary until a permanent building could be erected elsewhere.

MARIAN BLACK

British Grants to Insulate Attics in Five Million Homes

LONDON—"Many of our older houses are no more efficient in energy-saving terms than a medieval castle," said Ernest Armstrong, Britain's Parliamentary Under Secretary of State to the Department of the Environment, launching an attic insulation publicity campaign.

Last December the government introduced a 10-year attic and water pipe insulation program aimed at public sector housing (WER, March 13, p.5). The present campaign which started on September 17th will do the same for an estimated five million private dwellings with no attic insulation at all.

Owners will be able to approach their local councils for grants towards installation costs. The campaign is spearheaded by advertisements in national newspapers and national distribution of free books and leaflets.

If the objective of insulating around half a million houses a year were achieved, savings of one million tons of oil equivalent per annum, worth £70 million (\$137.2 million), would result after 10 years. BARBARA MASSAM

Ireland Torn Between Preserving Environment and Attracting Industry

DUBLIN—Irish officials are caught in a bind between wanting to preserve what may be the best environment in the European Community and the need to attract industries for its young, unemployed workers.

There is strong pressure on the government to find new industry to cope with high unemployment in this country of four million people. Ireland is also developing one of the biggest "young" populations in Europe, in the age group up to 30 years.

These pressures are worrying environmentalists, who fear that protection standards may be reduced to attract industry. There have been some allegations that "dirty" industries may move to Ireland, and there have been major environmental controversies over chemical plants and an asbestos-using factory. But the Industrial Development Authority denied that it is lowering its standards to attract industry. In its annual report, the I.D.A. admits problems in coping with the number of job losses which are affecting its jobs-creation target. In private briefings, I.D.A. officials have time and again spoken of industries with which they would not deal because they were considered "dirty." No names of such industries have been given because of the confidentiality involved.

At the same time, there are growing demands for a national policy on the creation, through local government authorities, of dumps for the disposal of industrial wastes, particularly toxic wastes. TOM MacSWEENEY

Japan and U.S. Increasing Mutual Environmental Activities

WASHINGTON—The United States and Japan are substantially increasing their mutual environmental activities. At the third annual meeting here of the Joint Planning and Coordination Committee, delegates agreed to add water conservation, controls in water quality management, and environmental economics and incentives for pollution control to the 11 projects already underway.

Reviewing Japan's efforts in the environmental field, Hisanari Yamada, director general of the Japanese Environment Agency, said they are stressing land-use planning, environmental impact assessment, transportation-related pollution, air and water quality and control of chemical substances.

Barbara Blum, deputy administrator of the Environmental Protection Agency, told delegates that the U.S. has been focusing on consolidating and integrating all federal environmental efforts.

Most of the meeting was devoted to discussions of toxic substances control, pollution control practices in the iron and steel industry, and energy. In addition, the U.S. made presentations on nonpoint source pollution controls and federal legislation for marine water quality control. PETER PHILIPPS

Latin American Bishops Discuss Politics and Ecology

PUEBLA, Mexico—Ecology as a political and religious subject is on the agenda of Latin American bishops this month at their first general conference since 1968. The subject: The Catholic Church as a pastoral force versus various socio-political forces such as the arms race, and it is indicative of the roles played by the church in Mexico, and Central and South America.

The conference working paper states, "The reckless waste of powerful and rich nations destroys nature while an immense mass of human souls cannot develop itself sufficiently to satisfy basic needs — and that includes the threat of starving to death.

"The church cannot remain passive before a problem of such magnitude that threatens the livelihood of human generations."

Urbanism and industrial expansion aggravate the problem: "Except for some cities well-balanced in population and offering activities for human enrichment, urbanism in Latin America is an alarming phenomenon: Its victims are the weakest, living in 'belts of misery,' lacking elemental services in contrast to the luxury of the rich neighborhoods."

KATHERINE HATCH

In Brief...

New UNEP Information Chief

George Kamau Muhoho has been appointed Director of the Division of Information of the United Nations Environment Programme (UNEP), based in Nairobi. He succeeds Alastair Matheson, who is retiring.

Muhoho was born in Kiambu, Kenya, in 1938, and trained as a Roman Catholic priest in Kenya, Tanzania and Italy. He resigned from the priesthood three years ago.

Since 1974, Muhoho has headed the National Environment Secretariat in the Kenya President's Office. He was chairman of the preparatory committee for Habitat, and at the Habitat conference in Vancouver, Canada, in 1976, he was elected chairman of Committee I.

Philippines Requires EIS

No enterprise can be registered or be eligible for incentives from the Philippine Board of Investments (BOI) unless environmental clearance is secured from the Ministry of Ecology and Human Settlements. Clearance comes in the form of an Environmental Impact Statement which explains the choice of location, pollution facilities to be set up, disposal of waste and related activities. The BOI also decided that no advance authority to import capital equipment will be granted unless an EIS is submitted.

Sahara Groundwater Project

Khartoum is proposed as headquarters of a transnational project to explore and develop an untapped sandstone aquifer on the borders of Egypt, Libya, Chad and the Sudan.

The project is part of a plan arising from last year's Nairobi U.N. Conference on Desertification. The project is expected to take seven years to complete.

Libya and Chad are almost entirely dependent on ground water for their needs. Egypt and the Sudan have the Nile, but away from the Nile valley they, too, depend on ground water, mostly in sandstone aquifers. The aquifers range from a few meters below the surface to several thousand meters deep.

The North-East Africa pilot project, the subject of the new plan, covers about 250,000 square miles of desert around the borders of the four countries. To assess its potential, the source of the water and its possible replenishment must be defined, and the water flow within the aquifer must be determined.

Bauxite Runoff Contaminates

The illegal exploitation of bauxite deposits is destroying important agricultural zones in the Cauca Valley in southwestern Colombia, according to a recent study by the University of Tolima Ecological Group, the most important environment research organization in the country.

The study showed that thousands of peasants have flocked to the bauxite-rich region, where intermediaries pay \$3 a day (a high wage by Colombian standards) to unskilled miners. The bauxite is later sold to local industries. None of the intermediaries is licensed by the Ministry of Mines and Energy, which theoretically is in charge of such activities.

Due to the primitive methods used, at least 50 percent of the bauxite is washed into local rivers, contaminating the entire region of Jamundi. Moreover, the soil removed during the mining is not replaced in contrast to strict controls enforced by Canada and other industrialized producers of bauxite.

Trees Clear Canton's Air

In an effort to tackle the ever-worsening pollution problem, workers from chemical works and other factories in the southern Chinese city of Canton are planting trees that can absorb toxic gases.

Over 300 factories in the city have planted 68,000 saplings since early this year, 30 percent more than in the same period last year.

Oleander, alpine fig, rose apple and sweet osmanthus have been shown chlorine-resistant, while willow fig and beefwood are resistant to sulphur dioxide. Fan palm and 18 other trees are resistant to hydrogen fluoride, according to data collected by scientists in Kwangtung Province.

So. Korea to Measure Pollution

The South Korean Government is planning to set up a network of 333 pollution measuring stations throughout the country to enforce an environment protection law that came into effect on July 1.

A national environmental research institute will also be established to undertake surveys and research projects aimed at preventing pollution.

A total of \$41.2 million has been pledged by the government for the anti-pollution effort.

Fish Need Green Trees Too

Bavaria's Minister for Environmental Protection, Alfred Dick, told the State Fishing Association that fish not only need good water, but trees and bushes along the shores as well.

The trees and bushes, he explained, provide the necessary shade for still water areas used for hatching purposes. He said this greenery must be protected to assure fish of a natural habitat.

Peking to Move Out Industry

Peking's town planners have decided to remove industry to turn the Chinese capital into a center of culture, education and scientific research. Peking was a consumer city before the Communist takeover in 1949, but now it has metallurgical, engineering, power, oil, and other heavy and light industries. No timetable for the clean-up has been released.

UN's Habitat Underfunded

Only about one million dollars have so far been paid in to the United Nations Habitat and Human Settlements Foundation (UNHHSF), for which a \$50 million target was set last May by the Governing Council of the UN Environment Programme (UNEP).

UNHHSF was set up to strengthen national environmental programs as they relate to human settlements, particularly in developing countries. It aims to provide seed capital, plus technical and financial assistance so that domestic resources can be mobilized to improve existing low-standard housing.

UNHHSF, which has so far operated under UNEP, becomes part of the UN Center for Human Settlements (UNCHS), now being established with headquarters in Nairobi. Arcot Ramachandran, of India, has been appointed Executive Director of the center, and is taking up his new post in Nairobi this month.

Kenya's Toxic Animal Feed

Favorable weather conditions which produced bumper harvests in 1977 have led to widespread concern in Kenya about the discovery of poisonous mycotoxins in stored food stocks.

The mycotoxins have so far been located in animal feeds, and particularly in dog food, manufactured by Kenyan processors from locally-grown grains and groundnuts. Dog owners have been advised to use alternative pet foods after 100 dogs died, and some of the main manufacturers have withdrawn stocks of dog foods.

Veterinary experts say the dogs died from aflatoxin poisoning produced when fungal molds developed on stored grains. Maize, barley, millet, soya and groundnuts have all been found to develop poisonous molds when stored under moist conditions, and high rainfall in Kenya in 1977 produced a high moisture content in many stored foods.

Maize meal is a staple food for millions of Kenyans, and widespread concern has developed, expressed in newspaper comments, that there may be a contamination problem.

Health Ministry officials say tests conducted so far have shown no danger to human beings. But investigations are continuing.

Bangkok Improves Workplaces

Industrial plants located in the Bangkok area of Thailand have been told to improve their working conditions in order to protect public safety, health and social serenity before the new Town and City Planning Act comes into effect within six months—or face expulsion.

South Indian Pollution Serious

Health officials in the Southern Indian state of Tamil Nadu say air and water pollution has assumed "serious proportions." Despite periodic surveys, monitoring and warnings, industries are not meeting the required standards.

Several industries' licenses have been cancelled for non-compliance. Other industries have preferred to shift their units to interior areas because of the high cost of treating their effluents.

Pakistan Plans for Water Use

The Pakistani Minister for Labor, Rural Development and Local Government has announced that the priorities set in the Fifth Five-Year Plan for rural development have been changed.

Provision of drinking water to all villages has now been accorded top priority. The government has directed that the target be achieved within six months.

He said his Ministry was issuing a questionnaire to learn the requirements of the rural population in this connection.

The Pakistan government, under an accelerated program, will spend \$79.7 million, including \$10.5 million in foreign exchange, to fight the dual menace of waterlogging and salinity during the current 1979 fiscal year.

Rockefeller Foundation to Give Energy Grants

The Rockefeller Foundation plans to award 10 to 20 small grants for research projects that promise fresh insights into the relationship between energy and alternative development strategies for Third World countries. Preference will be given to work that is interdisciplinary in approach and to candidates from developing countries. For further information and applications write: Energy and Development Strategy Grants, International Relations Division, The Rockefeller Foundation, 1133 Avenue of the Americas, New York, N.Y. 10036.



World Environment Report

VOL. 4, NO. 21

Copyright © 1978. Center for International Environment Information.

OCTOBER 9, 1978

Swiss Ski Area Developers Collide On New Trails With Ecologists

BERN—The Swiss Alpine Club, spearheading local environmental groups, has filed an official protest with the federal government here to prohibit construction of a planned World Cup downhill ski trail above Grindelwald in the Bernese Oberland.

The complaint noted that the construction of this trail would involve displacing some 63,000 cubic feet of earth and slicing out a sizable amount of forest. It referred to this as "an inadmissible transformation of Alpine pasturage that would provoke irreparable ecological damage."

Although the target is specific—the projected 3.6 kilometer long trail—the case will have a far-reaching impact on future planning of new ski areas. In effect, environmentalists are serving notice that such expansion has gone far enough and from now on they are prepared to fight.

Skiing alone brings an estimated 3 billion francs (about \$160 million) into the country each year. There are additional spin-off earnings in everything from the hotel, food, airline, train, and fuel industries to the sale of tourist-trap pottery and bumper stickers.

The Alpine Club's action has forced promoters of the Oberland project to hold up all work until the government makes a decision. This alone is a victory, since snow is already falling above 3,000 feet, and it is doubtful that the project can be completed this year if the delay continues.

The club has filed another such complaint against a similar project, this time in the Valais region.

"We have enough ski trails in Switzerland," club secretary Walter Strasser declared. "They can organize the events on these or else on natural terrain." He said that his club did not consider the new trail—expected to cost 600,000 francs (less than \$300,000)—necessary for the Swiss tourism.

"People already complain that there are not enough parking places for autos near the existing trails and lifts," Mr. Strasser said. "Grindelwald has more than enough tourists and no one will suffer if this project is dropped."

Albert Schlunegger, President of the Grindelwald Ski Club, has not been impressed by the complaints of ecologists. "The bulldozers are here, but we will await a decision. I am not disturbed because I have no doubts but that the trail will be built."

WILLIAM G. MAHONEY

Kenya First African Nation To Use Geothermal Energy for Electricity

NAIROBI—Kenya plans to become the first black African state to use geothermal energy to supplement its electric power supplies.

After extensive tests, detailed plans are now being prepared for a 15 megawatt power station at Ol Karia, 50 miles from Nairobi in the Great Rift Valley, where vast reserves of boiling water exist in subterranean lakes, producing steam which reaches the surface at temperatures up to 600° F. (160° C.)

A Canadian expert working with the Kenya Government, Dr. Tom Tuschak, said some calculations indicated that Kenya could obtain 500 megawatts of power from the Ol Karia site—more than the total amount of electricity now used in Kenya.

The United Nations Development Program has contributed \$2 million to cover the costs of surveys and initial drilling at the site, and the World Bank is expected to provide much of the financing for the new scheme, expected to go into operation in the early 1980s.

Problems involved in using geothermal energy are the high cost of equipment, because of the high temperatures and the complex chemical content of the water, and the question of disposing of effluents from the plant. The environmental aspects are now being closely examined; one possibility is that waste water may be re-injected back into the earth, another is that some of the chemicals may be capable of extraction on a profitable basis.

Ol Karia is in a remote area, inhabited by only a few nomadic tribes, but the Kenyan authorities are cooperating with experts of the U.N. Environment Programme, based in Kenya, to ensure that environmental questions are taken fully into account in the final scheme.

CHARLES HARRISON

In This Issue

Sweden's Stream Power	2
Mediterranean Oil Combating	2
Special Report: Brazil	3
Coke's New Shape	4
Nickel Allergy	4
Focus on Solar Energy	5
In Brief	7

Old Mill Stream Power Stations Going On-Stream Again in Sweden

STOCKHOLM—For environmental reasons, Sweden has long since put a stop to further exploitation of its great river resources even though the need for energy and its cost is constantly rising. In addition, a big question mark hangs over the future of nuclear power in Sweden—again for environmental reasons.

Faced with a rising oil import bill of more than \$3 billion annually, the Swedish government meantime has been researching and experimenting with alternative energy sources—primarily wind and solar power and so-called energy forests to cut back reliance on fuel imports.

But now the Swedish Power Association has come up with one of Sweden's forgotten energy reserves—some 1,500 tiny power stations along small streams which once drove saw mills, flour mills and forges. The majority were abandoned years ago for economic reasons. In view of present-day energy costs, it pays to revive many of these backyard stations, and there are no environmental objections. There is a push for similar action in France and in America's northeast.

Acting on the Power Association report, the Swedish Government as of July 1 set up a fund of \$91 million to encourage rehabilitation of the mini-hydropower stations. It will subsidize up to 35 percent of the cost of rebuilding with priority for plants shown to have a generating capacity of at least 100 kilowatts.

The National Industrial Board, responsible for examining and approving applications for state support, says "interest has been very great" among owners of the old power sites.

The Power Association has already surveyed approximately 1,000 mini-hydropower station sites, including new ones, and estimates they could generate more than two billion kilowatt hours of electricity annually.

New techniques ideal for mini-hydropower stations have been developed including an automated turbine which would make an attendant unnecessary. The supervision required for the old-fashioned systems, which needed constant regulation of the water flow, was one factor that made them uneconomical. *SPECIAL TO WER*

Plans for Combating Mediterranean Oil Spills Move Ahead Slowly

VALETTA, Malta—Coordinated contingency plans to clean up major oil spills in the Mediterranean are moving ahead, but slowly, says Philippe Le Lourd, Director of the Regional Oil Combating Center.

The center, established here 20 months ago, still is not fully operational because most of the 18 countries that border the Mediterranean have not yet come up with

national contingency plans, much less bilateral or multinational programs.

Only four coastal states have programs to combat oil pollution—France, Italy, Greece and Israel. Some, like Morocco and Libya, have done virtually nothing, Le Lourd said, and others, like Egypt and Algeria, have done little to solve the problem.

After a meeting in Monaco last year during which the Mediterranean nations were urged to cooperate and support the center, each state was told to develop plans and capabilities for dealing with oil pollution emergencies. It was suggested they work with nearby countries as well.

The Malta government is now preparing a plan based on suggestions made by the center. When approved, Malta's plan will be the first given professional input by the center.

Le Lourd said that several countries—Tunisia, Lebanon, Morocco, Algeria and Libya—have asked for help.

One of the first tasks, he believes, is to draw up a complete inventory of equipment available in the Mediterranean. This was a major discussion point at a four-day workshop the center held recently.

At the moment Mediterranean countries are not collectively ready to combat an oil spill of "Amoco Cadiz" proportions and, Le Lourd said, no country could tackle such a massive spill on its own. Describing the state of Mediterranean readiness, Le Lourd commented, "A child unable to walk could not be expected to run."

Le Lourd said that in order to walk awareness of the problem must be created. To run, the center must give each country progressively precise details of the problems to be mutually tackled.

The center is giving priority to training. Le Lourd is offering 25 training fellowships and hopes to be able to train more than 100 people in all. **FREDERICK BARRY**

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$150 per year, \$20 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive DirectorDr. Whitman Bassow
Editor-in-ChiefLibby Bassett
Circulation ManagerJan De Pinto
Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit private organization which seeks to foster public understanding in the United States and Canada of global environment programs, how they affect the quality of life in North America, and the role of international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

Special Report: Billionaire's Brazilian Project Changes Ecosystem

MONTE DOURADO, Brazil—Engineers and ecologists working for American billionaire Daniel K. Ludwig in the Amazon jungle are massively transforming the ecosystem of a nation-sized hunk of previously virgin forest. They believe their work will avoid significant environmental damage; others do not.

Ludwig, 81, has invested 700 million dollars over the past 11 years in the development of a forestry-industrial-mining-agriculture complex on a 3.75 million acre (1.5 million hectares) tract of Amazon jungle near the meeting of the Jari and Amazon rivers, 210 miles (336 kilometers) upriver from the mouth of the Amazon.

His Jari Florestal e Agropecuaria Ltda represents the largest development project ever created by an individual entrepreneur and features the world's biggest tree farm and what will be the largest rice plantation. An open-pit kaolin mine is also in operation, extracting the fine white clay that goes into paper finishes, medicine bases and processed foods. And, serendipitously, good quality bauxite has been found there as well.

A total of 25,000 people already live in Jari's five towns, situated in an area that was previously home to only a handful of squatters in stilt houses along the river bank. The Jari population is supported by a network of schools, clinics, supermarkets and clubs; 270 miles (430 kilometers) of road; private airline and steamship services and a railroad.

The big business of Jari is forestry with a 500,000-acre (200,000 hectares) tree farm of 40 percent Caribbean pine and 60 percent gmelina aborea, a fast-growing species brought by Ludwig from Southeast Asia for a first large-scale commercial planting attempt.

Both species were chosen for their fast growth and adaptability for processing (by a complex of a 30,000-ton floating industrial plant and generator built in Japan) and barged halfway around the world to Jari this year.

The gmelina will be thinned three times and clearcut after 10 years even though the pine's full rotation cycle is 16 years. The first crop will be converted into pulp by the floating factories early in 1979.

Jari foresters admit the replacement of the 125 species of trees normally found on each hectare of virgin Amazon forest by two non-native trees represents a change in the ecosystem. They say, however, that the new trees' roots will hold down the thin Amazon topsoil, avoiding the erosion problems that have marked other Amazon projects destined for cattle raising or road building.

Jari engineers are leaving large pieces of native forest in place to provide a continuing habitat for local flora and fauna.

Dr. Howard S. Irwin, president of the New York Botanical Garden and an expert on the Amazon Valley rainforest, says he "deplores" the way the tree farm was created. Seventy-five percent of the nutrients in tropical rainforests are tied up in the trees themselves, he said.

When the trees were bulldozed and then burned, rather than allowed to decay in situ, "the nutrients were vaporized. This will lead eventually to a non-productive state for these trees because both of these new species will require the same nutrients at the same time—because they were planted at the same time.

"We deplore also the leveling of the land. It was hilly country," he said, but by bulldozing it flat, "it has brought poor soil to the surface. We felt some moderation—to clear cut on the lower portions and leave the hilltops intact would be best. But our counsel was not heeded."

Dr. Irwin says, "It is a frustrating event, which will lead to a desertous area. The kind of forestry he's set up is not sustainable in that ecosystem." Once the soil is leached and trees can no longer grow, "it will be a long time before it comes back to stability; our research shows it may take up to 200 years. This is the problem with tropical enterprises: They move in, make a killing and move out, and the people there are left with a mess on their hands."

Irwin admired, however, the way Ludwig's other Jari efforts were planned.

Jari's pulp engineers say they foresee no environmental problems with the new pulp plant, especially constructed by Japan's Ishikawajima Heavy Industries to the highest standards of water and air pollution controls. The plants' industrial water systems are completely self-contained and will not be dependent on river water for cooling or flushing, an Ishikawajima engineer said.

The plants will be fueled by "hogfuel" wood waste from a sawmill operation, eliminating the need for large amounts of fossil fuel, the engineer said.

Ludwig's rice operation, presently with 8,000 acres (3,200 hectares) under cultivation and another 27,000 acres (10,800 hectares) being drained and prepared for plantation, will also drastically change the Amazon environment by diking off a floodplain along the main branch of the Amazon River. Current production of 30,000 tons per year is expected to reach 130,000 tons per year, making the Jari plantation the world's largest rice project, Arend Reedijk, the rice project developer said.

Another significant environmental change will be in the social area because of the massive influx of colonizers, workers and support personnel into the previously unsettled Amazon area.

Ludwig at 81 undoubtedly will not live to see Jari bear full fruit, and his associates believe he took on the Amazon venture to prove that "the green hell" can be settled, developed and tamed.

The success of Ludwig and smaller, similarly pioneer ventures by Brazilian government companies in other parts of the Amazon Basin, could lead to a fuller exploitation of Amazonia's untapped mineral and agricultural resources and threaten the future ecological balance of the still largely unexplored jungle.

SPECIAL DISPATCH TO WER

Coke Briquettes May Be the Fuel Of the Future for Steel Industry

GENEVA—Charcoal briquettes, like those many Americans use for outdoor cooking, may well be the fuel of the future for the steel industry.

A study prepared by the United Nations Economic Commission for Europe (ECE) predicts that "formed coke," or briquettes, could replace conventional blast furnace coke. As a result, the steel industry's dependence on dwindling and expensive supplies of coking coal would be significantly reduced.

Formed coke is produced from coals which cause less pollution, and they are cheaper, more abundant, and available because they are unsuitable for producing coke by conventional means.

The report said that formed coke could become a convincing alternative to coke developed from high-quality coal, provided the technological problems are solved.

So far, no extended trials have been undertaken, but, the report said, "the suitability of formed coke for the blast furnace, particularly as a partial replacement for oven coke, has been demonstrated in a limited number of blast furnace trials, many of which have been of short duration." Large, formed-coke pilot plants coming into operation will provide the means to arrange longer demonstrations, the ECE says. "If they are successful, it can be expected that formed coke production on a commercial scale will be underway in the next decade."

Formed coke as a blast furnace fuel is attractive for Europe because it would reduce the continent's dependence on imported coking coal. The U.S.A., USSR and Australia, which have abundant coking coal, could make savings using briquettes because high-quality coking coal must be shipped over long distances at high cost.

Several technological processes to manufacture the briquettes have been developed separately in Western and Eastern Europe, the United States, the Soviet Union, Japan and Australia.

Briquettes may be made from untreated, oxidized, partially or fully carbonized coals, or from a blend of coals that have been subjected to different treatments. A major distinction between the types of processes can be made in terms of the temperatures at which the briquettes are formed, either at low temperatures using an additional binder, usually pitch, or at high temperatures. In hot briquetting the forming temperature usually lies within the softening range of one of the component coals so that the coal itself acts as a binder.

Although concern about coal supplies provides the main impetus for development, enhanced environmental factors also play a part, the ECE study says. Use of briquettes would reduce pollution, thereby improving working conditions and the surrounding environment.

WILLIAM G. MAHONEY

Turkey Making A New Clean Fuel From Coal Dust and Cellulose Waste

ISTANBUL—A new type of "clean coal," made of industrial wastes and lignite dust, will soon be produced in Turkey. Because the new coal is a higher energy fuel and cleaner-burning, the manufacturer expects it will reduce air pollution in the nation's major cities.

Simtel, a private industrial firm, has already produced the coal on an experimental basis. It is now building a new factory at Tekirdag, about 150 miles west of Istanbul, to manufacture it on a commercial basis. The company has invested \$5 million in the venture and expects to get a \$3 million loan from West Germany.

The new fuel is produced from the dust of lignite coal—Turkey reportedly wastes five million tons of this dust every year—and cellulose waste that until now was poured into Izmit Bay by the state-owned newsprint plant SEKA. This new process should help to clean the polluted waters of the bay.

SAM COHEN

Nickel in Everyday Objects An Increasing Cause of Allergies

GENEVA—An international group of researchers reported that an increasing cause of eczema and allergies is the nickel found in such mundane items as earrings, casseroles and wrist watches.

The report was made at a conference of the "European Group for Contact Eczema" that met here under the auspices of the World Health Organization (WHO).

A Swiss participant—Dr. Robert Brun of the University of Geneva—stated that almost 90,000 persons in Switzerland suffer from contact eczema and of them 15 to 20 percent are allergic to nickel.

The eczema is generally confined to the areas of skin contact. But the allergy stays with the victim for life. U.S. studies have found that of all the metals, nickel is the most common producing an allergic reaction in women.

The researchers noted that the nickel-caused allergies were identified at the end of World War II. Powder detergents and other cleaning materials appeared on world markets, and many such washing products were then rich in nickel. They said that women suffer much more from nickel allergy than men—by a two to one margin. This, they said, was explained not only by the fact that women had more exposure to detergents, but also because they were exposed to many other contacts with nickel, such as earrings, lingerie hooks and zippers, for example. Men, more often than not, developed wrist eczema from wrist watches. But the researchers found that even babies were victims and that snaps on plastic pants were usually the culprit.

SPECIAL TO WER

Many Nations Focus Their Energies on Solar Projects

Cloudy Belgium Says It's Possible

BRUSSELS—The sun over Belgium has that northern European way of failing to appear very often. When it does, it comes down diffused, filtered by haze. So, when the subject of solar energy comes up in conversation here, it is usually about its use somewhere else, and how wonderful, considering that more than half of the country's present energy needs are met by petroleum products, it would be if the sun cooperated more willingly.

Yet the situation is really less cloudy than it seems. Take the recent week-long seminar held here on the future of solar energy in Belgium where Belgian scientists called the prospects promising and urged quickened research, even application.

"A large part of the heating needs of an average Belgian home could be met by solar energy," said Roger van Overstraeten, a professor at the Catholic University of Leuven and technical coordinator of the National Research and Development Program on Energy. "Specifically, 40 percent of the heating needs of a home consuming 15,000 kilowatt-hours per year could be met by an installation having 50 square meters of solar collectors, as well as a storage unit about half that size." But Professor van Overstraeten called the current cost of solar-energy equipment still too expensive for the average family.

In a report released at the seminar, the Belgian Office of Industrial Promotion estimated that a solar-energy unit capable of supplying heat and hot water to an average single-family home, could not cost less than 275,754 Belgian francs, or about \$8,617. To some seminar participants this seemed like a reasonable outlay for an environment-minded family, especially in light of high incomes in Belgium (per capita income is slightly higher than in the U.S.) and the savings that would result after installation of the unit.

Meanwhile, it was reported that the use of solar-energy units in Belgium remains sporadic. They are confined mainly to public facilities such as swimming pools and low-cost housing.

In Belgium, however, the future of solar energy will most likely be decided not in industry nor in public swimming pools but in the home. For it is domestic consumption that accounts for one-quarter to one-third of the country's total energy usage, with, not surprisingly, home heating taking the bulk of that percentage. The immediate hindrance to increasing home employment of solar energy units besides cost, say experts, is ignorance. It took 30 years of study and education, they say, before nuclear energy became competitive. GARY YERKEY

Mexico Building Solar Housing

MEXICO CITY—Two small housing developments, completely powered by solar energy, will be built in Mexico with West German help. For the first time, made-in-Mexico solar component parts will be used.

Known as the Sontland Project, work on the settlements is expected to begin this year and be completed within 18 months. Announcement of the project was made here by West German Ambassador Norman Denker and Mexico's Secretary for Public Works and Human Settlements, Pedro Vazquez.

The first will be a rural settlement of a few dozen houses, a school, water desalinization plant, 10 miles of roads and a paved airstrip to be built near the community of Las Barrancas in Baja California South. A similar but smaller project will be built in the city of Mexicali, near the U.S. border in Baja California North.

Component parts for the large solar energy cells to be used in the project are in production in Mexico for the first time, and generators should be in operation by next year, it was announced by the National Council of Science and Technology. KATHERINE HATCH

India Advanced in Solar Technology

NEW DELHI—There are at least 40 solar research institutions in India.

An official government release reports on their projects ranging from solar stills supplying drinking water to two villages in Gujerat, to solar driers in use on several farms and dairies to dry milk for milk powder, and to solar heaters providing hot water for a five-star hotel in Delhi and space heating for a factory at the foot of the Himalayas.

A solar-powered electric station is being set up in Madras, while a geothermal power station is planned for Himachal Pradesh. Scientists have built wind-electric generators, and windmills for pumping water have been set up.

Solar energy is being used both for rice drying and for parboiling rice. The Indian Institute of Technology at Madras has designed a solar desalinization plant that produces 500 liters of potable water a day.

Since solar energy is clean, non-polluting and non-depleting, India is stepping up research to meet the needs and demands of future generations. The government this year sanctioned 65 million rupees (more than \$8 million) for solar energy research. R. MURALI MANOHAR

Africans Say Solar Energy Is Key To Development

NAIROBI—There is an urgent need for greater use of solar energy in most African countries, African representatives agreed during two conferences called to focus on using the sun's energy for development.

At the conference in Nairobi, it was pointed out that costly imported oil, wood, and cowdung now supply 90 percent of eastern Africa's energy needs. Kenya's Minister of Water Development, Dr. Gikonyo Kiano, warned: "One of the ways that man unavoidably causes desertification is his search for fuel to cook and to have light for his household. He has to get firewood, or he cuts down trees for charcoal. Unless man gets an alternative source of cheap fuel, he will continue endangering the environment and spreading desert conditions in search of his energy requirements."

The conferences to discuss increasing uses of solar energy were organized by the European Economic Commission as preliminary meetings before a full-scale solar energy conference that will be held next March in Varese, Italy.

The Varese Conference is expected to draw up to 300 participants from all over the world. Its purpose is to evaluate present techniques in both developed and developing countries; discuss the technical, economic and financial aspects of solar energy development in rural areas; and to draw up guidelines for increasing the use of solar energy for development.

The conclusions of the Varese conference will be submitted to the United Nations Conference on Science and Technology for Development, to be held in Vienna later in 1979.

However, the ECE believes that the knowledge now available can be of immediate value to many developing countries, particularly those in tropical zones. Discussions at the conference in Nairobi (for East Africa) and Bamako, Mali (for West Africa) included using solar energy for water pumping and distillation; the feasibility of self-contained solar-powered electrical systems for remote areas; and the processing and refrigeration of foods by solar energy.

A demonstration solar cooker, installed by the West German government at Nairobi University, got mixed reviews. It worked well enough even though its mirrors had to be frequently adjusted, but cooking had to be done outdoors, which is against traditional African custom, and it did not work in the evening, which is when most African cooking is done.

Kenya said it was prepared to cooperate in setting up a regional research and development center. And Kenya and the other delegates — from Ethiopia, Lesotho, Mauritania, Rwanda and Zaire — called for international cooperation on a large scale (see *WER*, Sept. 25, p. 5).

CHARLES HARRISON

New Trash Collection System Transforms Sierra Leone's Capital

FREETOWN, Sierra Leone—"Trailer dustbins," or trash bins, are transforming the appearance of Freetown, capital of the West African state of Sierra Leone. This small but congested city has long had a problem of refuse collection, which was only partly solved by building large, stationary bins in populated areas.

The immovable bins soon became chipped and broken, rubbish fluttered about the streets, traffic jammed in the narrow roadways as garbage trucks tried to scoop up refuse, and the only beneficiaries of the mess were the vultures that perch on virtually every tree branch.

Now a local firm of auto mechanics has built a smaller metal bin that has two wheels and hooks so it can be towed.

Freetown residents are enthusiastically using the new trash bins, which are frequently collected by jeeps that do not cause congestion in the narrow streets. The jeep brings an empty bin and leaves it in place of the one that is towed to the dump.

SPECIAL TO WER

Lima Looking To Trolleys As Solution To Its Mass Transit Problems

LIMA—Ecologists and town planners agree that Lima has to rethink mass transit. The state-run electricity company for Greater Lima is studying the possibility of reintroducing trolley-buses here in an effort to provide a desperately needed mass transportation system without causing further atmospheric pollution.

At the moment, the public relies on an inadequate bus service and a network of privately-owned minibuses. Using diesel fuel, many old vehicles—the majority in Lima—can cause five times the amount of pollution emitted by a well-maintained vehicle (*WER*, August 14, p.5).

The general manager of the electricity company, Ricardo Tirado, says that trolleybuses would be economically feasible in the two central lanes of the Expressway—a 10 kilometer motorway which runs from downtown Lima to Chorrillos, a seaside suburb. And, as he points out, they would be comparatively quiet and comfortable.

Since Lima is already supplied by hydroelectricity, the proposed system would be the cheapest available. The cost of gasoline makes it virtually impossible to consider more conventional forms of mass transport. Plans for a subway—requiring huge capital investment—have quietly been forgotten.

If the experiment on the Expressway were successful, Electro-Lima would consider the possibility of extending the system throughout the city. LORETTA McLAUGHLAN

In Brief...

US-Philippine Joint Venture

A new Filipino-American joint venture, Natural Energy Systems, Inc. (NES), has been established to promote solar, geothermal, and wind energy-using devices in the Philippines. The company represents 10 U.S.-based manufacturers of solar energy equipment, including Arco Solar Inc., a subsidiary of Atlantic-Richfield Co. which makes solar power modules that transform solar energy to electricity; Acurex Corp. manufacturer of shallow and deep-well solar irrigation systems and solar collectors; and Rox International, Inc., maker of freon engines and generators.

Trees May Save Sperm Whale

Australian ecologists are hoping that the sperm whale can be saved from destruction by planting trees. Agronomists are trying to grow the Jojoba (*simmondsia chinensis*) tree, native to the deserts of Mexico and California, in Australia. The seeds of the tree can be made into an oil having the same qualities as whale oil.

Malaysia to Develop Biomass

A Malaysian government official said recently that biomass, a fuel derived from wood and other plant sources, will likely develop as a significant alternative source of energy because it can be obtained as a by-product of the plantation and timber industries.

Arshad Ayob, Deputy Director-General of the Economic Planning Unit in the Prime Minister's Department, said a related field for the development of biomass was the

production of biogas through the decomposition of organic waste from domestic as well as agricultural sources. He said that although Malaysia had some petroleum resources and undeveloped potential for hydroelectric generation, in the longer term it was necessary to develop other sources of energy.

Peru to Research Fauna

The Peruvian organization for the evaluation of natural resources has signed an agreement with UNESCO (the United Nations Education, Science and Cultural Organization) and UNEP (The United Nations Environmental Programme) to carry out a research project on jungle fauna in the Amazon.

Peru has already carried out a variety of pilot projects including one named "Man and the Environment" which was performed under the auspices of UNESCO in a large zone known as Genaro Herrera in the Amazon jungle.

EC Delays Radiation Measures

The Executive Commission of the European Economic Community (EEC), headquartered in Brussels, recently approved a proposal of the Council of Ministers (the highest EEC body) to delay for another two years the application of a 1976 directive setting forth measures relating to the protection of the Community population against ionic radiation.

It reported that the delay was necessitated by new findings of the authoritative International Radiation Protection Commission (CIPR) on the matter. The CIPR research, it said, had already forced several international organizations including the International Atomic Energy Agency and the World Health Organization to modify their recommendations on radiation protection.

Hong Kong Reducing Noise

The construction industry in Hong Kong will soon be asked to use noise-reducing equipment on construction sites to lower the level of noise pollution. The order will be contained in a code of practice currently being formulated by the Environment Branch.

This requirement was initially proposed by the Advisory Committee on Environmental Pollution. The Committee had earlier recommended a plan on using noisy construction equipment at night. This resulted in the amendment to existing regulations banning such work. Beginning in July next year, all pile driving will be banned from 7:00 P.M. to 7:00 A.M. At present, pile driving is banned between 8 P.M. and 6 A.M.

European Anti-Noise Law

A new regulation designed to curb heavy vehicle noise in Europe may be adopted in 1979.

A spokesman for the United Nations Economic Commission for Europe (ECE) said the aim of the regulation is to protect the occupants of buses and freight or goods vehicles against excessive noise.

Discussions on the regulation took place at the seventh session of the ECE's Group of Rapporteurs on Noise held recently in Stockholm.

Thailand Funds Rain Making

A Thai government official has announced the granting of about \$69,000 in extra funds to the Ministry of Agriculture and Cooperatives' Rain-Making Unit for the purchase of rain-making materials for fiscal 1978. Around \$995,000 has been allocated already, but the Rain-Making Unit has doubled its operations.

Fertilizers vs. Environment

An international symposium will meet in Geneva Jan. 15 to 19, 1979, to seek methods of increasing crop yields without damaging the environment at the same time.

High productivity levels depend to a large extent on fertilizer supplies. But they have also resulted in an environmental hazard because the high doses of fertilizers can cause water pollution, said a spokesman for the UN's Economic Commission for Europe.

The symposium will bring together experts involved in research and application of fertilizers, and specialists from governments, agricultural institutes, professional associations and the fertilizer industry.

Philippine Forest Protection

A special group has been formed to take charge of the Philippine government's forest protection program.

Its duty is to protect the country's public forests, including national parks, reforestation areas, wildlife and game refuges, and bird sanctuaries. It will also handle the prosecution of offenders in conjunction with the Ministry of Justice.

The division will be staffed by foresters, lawyers, security officers, game wardens, and 32,000 forest guards.

Hospitals Pollute Delhi

In India, hospitals are polluting Delhi's atmosphere and endangering its inhabitants' health, a recent study found.

About 30 truckloads a day—or over 10,000 a year—of hospital refuse, mixed with domestic, are dumped by municipal authorities into open grounds surrounding the city.

Hospital wastes include blood-stained cotton dressings, bandages, towels, blankets, linen, used beds, clothing from unclaimed bodies, floor sweepings, fleshy matter and amputated organs from surgical wards as well as the bodies of rabbits, mice, monkeys and dogs used in research.

When they are thrown out, Indian rag-pickers recycle most of the wastes to sell.

A two-week survey in Delhi's 10 major hospitals showed that the danger to the citizens' health arose not only from open dumping of solid hospital wastes but also from liquid effluents.

Solid refuse from a 400-bed tuberculosis hospital in Delhi was simply thrown into the "backyard"—a huge area used as a playground by school children of hospital employees.

Cases of tuberculosis infection among employees have also come to light. Though one hospital had an incinerator it had never worked even for a day for the last 10 years, according to a doctor.

However, a leading microbiologist has claimed that there is no great health hazard involved since the survival of hospital germs depends on environmental factors.

Ireland Radiation Grants

Improvements to Ireland's facilities for measuring solar radiation have been made possible by grants of more than £14,000 (\$28,000) from the European Economic Community (E.E.C.) to the Meteorological Service.

The first grant will pay half the cost of improving the network for collecting data on solar radiation. The other grant will enable Ireland to take part in a statistical analysis program at home and in the United Kingdom.

Indonesia Water Code

The Indonesian Minister for Ecological and Development Control has disclosed that his government will soon issue regulations on water pollution control. The aim is to impose standards governing the use of water for all purposes, from drinking to irrigation, "to maintain a harmony among the various agencies which need the water."

Environmental Guidelines for Industrial Development

The World Bank has published a 128-page booklet that provides environmental guidelines for consideration during industrial expansion and growth. Primarily designed for developing countries, the booklet could be a handy reference guide for *WER* readers in the industrialized nations as well.

It covers the sources and effects of industrial pollution, and possible governmental structures for environmental management. It suggests criteria and standards for levels of contaminants, goes into sampling and analytical procedures, and thoroughly discusses the technology of treating industrial wastes. In addition, the booklet has chapters on economic aspects and considerations, and on the sociological, planning and political aspects of industrialization.

Entitled "Environmental Considerations for the Industrial Development Sector" (August 1978), it is available free from the Office of Environmental and Health Affairs, The World Bank, 1818 H Street, N.W., Washington, D.C. 20433.



World Environment Report

70 001 1010

VOL. 4, NO. 20

Copyright © 1978. Center for International Environment Information.

SEPTEMBER 25, 1978

Crop Spraying in Northern Colombia Causing an Ecological Disaster

BOGOTA—Indiscriminate use of fertilizers and pesticides on banana, cotton and rice plantations in northern Colombia has produced what government ecologists and local farmers call an environmental disaster.

In this region of 80,000 inhabitants, cotton is sprayed aerially 15 times per crop, rice three times a crop. Although the government has outlawed the use of DDT and aldrin, they are still widely used in crop spraying, as are other insecticides.

Preliminary results of a pilot study sponsored by the government wildlife service, INDERENA, describe the deaths of thousands of animals, widespread sickness in the local population, and the forced migration of peasant farmers as a result of uncontrolled aerial crop spraying.

The study found that at least 30 percent of the population living on the cotton plantations near the Magdalena River are afflicted with illnesses due to crop dusting. Colombian doctors report the most common are skin allergies resulting in rashes; vomiting; and general ill health. But there have also been cases of serious anemia, damage to the respiratory system and the liver, and male sterility. In one case, in the area of Orihuera, a farm worker died.

The INDERENA survey is one of the first in-depth ecological studies made in Colombia. And it is the first to study the lands along the Magdalena River. It will serve as a model for similar surveys under a new pollution control program called Eco-Desarrollo (Ecological Development). Its aim is to establish a series of guidelines for government control of the use of pesticides and fertilizers.

The survey discovered that farm laborers working with phosphate and sulphate-based fertilizers have been sickened. And in the town of Guamachito, farmers complain of frequent headaches as a result of the noxious odors from a pesticide supply depot located, illegally, in the town. By law such depots should be at least two miles away from any settlement.

In the municipality of Aracataca many of the local inhabitants suffer from skin allergies caused by consumption of water used to irrigate nearby rice plantations. In other areas people fall sick drinking rain water, collected from rooftops, that has been affected by fallout from crop dusting.

Along the Sevilla River aerial spraying has destroyed

rain forests with the consequent flight of alligators, monkeys, manatis, turtles and other wild animals.

Local fishermen also have been forced to migrate because their oyster lagoons, such as Cienega Grande, which previously provided a source of income for hundreds of families, have been destroyed. However, migration may slow or stop thanks to a recent government decree declaring these fishing grounds off bounds for all but fishermen. This ban would include cotton and rice growers and oil developers.

Spokesmen for the National Federation of Cotton Growers maintain that if the government does not control aerial spraying, coastal plantations may be wiped out by plagues of insects, already becoming immune to insecticides despite, or because of, excessive spraying. This is what happened to the east coast's banana plantations, which formerly produced the principle cash crop in the Magdalena River region. The Cotton Federation reports that because of insect infestations the amount of land planted in cotton in the coastal region has fallen to 1.3 million acres from 7.5 million planted last year. This will have a negative effect on Colombia's balance of payments as cotton exports from the coast normally earn \$130 million a year.

The Cotton Federation is urging a control program using ecologically sound methods to stop the wholesale destruction of the environment. But as one agronomist admitted, there is no consensus in support of such a program. Nor do local farmers and officials observe Colombia's ecological code or the norms established by the government Livestock and Agricultural Institute for spraying.

PENNY LERNOUX

In This Issue

Irish Nuclear Protest	2
Bavaria's Hot Line	2
Special Report: Bonaire	3
Sweeps Clean Germany	4
Baltic Sea Action	4
EC Energy Plans	5
Salmon Swim in London	6
In Brief	7

Anti-Nuclear Group Being Formed in Ireland

DUBLIN—A mass movement on a national scale, pledged to oppose construction of a nuclear power plant anywhere in Ireland, is being formed following a three-day rally attended by about 7,000 people at the site proposed for Ireland's first nuclear plant.

The proposal has been stalled for two years because the local government authority, Wexford County Council, has made no decision on a planning application to proceed with the building, necessary under Irish law.

County Councillors in Wexford, in south-east Ireland, are reportedly reluctant to make a decision in favor of the plant because of feared public reaction. Because all local public representatives are to face an election next year, any decision is likely to be further deferred.

Speakers from the U.S., Continental Europe, and Irish trade unions addressed the weekend rally, at Carnsore Point. It was a festive weekend, with an underlying note of protest. Top Irish musical groups gave their services free and the organizers, a loosely-knit coordinating group of various organizations, voiced opposition to the proposed plant. They announced that a further national meeting would be held in three months time, at which the national opposition movement will be formed.

Thousands of protestors marched to the 200-acre Electricity Supply Board nuclear site and placed stones in the form of a cairn. The action was in memory of all those all over the world, who had died of radioactive leakage from nuclear energy plants and from nuclear accidents.

Ironically, the E.S.B. provided power on-site for the protestors, for their tents—as most of those present camped out—and for the music groups, refreshment facilities and other amenities.

The Irish Government has so far turned down requests for a public inquiry into the nuclear plant proposal, but the E.S.B. has decided to sound out public reaction to its proposals. It will commission a survey among a sample of the public to find out what worries, if any, people have about nuclear power.

A market research firm, Irish Marketing Surveys, will carry out the survey and the results will be published in October.

The Electricity Supply Board will use the findings to improve its information campaign on nuclear power and to ensure that the questions which people ask are adequately dealt with.

A spokesman for Friends of the Earth said they were opposed to the survey as it could be used as an opinion-forming tactic rather than an information exercise.

Last April the national television station, Radio Telefis Eireann, surveyed a representative sample of 520 adults. Asked their opinion as to whether or not a nuclear station was necessary to meet Irish energy requirements, 60 percent of the sample said it was necessary. A total of 90 percent thought that a public inquiry should be held.

TOM MacSWEENEY

Bavaria's Environmental Hot Line Produces Fast Action

MUNICH—Irate Bavarians disturbed by noise, stench or any other environmental abuse have a handy tool to cut through bureaucratic red tape and achieve speedy corrections: the "hot line" to the state's Environmental Protection Ministry.

All they need to do is walk to the nearest telephone and dial Munich 92143166. This connects them to the red telephone on the desk of Frau Rotraud Kudella in the Ministry—the official charged with fielding complaints and following through on the action they demand.

The system is informal, no written request is required.

Consider the 65-year-old warehouse administrator who had risen at dawn all his working life. He looked forward to his retirement goal: sleeping at least until 8 a.m. He moved into a new apartment and quickly found his retirement dream shattered. Slamming doors woke him every morning at 5:30 when bread and milk were delivered to the nearby supermarket. Exasperated, he used the "hot line" and just a week later was an hour and a half nearer his dream. The Ministry, acting through the city administration, enforced an edict barring such deliveries between 10 p.m. and 7 a.m.

The service has actually existed for six years, but only recently has it become better known. Frau Kudella now handles an average of 15 to 20 calls a day. When the service cannot act directly, it goes to the city or area authorities involved. Since the impetus comes from the top—the state government—and not the bottom, bureaucrats are prone to more rapid movement.

SPECIAL TO WER

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$150 per year. \$20 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Libby Bassett
Circulation Manager Jan De Pinto
Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit private organization which seeks to foster public understanding in the United States and Canada of global environment programs, how they affect the quality of life in North America, and the role of international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in WER, which in no way represents the official view of UNEP.

Special Report: In Caribbean Flamingos and Oil Tankers Coexist

BONAIRE, Netherland Antilles — This month, the BOPEC oil terminal here will celebrate another anniversary, marking a third year of peaceful coexistence between one of the most pollution-causing industries and one of the most conservation-minded islands in the Caribbean Sea.

For years, this tiny, beautiful island of 8,000 people has been a haven for scuba divers and in the last decade became the largest sanctuary in the Western Hemisphere for the graceful pink flamingos. While other Caribbean islands have reefs scattered around them, Bonaire is itself a reef, resembling the tip of a mountain whose sloping sides hide some of the Caribbean's most magnificent underwater marine life—a dazzling show of color and beauty set in the midst of crystal clear water. Conservationists and scuba fans from all over the world thought Bonaire's beauty was so precious that the island declared its underwater life off-limits to poachers, hunters and fishermen, making it illegal to take coral or fish anywhere around it.

It was therefore an agonizing decision to make in 1974 when two of the largest independent oil storage companies—Northville Industries Corporation of the United States and Paktank B.V. of the Netherlands—proposed to build a huge oil storage station on the lee coast of the island right next door to the Gotomeer, one of several flamingo nesting sites. The new joint venture, known as BOPEC, was to create a way station for oil coming from Africa and the Middle East with a storage capacity of eight million barrels of crude.

Bonaire offered so many advantages as the site for a storage station, industry sources said, that it was hard to resist. The island itself is well off the track of hurricanes, and the terminal's location is sheltered from the prevailing wind. Fair weather all year round, with average temperature at 80 and hardly any rain at all, coupled with water depth of 125 feet right offshore, allow huge oil tankers to berth smoothly. The political climate on the tiny island, like the weather, is one of the most stable in the Caribbean. And, the proximity of Bonaire to the United States where the huge tankers cannot berth, made it an attractive place to unload the crude for temporary storage until smaller tankers pump it back for transshipment to the U.S.

The problem, of course, was how to protect the island's treasured marine life, while boosting its economy.

Several innovative techniques were adopted by Northville, which designed and built the terminal. The principal concern was to avoid any ongoing pollution of the water and, in case of any spillage, to contain and rapidly remove the oil before it did lasting damage to the environment.

To protect the underground water in the area where the oil tanks were built, Northville came up with a new technique. Under each of the 12 tanks a thick layer of sand was built to absorb leaking oil. It was further separated

from the ground by a plastic liner that would block any oil not absorbed by the sand. The oil would come out of a "weep" hole in the sand pool, thus alerting the staff to the fact that a leak had sprung.

On top of each tank, a floating roof that rides up and down the oil prevents the formation of vapors that may become a fire hazard. And because the storage facility was built on the lee coast of the boomerang-shaped island, the wind blows fumes produced during loading and unloading away from the island. This particular precaution was taken after a lesson learned from nearby Curacao, another of the Dutch Antilles islands. The Shell refinery there was built in an area where winds blew into the island. The result has been a serious pollution problem that has done much damage to the island's tourist attractions, including its beaches.

The holding tanks on Bonaire were dug in groups of four in the midst of gravel and cement dikes to minimize the hazard of fire. Around each grouping of four tanks, and on the ground beneath them, a six-inch layer of a special type of soil prevents spillage. Should a spillage occur it is directed toward catch basins in the four corners of the square pits, where it is collected and pumped out.

Separating the oil storage facility from the nearby tiny Gotomeer lake where the flamingos nest is a permanent oil boom, which again acts as a shield to prevent any oil from slipping into the lake either from underground or from the sea.

In the water around the coast where the tankers moor, work boats equipped with oil booms are ready to contain any spillage and pump it right out. The staff of the facility is spill-drilled every week, but have not yet had an occasion to put their practice to use, as there have not been any incidents since the facility was inaugurated in September 1975.

Bonairians, who at first worried that the station would be a potential disaster, have relaxed. They feel that the companies went out of their way to insure against accidents, and to install the means of containing damage should it occur. Nestled in a corner of the island, the station with its light green colored tanks blends in with the land and the sky. It is monitored by a computerized systems of pumps, programmed to regulate the level of oil in each tank and to shut off automatically should anything go wrong. Because the waters around the station are very still, tankers can load and unload without the hazard of high waves that can cause accidents.

To an observer, the stillness and the quiet of the island are overwhelming. The tankers—one at a time—are filled up or emptied quietly, unobtrusively, with the most modern equipment available since the BOPEC station is one of the newest facilities in the Western Hemisphere.

Nearby, flamingos land and take off the water's surface, and scuba divers shuttle from the beach to the sea. So far at least, the match of industry and ecology in Bonaire seems to be working out. YOUSSEF M. IBRAHIM

Chimney-Sweeps in W. Germany Enforce Anti-Pollution Rules

MUNICH—The drive for a better environment has given a new lease on life to what had long been considered a colorful but vanishing species in Germany—the Schornsteinfeder or chimney-sweep.

The Sweeps—clad in traditional black coveralls with top hat, bearing ladders, brushes, and ropes—have always been considered symbols of luck. Lotto or toto betting shops facing a sudden swarm of customers always assume a chimney sweep has been walking down their street.

But this *rara avis*, it now develops, has not flown off to other cleaner, more lucrative professions. It has simply not been recognized so frequently because of new plumage: the sweep of today—often feeling silly in the traditional costume—has opted for wash-and-wear fabrics and carries new tools to meet new obligations.

"Focus on Germany," a monthly publication of the West German Government, points out that the Schornsteinfeder actually has more work than ever. In addition to determining if chimneys need cleaning, a sweep is charged with monitoring home heating systems for violations of new and stricter pollution laws. If he finds your chimney is emitting too much sulphur dioxide or carbon monoxide or other pollutant, he can order that repairs—often expensive—be made and/or slap you with a heavy fine.

SPECIAL DISPATCH TO *WER*

Sudan's Low-Cost Habitat Project May Be Important Breakthrough

NAIROBI—A pilot project which experts say represents an important breakthrough in low-cost housing is now in full production near Khartoum, Sudan. Backed by a \$1.2 million contribution from the UN Habitat and Human Settlements Foundation (UNHHSF), based in Nairobi, and further contributions from the Sudan Government, the project is designed to demonstrate the feasibility of building low-cost housing with bricks made from the soil stabilized with asphalt—a technique developed in the U.S. and given the name of asphadobe.

Local clay soil, with silt and sand, is being stabilized with by-products from the Sudan's oil refinery to make 36,000 sun-cured bricks each day. The houses—estimated to cost \$4,400 each—will be sold on long-term mortgages to low-income workers.

If the Sudan project proves successful, UNHHSF plans to set up a center there to train people from other African and from Asian countries in the asphadobe technique. Nigeria, Oman, and Mauritius have already said they want to use the training center.

CHARLES HARRISON

Denmark Acts to Limit the Amount of Nitrite Concentrations in Meats

COPENHAGEN—While most Americans learned this summer that nitrite-preserved meats could be carcinogenic depending on how they were cooked, Denmark's law specifying the amounts allowable went into force.

The new Danish positive list (which limits the kinds and amount of artificial substances that can be used in food preparation) became law this summer, nine months after it was first issued.

The amount allowed—as a nitrite-salt mixture—is 175 mg per kilogram of meat. After cooking, the maximum allowable is 75 mg a kilo, and for canned goods it is a 25 mg per kilo maximum.

A spokesman for the Copenhagen government noted that within the European Community, Denmark is at the forefront of efforts to introduce stricter, across-the-borders regulations. France and Italy, he said, have much more "liberal" laws.

CONSTANCE CORK

Poland Reports Progress In Cleansing Baltic Sea

WARSAW—Progress has been made in reducing pollution of the Baltic Sea.

Poland's Ministry of Administration, Regional Economy and Environmental Protection made this assessment in a recent report following last year's decision to implement the Helsinki Convention on the protection of the Baltic Sea environment.

This Convention was signed by all Baltic states four years ago with the aim of preventing progressive pollution of the Baltic waters. At the time the agreement was hailed as an example of cooperation among European countries in the field of environment protection.

Production of devices to collect ballast water, sewage and garbage from ships has already been started, the Ministry stated. At the same time, work is underway on organization of a national system to prevent and/or remove oil spills and other dangerous substances, particularly in port waters. And, special services are monitoring compliance with the convention.

In a related development, it was recently announced in Stockholm that the Baltic nations signed an agreement to police oil spills for a one-year trial period. They will use a detection method developed in Sweden. Combinations of metal particles especially formulated for each ship will be placed in the vessels' empty oil tanks; they will react with the oil to change its color. The trial detection period will begin next Spring.

The Polish Ministry reported that at present numerous sewage treatment plants are under construction along the coast at an estimated cost of some 1,500 million zlotys (\$4.6 million).

WILLIAM G. MAHONEY

The European Community Plans for Future Energy Needs

Funds for R&D Doubled and Tripled

BRUSSELS—The Energy Commission of the European Community wants to triple funds for solar-energy research and double energy-conservation expenditures.

Energy Commissioner Guido Brunner recently submitted his proposal for the Community's second four-year energy research and development program to the EC's highest body, the Council of Ministers. The program will run from July 1979 to June 1983, and its proposed budget is 125 million European Units of Account (EUA), or about \$156 million.

The biggest amount by far goes to solar energy. Brunner wants 58 million EUA. In the present four-year program a comparatively small 17.5 million was allocated. The significant leap results from the commission's belief that solar-energy research should in future include studies of wind-energy production and of solar energy as it applies to agriculture and industry. But priority still will be given to developing advanced technologies for domestic and industrial solar heating, a field called "particularly promising in the Community."

The Energy Commission would like 25 million to go for continuing research into ways of reducing energy consumption in the home, business, industry and transportation. At present this program gets 11.8 million EUA.

In addition, the Commission proposes that 20 million EUA be spent on geothermal-energy research, as compared to 13 million now. The purpose of this program is to continue identifying and evaluating regions having "an interesting potential."

Fifteen million EUA is being suggested for further research into the production and utilization of hydrogen, only a slight increase from the present 13 million (see WER, Sept. 11, p.1.).

And, lastly, the EC's Energy Commission wants 7 million EUA for an analysis of its current work, to "improve and develop energy models originated in the first four-year program." The current budget is half that, 3.88 million. The Commission would like to use part of this money for "adequate evaluation" of the impact on the Community of the world energy situation.

Alternative Energy Urged for LDCs

BRUSSELS—The skyrocketing cost of oil has been more of an economic burden to developing countries than it is to the richer, more developed nations. Because of this, Western heads of government and European Community foreign ministers this summer called for world cooperation on energy.

In this atmosphere, the European Community's Energy Commission recently presented an extremely forthright

document recommending alternative energy sources for the less developed countries (LDCs).

This would help the developing nations free themselves from the constraint imported energy places on their economies. And, though the report did not say so explicitly, oil would be more readily available for systems already in operation in EC countries.

Alternative sources of energy are expected to contribute no more than 5 percent of Europe's energy needs by the year 2000. But, the Energy Commission said, "it has been estimated that the share will be—and perhaps already is—much higher in the developing countries."

The Commission said its first task would be to create running inventories of energy resources in the LDCs and to establish medium-term supply and demand forecasts. Then it would be necessary "to intensify geological surveys, prospecting and identification of potential for fossil fuels, uranium, natural gas, wind and solar potential, geothermal sources, hydro-electric potential, and idle land suitable for afforestation biomass cultivation."

Solar energy is particularly suitable since small installations—requiring negligible maintenance and no fuel transportation—could cover a wide area.

Waterfalls of modest proportion (5 to 10 meters) and of limited flow can be harnessed economically to provide electricity for villages and small industries, the report stated.

Some developing countries already are using these energy technologies on a small scale, the report noted. "The task therefore is to put their use on to a more systematic and commercial basis."

What form would EC-LDC cooperation take?

It would, of course, be multi-faceted, growing initially out of existing international forums such as the UN's North-South Dialogue, the Euro-Arab Dialogue and special EC-LDC relationships like the Lome (Togo) Convention. More specifically, there will be a special EC-LDC conference early in 1979 on the scope and application of solar energy. And, the report suggests, "similar operations could be set up to cover other forms of renewable energy."

But beyond the meeting room further work needs to be done. The Commission believes it would be useful to work out an energy cooperation program split into two phases—study and operation.

The study phase would involve not only the inventory of energy resources, but also an analysis of technical, economic, geographical, geological and other difficulties.

The first five-year operational phase would specify priority projects, both large and small, to be developed jointly for "producing additional indigenous power supply" and promoting "its rational use"—energy conservation. The EC report foresees businesses and industries from both sides cooperating in this operational phase.

GARY YERKEY

Nine Centuries Later Swedish Mine Must Clean Up

STOCKHOLM—As early as the eleventh century, Swedes first began to exploit the ore-rich Falu mine at Falun in central Sweden. And for centuries mine water, polluted by heavy metals such as zinc and lead, has been running free and uncleansed into the nearest watercourses and lakes.

Lake Tisken nearby has been declared as good as biologically dead and Lake Runn has been strongly affected by the pollution.

Now, suddenly, the copper mine has become an issue in a Sweden growing more and more conscious of the dangers to its environment from pollution. The matter has been put into the hands of the National Franchise Board, a separate government agency much like a court of law which hears cases under the Environment Protection Act and awards licenses to operate under the act.

The National Environment Protection Board (NEPB) maintains that Falu mine, once the biggest in the world, is one of Sweden's greatest sources of heavy metal discharge.

Stora Kopparberg, which owns the mine, has made proposals for cleansing the mine water, but the NEPB feels they are inadequate. The mining company wants a two year postponement of any cleansing steps. Says the NEPB:

"During that time at least 1,000 tons of zinc and 30 tons of copper will be discharged. Looked at historically that is a small amount. But compared with other industries which must cleanse their discharges, it is very much greater. The watercourses which now directly absorb the discharge are as polluted as they can be. A delay there wouldn't play very much of a role for water quality, but the serious aspect is that the area affected is increased all the time."

A spokesman for Stora Kopparberg replied, "As we see it, this is an unreasonable demand. Mining has been going on there over many centuries and the mine now has only about 45 to 50 years of life left in it.

"If we are forced to clean the mine water even of iron, our costs will double and our investment increase by many millions. Then, we'll simply have to shut down."

SPECIAL DISPATCH TO *WER*

Salmon Will Swim Again In England's River Thames

LONDON—It is 145 years since the last salmon was fished out of Britain's River Thames upstream of London Bridge. The Thames Water Authority is confident that its antipollution measures have now made the river clean enough to try re-introducing them.

An ambitious three-phase scheme lasting about 22 years is expected to be finally adopted at the Authority's next meeting on September 26th. It aims to have an annual downstream migration of 20,000 smolts (migratory juvenile salmon) for its seven-year first phase, at an annual cost of £20,600 (\$40,170).

These smolts will have been introduced at earlier growth stages into various tributaries and water courses along the river. Experiments in this restocking have been taking place since 1975 with some apparent success. If the first phase is successful the Authority expect at least 1,000 mature salmon to be returning from the sea up the river to spawn after two or three years.

The second five-year phase, with a capital expenditure of £45,000 (\$87,750) and an annual running cost of £27,000 (\$52,650) would then come into operation. To encourage spawning the hard upstream swim would be made as easy as possible by modifying weirs to enable the salmon to reach as far as Cookham, some 30 miles from London.

The third five-year phase would see this process expanded and continued a further 50 miles upstream. Capital expenditure then would be around £71,000 (\$138,450) and annual running costs £37,200 (\$72,540).

The ultimate aim is to develop a self-generating salmon population of hardy strain, adapted to the natural conditions of the river. The possibility of future commercial exploitation could justify the expenditure.

BARBARA MASSAM

Tokyo Government Moves Against Relaxed Nitrogen Dioxide Standards

TOKYO—The Japanese government's recent relaxation of standards for nitrogen dioxide pollution has led to claims by Tokyo authorities that these new standards may be inadequate to protect the health of the city's residents.

To determine whether the new regulations are indeed injurious, the Tokyo Metropolitan Government has appointed a panel of 20 pollution specialists to review the scientific reasons behind the Japanese Environment Agency's decision. The panel also will examine the technical and economic aspects involved and submit their report next March.

The daily average tolerance of nitrogen dioxide concentration in the air was increased from .02 parts per million (ppm) to a flexible level of between .04 ppm and .06 ppm.

Federal standards in the United States stipulate that there be no more than .05 ppm, but this applies only to new sources, not to sources already in existence when the regulations were issued. A U.S. Environmental Protection Agency spokesman said that "there is no real concern here over nitrogen dioxide itself, but there is concern about hydrocarbons and ozone."

A.E. CULLISON

In Brief...

Asbestos Co. Aids Employees

An asbestos-mining company in Western Australia has set up a trust to compensate those employees who are now suffering from asbestos-related lung diseases. More than \$2 million will be paid out over the next 10 years.

CSR Ltd. admitted no liability in setting up the fund, the result of the company's own recently completed epidemiological study. The analysis of 6,500 employees who worked at CSR's Witenoom mine, operated by the now-defunct Australian Blue Asbestos company from 1943 to 1966, established that 200 employees developed asbestos-related lung ailments; of these, 45 have died.

Victims of the diseases, or their families, will receive up to \$2,000 per year through the trust in cash, goods, or services.

Ireland Lags on Energy Plans

The International Energy Authority has told the Irish Government that it has fallen behind in implementing effective energy policies and that it should spend more money on measures to save heat and use energy more efficiently.

The Authority, which is part of the Organization for Economic Cooperation and Development (OECD), says in its annual review that Ireland faces very adverse prospects in relation to the balance between energy supplies and demands, but it notes that new information may change some of its conclusions.

The review calls for a comprehensive energy strategy for Ireland, including more money for energy conservation, better incentives for insulating houses, long-term contracts for importing coal for generating electricity and legal rules on the fuel efficiency of motor vehicles.

Malaysia Forestry Code

Malaysian Primary Industries Minister Paul Leong has announced that the draft of a proposed forestry code has been completed.

The minister said that the new code, aimed at unifying forest practices in Peninsular Malaysia, was felt to be necessary "in view of the fast dwindling forest resources."

A special committee is currently discussing the draft with State Governments, he added. Officials from Sabah and Sarawak are attending the discussions as well.

British Fuel Saving Device

A British device to cut fuel consumption in heavy goods vehicles is now to be marketed in the United States.

The Dynair thermal clutch fan, designed by former Rolls-Royce designer, Arthur Elmer, controls the operation of engine cooling fans. It is air-operated, has a fail-safe design, and is available in sizes for most engine-and-fan combinations.

The thermal clutch fan has been successfully marketed in both United Kingdom and European truck fleets for some 10 years. Selling and marketing rights in the U.S. will be held by Kysor International.

Hong Kong Fines Oil Spillers

According to the newly released Shipping and Port Control Bill, the maximum fine for oil pollution in Hong Kong waters will be raised tenfold to \$42,600. However, the imprisonment provision will be deleted from existing legislation.

Hong Kong has so far avoided any major oil spillage disaster and the heavier fine will bring the colony into line with oil pollution measures in Britain and other countries.

Sweden Checks Pottery

Sweden's National Environment Protection Board (NEPB) together with health authorities are making a spot check of chinaware and pottery on sale around the country as a pollution control. The object is to determine whether the glazing or enameling contains too high a content of the poisonous heavy metals lead and cadmium.

The NEPB's product control bureau said that manufacturers, importers and stores are legally responsible for ensuring that the emission of lead and cadmium from utensils does not exceed permitted levels. The limit for lead is 3 milligrams per liter of the article's capacity and for cadmium 0.1 milligram. If the limits are exceeded, the utensils must be stamped "not for liquid or other food." Otherwise, the product is banned from sale.

Delhi's Foul Drinking Water

Of the 1376 kilometers that the river Jamuna travels, the 48 kilometer stretch through Delhi is the worst in terms of water quality.

This is due to the large amount of sewage from the city being dumped into the river. Much of it is untreated and contains poisonous industrial wastes.

Delhi citizens consume 250 million gallons of water a day from this river and municipal officials have said they do not have adequate facilities to treat the highly polluted water.

A study conducted by the Central Board for the prevention and control of water pollution has revealed that the pollution rate of the Jamuna river was rising alarmingly—from 5 to 10 percent during the sixties to 20 to 25 percent in the seventies.

Now the Delhi Corporation has sought the technical assistance of the London Thames Authority to check the rising pollution of the Jamuna river. A team of British experts is to visit Delhi soon.

Bulgarian Pollution

A high Bulgarian official has called on all citizens to make strenuous efforts for the elimination of pollution and to observe the laws for the protection of the environment.

According to Radio Sofia, the call came in a speech by Party Politburo member and Chairman of the National Front, Pencho Kubadinski, during a session of the Front's National Council which was devoted to a discussion for protecting the environment.

Kubadinski said that the main task now was strictly to observe laws and other norms, to make every effort for eliminating pollution, and to fight against any decline in vigilance or responsibility.

Korean Industries Lax

A recent survey conducted by the Federation of Korean Industries revealed that Korean industries as a whole still pay little attention to antipollution projects.

The 100 large manufacturing companies contacted, having fixed assets ranging from 10,000 million to 100,000 million won (\$20.66 million to \$206.61 million), invested only an average of 1.4 per cent of their fixed assets on establishing anti-pollution facilities last year.

Tourists Ruin Ecosystems

Tourism is destroying the fragile ecosystems on some of Mexico's biologically important Pacific Ocean islands, scientists at the National Autonomous University of Mexico disclosed in a two-year study just released.

Thousands of birds on Isabela island are being frightened to death, their nests and eggs destroyed by

tourists, the study said.

On Ixtapa island off Guerrero, important coral banks that affect the local fishing industry are being ruined by tourists who go to the island to dive. The rest of the island is unaffected by tourism—so far—because its dense vegetation has prevented exploration by visitors.

Thailand's Timber Troubles

Deputy Prime Minister of Thailand Sompob Hotrakit has disclosed the government may order either the suspension of forestry business for an indefinite period or the closure of forests throughout the country before the end of the year, in an attempt to end log poaching. The possibility of nationalizing all categories of business concerning forestry and logging will be discussed as well.

Hotrakit said that log poaching is mainly caused by people involved in shifting cultivation, the wood carving industry which is currently being promoted by the Industry Ministry and sawmills.

Due to strong objections from the Ministry of Agriculture towards the prohibition of logging activities for five years, the National Economic and Social Development Board in Thailand has been instructed to further study the matter, especially its effects on future investment.

Tanon Premrasmi, Director General of the Royal Forest Department in Thailand, said negotiations for a loan for the country's reforestation program are now underway with the World Bank. The project has already been approved by the World Bank, but various details have yet to be worked out.

According to Tanon, the five-year reforestation program is expected to require an investment of about \$10 million a year.

Hydrogen-Powered Car

An Australian engineer, Graeme Gibson, has developed an easily-converted hydrogen-powered car. His vehicle, a six-cylinder Holden, now runs on hydrogen produced from water by electrolysis.

Gibson said that one problem is the weight of the metal hydrogen containers. A cylinder containing 17.5 ounces of hydrogen—enough to take his car 18.5 miles—weighs 100 pounds. Storage of the tanks is difficult.

He claims, however, that his experiment demonstrates that hydrogen can be used as an alternative transport fuel in an internal combustion engine.

Korean Coke Briquettes

Coke briquettes made of anthracite coal and bituminous coal will be put into use in South Korea in future in an effort to help solve the country's fuel shortage.

Research into the coke briquettes found out that they emit more heat and burn longer, ignite more quickly and give off less poisonous gas than conventional anthracite briquettes. The research was conducted by the Korea Institute of Science and Technology with financial support from Yulsan Engineering Co.

Malaysia Regulates Wastes

Malaysia's Division of Environment is to draw up regulations to control the discharge of wastes into local waters.

The regulations will cover bilge, ballast waters, and garbage jettisoned by ships, including oil exploration and production vessels.

The discharge of sewage and industrial waste from the shore by pipeline will also be regulated.



World Environment Report

26 OCT 1978

VOL. 4, NO. 19

Copyright © 1978. Center for International Environment Information.

SEPTEMBER 11, 1978

New Editor Appointed For *WER*

Beginning with this issue, *World Environment Report* comes under the direction of a new Editor-in-Chief, Elizabeth (Libby) Bassett. An experienced reporter and editor, Bassett has served with the Associated Press in New York, covered East Africa and the Mideast for, among others, the American Broadcasting Company (ABC News), Newsweek, and UNICEF.

Our new Editor-in-Chief plans to introduce some important changes in *WER*'s format and contents aimed at making it more readable and relevant to our reader's needs. The changes are the result of a lengthy review by the Center for International Environment Information, publisher of *WER*, its Advisory Committee, and reflects comments and suggestions from many readers.

Dr. Whitman Bassow
Executive Director
Center for International
Environment Information

EEC Develops New Closed-Circuit Low-Temperature Hydrogen System

BRUSSELS—The world's first closed-circuit system producing hydrogen by thermochemical cycle is in operation at the European Economic Community's Ispra Joint Research Center in Italy.

Hydrogen, an extremely clean fuel that produces only water as a by-product when burned, is "expected to play an increasingly important role in the decades to come," EEC spokesmen say. "Reduced availability and increasing prices of fossil fuels might make hydrogen an attractive substitute on the energy market."

Although still in an experimental stage, officers at EEC headquarters called the new system "a first, important step towards the possible eventual industrialization of the process, which represents the long-term goal of the effort."

The significance of the development is that the Ispra

scientists have succeeded in developing a means to decompose sulphuric acid at a relatively low temperature. And the catalysts in the hydrogen-oxygen separation process can be reused indefinitely, reducing the cost substantially from previously known methods of splitting the water molecule. Other methods require higher temperatures (and therefore huge quantities of expensive electricity) and new chemical catalysts each time the process is initiated.

The Ispra system, made of glass and quartz, has been operating successfully since May 22, 1978. It produces what spokesmen call a "nominal" quantity of hydrogen—100 liters an hour. Utilizing a process whereby sulphur dioxide, bromine and water are made to interact, it produces sulphuric acid and hydrobromic acid. The two acids are then decomposed—the first thermally at 800 degrees Centigrade, and the second electrochemically—which produces hydrogen and oxygen. The sulphur dioxide is recirculated, closing the cycle.

Although the Ispra results were found "encouraging and perhaps very important" by one hydrogen expert in the United States, he said he would like to see further evidence that it is energy efficient, truly catalytic and that there will be no long-term corrosion problems.

This development parallels similar research into the production of hydrogen in other parts of the world. Recently, scientists in Japan developed a process that combines thermal, electrical and chemical methods, and utilizes solar energy. Several hydrogen-burning automobile engines have been designed. And the steel industry has expressed interest in the possibility of converting to hydrogen for its fuel needs. At present, hydrogen as fuel is used mainly by the chemical and petrochemical industries, which produce it, expensively, on site.

GARY YERKEY

In This Issue

Atomic Contamination	2
Irish Energy Policy	2
Housing in Africa	3
Plague of Locusts	4
World Wood	4
Eco-Code Flouted	5
In Brief	6

Plutonium Contamination Found At Secret British Atom Plant

LONDON—Twelve workers at Britain's top-secret atomic research plant at Aldermarston have been contaminated with plutonium to more than twice the internationally approved safety level.

None of the twelve is in a scientific job. The first three discovered are women laundry workers, who clean protective clothing at the Ministry of Defence plant. Six others are members of the Amalgamated Union of Engineering Workers, which has been pressing for further investigations and is also organizing compensation claims.

The government has ordered an enquiry, to be headed by Sir Edward Pochin, a world authority on radiology, into the health and safety standards at the secret plant. He is a consultant to the National Radiological Protection Board (NRPB), the government's watchdog agency set up in 1970.

About 2,000 people will be tested, past as well as present employees, who have had regular contact with any radioactive material. An inspector of the government's Health and Safety Executive, which has a nuclear advisory committee, is already investigating the situation.

One problem is that plutonium is difficult to detect because it is so deeply absorbed by the body. Another is that there is justifiable concern over the methods used to establish acceptable doses.

In England there are disparities between testing procedures used by the military and civilian establishments. The civilian British Nuclear Fuels workers receive six-monthly tests and none has been discovered with more than half the recognized safety limits. Aldermarston has no facility for whole-body scanning, and tests on a cross section of its work force have been taking place only since January of this year. So far, the Ministry of Defence has not yet joined a national register of radiation workers set up by the NRPB.

BARBARA MASSAM

Ireland Takes First Steps Toward National Energy Policy

DUBLIN—The Irish government has taken the first step towards formulation of a national energy policy. It has produced a national discussion document that clearly points to the government's intention that no new power stations will be built in Ireland fired solely on imported oil.

Energy Minister Des O'Malley said it was "totally unacceptable" that 80 per cent of Irish energy needs were at present met from imported oil. He said this situation would have to be reversed.

The discussion document, published by the Department of Industry, Commerce and Energy, has been promulgated to start a national debate on the subject of energy and to draw people's attention to the future problems of oil supply.

Unless the current search for oil off the Irish coast succeeds, the document declares that nuclear power and coal appear to be the only realistic alternative sources available. O'Malley said that, though there were risks attached to the use of nuclear power, these were not generally unacceptable.

The energy minister said that he would bring the matter before the Cabinet for discussion this autumn, and a decision would then be made whether to allow the national Electricity Supply Board to go ahead with the work of designing a nuclear station proposed for Carnsore Point in County Wexford, in the south-east of the country. The £350 million (\$750 million) proposed plant has already become a major source of controversy.

Approval recently was given for a new power station on the banks of the Shannon in County Clare in the west of Ireland, which will be coal-fired but have an oil facility in case oil is discovered off the Irish coast.

Coal deposits had been found off the Irish coast in the Irish sea, O'Malley said, but they cannot be mined in the normal way.

"One possibility is that it might be possible to 'gasify' that coal on location and pipe in the gas—in other words, the coal," he said.

Research scientists have criticized the government for not providing enough funding for studies into alternatives such as wind, wave, and solar power. The new document discusses other energy sources, but it implies that it will take considerable time before they can contribute to Irish energy needs. TOM MacSWEENEY

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$150 per year. \$20 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Libby Bassett
Circulation Manager Jan De Pinto
Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit private organization which seeks to foster public understanding in the United States and Canada of global environment programs, how they affect the quality of life in North America, and the role of international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

Liberian Conference Surveys Need For Low-Cost Housing in Africa

MONROVIA—The problems of mobilizing and allocating resources to meet the needs for low-cost housing for low-income and squatter groups in African urban areas were the major issues discussed at the 5th Conference on Housing in Africa which was held recently in Liberia.

The Conference, which brought together more than 150 delegates from over 20 African countries and representatives of six international agencies, was jointly sponsored by the National Housing Authority of Liberia and the United States Agency for International Development (USAID).

Liberian President William Tolbert, who opened the conference, told the delegates that his government has taken imperative initiatives to provide appropriate shelter for the low-income majority, citing the construction of three new housing projects in Monrovia which have cost the government \$17 million to accommodate about 6,000 residents.

American Ambassador to Liberia, Beverly Carter, told the meeting that the problem of adequate housing for the African people is staggering. He said the urban population of Africa has more than doubled in the past 15 years and is expected to triple within the next 25 years.

Mr. F. Ola Udoh of the Federal Mortgage Bank of Nigeria defined the mobilization of human resources in a restricted sense as "a concept of self-help achieved from the result of community action." Recognizing that it is not always easy to stimulate popular participation in community projects, Mr. Udoh stressed the need to educate community residents to correlate their needs in an order of priority and ease of performance.

Mr. M. Yusuf, a member of the City Council of Nairobi, told the meeting that Nairobi is growing at an estimated rate of 7.5 per cent a year, and that the city's projected population by 1981 is expected to be over one million, and over three million by the end of the century. To house this increasing population, 10,000 new housing units are needed every year, 60 per cent of them for middle to low income families.

In the greater Cairo area, informed estimates place the current shortage of housing units at approximately 500,000, according to Dr. A. Zaki Abou El Nasr, executive vice president of the Real Estate Development Bank. With almost 20 per cent of Egypt's population in the Cairo area, Dr. El Nasr said that a priority of the Egyptian Government is the creation of new productive urban centers to attract and absorb part of the population from overpopulated areas.

With such great demands upon the limited resources of the government, Dr. El Nasr said that Egyptian housing authorities have decided to sell low-cost units on a 90 per cent mortgage basis, with a long-term, reduced lease on the land, so that the tenant is relieved of the burden of land costs, and can devote the money thereby saved to

maintenance of the unit.

Mr. Joran M.L. Nghweno, Director of the National Sites and Service Project and Squatter Upgrading in Tanzania, said that instead of trying to remove squatters to make room for housing projects, Tanzania's housing authorities have decided to accept existing squatters' areas and improve them.

Botswana has recognized a need to create new low-cost housing and to upgrade existing squatter settlements. Mr. N.T.K. Mmono, Permanent Secretary in the Botswana Ministry of Local Government and Lands, indicated that even in countries with comparatively small urban populations, the constant migration of people from rural areas to cities poses problems which require careful planning and consideration of human needs.

J. BLAMO ROBINSON

Australian Conservationists Lose To Giant Alumina And Gas Projects

PERTH—Conservationists have lost their fight to stop government approval of a third big alumina refinery in Western Australia. The dispute had threatened a \$3.4 billion natural gas project.

The state government sanctioned the refinery after the operating company, Aluminum Company of America, submitted a 500-page report on the environmental impact of the refinery and its associated bauxite mine.

Environmentalists claimed that the only forest in a million square, empty miles would be destroyed by the mine. Alcoa responded that 75 per cent of the Jarrah trees were already infested with dieback, an incurable root-rot disease and were therefore unsalvageable. The company said it planned extensive reforestation.

The mining site lies within Perth's water catchment area. Residents of Perth, 265 miles to the north, are suffering through their third year of drought and feared that deforestation might increase the salt content of their water supply. But the Alcoa report said water pollution would not be a problem as the proposed mine site lies in a zone of high rainfall and low salt levels.

Alcoa, the world's biggest aluminum producer, has two other refineries in Western Australia already producing 3.4 million tonnes of alumina, the sandy-white powder from which aluminum is made. This third refinery could eventually put out four million tonnes of alumina annually, although the state government last April passed legislation limiting the plants to a two-million tonne capacity.

If the new refinery had not been approved, a government project to run a \$400 million dollar pipeline 900 miles from the northern gas fields to Perth would have been in trouble. The refinery's huge demand for the fuel is, the government admitted, a crucial factor in the feasibility of the natural gas project.

DON LIPSCOMBE

African Plague of Locusts Could Be World's Last

NAIROBI—Swarms of locusts now breeding in Ethiopia and Somalia are threatening wide areas of Africa and Asia, but recent remote sensing experiments may signal an end to future plagues of locusts.

Although the Ethiopian and Somali governments have thousands of men in the locust breeding areas, their efforts to spread poisoned bait and spray with insecticides have been disrupted.

War between the two countries and between Ethiopian forces and Eritrean rebels hampered normal control operations. Officials of the nine-nation Desert Control Organization say that fighting the biggest locust infestation in more than a decade while the governments involved were fighting each other has led to a crisis situation.

The last outbreak of this Biblical scourge was brought under control 16 years ago by a group of countries assisted by the UN Food and Agriculture Organization. But early this year long, heavy rains in Arabia and the Horn of Africa created ideal conditions for a new plague of locusts.

New techniques for spotting the locusts before they assemble in large numbers are being tested now. Using satellites and computers backed by meteorological stations and ground control units, the first practical experiment using remote sensing techniques took place recently in the Hagggar mountains of Algeria. They established the mathematical models for predicting and avoiding future plagues of locusts.

The war against the desert locust is a continuing one. Operations are mounted each year in the Arabian desert and in the desert areas of the Horn of Africa, the main breeding places for the locusts, but this year has seen an exceptionally high rate of breeding.

Millions of locusts are being destroyed by being shovelled into hastily-dug trenches and burned with gasoline. The Desert Locust Control Organization of East Africa is spraying locusts from its small fleet of planes. Help is coming from FAO and from many countries which have responded to urgent appeals for insecticides, vehicles and other equipment to battle the invading locusts.

Nevertheless, officials believe it may be impossible to head off the threat of a large-scale migration. Already, swarms are 40 square miles wide. By November or December the locusts can be expected to move on prevailing winds into Kenya and Tanzania to the south, as well as into the Sudan to the west.

There is also a serious risk of locust swarms moving back across the Arabian Peninsula and on to Iran, Pakistan and India.

Control teams now in the Horn of Africa say their task is virtually impossible. High winds counteract aerial spraying, and locusts fly overnight with the winds, making control operations extremely difficult.

John Malecela, Tanzania's Minister of Agriculture and chairman of the Desert Locust Control Organization, said after a visit to the Horn of Africa that the locusts were virtually out of control.

The Kenyan Government is seriously concerned because of potential damage to the country's important agriculture industry. An emergency control committee has been formed and plans are in hand to destroy the locust swarms if they appear. But officials admit it will be difficult, for the locusts can cover large areas in a matter of hours.

CHARLES HARRISON

FAO Foresees Worldwide Imbalances Of Wood Resources and Consumption

ROME—Worldwide imbalances in wood resources and consumption are foreseen by the UN's Food and Agriculture Organization (FAO) for the coming years.

To meet the most basic daily needs of life, many wood-poor people are destroying environmental resources that provide their food, fuel, shelter, and livelihood. To escape this vicious circle, FAO recommends a rational and less wasteful management of forests, as a matter of priority.

By 1994 wood imbalances would result in regional shortages in a world of potential surplus, according to FAO. Among the major forest producing regions of the world, North America and the Soviet Union are expected to keep their wood surplus positions. In the developing world a few wood-rich countries will possess 70 per cent of the Third World's forest resources while accounting for only 30 per cent of its consumption, and for many developing countries FAO is predicting serious shortages of the basic fuel for heating and cooking, with no means for buying substitutes.

During a recent meeting in Rome, a senior FAO official urged the chiefs of national forest services from all continents to radically change methods of management and ways of using tropical forest. Dr. K.F.S. King, Assistant Director-General of FAO in charge of the forestry department, told the delegates of 79 governments and 10 international organizations that many of their strongly-held attitudes about tropical forestry needed to be radically transformed. With serious shortages on the horizon, he said, it made no sense to continue managing these forests with methods that are outmoded and ill-suited to man's needs.

Temperate forests contain relatively few species, mostly conifers, while the mixed tropical hardwood forests contain hundreds of species of different and often unknown properties. These are located in areas with hot, humid climates, often remote, and the trees are difficult to extract, process, and market.

As it is generally practiced, however, tropical forestry is based on methods originally developed for temperate zones and is extremely wasteful of all those species that

are unknown or unwanted on international timber markets.

Instead of "creaming" mixed tropical forests of the most valuable woods at the expense of wasteful destruction of the other species, Dr. King recommended that the unmarketable species be utilized as a source of fibers for wood products such as pulp and wood-based panels.

The International FAO Committee on Forestry, meeting in Rome to examine the state of forestry in the world, discussed two policies well suited to developing countries: the integration of forestry and agriculture; the creation of small-scale forest industries

Agri-silviculture, the harmonization of forestry and agriculture, was suggested as "a prerequisite to halting the alarming forest destruction and degradation by shifting cultivation." Adapted to the differing conditions of developing countries, it was also seen as generally well suited to the way of life of people engaged in small-scale farming.

Concerning small-scale industry, the Committee's final report recommended that "there is a real need in the developing world for plants of the minimum size capable of products of acceptable quality for the domestic market." These "should be labor intensive if possible, while utilizing technologies which are not obsolete."

The FAO forecasts an increase over the period of 1976-1994 of 75 per cent in world consumption of industrial wood products, mainly in the developed countries, and an increase of 40 per cent in fuel wood products, also mainly in the developed countries. World consumption of paper was foreseen as doubling, requirements for wood-based panels (plywood, fiber-board and particle-board) would more than double, and sawtimber needs would increase by 50 per cent.

Still, even with the worldwide increase in wood consumption, the total potential of the earth's forest resources is expected to remain ahead of consumption in 1994. The time required to maintain the potential surplus of this renewable resource is, however, running out, FAO believes. To maintain this potential, the required level of investment would average \$47,000 million per year over the 1976-1994 period, according to FAO.

VITTORIO PESCIALLO

Turkey Appoints Its First Environmental Overseer

ISTANBUL—Turkey has joined a growing number of governments that in the past five years have designated high-ranking environmental overseers to deal with serious problems of pollution.

Vice-Premier Faruk Sukan recently announced the appointment of Turkut Kilicer to the newly created office of Under-Secretary of State in charge of Environmental Affairs. Kilicer will report directly to the Prime Minister's office. (*WER*, Aug. 14, p. 2)

The purpose of the new office is to coordinate the activities of a number of departments dealing with the environment. The new office will be the only body authorized to conduct research, policy-making, control and implementation of environmental efforts (*WER*, July 3, p. 3).

Sukan told a symposium in Izmit that top priority will be given to the serious pollution problem in the Sea of Marmara and Gulf of Izmit.

SAM COHEN

Colombia's Ecological Code Flouted By Traffickers In Wild Animals

BOGOTA—The multi-million dollar contraband in Colombian wild animals and skins continues unabated four years after a government ecological code banned the hunting of diminishing species.

Such is the conclusion of a well-documented expose by Bogota's leading daily, *El Tiempo*. Colombian wildlife service officials privately concur that the triangular trade in animals—between Colombia and Panama for export elsewhere—still goes on, but plead they lack funds, personnel and legal clout to enforce the ecological law.

When it was introduced in December, 1974, the code was hailed as a model of environment legislation in Latin America. It has proved less a plan of action than wishful thinking.

To circumvent the law, Colombian traffickers ship animals and skins from Barranquilla to the free zone of Panama City's international airport. They are then shipped back as Panamanian exports to Barranquilla's free port to be converted into handbags, luggage, belts and other high-priced goods for sale in Europe or the United States. Live animals are sold to Europe, the United States and Japan.

The traffickers get around the code because Colombia has a government export incentive program known as the Vallejo plan, which allows the free import of goods otherwise banned or heavily taxed—if they are components of exports manufactured or assembled in Colombian free ports.

This \$4 million annual trade takes an enormous toll in live animals. *El Tiempo* says Colombian contrabandists calculate that an order for 1,000 tropical fish in the United States means they must ship 10,000, for only one-tenth will survive the complex journey.

The expose revealed that the three-way trade depends on false veterinary certificates. One of the biggest traffickers in Panama is wanted by the Colombian government for fraud, because he claimed government subsidies for fictitious exports under the Vallejo plan. His company, *El Tiempo* says, is protected by Panamanian strongman Omar Torrijos' brother, Hugo, who has considerable clout with Panamanian customs authorities and at the airport free zone from which the animals are reshipped.

PENNY LERNOUX

In Brief...

Incentives Offered For Geothermal Development

The Philippine government has recently offered a package of incentives to firms wanting to go into the exploration and development of the country's vast geothermal resources.

These incentives, which include tax exemptions on imports of capital equipment, are contained in a presidential decree signed by President Ferdinand Marcos in June.

Only the government, in partnership with the private sector through the issuance of a service contract, can engage in geothermal resources development.

Other privileges stipulated in the decree include the exemption from payment of tariff duties and compensating tax on the importation of machinery and equipment, and spare parts and all materials required for geothermal operations; and the repatriation of capital investments and remittance of earnings derived from service contract operations, including sums necessary to cover principal and interest of foreign obligations incurred for geothermal operations, subject to Central Bank regulations.

Bonn Fumes Over Czech Factory Stench

The Bonn government is raising a big stink with Czechoslovakia about the foul odor that wafts from the east into West Germany.

The West German Foreign Office has proposed that talks be opened to find ways of reducing the stench that drifts across the porous Iron Curtain into northeastern Bavaria.

The Foreign Office was referring to the fumes, reminiscent of cat excreta, that emanate from Sokolov, a Czechoslovak chemical production center. Sokolov is 15 kilometers from

the Bavarian border.

Sometimes, they pointed out, the stench drifts as far west as Nuremberg.

The Bavarian Ministry for the Protection of the Environment has used specially-equipped trucks, aircraft and tethered balloons to pinpoint Sokolov as the source.

Danes Plan A New Ecological College

Danish environmental groups plan to open a commercial ecological college this November.

They want to train unemployed people with technical qualifications in the techniques of producing such environmentally beneficial equipment as windmills and solar energy systems.

The Albertslund community, south of Copenhagen, has pledged a guarantee of \$15,000 for the college.

Peru to Purchase Nuclear Reactor from Argentina

Peru has decided to purchase a 10 MW nuclear reactor from Argentina for a nuclear research center which IPEN, the Peruvian Institute of Nuclear Energy, is to establish at Huarangal, 40 km north of Lima in the Chillón Valley.

The Argentina Banco Nacional de Desarrollo has opened a \$48.5 million credit line to finance the construction of the nuclear center and the purchase of the light water reactor.

Argentina has already loaned Peru a zero-type reactor which has been installed in IPEN's headquarters in the Santa Catalina suburb in Lima. Final tests are now being carried out on the zero-type reactor and according to General Juan Barrera Delgado, head of IPEN, it should go critical very shortly.

Mexico To Market "Cleaner" Gasoline With Methanol

A new "cleaner" gasoline will be marketed in Mexico by Petroleos Mexicanos (Pemex), the government oil monopoly. According to a spokesman, a mixture of gasoline and methanol has been developed at the Mexican Petroleum Institute to provide better ignition, and less contaminating fumes than emitted by pure gasoline.

Methanol for the new combination fuel will be provided from a new processing plant in the state of Puebla which has a production capacity of 150,000 tons per year.

Sweden Bans Methanol In Auto Products

Sweden has banned all automobile products containing methanol. It is used as anti-freeze for radiators, as a de-icer for windscreens and carburetors and for other purposes. The National Environment Production Board's product control bureau has classified methanol as a liquid dangerous to health and the environment. The government followed through by making the transfer or sale of products with more than 5 per cent by weight of methanol illegal after July 1. The bureau said the ban could reduce methanol poisoning to a minimum.

DDT Use Restricted In Philippines

The Fertilizer and Pesticide Authority (FPA) and the Malaria Eradication Service of the Philippine Ministry of Health have recently agreed to restrict the use of DDT for malaria eradication and control and to ban its use on crops.

Three Asian States to Aid Cleanup of Malacca Strait

Singapore, Malaysia, and Indonesia have recently agreed to administer on a rotational basis the revolving fund to clean up the Singapore and Malacca Strait in case of oil spills.

The Japanese Government, meanwhile, has already agreed to finance the fund totalling about \$1.27 million.

Fifteen 200,000 dead-weight-ton supertankers pass on a monthly average through the Strait en route to Japan. Singapore, Malaysia, and Indonesia, all of which have shores on the Strait, signed an agreement in 1975 to protect their water but it does not become effective until 1980.

Malaysia Puts Money Into Oil-Recovery Equipment

The Malaysian government has allocated M\$23 million (US\$9.7 million) for the purchase of equipment to control oil spills in the Straits of Malacca. Mechanical means will be used to recover spilled oil instead of using chemical dispersants.

The control plan calls for the establishment of three operational centers to be located in Penang, Port Klang and Johore Port. Area coordinators are to take responsibility for minor spills. But major spills will be dealt with by utilizing forces from the Royal Malaysian Navy and other departments.

Ankara Cracks Down On Use Of High Sulphur Coal

The Municipality of Ankara, where air pollution is the worst among the large cities of the world, has taken strict measures to prevent the use of high sulphur coal, which is one of the major reasons for the problem. Most apartment and office

buildings use coal in their central heating system.

The Municipality has concluded an agreement with the State-owned Coal Agency for the purchase of only a high quality, low sulphur coal. All private retail sellers of coal will be closely controlled and anyone selling coal contrary to the public specifications will be heavily fined.

Air-Polluted Bombay Called 'Gas Chamber of India'

According to a recent governmental survey, respiratory diseases are the main killers in Bombay city which houses nearly half of the chemical industries in the whole of India.

Last February nearly 700 died of tuberculosis alone. Because of the very heavy atmospheric pollution, the Chembur area in Bombay city has been described by environmental scientists as "the Gas Chamber of India."

This eastern suburb, once known mainly for its film studios, today has many oil refineries, fertilizer factories, and other large industrial plants, and is considered one of the most polluted regions of the world.

Nepal to Use Solar Energy For Telecommunications

Nepal will shortly use solar energy to run the telecommunications transmitting stations at various points in the country where electricity is not readily available.

Solar energy stations will be used for the extension of the micro-wave system linking Kathmandu, Nepal's capital, and other nearby stations. When the project is completed in 1980, the trunk medium will be available to all regions of the country along with the connection of all the automatic and manual telephone exchanges to the micro-wave system.

Cuernavaca Protected From Encroaching Mexico City

Two ambitious projects to protect the mountain resort city of Cuernavaca from being overrun by Mexico City have been announced by the federal government. Both aim at conserving existing natural resources.

The northern portion of the state from Cuernavaca some 20 miles north to the Mexico City limits has been declared a National Climatological Reserve Zone. This will insure that the wooded mountains remain as "lungs" for Cuernavaca, acting as a filter purifying air currents from Mexico City.

The second project is a 930-acre national park to be created on the east side of Cuernavaca in undeveloped rolling hills and fields. State and federal authorities will cooperate in the creation and maintenance of the park.

Environmentalists Protest Swedish Speed Boat Races

For years, environmentalists have protested in vain against the annual national and other speed boat races in Stockholm's archipelago.

One reason for demanding a ban of the races is that they are run at the most sensitive time for the rich but fragile bird life in the archipelago. Another is that they are a nuisance in a primary recreational area. The National Environment Protection Board gave its support to the protests and recommended a ban on such racing from April through August.

The Stockholm provincial government finally came to a decision. The national regatta was stopped — not for environmental reasons but for safety reasons. However, another consequence of the protests is that a government working group is now studying what restrictions should be placed on speed boat racing from the standpoint of protecting the environment.

Hong Kong to Export Cheap Solar Energy Collectors

The British colony of Hong Kong will be able to manufacture and export inexpensive solar energy devices within a year, according to a professor at the University of Hong Kong.

"We've got all the skills available. Equipment, a sophisticated business environment, and the low-cost labor which would make the colony's products less expensive than those manufactured by the current producing countries," B.A. Bruges said.

Excluding the shipping costs, the simplest imported collector for heating home water ranges from \$200 to \$300, depending on its design. "We can make the identical collector for \$100," Bruges said.

"Hong Kong can start by helping its neighbors and other developing countries and serve its own ends at the same time," he said.

Chemical Air Pollution Topic Of Seminar In Poland

The United Nations Economic Commission for Europe (ECE) will sponsor a seminar in Szczecin, Poland, Oct. 16-20, 1978, to study air pollution by the chemical industry.

This topic, the ECE commented, "has become a focal point of ecological concern in European countries."

Australian Minister Bans Herbicides 24D and 245T

William Houghton, Minister for Health in the Australian state of Victoria, has recently recommended that herbicides 24D and 245T be banned pending further study of reports claiming that they are responsible for birth abnormalities.

Houghton said a final report from

the State Working Party on Congenital Abnormalities is expected within a month and further examination of the question by the National Health and Medical Research Council is pending.

A physician in Mossman, Queensland, said that babies were dying from brain tumors and spinal cord deformities in areas where 245T was used as aerial spray on sugar cane fields.

Polluting Asphalt Plant Closed In Colombia

The Colombian Health Ministry has closed another factory for air pollution, this time an asphalt industry located in a densely populated sector of the city of Medellin in western Colombia. Earlier the ministry shut down three cement plants for the same reason.

The asphalt plant was given four days to close, but this has been appealed by Medellin's mayor, Guillermo Orozco, who asked the Health Ministry to give the company four months to relocate on the outskirts of the city.

S. Korea Bans Hard-Type Synthetic Detergents

The South Korean government has recently banned the manufacturing of hard-type synthetic detergents in an effort to prevent soil damage.

The pollution created by 40,000 tons of hard-type synthetic detergents released so far this year measured 0.48 parts per million in the Han River, only slightly lower than the internationally permissible level of 0.5 parts per million.

Health authorities said that water soluble soft-type synthetic detergents will be made available in public markets shortly after chemical analyses of all detergents are completed.

Bohemian Forests Devastated By Pollution

A Czechoslovak Communist Party delegation recently inspected forests in the mountains of North Bohemia to see first-hand their "devastation" by industrial pollution.

The Czechoslovak news agency Ceteka reported earlier that North Bohemia, an area with a heavy concentration of chemical and energy plants, was increasingly suffering environmental damage from industrial expansion.

Indian Plants To Preserve Food By Irradiation

The Bhabha Atomic Research Center in Bombay is planning to set up semi-commercial plants to preserve food by irradiation.

Scientists in this center—one of the largest and most modern food irradiation and processing laboratories in the world—have carried out techno-economic feasibility studies to treat onions, potatoes, fruits, grain and sea foods with very low doses of radiation.

The application of very small doses of radiation, Indian scientists have found, can stop sprouting and reduce dehydration of tubers like potatoes and bulbs such as onions. This cuts storage losses and enhances their shelf-life.

Low doses are effective in delaying for a week or two the natural processes of ripening in fruits.

A variety of processes utilizing radiation have been developed in India for extending the shelf-life of shrimps, pomfrets and Bombay duck—major harvests from Indian waters. Moderate radiation destroys spoilage bacteria and extends the marketability of iced fish by about two weeks. Combination processes with heat and radiation have also been developed to increase the shelf-life at room temperature.



World Environment Report

VOL. 4, NO. 18

Copyright © 1978. Center for International Environment Information.

AUGUST 28, 1978

Antarctic Meeting in Argentina Slight Environmental Issues

BUENOS AIRES—Environmental protection is still a secondary issue as regards Antarctica, according to experts interviewed by *World Environment Report* during an international conference on Antarctic issues held here recently.

Direct information on the conference was sparse, since delegates were ordered by meeting officials to keep confidential the specifics of the talks, which mostly centered on claims made on the White Continent by 13 nations. This secrecy procedure is a carry-over from the last Antarctic Treaty meeting, which was held in Canberra, Australia.

One source told *WER* that the Buenos Aires meeting was the first at which the question of sovereignty in the Antarctic had been brought out into the open. All delegations present at the conference agreed that some solution had to be found to the long-standing argument over who should have jurisdiction in Antarctica.

"This is important," the source said, "because nothing can be done in any other field in the Antarctic until the claims issue is straightened out."

In the midst of these political discussions over sovereignty and the diplomatic side-stepping of the ever-present issue of mineral exploitation, environmentalists were busy trying to get the conference interested in what they had to say. One environmentalist said that while there were politely listened to, most of their recommendations would probably be cast aside if Antarctica were opened up to political and commercial exploitation.

"Everybody's interested in their claims," the environmentalist said. "Minerals, fishing, and tourism are truly the big issues." But most environmentalists think that the big issue is whether Antarctica can withstand the onslaught of civilization.

Antarctica is not only the purest but also one of the most delicate of ecological zones on earth. Environmentalists maintain that the slightest carelessness in mineral exploitation or the least imbalance in fishing in the area could spoil it irrevocably.

Tourism is another frightening, perilous aspect, according to environmentalists at the conference. More and more Argentine agencies are offering Antarctica as a different sort of vacation trip. The high cost of the journey restricts the tourist flow considerably, but the Antarctic tourist trade is definitely growing.

Thus, environmentalists express fears that before long what was once the desolate face of the White Continent will be studded with thermal souvenir stands where one will be able to buy T-shirts bearing slogans like "I've been to Antarctica" unless something is done to stem the tourist flow. Tourists would also disturb the mating habits of the Antarctic's rare wildlife, and tour vessels would pollute the Antarctica area. DAN NEULAND

Norway's Environment Minister Brundtland to Address IEF

NEW YORK—The Environment Minister of Norway, Dr. Gro Harlem Brundtland, will address the next meeting of International Environment Forum on September 11, 1978.

According to Dr. Whitman Bassow, Executive Director of the Forum, Dr. Brundtland will speak on "Economic Growth and Environmental Quality: the Norwegian Experience."

The all-day meeting will take place in New York.

The Forum—which meets four times annually—brings together U.S. and Canadian business executives and senior environmental officials from around the world to examine international environmental issues that affect the operations of business and industry. Previous Forum guests included Arnaldo Jose Gabaldon, Environment Minister of Venezuela, Dr. Raimi Ojikutu, Director of Environmental Planning and Protection of Nigeria, and Dr. Mostafa K. Tolba, Executive Director, UN Environment Programme.

Forum members include IBM, Texaco, Petro-Canada, DuPont, Union Carbide, Atlantic Richfield, Exxon, Tenneco, AMAX, Procter & Gamble, and the 3M Company.

In This Issue

Environmental Research	2
U.S. Senate and EIS	2
Swiss Solar Energy	3
Diesel vs. LPG	4
Nuclear Waste Burial	4
U.S.-Mexican Agreement	5
In Brief	6

EEC in Brussels Boosts Budget For Environmental Research

BRUSSELS—The Commission of the European Economic Community (EEC) has submitted to the Council, the EEC's highest body, a revised research and development program that will boost environment-related research expenditures by the EEC by more than 25 per cent over the original five-year research program adopted in 1976. The new program is expected to be approved by the Council shortly.

In announcing the revised program, the Commission noted that it "takes account of changes dictated by experience" since the original program was proposed, a not-too-veiled reference to the "experience" of the Amoco Cadiz supertanker off the French coast last March. The cost of the new program, still scheduled to conclude by 1981, was estimated at \$26 million.

The newly revised research program retains the four-part division of the earlier one—research on the effects of pollution on health and environment; on environmental information management; on pollution prevention; and on protection and improvement of the natural environment. But significantly, it calls for "expanding research into the ecological effects of oil pollution and the techniques of cleaning up after accidents to supertankers." The original program placed only minimal emphasis on the prevention and clean-up of tanker oil spills.

The Commission also said that "more effort will be put into research into the effects on health and environment of marketed chemicals." Nearly one-quarter of the program adopted in 1976 had been concerned with the investigation of potentially dangerous chemicals and their effects on the environment.

The Commission, in announcing the revised program, also singled out for attention anticipated research into the dangers of human exposure to asbestos and other fibers, as well as into the impact of fluorocarbons (used in the manufacture of aerosol sprays) on the atmosphere's ozone layer.

GARY YERKEY

U.S. Senate Urges International Environment Impact Statements

WASHINGTON—By a unanimous vote, the U.S. Senate has approved a resolution calling upon the government to seek the agreement of other nations to a proposed treaty requiring an international environmental impact statement for any major project, action, or continuing activity that could have a significant adverse effect on the physical environment, or on the environmental interest of another country or global commons area.

The resolution was introduced by Sen. Claiborne Pell (D-R.I.), whose work to ensure peaceful uses of the

oceans and international cooperation in protecting the environment has already resulted in two earlier treaties. One is a treaty prohibiting the emplacement of weapons of mass destruction on the seabed; the other prohibits the U.S. and the Soviet Union from using environmental modification techniques as weapons of war.

Among the treaty's major provisions is one calling upon all governments and nongovernmental agencies to consult with all affected entities with a view toward preventing or minimizing any adverse environmental consequences beyond their territory that might result from a major project. In the case of a global commons area, the respective government or agency would be required to consult with the UN Environment Programme before undertaking a major project.

Under another provision of the proposed treaty, a party planning a project could be requested to refrain from initiating the project for 90 days following submission of an international environmental impact statement to permit consultation among all affected interests. An exception would be made in cases where a delay "would involve serious risks to the safety of life or property or would otherwise be clearly infeasible (sic)."

After the treaty has been in force for five years, the signatories would meet in Geneva to review the effectiveness of the agreement. At the same time, the nations would consider the need for developing procedures for assessing liability against nations responsible for damaging the environment of other nations or areas beyond national jurisdictions.

The treaty would be of unlimited duration, although each nation would have the right to withdraw upon 90 days' notice.

PETER PHILIPPS

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$150 per year. \$20 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
 Editor-in-Chief Albert Wall
 Circulation Manager Jan De Pinto
 Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit private organization which seeks to foster public understanding in the United States and Canada of global environment programs, how they affect the quality of life in North America, and the role of international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

SPECIAL REPORT: Switzerland Pursues Active Solar Energy Policy

GENEVA—A Swiss energy expert has reported to the European Free Trade Association (EFTA) that his country has been pursuing an active policy to increase the use of solar energy.

Riccardo E. Mueller, of the Federal Energy Office, recently reported in the EFTA monthly "Bulletin" that Switzerland was making great efforts to ensure greater diversification of energy sources. He pointed out that his mid-European, mountainous country has an annual average of some 1,500 to 1,800 hours of sunlight, while states such as Saudi Arabia have figures about twice as high. More southerly states find it easier to exploit solar energy, he wrote.

Petroleum Products

Petroleum products, he wrote, account for an extremely high proportion of total energy consumed in Switzerland — 76.6 per cent in 1976. Furthermore, Switzerland has no coal deposits of any significance. Until now, he reported, apart from wood (an indirect form of solar energy), hydraulic power has been the most widely used regenerable energy source.

The next step, Mr. Mueller said, is to use solar energy directly for heating buildings and for hot-water production. Furthermore, studies are also being carried out on the use of solar energy for electricity generation, he reported.

As of late 1977, there were some 500 solar energy installations in Switzerland — chiefly systems for heating swimming pools, hot-water production and, in some cases, for heating private homes. These installations, he noted, were carried out with government subsidies.

Collector Panels

Numerous large and small firms manufacture collector panels for both domestic use and export, Mueller reported. Swiss firms have also developed concentrator collectors which are in use throughout the world, he wrote. The introduction of concentrator collectors opens up new fields of application, in particular, for cooling buildings, industrial heating, and water processing, his report commented.

A recent study carried out as a part of a total energy review, he reported, estimated that in 1985 solar energy will account for about 0.5 per cent of total energy consumption in Switzerland. For this to be achieved, he said, it will be necessary to install about one million square meters (three million square feet) of solar collectors. The prime uses here would be domestic hot water production, home heating, and swimming-pool heating.

Firms and experts dealing with solar energy all require a back-up of meteorological data, Mueller noted. The Swiss Central Meteorological Institute entered this field at a relatively early date and, for example, a mobile solar-

measurement unit equipped with seven pyranometers has been in use since 1973.

The Dairy Industry Laboratory of the Zurich Federal Polytechnic is experimenting with solar energy use in agriculture, he reported. In fact, one of Switzerland's contributions to development aid has been the construction of a solar powered cheese works for Afghanistan.

The Federal Reactor Research Station in Wuerenlingen has its own collector testbed. An artificial light testbed is now under construction there. The same Institute is developing an instrument package for long-term monitoring of solar installations in private houses.

Because climatic conditions in Switzerland vary so widely, there would be little sense in evolving a standardized governmental solar house, Mueller pointed out. Instead, existing solar houses in different climate zones are being fitted with standard instrument packages. Trials with highly concentrated sunlight and with latent heat accumulation are being carried out, in particular, at the Federal Polytechnic in Lausanne.

Climatic Conditions

Mueller's report noted that radiation is more favorable in the mountain areas than in the plains, especially in winter. Consequently, he said, it would be possible to install solar stations for electricity generation in the Alps. A combination of solar plants and existing hydraulic storage installations would make it possible to partially overcome the irregularity of solar radiation available, Mueller commented.

He cited two international agreements in which Switzerland has participated. Both fall within the scope of the International Energy Agency in Paris. In early 1977, Switzerland signed a collaborative agreement with Austria, Belgium, Denmark, West Germany, Italy, Japan, the Netherlands, Spain, Sweden, Britain, and the U.S. This program covers the development and testing of solar heating and cooling systems and provides for the exchange of information on their research results. This not only eliminates duplication, but uniform standards are developed from the start, Mueller noted.

Solar Agreements

In late 1977 a further agreement covering preparations for the construction of solar electricity generating stations was signed by Austria, Belgium, West Germany, Greece, Italy, Spain, Sweden, Switzerland, and the U.S. In the preliminary stage, design data will be developed for the construction in Spain of two solar power stations of different designs. Following the completion of this initial stage a decision will be taken on the implementation of these two projects for which a new agreement will be required.

WILLIAM G. MAHONEY

Pakistan to Convert Diesel Buses To Run on Liquefied Petroleum Gas

ISLAMABAD—The Hydrocarbon Development Institute of Pakistan (HDIP), a State-owned organization, has drawn up a pilot project plan for submission to the Government for large scale conversion of diesel-operated buses to liquefied petroleum gas (LPG). The purpose is to reduce pollution and save foreign exchange on import of petroleum.

Institute sources said that successful experiments have been conducted on Bedford trucks manufactured by a State-owned company, Bela Engineers Ltd. Urban transport in Pakistan is mainly owned by the government. The performance of the modified engine has proved even smoother than the original one and the problem of pollution has been eliminated, the sources claimed.

It is estimated that the conversion of 100 buses of Karachi Transport Corporation could result in a significant reduction of high-speed diesel (HSD) imports. Although the difference in the prevailing market price of diesel and LPG in terms of value is nominal and the mileage per gallon is equivalent, the most important objective of the project is the utilization of the indigenous material and the consequent reduction in the use of HSD, which now accounts for an estimated 55 per cent of the country's entire petroleum products consumption.

MOHAMMAD AFTAB

British Hospital to Preserve Amerindian Plantlore Medicine

LONDON—The expertise of one of Europe's oldest centers of medical healing, the Royal Hospital of Saint Bartholomew ("Bart's") in London, is being used to try and preserve the much more ancient arts of healing practiced by the disappearing tribes of Amerindians in the South American continent.

Their environment and their way of life in the Amazonian forests are being gradually destroyed by the advance of civilization, climatic changes, and massive pollution. With them will disappear a plant life unique in its richness and diversity, and an oral tradition of plantlore which understands and makes full use of plant properties in food, medicine, and agriculture.

Dr. Conrad Gorinsky, of part-Amerindian descent from the Rupununi region of Amazonas, and a lecturer in biochemistry at Bart's Hospital Medical College, has long appreciated the value of this knowledge for the benefit of medicine throughout the world.

With the help of the governments of Guyana and of Venezuela he has organized field expeditions to collect and catalogue plant species and the ways they are used by the Amerindians. Female contraception, heart and lung

ailments, oil, and paper pulp are some of the multiplicity of traditional uses.

The potential for drug use in the western world has led Dr. Gorinsky, with colleagues at Bart's, to form Biotechnical Research and Development Services Ltd. (BoTec)—"a company pioneering the science of ethnobotany and dedicated to the use of natural materials for the benefit of mankind."

With the use of computers, BoTec is codifying all the available data on the plants, down to the molecular structure, some of which have considerable economic value in the production of foods, drugs, insecticides, perfumes, fibers, and the manufacturing of raw materials.

The company can draw on a large range of academic disciplines and offers services which include the provision of rare plant materials for research purposes and new techniques and material in drug design. It also offers expertise in the organization of scientific expeditions, and in the organization of ethnobotanical programs.

BARBARA MASSAM

Australian Geochemist Claims Safe Method for Nuclear Waste Burial

PERTH—An Australian geochemist has developed what he claims is a safe method of disposing of nuclear waste by binding it in synthetic rock and burying it in canisters encased deep in granite. The problem of disposal has been among the most intractable in the uranium debate and, ironically, the anti-mining protest has been heard loudest at Prof. Alfred Ringwood's Australian National University (ANU).

As director of the Research School of Earth Science at the ANU, Professor Ringwood with a four-person research team developed the process over two years at a cost of \$50,000. He recently told a press conference that the method could be in use on a 1,000 megawatt nuclear power station within two or three years. The university has patented the process.

The Ringwood method is to create an alloy of synthetic minerals ("Synroc") under 1,300-degree Celsius temperatures, then bind the radioactive waste into the impervious material, seal the material in canisters, and bury it 1,000 meters into stable granite. The radioactive waste would gradually decay over 10,000 to one million years, although the process could be accelerated by leaving the canisters above ground for 20 years before burial.

Professor Ringwood said that for some years he had been doubtful about the efficacy of the present storage method. Presently, "radwaste" is stored in insulated tanks, or sealed in glass ("vitrified") and buried in salt formations.

"Buried radwaste creates a thermal field, and the brine migrates toward the waste cylinders by a process of solution and recrystallization. Thus the brine in the

thermal field will ultimately interact with the radwaste cylinder," he said. The result would be eventual leakage.

Professor Ringwood said that, other objections to the use of nuclear power aside, "the radwaste problem cannot reasonably be cited in justification of policies to abandon its use."

DON LIPSCOMBE

Sri Lankan Accuses State Sector Of Being Principal Polluter

COLOMBO, Sri Lanka—The Acting Director of the Ceylon Institute of Scientific and Industrial Research (CISIR), E.E. Jeyaraj, has accused state-owned institutions here of being the principal polluter of the Sri Lankan environment. The CISIR is a state-funded but autonomous non-profit industrial research institute established by Parliament in 1955. It is the only institution of its kind functioning in the country.

In an article published in the government-controlled "Ceylon Daily News," the country's largest circulation English language daily, Jeyaraj says: "It is an obvious fact that the chief architect of pollution in Sri Lanka is the state sector — both public bodies and industrial corporations."

The CISIR Director goes on to list pollution offenses committed by state-owned industrial corporations and other public institutions. Included in his list are the country's two cement factories at Kankasanturai and Puttalam, which are polluting their surrounding areas with kiln dust despite the fact that they were ordered to install electrostatic precipitators.

The caustic soda factory at Paranthan in the North was to have a DDT factory attached but since this never materialized, the surplus chlorine (about 15 per cent), Jeyaraj says, "is emitted into the environment." He dryly notes that the factory is to be expanded twofold and an assurance has been given that all the chlorine produced will be utilized by the paper factories.

The CISIR Director adds to the list: Sulphur dioxide from the state-owned petroleum refinery near Colombo pollutes the air in combination with automobile emissions from vehicles owned by the Ceylon Transport Board, the state-owned monopoly bus service.

"In the heart of Colombo we already have one tenth of the sulphur dioxide concentration present in the disastrous London fog of 1952 in which thousands died," Jeyaraj says.

Public-Sector Callousness

Turning to water pollution, the CISIR Director says that alkali and milk washings from the state-owned spray dried milk factory ends up in the drinking water of neighboring villages; that alkali and sizing effluents from the large state-owned textile plants enter mainly untreated into streams; and that alkali and particulate

wastes from the state-owned paper factory at Valachenai in the country's Eastern Province is destroying the aquatic environment there.

"An example of the callousness of public-sector industries regarding the pollution they cause is a state factory in which the imported effluent treatment plant has never even been installed but is being allowed to rust and rot in the factory yard," Jeyaraj says.

He points out that the canal system in the capital city of Colombo literally stinks and points an accusing finger at the government-owned National Milk Board, the government Marketing Department cannery, the concrete works of a state housing construction project, a government-owned textile mill, a nationalized oil mill, and the Colombo Municipal Council's overflowing sewer. Capping it all are the shanties along the canal banks whose dwellers "are not relocated because each shanty dweller has one vote."

Asked what scientists and citizens should do about the problem, the CISIR Director argues for more effective environmental monitoring at the local level.

MANIK DE SILVA

U.S., Mexico to Cooperate On Mutual Environment Problems

WASHINGTON—The U.S. and Mexico recently signed an agreement pledging mutual cooperation on environmental problems, including air and water pollution control on both sides of the U.S.-Mexican border. The agreement is the first of its kind between the two countries.

Douglas M. Costle, administrator of the U.S. Environmental Protection Agency (EPA), expressed confidence at the signing in Mexico City that the two neighbors will "emerge from our joint endeavor to confront the challenges ahead with a bond that is closer even than the one we have now." He added: "Today we are increasingly confronted with problems that will demand a whole new kind of commitment if they are to be resolved." These problems, he said, included the widespread contamination of the environment by toxic chemicals, the growing pollution of the seas, and "the potential that even the weather may be altered as an after-effect of our continued economic expansion."

Under the agreement, the EPA and its Mexican counterpart, the Subsecretariat for Environmental Improvement of Mexico (SMA), will initiate a cooperative effort to resolve environmental problems of mutual concern in border areas, as well as any environmental protection matter, through exchanges of information and personnel, and through the establishment of parallel projects. Senior EPA and SMA officials will meet periodically to discuss mutual problems and policies, as will experts designated by each nation to review technical issues and coordinate projects.

PETER PHILIPPS

In Brief...

Holland Develops Filtrator For Cleaning Polluted Water

A new automatic filtration unit for cleaning of polluted surface water, waste water, and recycled water has been introduced recently in Holland. This continuously-operating filter is a combination of a sedimentation and filtration system, plus an optimized pre-coagulation stage.

Developed and manufactured by the firm of Altron-Eco-Supply B.V. of Wormerveer, the Netherlands, the filter plant has numerous potential applications, including: initial purification of surface water for reverse osmosis; biological purification of domestic waste water; and treatment of waste water used in electro-plating, production of pigments, and carbon paper, and in steel rolling mills. Marketed as the "Rozka-filter," the unit is now available for export to the United States, Canada, and other countries.

Further details, maybe obtained from the Netherlands Consulate General, Commercial Division 659, One Rockefeller Plaza, New York, N.Y. 10020.

UNEP Sponsors Study Tours Of USSR's Parks, Reserves

The UN Environment Programme (UNEP) is sponsoring a three-week study tour of the Soviet Union's national parks and reserves for 20 administrators, professional personnel, and conservation leaders throughout the world.

The aim is to enable the group to learn at first hand how the USSR manages and plans its natural reserves—120 protected locations, with an area exceeding 9.5 million hectares, used for scientific research, and another 1,500 locations, covering 10 million hectares, reserved for

economic uses such as the breeding of valuable species.

UNEP is financing the tour, which takes place this fall, from its rouble account (one of the problems in the past has been to find ways to use the non-convertible contribution of the USSR to UNEP). The tour is being arranged with the cooperation of the USSR State Committee for Science and Technology.

Mexico and Panama Join In Desalinization Venture

Mexico and Panama recently signed an agreement to operate jointly a desalinization plant in Panama, built by Mexican technicians as a means to train Panamanians in construction and operation of such projects. The plant has a capacity of 15,000 liters daily of potable water, according to a Mexican Government spokesman.

HK Invites Industry to Join Advisory Environment Agency

The government of Hong Kong plans to invite representatives from the Colony's major industrial organizations to join a reconstituted Advisory Committee on Environmental Pollution.

Stuart Reed, the Colony's Environmental Protection Advisor, also said a legal framework will be worked out for the overall strategy for pollution control.

He said extensive discussions have been taking place over the past three years and are now involving representatives of local industry including an ad hoc body set up by the Federation of Hong Kong Industries and groups such as the General Chamber of Commerce and Chinese Manufacturers' Association.

The Water Pollution Control Ordinance is the first of five ordinances being discussed with industry, he said.

Irish Council Publishes Water Pollution Booklet

Under the booklet title, "Water is Life," Ireland's National Water Pollution Advisory Council (WPAC) and its chairman, Ted Bonner, warned that Ireland can no longer remain complacent about water pollution. The report says that fish kills in Irish rivers are no longer uncommon, while algal blooms in some lakes are also becoming familiar. Certain Irish estuaries, says the Council, are receiving considerable waste loads.

A total of 31,000 copies of the booklet will be distributed through schools, youth bodies, conservation groups, and local government authorities.

Uranium Firms Acquire Equity Mining Rights in Australia

A month after the federal government formally approved uranium mining in Australia in principle, a large mining corporation has filed a preliminary environmental impact review of a proposed mining development in Western Australia.

Western Mining Corp. compiled the report over two-and-a-half years at a cost of \$500,000. The corporation says its uranium deposit, located 750 miles north-east of Perth, contains an estimated 47,000 tons of "yellowcake," valued at \$4 billion.

Two other companies—Esso Exploration and Production Australia Inc. (an Exxon unit) and Urangesellschaft m.b.H. also acquired equity interests in the project.

Although the uranium find was made in 1970, the project, called "Yeelirrie," has been in limbo for the past five years during which there were plans afoot to nationalize various mining industries. Mining of uranium was only approved in Parliament last month, following recommendations of a special commission and a bitter battle between conservationists and mining interests.

Bombay Secures IDA Credit For Sewerage Project

The International Development Association (IDA) recently approved a \$196 million credit for its second water supply and sewerage project in Bombay. IDA is the World Bank's affiliate for concessionary lending.

Bombay, with a population of 7.6 million, is the second largest city in India and a major industrial center. A rapidly expanding population has led to increasing demands for water supply and sanitation.

The \$411.6 million project will supply an additional 450 million liters per day of water in the Greater Bombay area. The sewerage component will improve and extend the collection system from 44 per cent to 90 per cent of the Greater Bombay area and will provide treatment and safe means of disposing of sewage from the whole of the urban population. It will provide additional public latrines for the slum areas where some 2.5 million people, one third of Bombay's population, live.

Taiwan Producing Efficient Solar Water Heaters

Scientists in Taiwan have discovered that solar energy can be viably tapped in the sub-tropical island. This conclusion was reached after five years of research at the Tatung Institute of Technology.

The Institute has already produced a water heater, cooling system, irrigation pump, still power system, and tracking system, all powered by solar energy.

Orders for such heaters have come in from the U.S., Canada, Saudi Arabia, South Africa, Tonga, Jordan, Singapore, and Indonesia. To date, Japan is the only country using solar water heaters extensively for family use.

Huang Wen-hsiung, director of the research center, said although a solar water heater may cost twice as

much as either a gas or electricity heater, it costs 30 per cent less to run over a period of 10 years after capital expenditure is taken into consideration.

New Delhi Industries Face Trial Over Water Pollution

Seventeen industrial establishments in New Delhi are now facing trial for not taking effective steps to control water pollution.

Dr. N. Chaudhuri, Chairman of the Central Board for the Control of Water Pollution, said that these industries had disregarded the Board's advice to minimize the pollutants discharged into Jamuna River, the source of drinking water for the capital's citizens.

Auto Emissions in Singapore Exceed Permissible Levels

The Anti-Pollution Unit in Singapore has recently discovered that three-quarters of the vehicles it tested in the island republic were found to emit poisonous gases above permissible levels.

In its annual review, the Unit said that 75 per cent of the 86 vehicles it tested in 1977 were found to emit hydrocarbons (like methane) in excess of 500 parts per million. Some 30 per cent of the vehicles surveyed were found to produce exhaust gases containing more than 4.5 per cent carbon monoxide.

In addition, a total of 224 source emission tests were conducted on various factories in 1977 to check for compliance with regulatory standards. Smoke levels in urban areas were found to be generally higher than in industrial and rural areas, although the relatively low smoke levels in all three areas appear generally unchanged from the previous year, the report said.

Human Settlements Agency Created in Philippines

Philippine President Ferdinand Marcos recently created a new government department, the Department of Human Ecology and Settlements, and appointed Mrs. Imelda Marcos, the first lady, as its secretary. The new department will attend not only to the social and housing needs of the Filipinos but also the planning development of the 1,600 towns and cities throughout the country.

Nationwide Tree Planting Campaign Set for Sri Lanka

The Ministry of Agriculture and Lands in Sri Lanka has recently launched a nationwide tree-planting campaign. About 2.5 million plants were supplied for the purpose.

Due to the rapid opening up of land for large-scale cultivation and the clearing of jungle for future projects, the country's forests have been dwindling at an alarming rate, according to the Ministry.

The trees planted as part of this campaign will not merely serve as a source of food and timber but as means of protecting the environment.

Pineapple Peels Used for Cattle Fodder in Malaysia

Scientists in Malaysia have found a new use for pineapple peels: fodder for cattle.

At the Kempas Breeding Center of Johore State, investigators have discovered that cattle grow more quickly on pineapple peels than on grass. A steer takes two and a half years to reach a weight of about 700 pounds by the traditional grazing method. Now a six-month old calf fed with pineapple peels reaches the same weight in eight months.

Danes Warn About Hazards of Dry-Cleaning Fumes

Denmark's Environmental Ministry has compelled all self-service dry-cleaning establishments to post illustrated signs showing that breathing in fumes from the machines is dangerous, especially to children, and that smoking in the automat increases the danger of being poisoned.

If after cleaning, the clothes are damp, or smell strongly, a picture of a telephone advises the user to seek instant help.

Another warning sign shows a car with open windows to emphasize the danger of conveying recently cleaned clothes in a closed car.

The Ministry has also ordered owners of the machines to service them every six months and display a certificate to this effect.

Purify Polluted Water in Major Chinese Fish Farm

The polluted water of Duck Lake, a major fish farm in Hupeh province in China, has been purified and the fishes in the lake now have a 30 per cent survival rate.

The New China News Agency said water in the lake was once polluted by discharges from three nearby chemical plants. In 1976, the provincial party committee set up an anti-pollution team of 20,000 commune members, and last year 788,000 fish fry were bred from spawn in the Duck Lake fish farm.

S. Korea May Build Tidal Power Generation Plant

South Korea may start building its first tidal power generation plant next year if a study conducted by the Energy-Resources Ministry and the Korean Electric Co. shows it is feasible.

The plant, with a planned capacity of 400,000 kilowatts, is expected to cost \$288.7 million. Possible sites are the Sosan, Asan and Chonsuman Bays located 70 miles southwest of Seoul.

The study will be completed by the end of this year. If construction work starts in 1979, the plant could be completed by 1986.

Colombia to Construct 24 Reservoirs for Forestation

The Autonomous Corporation of the Cauca Valley (CVC) in southwestern Colombia will invest \$10 million during the next year for the construction of 24 reservoirs for forestation projects. The program will also include soil studies and river controls, to be financed by the federal government.

The CVC has some 5.5 million acres under its jurisdiction in the agriculturally rich Cauca River Valley. Patterned after the United States' TVA, it is generally considered to be one of the most advanced regional environment control agencies in South America.

Pakistan To Reclaim Land Ruined by Waterlogging

Pakistan's state-owned Water and Power Development Authority (WAPDA) Chairman, Maj. Gen. Fazle Razik, said recently that the WAPDA intends to spend about \$180 million to reclaim the agricultural land affected by the twin-menace of waterlogging and salinity in the northern Mardan area covering Mardan, Swabi, Charsadda and Nowshera.

He said that more than 100,000 acres of land had been waterlogged in the area. The six-year project will involve remodelling, clearing, and dredging of drains, and the overhaul of lower Swat canal.

Debate Environmental Impact Of Overhead Power Lines

The China Light and Power Company in Hong Kong plans to spend \$217,391 on an environmental study before deciding where the power lines for its new power station should run.

The company had decided to use overhead power lines instead of underground cables. But some environmentalists voiced objection because the lines may have to cut through some of the Colony's parks. It is still unclear which parks will be affected. A spokesman for the power company said that the study will come up with answers and it may even turn out that the parks will not be affected. But he did not say how the company plans to minimize the visual impact.

Create Land Reserve At Scene of Diamond Boom

The government of Western Australia has reserved a 440-square-mile block of land for a national park, in an area of the state which has just recently been the scene of a frantic diamond hunt.

As a reserve, the block located at the northernmost tip of the state is off-limits to miners. It was part of a total land mass of 10,540 square miles which has been delegated by the Western Australian Conservation Through Reserves Committee as a protected area. These reserves comprise 5.6 per cent of the Kimberley region. Coincidentally, there have been a rush of new prospecting claims made as miners here gear up for a diamond boom.

The area reserved as a national park because of its unique scenery and flora and fauna is the remote Cape Londonderry area, which is only accessible by sea or helicopter. Other portions of the reserve area are protected in varying degrees, depending on the priority placed upon it by the Committee.



World Environment Report

Library

22 AUG 1978

VOL. 4, NO. 17

Copyright © 1978. Center for International Environment Information.

AUGUST 14, 1978

Raise Issue of Ecologic Harm To Australia's Great Barrier Reef

PERTH—Between \$11-12 million will be spent to research the effects of oil drilling on Australia's Great Barrier Reef before exploration begins there, but there is no doubt that drilling will take place despite the risks to the reef ecosystems.

Dr. J. Bunt, Acting Director of the Australian Institute of Marine Science, said that the discovery of oil would encourage exploitation and "under these circumstances it would become necessary to accept some element of risk for the reef communities."

He was speaking to the state of Queensland's House of Representatives Standing Committee on Environment and Conservation, in Brisbane. The Committee is responsible for the protection of the Great Barrier Reef which extends for thousands of miles across the Queensland eastern seaboard. It is considered a unique marine environment, as well as a tourist attraction.

Mr. R. Williams, Chief Executive of the Great Barrier Marine Park Authority, said the likelihood of finding any oil on the reef was slight, and the millions of dollars to be put to researching the environmental impact of oil drilling and spillage on the reef could not be justified. He added, however, that the Authority supported further research before a final decision to permit exploration was made.

DON LIPSCOMBE

Sweden to Sharply Reduce Lead Content of Regular Gasoline

STOCKHOLM—As a further step in cleansing polluted air, the Swedish Government recently decided to enforce a reduction in the lead content of regular gasoline from 0.4 to 0.15 gram per liter.

The regulation is to take effect in 18 months' time, beginning in 1980, in order to give refineries time to prepare for the change. The lead content in premium gasoline will remain unchanged at 0.4 gram per liter.

The danger of lead in the environment was taken up seriously by the government after an official investigation six months ago showed that Sweden's atmosphere was becoming so polluted by lead in car exhaust that city dwellers, especially children, were running the risk of

damage to their central nervous system (*WER*, Feb. 13, p.5).

The investigating Products Control Bureau of the National Environment Protection Board (NEPB) said that lead had become a very serious and general environment problem. More than 4.7 million cubic meters of gasoline are consumed annually in Sweden, it said, and that consumption releases 1.2 to 1.4 million kilos of lead along Sweden's roads.

The government's decision followed upon a further report from the NEPB stating that Swedes could expect further increases in lung cancer and illnesses of the air passages over the next decades. Besides smoking, it mainly blamed air pollution, especially car exhaust.

SPECIAL DISPATCH TO *WER*

Rigid Air Pollution Standard For NOx Modified in Japan

TOKYO—Enforcement difficulties encountered by the Japanese Environment Agency (JEA) has resulted in a relaxation of the country's single official air pollution standard of 0.02 parts per million per day for the average atmospheric content of nitrogen oxides (NOx) to standards between 0.04 and 0.06 ppm per day. The move was a compromise between the Agency and officials of the Ministry of International Trade and Industry (MITI) despite the likelihood that some highly pollution-conscious communities throughout the nation may bitterly protest what they consider to be a serious downgrading of the previous standard.

But members of the Central Council for Environmental Pollution Control (CCEPC), a governmental organization which is frequently consulted by the JEA,

In This Issue

Turkish Protest	2
James Lee Interview	3
Chemical Pollution	4
Noise Pollution	4
Maritime Convention	5
Air Pollution	5
In Brief	6

explained to both the Agency and MITI only recently that in any event the effects on human health from nitrogen oxides emitted by industrial plants and automobile engines are not easily determined in scientific terms. A spokesman for the CCEPC also explained that in annual terms the new standards will work out to between 0.02 and 0.03 ppm on the average.

It is expected, however, that the new standard will be introduced by the Agency based upon regional levels of industrialization and the volume of traffic in each area. For example, the standard maximum limit of 0.06 ppm for NOx limits will be enforced in major cities and industrial sites. For the rest of the country the maximum allowed will be 0.04 ppm.

Agency officials plan to review the new standards every five years based upon the latest scientific studies and using the most up-to-date equipment. The purpose will be to determine whether the tolerance levels assigned are remaining appropriate.

The former maximum allowable limit of 0.02 ppm was set by the agency in 1973. It was the strictest standard established anywhere. Nevertheless, a nationwide study of air pollution factors conducted in 1976 disclosed that the stiff standard was being met at only 17 per cent of those areas in Japan where monitors were set up.

MITI authorities had joined business leaders to ask the Agency to relax the standard for NOx, arguing that the national economy—already hard pressed by the continuing slump—would be badly affected because of the enormous sums corporations would have to spend to meet the old standard. The new standards are almost as strict as those of Canada and more of a limit on air pollution than presently imposed in the U.S. and West Germany.

Environment Agency officials believe that the relaxation in the NOx levels could lead to more frequent occurrence of photochemical smog in such cities as Tokyo, Yokohama, and Osaka, especially if the level of air pollution returns to what it was a decade ago. It was exactly this fear that led the Tokyo Metropolitan Government to file an objection with the Agency concerning the move.

Yet even with the relaxation of the NOx standard, it is believed that private Japanese companies will be spending more than \$4.3 billion over the next few years on installation of devices to curtail the emission of NOx fumes.

Corporations most involved in the program are those operating power plants, steel mills, chemical complexes, and cement factories. These were the firms which lodged the loudest protests with MITI that the previous NOx limitation was economically unrealistic and, for the moment, not technically feasible. Apparently they convinced both MITI and the JEA that to stiffen restrictions on NOx emissions beyond 0.03 ppm would necessitate use of greatly improved fuels as well as a drastic change in the structure of energy consumption throughout the country.

A. E. CULLISON

Turks Stage Protest Against Pollution in Izmit Bay

ISTANBUL—Hundreds of inhabitants of the town of Izmit and the surrounding villages recently staged a demonstration against pollution in Izmit Bay, in the Marmara Sea.

Dozens of small boats, carrying slogans protesting the pollution of the Bay and asking authorities to take immediate action, traversed the Bay. This is the first time that a protest demonstration on pollution in the Sea has been held in Turkey, and Turkish environmentalists welcomed this as "a sign of awareness" of public opinion on environmental problems.

The demonstrators protested the pollution of the Izmit Bay by hundreds of nearby industrial plants which are discharging huge amounts of waste. They complained that Izmit Bay, formerly described as "the pearl of Marmara Sea," has been "rapidly poisoned" by the factories set up along the shores.

The Minister of State in charge of environmental problems, Faruk Sukan, visited Izmit a day after the demonstration was held, and met the managers of the major polluting factories. He warned them that unless the necessary measures were taken, the authorities would not hesitate to close their factories. Sukan also told the press that the final preparations for the creation of a cabinet post of Under-secretary for Environmental Problems are now under way and are expected to be completed soon.

SAM COHEN

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$150 per year. \$20 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director.....Dr. Whitman Bassow
Editor-in-Chief.....Albert Wall
Circulation Manager.....Jan De Pinto
Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

SPECIAL REPORT: An Interview With The World Bank's Environment Chief

WASHINGTON—Some decades hence, when school-children are asked what Sarajevo is famous for, there may well be two correct answers. The first, of course, is that it is the city where the Archduke Francis Ferdinand of Austria was assassinated, marking the start of World War I. But in time it also may come to be remembered as the first major city to emerge from the "absolute depth of environmental despair," in the words of Dr. James A. Lee, Director of the World Bank's Office of Environmental and Health Affairs, "into a showcase of rehabilitation."

As the World Bank's only environmental Director since the post was created in 1971, Lee has played a direct role in Sarajevo's environmental miracle. A Yugoslav city of 60,000 at the end of World War II, Sarajevo's population has grown to 450,000, bringing with it "all the worst environmental problems," Lee says. As a result, when Lee made his first visit, the city had no fresh water for 14 to 16 hours a day and sewage leaked into the water supply. In addition, with every house burning lignite and frequent temperature inversions, the sky of the once famed spa was usually shrouded by heavy concentrations of sulfur oxides.

Sarajevo's recovery was made possible by \$100 million in development loans, of which the World Bank put up \$55 million. By 1981, when the project is scheduled to be completed, Sarajevo will have a reliable and safe water supply and a sewage collection system, including a new sewage treatment plant, a sanitary landfill system for solid wastes, and a significant abatement of its air pollution problem through a piped-in supply of natural gas that will be used to heat Sarajevo's homes and a new traffic system designed to rout autos around the city.

If Sarajevo is a showcase of what World Bank loans and know-how can accomplish, it also is illustrative of the big role environmental factors now play in Bank projects. It is the job of Lee and his 12-member staff to review every project and make sure it will not unduly harm the environment. His "marching orders," Lee explains, were to educate and sensitize the bank's staff "to be conscious of the human element." That means, he says, that each new project has to be viewed not only in terms of its effect on the environment *per se*, but in relation to its impact on the "health and well-being and socio-cultural milieu" of the people most directly affected.

Lee's job was created at about the time that thoughtful Third-World leaders were becoming increasingly concerned about the environmental degradation accompanying hasty and ill-conceived development projects. And, as the world's largest development institution, the World Bank worried that development projects were not being planned in a sound environmental context.

Thus began a new system under which borrowers must abide by environmental guidelines, and the "nitty gritty chore of looking at the environment" is built right into

the planning process of every new project, Lee says. As a result, he goes on, by the time a new project is ready to be presented to the Bank's board of directors "our work has been done."

Actually, Lee's responsibility does not end with the completion of a development project's environmental blueprints. Each project is carefully monitored throughout the building process to make sure the borrowing country is doing everything it agreed to do and to ascertain "how clear was our environmental crystal ball," Lee says.

Although much of the advance environmental planning is carried out in the Bank's headquarters in Washington, a great deal also requires on-site work. Lee cites a new hydroelectric plant as an example. Many aspects of such a project are familiar to the staff and can be worked out in-house, Lee explains. But such specialized problems as fish and wildlife migration must be studied first hand. Such studies may be carried out with the aid of a Bank loan or, in the case of poor countries, the Bank conducts development studies "as a surrogate for them," Lee says.

The World Bank is now the main conduit of development aid from the rich countries to the poor, lending about \$8.5 billion a year. This compares with only \$2 billion 10 years ago. Each year the Bank undertakes 200 to 250 new projects, and some 700 projects are under active surveillance by Lee's staff at any one time. Along with the dramatic increase in the amount of development aid the Bank makes available has been a marked shift away from what Lee calls the "physical aspect" of projects, such as roads and airports, to housing, education and health. What is more, an increasing percentage of the Bank's loans are used for what Lee calls "environmental rehabilitation to redress past wrongs," as some of the less developed countries "find out the wisdom of what we have told them."

In addition to Sarajevo, Lee cites two other examples of World Bank development loans being used "purely for environmental-type projects." One is Finland, where the Bank is helping to fund a nationwide industrial clean-up. The other is Sao Paulo, Brazil, where the Bank is involved in helping to solve what Lee claims is a "staggering problem" of air and water pollution (*WER*, June 19, p. 4).

Equally far afield from dams and other projects once considered the Bank's mainstays is the increasing role it plays in helping to control schistosomiasis and other diseases endemic to developing countries. Says Lee: "The development process is not without its threats to health."

A physician (George Washington University) with advanced degrees in ecology and management, Lee seems ideally suited to his job, which he himself describes as "manipulating both sides [health and environment] to raise living standards."

PETER PHILIPPS

Irish Environmental Committee Cautions on Chemical Pollution

CORK—A recent government report on pollution control in the Irish Republic recommends that programs for control of production, storage, transportation, and use of chemicals should include adequate measures for prevention of accidents which could pose a threat to public safety, as well as arrangements for dealing with any such accidents.

Drawn up by an Inter-Departmental Committee on the Environment, the report also emphasizes that State aid to projects with pollution implications should be subject to compliance with appropriate environmental standards.

The Committee also found a need for a system of evaluation and control of potentially harmful substances, as well as for clarification of Departmental responsibilities in this area.

Overall, the report says regulatory provision for pollution control is generally satisfactory, but some gaps exist in the control arrangements, and improvements in working and liaison aspects are desirable.

Welcoming the publication of the report, Minister for the Environment, Sylvester Barrett, said the Government had agreed that specific recommendations should be considered by the Departments affected.

Mr. Barrett announced that the Inter-Departmental Committee will continue in existence, assisting Government Departments in environmental matters, making an input to the Environmental Council, monitoring matters arising out of this report, and making any further inter-Departmental examination it finds necessary.

TOM MacSWEENEY

Bavaria-Wide Assault on Noise Pollution Focuses on Traffic

MUNICH—Using the slogan "Silence—Noise is Cruel!" a new, one-week campaign aimed at reducing noise pollution was conducted recently in 50 Bavarian cities and communities.

The campaign was the joint effort of the Bavarian Cities Association (BCA) and the State Ministry for Environmental Protection. The Chairman of BCA, Josef Deimer, commented at the opening press conference that road traffic—the worst source of noise—would be combated by the distribution of some 400,000 leaflets and 10,000 posters advising drivers not to let their motors idle; not to race motors; not to drive under the gear needed; not to blow horns unnecessarily; not to slam car doors, trunks, or hoods; and not to play car radios too loudly.

Bavarian Minister for the Protection of the Environ-

ment, Alfred Dick, maintained that "the best, cheapest and fastest protection against noise can be provided by the drivers" rather than by insulation of walls and windows in housing.

Simultaneously with that campaign, Bavaria's most respected daily newspaper, the "Sueddeutsche Zeitung," sponsored a "Health Forum" in which physicians and psychologists stated that increasing noise in the streets and at working sites could cause illness.

Although the Forum urged city planners to consider the noise problem as a major factor in planning settlements and access roads, it too found that the best solution was to educate drivers. Prof. Karl Krell of the Federal Institute for Traffic Affairs said that better behavior on the part of drivers would be more effective than any governmental defensive measures.

WILLIAM G. MAHONEY

Mexico City Running Out Of Land to Meet Future Needs

MEXICO CITY—The rapid growth of this capital has left urban planners with only 30 square miles of "reserve" territory for future needs, according to a study ordered by Mayor Carlos Hank Gonzalez. In 1968, Mexico City's population was seven million; today, it is more than 12 million.

In the next two decades, the city's growth will have to be severely restricted and directed to the east side of the metropolitan area, urban specialists said in their study-plan which took 18 months to devise. Some parts of the city already are totally occupied by inhabitants and buildings, they noted.

Despite the population growth, Mexico City appears to be holding its own with green spaces. Study figures showed that of 919 square miles, some 377 are occupied by structures and streets while 512 are parks, forests and in agricultural use. The balance is the reserve for future residential growth.

The plan presented to the mayor proposes, first, the channeling of residential growth to the east where land remains available for public housing projects and private housing development.

Restrictions against the urbanization of all forests and agricultural land would be strongly imposed and squatters who have moved onto those lands would be moved off.

Several agricultural zones surrounding the city, including the famed "Floating Gardens" at Xochimilco, would retain their use and no new housing developments would be permitted there.

An inventory was suggested of vacant lots in all parts of the city to determine where space exists for additional housing. After population is funneled to the east, the south part of the city is the second most likely area for additional residential development.

KATHERINE HATCH

Maritime Environmental Safety Convention Adopted by IMCO

LONDON—A major step forward in maritime safety and protection of the environment was claimed by the Inter-Governmental Maritime Consultative Organization (IMCO) at its recent London conference.

The conference adopted a Convention establishing basic minimum training requirements and certification for ships' personnel. Since over 80 per cent of maritime accidents are caused by human error, IMCO anticipates a substantial drop in numbers in the future.

The Convention was accepted by 25 States, between them owning more than 50 per cent of the world's shipping, and will come into force in twelve months' time.

It contains regulations relating to ships of differing tonnage, to ships on coastal routes, and to tankers carrying dangerous cargoes such as oil or chemicals.

The standards set by the Convention cover such subjects as navigation, watchkeeping, radar equipment, cargo handling and stowage, fire and emergency procedures, communications and maritime law.

Agreement was reached on procedures for checking whether ships arriving in the ports of member states were complying with the Convention. In "very serious cases" there will be power to detain those ignoring it.

ALAN MASSAM

Peruvian Ecologist Urges Lima To Enact Air Pollution Law

LIMA—Scientists are pressing the Peruvian Government to take immediate action on pollution here. They propose that the new Constitution—to be drawn up by the recently elected 100-man assembly—include specific articles to control atmospheric pollution in the capital.

The problem is 20 years old and getting worse daily, according to Carlos Bustamante, a leading ecologist and lecturer on pollution control at the National University of Engineering (UNI). "It is already serious and by the turn of the century it will be critical if we don't act now," he says.

Although a series of proposals was presented to the Architects Congress held in Lima last November, they have not yet been accepted. In fact, environmentalists have been waiting since 1973 for a law to control atmospheric pollution. It is not yet known if or when it will be passed.

Lima's meteorological conditions and geography are unfortunately all too conducive to a massive pollution problem: little or no rain, high humidity, low-altitude inversion. Moreover, the diffusion of contaminated air is almost nil since the city is locked on three sides by the surrounding foothills of the Andes.

Mr. Bustamante says there is a great need for an organization which would be responsible for monitoring pollution. "We must carry out studies to establish how much contamination there is; what kind of pollution is most prevalent in each area; and then act to control it," he insists.

The four major worries are: cars, industry, an inefficient system for refuse collection, and inefficient domestic appliances.

One in 12 persons in Lima has a car. If this ratio continues, by the year 2000 there will be 980,000 vehicles in the city. Many of the engines are run on diesel fuel which emits an extremely high percentage of carbon monoxide, hydrocarbons, and nitrogenous oxides.

But the problem is not just that cars are circulating in a city where contaminated air cannot be dispersed properly. The percentage of old and badly maintained vehicles in Lima is exceptionally high. According to Mr. Bustamante, these badly maintained cars emit five times the amount of pollution than a new car does.

Smog is worsened too, he says, by high buildings, narrow streets, bottlenecks, and the flat terrain.

Peruvian industry is centralized in Lima, and control of its pollution is negligible. At the moment some 70 per cent of the total manufacturing industry is located in the capital. By the year 2000 there will be double if not triple the number of factories in and around greater Lima.

There is a risk of greater chemical pollution if new factories are allowed to be constructed in the industrial zone without prior studies to establish the maximum "acceptable" emission limit. The principal industrial areas on the outskirts of the city are already dense with mills, smelters, assembly plants, textile factories, and soft drink, metal construction, chemical, and fishmeal plants.

These industries are responsible for emitting sulphur dioxide, metallic oxides, nitrogenous oxides, fine and heavy solids, noise, vibration, and finally, smell.

As far as garbage is concerned, each of Lima's four million inhabitants is responsible for a half kilo of refuse daily. (In New York, the figure is around 1.5 kilos.) Nevertheless, for the two million kilos of rubbish created here daily, there are only two big garbage disposals and three smaller rubbish dumps with no sanitary facilities.

"Even if we are still only producing a half kilo of rubbish per day 20 years hence, there will be seven million kilos of refuse to be collected daily. The problem will be alarming. Even now, between 30-40 per cent of the refuse is not collected," says Mr. Bustamante.

Finally, some system has to be established to prevent the use of faulty domestic appliances. In Lima, kerosene and gas are used in many homes for cooking. All too often these appliances function so poorly that considerable amounts of fuel permeate the atmosphere.

Although Mr. Bustamante and his colleagues are eventually hoping to create a National Environment Council to study and control pollution, right now they primarily are seeking some official recognition of the problem.

LORETTA McLAUGHLAN

In Brief . . .

Venezuelan Oil Town Pioneers In Sewage, Waste Treatment

While Maracaibo, Venezuela's second largest city (population two million), discharges untreated wastes into Lake Maracaibo, on the opposite shores the oil town of Lagunillas is pioneering sewage treatment.

The east coast, scene of Venezuela's major oil exploitation for more than fifty years, now has the benefit of the first plant, costing some \$1.2 million. Lagunillas' Egremont system, paid for by Maraven, subsidiary of the national oil company, will be followed by similar plants in the east coast oil towns of Bachaquero, Tia Juana, and Las Morochas. These and another eight smaller plants will serve a total population of 60,000.

Solids from the Lagunillas plant are being used for fertilizer, while the recycled water will enable some 500 acres of former shanty-town to be converted into gardens.

Although lake fisheries employ some 5,000 members of fishermen's unions, catches have declined as the result of trawling and contamination. Oil is considered to be an "insignificant factor" in the lake's pollution, the major blame being laid on raw sewage, and industrial and farming wastes.

Ghana Official Cautions On Over-Usage of Pesticides

The Environmental Protection Council of Ghana has appealed to the public not to allow over-enthusiasm for maximizing agricultural growth to lead to an aggressive and harmful use of pesticides and other agricultural chemicals.

Reading the statement at a recent press conference in Accra, Council Secretary F.A.K. Jiagge attributed the peculiar problems associated

with the misuse of pesticides in Ghana to ignorance. He disclosed that the Council had already embarked on a nationwide educational campaign.

The over-usage of such chemicals, he maintained, could have severe environmental repercussions on both the land where the natural organic fabric could be undermined and in waterways where the run-off would cause pollution problems.

Mr. Jiagge cited the Odaw River and Korle Lagoon, both in Accra, as examples of water polluted by pesticide runoff.

Pollution Control Progress Reported in Cali, Colombia

The municipal public health office of the city of Cali reports considerable progress in pollution control in this industrial hub of southwestern Colombia. As a result of a strict contamination control program, several industries have taken steps to stop pollution, including the Uni-Royal factory, Cementos del Valle, which recently installed four filters at a cost of \$157,000.

Many other industries have fallen into line since the health authorities closed a large petrochemical plant, Quin S.A., because of pollution. The plant will not be allowed to reopen.

The public health office is particularly concerned with air pollution since this is judged to be the city's chief environmental problem. Eight air control stations have been located in industrial, commercial and residential areas, and air samples are analyzed by special machines which break down the particles.

Cali's Public Health Secretary Armando Aparicio explained that the aim of the program is not to halt the city's industrial growth but to plan expansion in accordance with environmental safeguards. The second largest metropolis in Colombia, Cali is the headquarters for paper, rubber, plastic, metallurgical, and food industries.

Praise Chinese Oil Refinery For Extreme Cleanliness

The Changling Oil Refinery in the central Chinese province of Hunan has been praised as one of the cleanest industrial enterprises in the country.

A recent New China News Agency report, in detailing achievements of the refinery, said engineers built China's first purifying installation using activated carbon absorption to treat oil refinery effluents. It now handles 600 tons of water an hour.

The plant also has an installation that uses ozone to purify waste water at a rate of 200 tons per hour. The purified water is basically up to surface flow standards and more than half of it is recycled in production.

The oil recovered from the waste water is refined again, and raw materials such as liquid ammonia and hydrogen sulphide are also recovered.

Most of the harmful gases produced are now recovered by new techniques and used to fuel heating furnaces. The vacuum distillation workshop recovers all toxic gases and eliminates pollution. The plant has been saving an average of 3,000 tons of fuel oil a year.

Because of the effective pollution control, the air in the vicinity of the refinery is fresh and the water of the Yangtze River clear.

Philippines to Use Nuclear Energy to Measure Pollution

The Philippine Atomic Energy Commission (PAEC) is exploring environmental uses for the country's atomic energy. Currently, PAEC is working on the use of nuclear detection techniques in the study of agricultural and industrial pollution sources, and measuring the extent of contamination in the soil, water, air, and crops.

Indonesia Installs Solar System for Electricity

The Indonesian Government has recently installed a helio-thermochemical system in Medan to utilize solar energy to generate electricity.

The system is capable of generating 10 to 100 kilowatts of electricity per day. M.S.A. Sastroamidjojo, an expert on solar energy at Gajah Mada University, said the installation of the thermochemical system will be ideal for Indonesia in carrying out the electrification of villages.

Excessive Noise Levels Deafening British Workers

At least a half million British workers, and perhaps three times that number, are being exposed to noise levels which could gradually make them deaf, estimates Prof. Elvin Richards of the Institute of Sound and Vibration Research at Southampton University.

Britain does have a code of practice for industry under its Health and Safety at Work Act, which advocates a 90 decibel noise limit. But this is not being observed, Professor Richards points out, citing places with levels rising to 110-120 decibels.

Worst affected, he says, are dockyards, where noises are "impulsive," the machine tool industry which works with heavy steel, and workplaces with noise equipment that releases air at supersonic speed. Except for a few industries, like boilermaking and forging, there is no redress for workers whose hearing suffers.

In the professor's view, only making the code legally enforceable will improve the situation. He acknowledges the difficulties of enforcement on plants with older machinery, and in industries like the machine tool industry which contains many small, scattered firms.

He estimates the cost of bringing all such industries down to the 90

decibel limit as \$9.25 billion, but spread over 10 years thinks this would be a comparatively minor cost. "The only way to get it going is to pass a law and stick to it," said Professor Richards.

Recycling of Agricultural Wastes Boosts Beef Output

A recent study, conducted by the Asia Research Pte., Ltd. in Singapore, on recycling wastes into useful products showed that a village having rice, coconut, and sugarcane farming as the main sources of livelihood can support a feed mill factory and help boost beef output. Such wastes can also become rich sources of raw feed materials for the production of furfural, an important chemical used for the production of solvents and alcohols as well as lubricating oils.

The study showed that wastes from 2.47 acres of sugarcane can meet the forage requirements of at least four adult cattle, compared to about 60 acres of grassland for four roaming cattle.

Solar Energy Heats, Cools Australian Medical Center

A medical center using solar energy for its heating and cooling systems has recently opened in Sydney.

The solar unit at the Eldridge Medical Clinic consists of 250 collector plates which form most of the roof. The collectors also supply the building's hot water.

Rooms for diagnostic equipment, a theatre for minor operations, a recovery ward, a pharmacy, and an optician's shop are all air-conditioned by solar energy.

Unlike solar heating systems which use copper collectors, the medical center uses collectors made from dimpled stainless steel sheets

with a blue-violet surface. This enables water to be heated to temperature high enough to power the center's refrigeration equipment.

The hot water is pumped to a Japanese-made, indirect-fired absorption chiller of about 50-ton capacity, and then is passed over coils containing a lithium bromide-and-water solution. The heat causes water vapor to separate from the solution and it is passed through a conventional condenser and evaporator.

In winter, the chiller unit can be by-passed and hot water from the tank circulated to rooms.

ECE Study Urges Recovery Of Wasted Industrial Energy

Industries in Europe and North America are only using from 32 to 48 per cent of the energy they consume each year to turn out goods and provide services—but the remaining 52 to 68 per cent is lost.

A study recently completed for the UN Economic Commission for Europe (ECE) points to the urgency of taking action—with means that are in most cases already at hand—to recover a high proportion of this wasted energy.

The ECE said that industry is far and away the largest consumer of energy, with metallurgy, chemicals, building materials, and electric power stations as the leaders. The present average net efficiency of use of primary energy in industry does not, however, exceed 50 per cent, and in some sectors—building materials, wood, pulp and paper, glass and porcelain manufacture, for example—it is much lower. Indeed, the ECE study found, most of the heat obtained from fuels in industrial plants is dispersed as exhaust gases or radiant heat or in cooling water.

It said that the combined production of electricity and heat is another major means of economizing energy. Experience in West Germany, Poland, Romania, and the Soviet Union confirms that.

Grazing of Bedouin Flocks Damages Israel's Flora

To keep Bedouin from over-running agricultural areas with their flocks of goats and sheep, the Israeli Agriculture Ministry plans to establish a 2,500-acre experimental farm in the arid Negev for the growing of plants for grazing.

Bedouin flocks have become a major problem for Israeli farm authorities in recent years. When Israel was established in 1948, there were only 14,000 Bedouin dwelling in the Negev and 14,000 sheep and goats. Today the figures have risen to 40,000 and 250,000, respectively.

Because pasture in the semi-arid Negev in a normal year, however, is sufficient to sustain only 30-50,000 animals, the Bedouin have been raising the bulk of their flocks in Israel's cultivated heartland. In addition to devouring substantial amounts of agricultural crops, the animals have caused incalculable damage to natural flora and have spread animal diseases. Many Bedouin have established year-round dwellings in tents or shacks alongside Israeli farming villages. The problem has been aggravated in the past year because of a drought.

According to Israeli authorities, animal raising is only a supplemental form of income for 70 per cent of the country's Bedouin who earn their livelihood as construction or farm workers. In order to encourage them to sell their animals for slaughter, the government has vetoed a plan to import lamb in order to keep the price artificially high.

Ipil-Ipil Charcoal to Serve As Anti-Pollution Device

Kawasaki Steel Corp. of Japan has recently entered into a joint venture with a Filipino group to produce 50,000 tons of ipil-ipil charcoal in the Philippines as an industrial anti-pollution device.

Kawasaki is investing up to 40 per

cent or \$434,000 of the \$1.08 million equity of the Mabuhay Agro-Forestry Corp.

Mabuhay plans to grow ipil-ipil trees on 12,350 acres in Iligan City. The matured ipil-ipil trees will later be burned into charcoal, and for the first time used as a filter for pollutants. At present, only coconut charcoals are so utilized.

Malaysia Asks Compensation From Polluting Copper Mine

The Sabah Government in Malaysia has asked for compensation over a five-year period of \$5.22 million from the Overseas Mineral Resources Development Sabah (OMRD) whose Mamut copper mine has polluted rice fields, irrigation canals, and rivers in Ranau district, about 70 miles from Kota Kinabalu, according to Chief Minister Harris Salleh.

OMRD is a joint venture between a Japanese mineral company and local businesses.

Philippines Cracks Down On Use of Pesticides

The Philippine Fertilizer and Pesticide Authority (FPA) has recently restricted the distribution and use of certain pesticides "to protect the country's aquatic and fishery resources from pollution or contamination."

According to Miguel M. Zosa, FPA Administrator, the restricted pesticides include Aldrin, Chlordane, Dieldrin, Heptachlor, Toxaphene, DDT, Perthane, Endosulfan, Mercuric fungicides, and Triazophos. Zosa said the FPA is now in the process of licensing all pesticide dealers and distributors so as to have a better management of pesticide distribution and use. The FPA will also work out a program to restrict the sale of chemicals by "specialized" dealers only.

Colombia Opens Credit Line For Anti-Pollution Devices

The government of the Department of Cundinamarca in central Colombia has opened a line of credit for financing of pollution control equipment, such as water treatment plants. Site of the country's capital Bogota, Cundinamarca is the first department in the country to establish such a program. Governor Gabriel Melo also announced that the Department's finance corporation will refuse all requests for loans by companies for projects which contribute to the region's pollution.

Study Use of Lasers To Extract Oil From Tar

The Venezuelan Petroleum and Petrochemical Research Institute (INTEVEP) is studying the use of lasers as an extracting tool in the Orinoco Tar Belt, a 600 km x an average of 70 km long deposit stretching along the north bank of the Orinoco River in eastern Venezuela. Oil reserves here are calculated to reach 700,000 million barrels, enough to carry Venezuela's petroleum industry into the 21st century if they can be exploited.

At present the tar belt is not included in estimates of total world reserves.

Under today's technology, however, only 10 per cent of the heavy sticky crudes can be extracted, and the national oil corporation, Petroven, is actively seeking new extraction methods. One of these, developed by a team of physicists at Simon Bolivar University, involves high-powered lasers. Atomic explosions have also been considered for melting the tar formation.

Venezuela's present reserves of light oil are estimated at 18,000 million barrels. Annual sales represent 75 per cent of the national income.



World Environment Report

15 AUG 1978

VOL. 4, NO. 16

Copyright © 1978. Center for International Environment Information.

JULY 31, 1978

U.S. and Japan Sign Agreement On Geothermal Energy Development

TOKYO—The United States and Japan have signed an agreement providing for technological cooperation between the two countries in the field of geothermal energy development. The two organizations directly involved are the U.S. Department of Energy (DOE) and the Agency of Industrial Science and Technology (AIST) of Japan.

Yoshio Tadenuma, Technological Affairs Councillor of AIST, explains that the arrangement calls for exchange of scientific and technical information concerning drilling and fracturing. The two nations also will swap studies on environmental disruptions involved in the siting and operation of geothermal plants.

It was disclosed that the Japanese are particularly interested in obtaining U.S. information pertaining to advanced American technology for the use of volcano heat to generate power by means of hot dry rocks relatively abundant at approximately 9,000 feet below the surface of the ground. Scientists in the U.S. only recently succeeded in generating power through artificially induced cracks in hot dry rock formations.

The Japanese are studying the process by which water is injected into the cracks. The heated water is then removed in the form of steam and used to generate power.

At present, although the U.S. has 11 geothermal power plants in California producing 520,000 kilowatts of electricity, the Japanese are only operating five plants with a total capacity of slightly more than 111,000 kilowatts. Two other plants may be built there soon.

Only a few years ago, according to Japan's Ministry of International Trade and Industry (MITI), the government had hoped to raise geothermal output overall to at least seven million kw by 1985 and to a grand total of 48 million kw by the turn of the century. Now, however, a much more conservative program calls for boosting the country's geothermal capacity to only a million kw over the next seven years and to something like three million kw by 1990.

Although U.S. scientists perfected deep-boring techniques, power firms in Japan have been able to extract heat for generation of electricity from depths of only around 1,800 feet. AIST officials are hoping to tap geothermal heat in the future at depths of 6,000 feet and even down as far as 12,000 feet.

The Japanese are believed to possess roughly 10 per cent of all the world's geothermal power resources. But the country's largest plants have a capacity of only 50,000 kw each, whereas in the U.S., Italy, and New Zealand the plants are able to produce between 400,000 kw and 500,000 kw each.

It has been estimated that Japan has from 200 to 300 sites suitable for geothermal electric power generation. All of them are former active volcanoes. Japanese scientists believe that if all of these sources can be tapped successfully it will prove possible to generate a total of 1 billion kw on an annual basis, about four times the present electric power consumption in the nation.

One of the major problems, however, is that so little is known about the possible detrimental effects of geothermal power generation construction on the environment. Some scientists, for example, have warned of the danger that earthquakes might be triggered by such operations, depending on how the necessary steam is extracted.

A.E. CULLISON

Debate U.S. Policies On Export Of Banned Hazardous Products

WASHINGTON—The hodgepodge of U.S. Government policies that allow producers to export products that have been banned in this country came in for intensive criticism recently before the House Commerce Subcommittee on Consumer Affairs chaired by Rep. Benjamin S. Rosenthal (D.—N.Y.) "Although difficult to pinpoint precisely, export of hazardous products is substantial," Rosenthal said. He charged the U.S. lacks a "recognizable, uniform approach to export policy in this area," and added that "each agency acts under different

In This Issue

Vibration Stress	2
Israel's Water Technology	3
Laser Beam Monitoring	4
Shipping Conventions	4
Asian-Pacific Habitat	5
Amazon Treaty	5
In Brief	6

and often conflicting statutory mandates.”

Esther Peterson, Special Assistant to the President for Consumer Affairs, conceded the problem could get worse because of the growing demand in developing countries for such products as pesticides. At the same time, she said, the economic pressure on U.S. producers to increase exports is mounting.

Peterson told the subcommittee the Carter Administration had recently formed an interagency working group to develop a policy on the issue of exporting hazardous products. The group comprises representatives of regulatory agencies, several Cabinet departments, the Export-Import Bank, the Overseas Private Investment Corp., and the White House.

Reflecting the variety of statutes affecting exports, Peterson said, is that eight laws permit exports of banned substances, three require prior notification of the foreign government, three require approval of a foreign government, two give the regulatory agency authority to ban products, and two laws impose an outright ban. “This uneven treatment of exports has created ironic situations where foreign governments pressure the U.S. for products that are banned in the U.S.,” Peterson testified.

Also underscoring the inconsistency of U.S. policy was testimony from the General Accounting Office (GAO) pointing out deficiencies in the Environmental Protection Agency’s (EPA) pesticide notification program. Although the EPA has cancelled, suspended, or restricted 14 pesticides or pesticide ingredients since 1972, the GAO testified, the agency has requested the State Department to notify foreign governments of only five regulatory actions. The EPA and State Department conduct the notification program jointly. What is more, said Henry Eschwege, Director of GAO’s Community and Economic Development Division, foreign countries receive “very little, if any, information through official channels regarding the U.S. regulatory status of pesticides.”

Under the EPA program, the agency informs State, which then informs its embassies or consular offices, which in turn inform the host countries. But “forwarding pesticide information may conflict with other duties” of some embassy officials, Eschwege said. At the time of the GAO survey, the EPA had issued three notifications covering 11 pesticides. Of the 20 nations queried, only two said they received all three notices. Five other nations received only one or two, eight reported receiving none, and the remaining five did not respond.

Eschwege informed Rosenthal’s panel that one embassy official told the GAO he did not routinely forward notifications on chemicals not registered in the host country because he was concerned about the adverse effect on U.S. exports. Eschwege also said that some foreign officials found the Federal Register notices they received “unclear and hard to understand, and sometimes illegible.” At the same time, he added, the less developed nations in particular are anxious to get such timely data because they lack the expertise to perform the hazard evaluations being done by the EPA. PETER PHILIPPS

ISO Issues Guide to Vibration Stress on the Human Body

GENEVA—The International Organization for Standardization (ISO) recently published a guide — the result of 15 years of research — that evaluates how much of shake, rattle, and roll in modern living the human body can withstand.

The ISO International Standard 2631 (guide for the evaluation of human exposure to whole-body vibration) was drawn up by the Technical Committee devoted to the study of mechanical vibration and shock.

An ISO spokesman said that “these problems are more common and severe than we may think.”

The Committee attempted to find answers to such questions as: Can an airplane pilot read his instruments when subject to vibration and buffeting in turbulent weather? Is the farmer fatigued or injured by continuous exposure to vibration from his tractor? Do vibrations from the elevator or the air-conditioning equipment do more than annoy guests in a hotel and cause stress to the office worker?

The ISO Guide applies to whole-body vibration as it occurs in the transportation industry (aircraft, boats, trains, autos, and subways); the manufacturing industry (floor vibration from heavy industry); the agriculture and building industries (tractors, earth-moving equipment); and homes (vibration from street traffic, for example).

The Guide is available from the ISO, 1 rue de Varembe, 1211 Geneva 20, Switzerland.

WILLIAM G. MAHONEY

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$150 per year. \$20 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Jan De Pinto
Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

SPECIAL REPORT: Israel Exhibits Her Advanced Water Technology

TEL AVIV—Israel's ability to exploit water resources to their maximum and still preserve a natural ecosystem in a semi-arid climate was dramatically evidenced here recently at the largest exhibition and conference on water systems ever held.

Subjects covered ranged from water meters and thrifty toilet flush devices to computer-controlled irrigation networks and desalting technologies. The scientific and environmental event, known as Israqua '78, was organized by several Israeli institutions and held at the Standards Institution of Israel in Tel Aviv. Experts from five continents attended.

Drip Irrigation

With 80 per cent of water in Israel used in agriculture, emphasis at the conference was on irrigation methods. These were already highly sophisticated in Israel 15 years ago when the average output of irrigated crops was \$8 per cubic meter of water used. By 1976 this had reached \$20, in good part due to the system of drip irrigation devised in Israel. Water, often enriched with soluble fertilizers, is "dripped" through plastic tubes directly to plant roots in measured quantities, thereby attaining significant savings in water and gains in crop yields.

A breakthrough described at the conference now permits drip irrigation of row crops such as cotton and maize with impressive results. Manufacturers also displayed new equipment in which the blockage problems which frequently clog the narrow plastic pipes are said to have been eliminated.

Brackish Water

Drip irrigation also permits the use of brackish water with salt content five times as high as that of fresh water. By avoiding conventional sprinkling, the leaves are not contaminated by the salty water. Hebrew University researchers told the conference that even minimally treated sewage effluent had brought good crop yields through drip irrigation. They saw this as an attractive solution for small farming settlements with restricted water supplies.

Israel's primary lesson for the developing world was spelled out by Shaul Arlosoroff, advisor to Israel's Water Commissioner, who said: "Considerable economic progress may be achieved under conditions of serious water resources scarcity."

Dual-Flush Cistern

The water-saving device for toilet flushing, developed by a researcher at the University of the Negev in Beersheba, is now being commercially marketed. It is a low-cost, dual-flush cistern which permits the user to

release either 9.5 liters of water by pressing a lever or 4.5 liters by turning a knob. Although removal of liquid wastes requires less than half the volume of water required for removal of solid wastes, conventional flushing devices provide only one volume — the larger. The firm producing the cistern says it reduces water consumption in toilets by 43 per cent and total consumption in a household by 25 per cent.

Also being produced in Israel is a foot-pedal control for the kitchen sink which encourages people to refrain from letting water run while soaping dishes. Another water saver coming into increasing use, particularly in hotels, is flow regulators which concentrate the flow from showerheads and faucets while significantly reducing the actual flow. The manufacturer claims a saving of more than 30 per cent in domestic use for an investment of less than \$10.

Another way to reduce water usage is to install water meters. The installation of these meters in Israel, a government official pointed out, resulted in a drop of annual per capita water consumption from 145 cubic meters to 100.

Recycling Waste Water

With 95 per cent of its available water resources already being utilized — the highest such figure in the world — Israel is turning increasingly to reuse of municipal wastewater, principally for irrigation. The largest sewage treatment plant, south of Tel Aviv, began last year to percolate 10 million cubic meters of water annually into the aquifer. Within eight years, the plant is to begin pumping ten times that amount southwards to the arid wastes of the Negev for agricultural use.

Since this water will not be potable, an independent network of pipes, pumping stations, and storage areas will have to be created for effluent from this nitrification-denitrification activated sludge plant. Smaller such plants are being planned elsewhere in the country and authorities estimate that 15 per cent of the nation's total water supply will within a few years consist of treated wastewater. "We will be as close as you can get to a space ship, with near total recycling of all our wastes," says Dr. Avner Adin of Israel's Environmental Protection Service.

Similarly in industry, waste purification is carried out by a growing number of factories not simply as an anti-pollution measure but to be able to reuse the water, an increasingly expensive and difficult-to-obtain commodity. An official of the Hadera Paper Mills told the conference that recirculation of process white water after filtration reduces fresh water consumption to half that of American and European plants. The mill's effluent is to be treated with local municipal wastes in an activated sludge plant, the water to be made available to the surrounding agricultural communities for irrigation.

Solar Energy

Visitors to Israqua '78 also saw some of the advanced solar energy equipment which Israel has pioneered and utilized more than any other country. This includes sunpowered turbines for use in remote areas. Two hundred thousand households — one in every five — uses solar collectors for some or all of their hot water.

The conference was told of electronically controlled irrigation systems embracing more than 1,000 acres already being used widely in Tel Aviv. Water is sent pulsing through the pipes automatically after a computer calculates such factors as soil conditions, climate, and water availability. The system, which saves water and manpower, has three main elements — a master control station with computer and display equipment, field units which relay data and execute instructions, and a buried cable linking the system.

Greenhouse Agriculture

The ultimate in water conservation is greenhouse agriculture, which is becoming increasingly widespread in Israel's semi-desert areas. Mr. J. Gale of the Desert Research Institute of the University of the Negev, noted that water use in closed systems like greenhouses may be less than one-fifth that of crops growing in an equivalent area in the open in arid regions. Furthermore, the farmer growing intensively in greenhouses requires less than one-twentieth the land needed for conventional farming. This means that water used in greenhouse farming in arid regions is less than one hundredth that used in conventional farming.

The hope for the future, of course, is desalinization. Of a number of systems now being tested in Israel, one of the most promising, developed by the Mekorot Water Company, uses reverse osmosis for desalting brackish water. After two years of testing with several membrane technologies, a number of experimental units have been transferred to desert settlements for drinking water supply. The system will soon be extended to seawater desalinization.

Desalting Units

Israel's water strategy is based on finding solutions that will permit it to bridge the gap of growing demand until large-scale desalting units are functioning in about 15 years. In the industrial sector, the use of drier processes, reclamation of effluents and other processes have permitted industrial production to grow three times faster than the growth in water use since 1962. During the same period, Israeli farmers learned to extract twice the value from a given piece of land while using 20 per cent less water. Says Arlosoroff: "There are grounds for assuming that water will not act as a limiting factor in the development of Israel's economy" — a far-reaching claim for a country already using 95 per cent of available water.

ABRAHAM RABINOVICH

Bavaria to Research Laser Beam Use to Measure Algae in Water

MUNICH—The Bavarian Ministry for the Protection of the Environment has commissioned a two-year, \$125,000 research project to explore the use of laser beams to trace the development of algae in water.

The research will be carried out by Prof. Wolfgang Gebhardt of Regensburg University's Physics Institute.

The objective will be to develop a measuring instrument using laser rays in water testing to determine chlorophyll content. Once this is known, according to Environmental Protection Minister Alfred Dick, conclusions can be drawn as to the quantity, types, and activities of the algae. Improved instrumentation, he noted, would permit more rapid and more accurate data on water analysis, permitting faster and more precise protective measures (*WER*, June 19, p. 7)

Dick declared that such a process would permit factoring in possible growth processes and mud formations in areas of dams and waterway channels as well as in the area of water purification plants.

A spokesman for the Environmental Protection Ministry said that there were more and more indications of "overfeeding" in Bavarian waters — a surplus of nutritive substances in the water increasing the algae and simultaneously disturbing the oxygen balance. In extreme cases, a sharp fall in oxygen content could cause fish to die, he noted, and in many cases the increased algae cover destroyed both the scenic and the recreational values.

WILLIAM G. MAHONEY

EEC Urges Members to Ratify Shipping Safety Conventions

LUXEMBOURG—The European Economic Community Council of Transportation Ministers, meeting here recently, approved the Commission's recommendation that the EEC member states ratify three existing international conventions on safety in shipping.

The three conventions referred to were the 1974 SOLAS Convention (International Convention for the Safety of Life at Sea); the 1973 MARPOL Convention (International Convention for the Prevention of Pollution by Ships); and Convention Number 147 on Minimum Standards for Merchant Shipping adopted by the 1976 International Labor Conference. The SOLAS and MARPOL Conventions were drawn up by the Intergovernmental Maritime Consultative Organization (IMCO).

The SOLAS Convention, amended this year in the wake of the AMOCO Cadis oil-spill disaster off France in March, sets standards for ship construction, stability, radio communication, inspection, and overall fitting and

safe operation, with particular attention paid to oil tankers. The MARPOL Convention, also amended this year, while covering much the same ground as the SOLAS Convention, also lays down the methodology for cooperation among nations on researching violations of sea law. Convention Number 147 sets the minimum standards regarding labor and working conditions aboard ship.

GARY YERKEY

UNEP Warns of Destruction Of Asian-Pacific Habitat

NAIROBI—In its first report on the environmental situation in Asia and the Pacific, the new Bangkok regional office of the UN Environment Programme (UNEP) warns that destruction of the habitat has created a serious situation in much of this area. For example:

- At the present rate of loss, Thailand's forests will be completely denuded in 25 years, while forests in Malaysia and the Philippines will be exhausted within ten years;
- Phosphate mining in Nauru will render this small island barren in the near future;
- South-East Asia has the world's largest number of threatened species of fauna and flora.

Details of the Bangkok report were issued here at UNEP's headquarters. The report notes that while the general environmental situation is serious, there are some bright spots in the area, among them Australia, New Zealand, and Japan for their special concern for environmental issues; each of these countries has elaborate and comprehensive legislative and administrative structures to protect the environment. The Philippines, Singapore, and China are also implementing commendable environmental policies.

Examples of important achievements, the report says, include:

- China's "Green Wall" project, involving the planting of forests on 230,000 hectares to contain the Maowsu desert;
- Australia's protection of the Great Barrier Reef by establishing a national park;
- Indonesia's prohibition of exploitation over 25 million hectares of forest which will be used for watershed conservation and other purposes;
- Thailand's ban on timber exports;
- Iran's declaration of a biosphere reserve in the Turan area.

UNEP and other UN agencies are helping governments throughout the region in the fields of human settlements and health, terrestrial ecosystems, desertification, and reforestation.

The report notes that environmental management is now part of the development activity, and of education and training, in many countries in the region.

CHARLES HARRISON

Eight-Nation Amazon Cooperation Treaty Ready for Ratification

CARACAS—The Amazon Cooperation Treaty, signed on July 3rd in Brasilia by the Foreign Ministers of eight countries — Brazil, Bolivia, Colombia, Ecuador, Guyana, Peru, Surinam, Venezuela — now goes to the respective governments for parliamentary approval.

Reactions to the pact's provisions, which encompasses the entire basin of the 7,275-kilometer-long Amazon River and its 1,500 tributaries, ranged from the Venezuelan Foreign Minister's "one of the most promising cooperative agreements in Latin America," to the Colombian *Alternativa* magazine, "a group of blind men distributing the pages of an unknown book." Joaquin Molano Campuzano of the World Peace Council expressed the fear that Indian territories would be open to invasion by transnational corporations, and the *Agence Latinoamericaine d'Information* of Montreal termed the agreement a tool of business interests out to exploit natural resources.

The terms of the 28-article document written in Portuguese are a base for cooperation in research and interchange of information. Member nations are committed to study ways to improve road connections, river transport, and telecommunications. Much space is given to environmental protection as well as to the exploitation of natural resources, two objectives which are considered compatible.

The Amazon supplies one-fifth of the world's fresh water, discharging in a day more than the Thames in a year. Navigation is perhaps the most important issue for Bolivia. Some 200,000 kilometers of waterways are navigable. As for Venezuela, free navigation of the Amazon was assured by a treaty in 1859 with Brazil, which possesses two-thirds of the area and has taken the initiative in building the 8,000 kilometer trans-Amazon highway.

Offsetting the predominance of Brazil, the Treaty establishes the sovereign right of each country to undertake projects in accordance with its national plans, that is, to give priority to incorporating the area into the country before it is integrated with the multinational agreement.

Decisions will be made only by unanimity; in case of disputes, for instance on the use of headwaters, the member countries will refer to International Law.

A council of Amazon cooperation composed of the Plenipotentiaries will work at the intermediate level between the foreign ministries and the pro tempore bodies. In each country a national permanent commission will carry out the decisions, coordinating also the work of international and national organizations such as Venezuela's IVIC, now studying the humid tropical jungles in San Carlos de Rio Negro.

HILARY BRANCH,
LILI DE STEINHEIL

In Brief...

Singapore's Offshore Oil Wells Good for Fisheries

Studies of oil wells offshore Singapore have indicated that, far from killing off marine life, these sites have become centers of intense marine activity, even to the extent of attracting colonies of fish where few or none existed.

This was one of the surprises that recent studies of oil pollution on marine life have produced, according to Martin Lee, Environmental Conservation Coordinator at Esso in Singapore.

Lee said follow-up studies of oil spills and the toll they had taken of marine life, particularly among sea birds, had shown that nowhere had oil spills produced a lasting effect on the marine environment. Even sedentary organisms were found to have detoxicated and cleansed themselves of oil in a surprisingly short time.

"Following-up on this, it now appears that, with a few exceptions, oil spills might be more effectively handled from an environmental viewpoint by dispersion with chemicals than by trying to recover the oil," he said. "Early dispersion reduces the immediate undesirable effect of the bulk oil and promotes the ultimate biodegradation of hydrocarbons."

World Bank Grants Kenya Slum Clearance Loan

About 150,000 poor people, living in the slums of the three largest cities of Kenya—Nairobi, Mombasa, and Kisumu—will benefit from a loan and a credit totalling \$50 million, approved by the World Bank and its affiliate, the International Development Association (IDA). The remaining 28 per cent of the project cost will be provided by the Government of Kenya.

The combined loan and credit will help finance an urban project that will improve existing unserved squatter settlements and establish new and better housing areas for more than 30,000 low-income households in the three cities. The project is a continuation of the World Bank's support for the efforts of the Kenyan Government to face the problems resulting from the sharp increase in the urban population in the country in recent years. The shortage of low-income housing has led to the creation of shanty towns and illegal, temporary squatter settlements with unsanitary conditions around Kenyan cities, particularly Nairobi.

By providing space for 350 kiosks, 1,830 market stalls, 960 serviced sites for small industries, and loans for construction of workshops, the project will stimulate and encourage employment.

Report Radioactive Fallouts From China on South Korea

A survey conducted by a South Korean professor shows that farmlands in the southwestern part of South Korea have been affected by radioactive fallouts from a recent nuclear explosion in China.

Prof. Kang Yong-hong of Kyongbuk University said ferns collected from Cholla provinces were found to contain 343.2 picocuries of strontium 90 per 0.04 ounce (1 gram), about 1.5 times the allowable level set by the International Commission on Radiation Protection.

Edible roots from the Cheju-Do were found to contain 315.9 picocuries of the deadly radioactive isotope. Edible roots cultivated in Taejon in the central part of the country contained only 55.8 picocuries of strontium 90.

The study also shows that 20 other vegetables produced in Cheju-Do and Cholla provinces contained more strontium 90 than the same kinds of edible plants cultivated elsewhere in the country.

Philippines to Require EIS For Construction Approval

Government agencies and private firms in the Philippines undertaking planned development projects such as dams, roads and power systems, will soon be required to submit an "environmental impact assessment" of their project prior to approval by authorities, according to Philippine Natural Resources Secretary Jose Leido Jr.

Leido said the early creation of a Department of Environment in the Philippines will ensure that severe degradation of the environment is minimized in the process of economic development.

He also said that while the total preservation of nature and the environment may be impossible in the course of economic development, proper land use planning, reforestation, pollution abatement, and waste disposal programs can minimize damaging and possibly irreversible effects of rapid exploitation of natural resources.

Meanwhile, Celso Roque, Executive Director of the National Environmental Protection Council, said the implementation of "environmental impact assessment" requirements will have to be flexible during the first few years to give private investors and government agencies time to prepare.

Environmental Education Set For Venezuela's Schools

A Ministry of Education and Environment Ministry joint commission has been created by Carlos Andrews Perez, President of Venezuela, to orient and oversee the incorporation in public school curricula of environmental education. The board will set up a strategy for inclusion of ecology and conservation programs, methods, audiovisual materials, and establish links between universities and research bodies.

Denmark Calls for Quick Action on Noise Pollution

Denmark's Minister for the Environment, Niels Matthiasen, has called for quick action on the growing plague of noise pollution by setting up a special group to study noise nuisance emanating from highways, city streets, and railroads, with orders to report back by October 1.

The group, led by the director of the Environment Commission, Ejler Koch, will consist of representatives of municipal authorities and other ministries.

Malaysia's River Pollution Blamed on Palm Oil Industry

The palm oil industry in Malaysia has caused a severe water pollution problem in the country. Some 42 rivers have already been declared "grossly polluted" and cannot sustain life.

It is estimated that at least one-half ton of waste is created for every ton of palm oil processed.

The most harmful thing about palm oil liquid wastes or effluents is their high level of bio-chemical oxygen demand (BOD). The BOD concentration of a waste material is the amount of oxygen consumed by a sample in about three days at 30 degrees centigrade.

According to studies, oil palm waste has an average BOD concentration of 20,000 parts per million, or 100 times stronger than domestic sewage. In 1975, the load of BOD discharged into Malaysian waters was about 210 tons per day. By 1980, with the number of mills increasing to around 150, the load is expected to reach 450 tons per day.

Although the government last October enacted a series of regulations to reduce the pollution for the first year, mills can pay fees for not meeting the standards and will not be taken to court. After that period, they are liable to prosecution and

finest of up to \$43 for each ton of BOD discharged if they don't meet the increasingly stringent standards of reducing the BOD concentration to 2,000 parts by July, 1979, to 1,000 parts in 1980, and to 500 parts by 1981.

Chinese Using Low-Volume Aerial Insecticide Sprays

To ensure a good crop yield, farmers in China have adopted ultra-low volume aerial spraying of insecticides over large stretches of land to prevent and control pests.

This technique requires only a small amount of insecticide to kill pests on a large acreage. A plane can spray 7,410 acres per day using only 3.3 pounds of insecticide for every 2.47 acres.

In the provinces of Heilunkiang, Chekiang, Anhwei, Hopei, and Shantung and in the Sinkiang Uighur Autonomous region, ultra-low volume aerial spraying has been tried out to control wheat cut worms, sorghum locusts, rice grassleaf rollers, forestry pine caterpillars, and locusts in pastoral areas. Over 96 per cent of the insects were killed.

Cars, Not Factories, Found Taipei's Chief Polluters

A recent survey conducted in Taiwan shows that motor vehicles, and not factories, are Taipei's biggest polluters. Cars caused 93 per cent of the 200,000 tons of pollutants in the air.

Although there is a special provision for controlling pollution caused by motor vehicles under a 1975 air pollution prevention and control law, it has never been enforced.

The National Health Administration is trying to hammer out standards for the amount of exhaust emission allowed per vehicle. Until these become effective and are enforced, car owners remain polluters.

Thailand in Dilemma Over Coastal Sea Pollution

Thailand is currently facing a dilemma on sea pollution, according to the country's Director General of the International Organization Department, M.L. Birabhongse Kasemsri.

Birabhongse said the problem arises because Thailand wants to step up its control over foreign ships passing near the Thai coast but at the same time does not want neighboring states to get tough over Thai vessels that pollute as they pass through neighboring waters to reach the open seas. It is a well-known fact that many of the Thai vessels are not well equipped to meet international standards on pollution prevention, Birabhongse said.

Hong Kong Initiates First Water Pollution Legislation

The first legislation concerning water pollution in the British Colony of Hong Kong will be introduced this autumn, Stuart Reed, the Colony's Environmental Protection Advisor, announced recently.

Reed said the present air pollution laws will be extended to cover more than just smoke. It will include the problem of smells, regulate fuel consumption—taking into account such ingredients as sulphur—and register all processes which are difficult to control or with serious implications for the environment.

Regulations to control construction noise and air conditioning units and strengthen the summary procedures for neighborhood noise will also be introduced. Reed said a statutory waste disposal plan will be drawn up soon. The disposal of agricultural waste and toxic waste will be regulated, and litter controls will be strengthened, Reed said. But he predicts it will take another 18 months to two years to establish specific pollution reference levels.

Sales of Pollution Control Equipment Soar in Japan

Orders in Japan for pollution control equipment in fiscal 1977/78 amounted to \$222 million, an increase of 27.8 per cent over fiscal 1976/77, according to Japan Society of Industrial Machinery Manufacturers.

The Society said orders for air pollution control devices totalled \$32.2 million, a decrease of 3.3 per cent from fiscal 1976/77, while water pollution control orders rose 25.1 per cent to \$133.7 million.

The Society said orders for refuse disposal equipment came to \$56 million, a gain of 70 per cent over the preceding fiscal year. It said 71.7 per cent of the total orders came from public institutions, 24.3 per cent from private concerns, and 4.6 per cent from abroad.

UNEP, WMO Seek Weather Modification Agreement

An informal meeting of experts, convened in Geneva by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO), has recommended that moves to control the weather in any area should be subject to international agreement. The meeting was part of a program to assess whether man may modify the weather for his benefit—and what the cost, in terms of environmental impact, might be.

It was chaired by the Deputy Director of UNEP's Environmental Assessment Division, Dr. Ramses Mikhail, who told the meeting that any attempt to modify the weather in one place must have an effect somewhere else.

Such effects could not be assessed precisely, he said, because of the limited state of scientific knowledge on the subject. But they could lead to conflicts between countries or groups, and could impede scientific research.

To avoid such possibilities, the meeting recommended a set of nine principles declaring that the atmosphere is a global resource, and that any modification of the atmosphere is the legitimate concern of the international community. The meeting also agreed there is a need for the exchange of information, and for consultation and cooperation.

EEC Reports on Dangers Of Nuclear Energy

The European Economic Community (EEC) recently published the 1977 annual report of its five years Radiation Protection Program, 1976-1980, which summarizes the work of some 500 research scientists under contract to the EEC to study the biological and ecological ramifications of nuclear energy activities and ways to provide appropriate protection against possible danger.

In 1977, the 123 contracts of the Program involved some 240 research projects in the fields of dosimetry, radioactive contamination, hereditary effects of ionizing radiation, and short- and long-term somatic effects of ionizing radiations.

The 1977 report, designated the EURATOM Report Number 5972, is available for a charge from the Office for Official Publications of the European Communities, Boite Postale 1003, Luxembourg.

Taiwan Bans All Smoking On Domestic Flights

The Civil Aeronautics Administration of Taiwan has recently banned all smoking on domestic flights. This is believed to be the first such total smoking ban.

However, the ban will only be a short ordeal for tobacco addicts since the longest flight in the country takes only one hour.

British Driving Habits Wasteful of Gasoline

Heavy-footed British motorists may be wasting \$296 million worth of gasoline each year, says the Department of Energy.

A survey carried out by the Automobile Association at the Department's suggestion showed that most motorists could improve their fuel consumption by nine per cent. Nationwide, this could amount to a saving of 200 million gallons.

A TV and press campaign to encourage economical driving techniques was launched recently at a cost of nearly \$1 million. Over the next four years nearly \$4 million will be devoted to the media campaign.

Australia Finally Approves Uranium Mining Legislation

Despite a long-drawn battle involving environmental and other considerations, final passage of federal legislation has officially cleared the way for development of uranium mining in Australia's vast, sparsely-populated Northern Territory (*WER*, Oct. 24, 1977, p. 8).

The government is setting up a federal uranium marketing board, as was recommended in an earlier environmental report. However, the proposed Australian Uranium Export Authority's role will be strictly advisory, and basically an information-gathering service. The authority will collate data on domestic reserves and the international uranium market. Mining companies will not be represented on the board.

Legislation is now pending which will require all uranium royalties that result from mining on Aboriginal reserves be paid into a native trust fund. (Aborigines' land rights claims are similar to those of the American Indians.) The legislation will also stipulate that Aborigines have no claim over mining facilities established on these native tracts.



World Environment Report

26 JUL 1978

VOL. 4, NO. 15

Copyright © 1978. Center for International Environment Information.

JULY 17, 1978

EEC Environment Ministers Adopt Major Water and Lead Measures

BRUSSELS—The European Economic Community (EEC) acted with uncharacteristic swiftness recently when its Council of Environment Ministers approved in its one-day, semi-annual meeting several measures that will likely have wide-ranging impact in the near future throughout the nine-member Community.

The Council, consisting of thirteen Ministers, adopted two controls—one on water pollution and the other on lead levels in gasoline. Additionally, it lent its support to continuing research into the hazards of fluorocarbons and on ways of dealing with maritime pollution brought about by oil tanker accidents. It also agreed to the EEC Commission launching negotiations with the United States this summer on harmonizing laws between the two on the regulation of toxic substances. It failed, however, to adopt the controversial law proposed earlier on protecting migratory birds.

Originally proposed nearly two years ago, the water pollution measure finally adopted by the Environment Ministers set standards directed at protecting fresh-water fish. It allowed individual governments, however, to specify the rivers and lakes within their countries' borders that would be subject to the standards set forth by the EEC, an allowance that will probably diminish the overall effectiveness of the measure. Moreover, the standards, which relate principally to water temperature, oxygen content, and the presence in the waters of polluting substances, were lowered from those originally proposed due to pressure from several nations. Great Britain and West Germany, for example, balked at approving the original proposal, the former arguing that its swift-moving currents should allow for looser standards, the latter that its necessity for locating nuclear power plants along its short coastline made it difficult to meet temperature limits on its inland waters.

The second control adopted by the Ministers stipulated that seven of the EEC countries reduce the gasoline lead content by 1981 to between .40 and .15 grams per liter, roughly 10 per cent below the present allowable levels. West Germany, which already meets the newly-adopted requirements, and Ireland, which argued that its refineries would not be able to manufacture gasoline having such low levels of lead until at least five years from now, were exempted from the new directive. According to a special provision of the directive, its requirements

would be waived in the event of an oil-supply crisis, including an embargo.

The Ministers also adopted a resolution encouraging EEC-member countries to intensify research into the effects of fluorocarbons on the environment, urging industry in turn to consider the use of substitutes for chlorofluoromethanes F-11 and F-12 and to reduce, meanwhile, and even attempt to eliminate altogether, emissions of such chemicals. Currently, the EEC Commission is studying the possible economic and social impact of legislation regulating industrial chemical pollution; it is expected that their findings will be released in late 1978.

The Ministers showed more typical form by dragging their feet during the one-day meeting on the maritime action program presented recently by the EEC Commission. Outlined in the wake of the Amoco Cadiz disaster off France, the action program called for specific measures to avert future oil spills (e.g., computerization of data on vessels in Community waters capable of polluting) and to deal with pollution in the event that spills occur (e.g., training oil pollution combat teams). But the Ministers merely approved the program in principle without initiating further concrete action in the form of legislative proposals. **GARY YERKEY**

W. Germany and U.S. Confer On Control of Toxic Substances

WASHINGTON—West German and American government officials and representatives of industry, labor, and environmental groups met here recently for two days of discussions on the control of toxic substances. The conference was sponsored by the Conservation Foundation,

In This Issue

Pollution Survey	2
Steel Mill Crackdown	2
Human Settlements	3
Rain Forests	4
Lead Pollution	5
Cholera Scare	5
In Brief	6

a U.S. nonprofit research organization, which is conducting a program to help implement the Toxic Substances Control Act of 1976. A similar law is under consideration by the West German legislature, and the European Community is also in the process of formulating a directive on toxics that will closely parallel the U.S. law.

Dr. Gunter Hartkopf, State Secretary of the Interior Ministry, led the 15-member West German delegation, which included several members of the West German Parliament, the Federal Environmental Agency, and the Federation of German Chemical Industries. Heading the U.S. delegation was Barbara Blum, Deputy Administrator of the Environmental Protection Agency. Other U.S. participants were Steven Jellinek, EPA Assistant Administrator for Toxic Substances; Russell E. Train, former EPA administrator and now President of the World Wildlife Fund—U.S.; and Richard Heckert, Senior Vice President of E.I. duPont de Nemours & Co.

J. Clarence Davies III, Executive Vice President of the Conservation Foundation, says that insofar as the meeting was designed to "share viewpoints," it was a success. A follow-up meeting next year in Germany is a distinct possibility, Davies adds.

Once the European Community issues its toxics directive, now expected before the end of the year, each member nation will be obligated to implement its own toxic control laws. Davies says the Foundation sponsored the meeting with West Germany, the largest chemical manufacturer in Europe, because "it was our perception that it is important for the U.S. and Germany to get together."

PETER PHILIPPS

Urge Ireland Conduct Complete Coastline Pollution Survey

CORK—The Irish Government is considering requests for a national coastline survey which would study pollution in bays and estuaries, make recommendations on locations for fish farming, and examine recreational and natural resources.

The country's top scientists, research workers, environmentalists, and local authorities are backing the proposal which has been put before the Department of the Environment following a national conference here.

Areas under most pressure from pollution caused by pharmaceuticals, brewing, distilling, confectionery, fishmeal, and dairying effluents, are thought to be Dublin Bay and County, Cook Harbor, Drogheda, Dundalk, the Shannon Estuary, and Waterford Harbor.

Clearly, the feeling is that Ireland has a chance still to develop industrially without the pollution problems found elsewhere in Europe, but only if a national coastline study clearly indicates to which areas new industry can be directed without harmful effect.

TOM MacSWEENEY

Greek Minister Closes Steel Mill Responsible for Heavy Pollution

ATHENS—The Greek Ministry of Industry has halted the operation of a steel mill because it polluted the environment. The order was given by the Minister himself when he ascertained that the Hellenic Steel Mills was responsible for heavy atmospheric pollution and because its waste was endangering the operation of other nearby factories.

Minister Miltiadis Evert said that the reopening of the plant will be permitted only after the necessary anti-pollution equipment is installed.

A major factor, however, leading to the Minister's decision was the protest voiced by the inhabitants of Elefsis, the town where the mill is located. About 20 kilometers west of Athens, Elefsis is one of the most heavily industrialized areas in Greece, and inhabitants long ago started complaining about violations of anti-pollution laws by the many local industries.

In repeated appeals to the Government, local authorities have urged that appropriate measures be taken, saying that the inhabitants' health was in great danger. They claimed that in the last few years an increasing number of defective children have been born in the area, attributing it to the effects of pollution.

Mayor of Elefsis, Michael Levendis, described the Minister's decision to halt the industry's operation as "the first victory of our struggle," adding that "we are determined to continue until Elefsis becomes clean again."

The Mayor is strongly supported by the Elefsis labor unions which demand more hygienic working conditions.

KYRIACOS CONDOULIS

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$150 per year. \$20 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
 Editor-in-Chief Albert Wall
 Circulation Manager Jan De Pinto
 Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

Tokyo to Conduct Massive Survey Of Pollution-Related Ill Health

TOKYO—A four-year survey of the effects of environmental pollution on the health of Tokyo's populace was launched recently by the Metropolitan Government as a direct result of dissatisfaction with conclusions of a similar study made by the Japanese Environment Agency (JEA).

The large-scale project is an attempt to determine the relationship between environmental pollution and human health. This was the same objective of the JEA survey conducted for three months in 1975. However, officials of the Tokyo Metropolitan Government contend that the JEA study was too limited and that was why it revealed no statistically significant relationship between the polluted atmosphere and deteriorating health conditions.

Tokyo Governor Ryokichi Minobe has argued that another survey is needed and will be carried out by the city's own specialists. Both the area of the air samples and the methods employed previously, he said, were inadequate and could only lead to misleading findings.

Tokyo's administration has earmarked approximately \$76,000 for the project this fiscal year. Similar amounts—and possibly more—will be allocated for the next three fiscal years.

According to Governor Minobe and his advisors, Tokyo is Japan's worst polluted region with respect to air pollution. City records show that the number of persons officially recognized as suffering from pollution-related ailments in Tokyo's 23 wards is approaching 20,000.

Actually, however, there are many more Tokyo residents seriously affected by air pollution than this figure might suggest because the law governing compensation for patients applies only to those parts of the city where the state of air pollution from sulfur oxide is worse than the Government's fixed standards.

City officials claim that there are many other areas where people are badly affected by air pollution—areas which the JEA experts did not survey. To bolster their contention of wide-spread air pollution, city authorities pointed to a recent finding of the National Meteorological Agency (NMA) which disclosed that daily extremes of temperature in Tokyo are becoming more moderate every year.

Scientists of the NMA explained that the average lowest daily temperature recorded last year in Tokyo was 12.3 degrees centigrade. This was the highest figure since the agency began regular temperature observations in 1875. In 1876, for example, the average lowest temperature was 8.3 degrees centigrade. So the temperature has risen as much as four degrees over the past century.

On the other hand, the highest daily temperature last year averaged 19.7 degrees centigrade in Tokyo. In 1960, according to the NMA, the average highest daily temperature in the capital was above 20 degrees.

NMA officials claim that these temperature variations

result from a proliferation of chemical fumes from factories and automobiles and from decreases in the amount of city greenery. To put it another way, they maintain that the situation results from a decrease in sunlight reaching the capital's surface as a direct result of air pollution. In the view of the Minobe Administration, this development simply must be affecting the health of Tokyo's residents and the city fathers intend to find out how through their new survey.

A.E. CULLISON

UN Organizes Series of Regional Conferences on Human Settlements

NAIROBI—The United Nations Habitat and Human Settlements Foundation (UNHHSF), in cooperation with the UN Environment Programme (UNEP), is organizing a series of regional conferences, culminating in a global meeting at the end of 1979, to discuss fundraising for the world's human settlement needs.

Governments in each region will be invited to send participants, who are expected to be executives of financing institutions and housing construction companies.

The first conference is due to be held in Nairobi from October 9-14, followed by Mexico City (November 27-December), West Asia (March 1979), Bangkok (April), and Geneva (no date set). The date and location for the final global meeting have yet to be decided.

During the recent UNEP Governing Council meeting in Nairobi, Mr. Gote Svenson, Chairman of the newly-created UN Commission on Human Settlements, told delegates: "If we are to provide adequate shelter for the people of the world during the next two decades, we have to build a new world in addition to the existing one." This "almost incredible task," he said, would require mobilization of resources on a giant scale.

A UNEP spokesman added that it was generally recognized that conventional methods of financing, planning, and implementation are unable to change the poor housing conditions of millions of the world's poor.

Among the objectives of the forthcoming conferences are:

- Securing higher priority of human settlements in national plans;
- Providing information at regional and national levels on finance and management aspects;
- Promoting understanding of the vital role of finance for human settlements in mobilizing and channeling resources, improving the environment, redistributing wealth;
- Discussing the possibilities of international pools of materials, equipment, and servicing.

UNHHSF, which previously operated under the aegis of UNEP, is now a component of the UN Habitat Center, which is being established in Nairobi. One of UNHHSF's main functions is to raise funds which can be made available to institutions and governments for human settle-

ment work. It also aims to stimulate new approaches to the development of habitat and human settlements projects, and to organize technical assistance services (*WER*, Aug. 1, 1977, p.5)

A target of \$50 million for the 1978-1981 period has been set for UNHHSF, and the UN General Assembly plans to hold a pledging conference to invite member-states to contribute to this total. CHARLES HARRISON

File Formal Complaint Against Polluting Plant in Belgium

ANTWERP—There is an environmental issue simmering near here at the industrial town of Hoboken that could eventually force the closing of one of Belgium's most profitable companies. At stake are Hoboken's huge non-ferrous metals smelting plant and the basic health of the town's population, especially the children.

The facts are that the plant is spewing forth some two kilograms of lead dust (mixed with cadmium, copper, and mercury) per hour; that growing numbers of children are entering hospitals in the hope of stopping the lead in their bloodstreams from entering their bone marrow; and that the plant or the children will have to succumb to different sorts of pressures someday.

However, it is unlikely, save for some unprecedented move by political and/or industry officials, that the Hoboken smelting plant will be closed. It has been pumping toxic dust out over the city for nearly a century. Since 1965, the local government has gone through the formality of lodging complaints, some 125 so far.

In April 1973, there was a minor scandal when eight cows and two horses were found dead. Cause: lead poisoning. In 1977, the Belgian Ministry of Health published a report showing that the average child playing near the Hoboken plant goes home after 15 minutes of play with 128 micrograms of lead on his or her hands. The children continue to play; the workers continue to work.

Meanwhile, the labor unions have failed to make it an issue. There has been a frustrating, inconclusive debate in the Belgian Parliament. A ray of hope was seen recently when a group of nine parents of lead-sick children filed a formal complaint against the Hoboken management.

It is widely believed here, however, that the mobilization of public opinion—thus far mute on the subject—may be the only hope for clearing the air over Hoboken because the hands of political officials are thought to be tied tight. The Hoboken plant, it is pointed out, is part of Belgium's most powerful and influential financial giant, the Societe Generale de Belgique holding company. And it is extremely successful. Its declared profits rose from 260 million Belgian francs (about \$8 million) in 1976 to 380 million Belgian francs (nearly \$12 million) in 1977.

GARY YERKEY

UNEP Reports Rapid Demise Of Southeast Asia's Rain Forests

HONG KONG—The tropical rain forests of Southeast Asia are fast disappearing due to the wanton exploitation of timber, according to a recent report prepared by the United Nations Environment Programme (UNEP). The report, compiled by UNEP's Asian regional office in Bangkok, says that if the rape of the forests goes unchecked, timber resources will be completely exhausted by the end of the century.

"Tropical forests are in sharp retreat everywhere but nowhere with the same alacrity as in Southeast Asia where population pressure is greatest," it says. The report estimates that five to seven million acres of arable land worldwide are lost annually, representing a cost to agriculture of \$10 billion.

In Thailand, 965 square miles of woodland are bared annually by soil erosion, building, and settlement. Official figures show that Thai forests will be completely denuded in 25 years. The Thai National Forestry Department predicts that Thailand will be importing timber for local consumption after 1985.

In the Philippines and Malaysia, other UN agency studies predicted that all accessible lowland forest would be flattened in 10 years. "As the population of the world increases beyond the four billion mark and economic expectation rises, more and more of the life-supporting systems on earth are subject to overuse, regardless of long-term ecological and economic advisability. Ill-planned and badly-managed exploitation has led to increasing degradation of ecological systems, reducing many to an unproductive state," it says.

The report points out that even fragile crusted mountains and islands have not been spared. Deforestation abuse has resulted in soil loss and sterility, and mountain losses have affected life and economy thousands of miles away. "Aerial photographs have revealed a huge island is being formed in the Bay of Bengal from soil washed down from the Himalayas and other watersheds."

The report lists monoxides, carbon and sulphur dioxides, risky management of radioactive nuclear wastes—and heavy dependence by rural population on firewood, causing rapid deforestation, soil erosion, and hydrological changes—as hazardous by-products of current energy development and consumption practices in Southeast Asia.

The UNEP report stresses educating future generations on methods to preserve the forests. Countries like China, Bangladesh, Singapore, Iran, Australia, Japan, India, and Thailand have consolidated environment education in schools and universities. In addition, environment training courses are offered in the Asia and Pacific Development Institute and the Asian Institute of Technology, both in Bangkok.

SPECIAL DISPATCH TO *WER*

British Report Airs Controversy Over Automotive Lead Pollution

LONDON—"There is cause for concern," concludes Britain's Department of the Environment (DOE), which recently published a report it had commissioned on lead pollution around Gravelly Hill, the "Spaghetti Junction" motorway interchange in the midlands industrial city of Birmingham.

Regular surveys undertaken before and after the interchange opened in May, 1972, suggested a doubling of blood lead levels in the local population. Such a "highly emotive topic" warranted prompt investigation, decided Minister of State for the Environment, Denis Howell, who commissioned the report in 1974. Lead emissions from gasoline were then known to be a major source of airborne lead.

The report considers that lead levels around the junction are not exceptional for urban areas because the junction's elevation ensures exposure to what wind is available for dispersion. Atmospheric conditions and traffic flow could clearly cause pockets of high concentration, but the report considers these "should only be seen infrequently."

As for the elevated blood levels, these are described also as not unusual for city dwellers. Extra follow-up was made of those at the higher end of this "not exceptional" range, levels of 35 micrograms of lead per 100 milliliters and above. The report is very cautious about ascribing cause and effect for this, pointing out all the varying sources of lead intake. These include dust on working clothes, drinking water from lead pipes, lead-rich dust from re-decorating over old paintwork, as well as airborne lead from traffic flow.

"There is no doubt," says one of the concluding paragraphs, "that however one looks at the results, the mean blood level concentrations of some of the residents living near the M6-A38(M) interchange increased after the motorway opened." It goes on to describe the difficulties of tracing and quantifying the real cause.

The report does express concern at the number of preschool children (15 out of a non-random sample of 429) with blood lead levels of 35 $\mu\text{g}/100\text{ ml.}$ or above, an "unacceptably high proportion" of whom come from two inner areas of the City. Because no connection with airborne levels was discovered, a new phase of investigation will now be undertaken by the Working Party into the causes.

Conservationists and independent observers like Derek Bryce-Smith, Professor of Organic Chemistry at Reading University, are unlikely to be satisfied with this very cautious report and to consider it something of a whitewash. Only last month, Mr. Howell received a delegation, which included some Members of Parliament, from Conservation Society's Campaign Against Lead in Petrol. It accused the Government of dragging its feet on implementation of the European Economic Community's (EEC) draft directive on lead levels, saying that the

quantity of lead being added to gasoline in Britain is actually increasing.

Prof. Bryce-Smith challenges underlying standards of what is "acceptable" in blood lead levels. He says that independent studies have provided sufficient evidence to show that so-called "normal" levels of lead in the urban environment are sufficient to adversely affect human health.

The Government, on the other hand, would naturally be unwilling to engage in any costly action without sufficient proof of cause and effect. A standing technical advisory committee of the DOE estimated in a recent report that about five million people in Britain were using drinking water with lead levels above the safety limits defined by the World Health Organization, and confirmed by the EEC. More than \$540 million would be needed to replace the lead piping in the nearly two million homes concerned, the report said, and it might be cheaper to alter treatment of the water.

BARBARA MASSAM

Cholera Scare Focuses Attention On Pollution in Brazilian Bay

SAO PAULO—Although a recent cholera threat in Brazil—which surfaced in the port city of Santos when *El Tor* bacterium was isolated in a routine sewage sample—turned out to be a false alarm, the astonishing thing about the alert was the lack of public surprise or outrage that "such a thing might happen here." For it has been generally conceded for years that the area surrounding the Santos estuary is one of the most polluted in Brazil. Three things contribute: sewage, industrial waste, and the fact that the bay is forced to absorb all the untreated garbage from the city of Sao Paulo (population 11 million) in addition to its own.

The permanent Santos population is about 450,000. In summer and on holiday weekends it peaks at an estimated two million. The present sewer system was built in the 1920s for a projected population of 150,000. Today, at least one-third of the city uses clandestine sewer connections to the canals which run across the beaches and spill raw sewage into the swimming areas. In aerial view picture post cards one can distinguish a series of brown parallel stains across the beaches.

An undersea pipeline to carry a part of the city's domestic and industrial waste four kilometers out to sea will only partially alleviate the problem when it is connected later this year. A comprehensive solution must include replacing the thousands of clandestine connections with city collectors.

Even more serious is the huge quantity of industrial pollutants poured daily into the estuary from nearby heavy industrial concentrations at Cubatao from plants producing petrochemicals, fertilizers, and cement.

LIBBIE S. MATHES

In Brief...

UNEP Official: Environmental Investment Aids Development

Lars Karlstrom, Director of the European Office of the UN Environment Programme (UNEP), declared in Geneva recently that investment in environmental protection in the United States alone in 1977 amounted to \$40 billion and created 700,000 new job opportunities.

Mr. Karlstrom, speaking on the economic situation in Europe before the Economic Commission for Europe (ECE), emphasized that environmental investment should not be seen as a constraint to development but rather the contrary.

"We should not fool ourselves by looking at short-term economic advantages that will have to be paid for by future generations," Mr. Karlstrom said. "We must approach environmental problems in a longer perspective. Strong and common efforts must be made to show that additional investment in environmental protection pays off in the longer run and that development must be planned in a sustainable way to protect our limited resources."

Venezuelan Children Raise Seedlings for Tree Planting

Children in several Venezuelan states responded to the Environment Ministry's campaign for more tree planting with thousands of their own hand-raised seedlings. Recently, when the Ministry offered to buy the children's plants, some 100,000 saplings were brought to schools and other collection centers. Children of the Orinoco Delta, which has a total population of only 57,000, raised 40,000 seedlings.

In just one of many official planting programs citizens also

pitched in one month this rainy season to plant some 15,000 trees on the slopes of the Avila range overlooking Caracas, replacing the species which had been destroyed by forest fires last summer. The 22 groups involved in these Thursday, Saturday and Sunday operations included volunteers from schools, scouts, Marine and National Guards. The Park Institute has a goal of 60,000 trees to be planted on the Avila by the end of the rainy season in October.

Israel Fights Coal Unloading As Harmful to Environment

With construction well underway on Israel's largest power station, authorities have not yet resolved the question of how the coal it will use will be brought to it.

The 1,400 megawatt plant going up on the coast at Hadera between Tel Aviv and Haifa will supply 40 per cent of the country's power needs. It was originally intended to be fueled by oil but following the 1973 Mid-East war the government decided to provide a fuel-switching capability which would allow the use of coal.

The Transportation Ministry, however, ruled on environmental grounds against unloading the four million tons of coal in Haifa Port and then transporting it by rail to Hadera. Then it was widely assumed that a breakwater and jetty built next to the Hadera plant would permit offloading there at a reasonable cost. A new study by marine engineers, however, has determined that the cost of building such facilities would be close to \$600,000 which, according to officials of the Israel Electricity Corporation, would make the cost of coal-produced electricity prohibitive.

Some technologists continue to push for Haifa as an offloading point, arguing that modern transport technology can permit a clean operation that would not carpet Haifa and the countryside with black dust.

Britain's Breweries Plan Sharp Energy Reduction

The British pint of beer, consumed at the rate of eleven billion a year, could be produced with 10 per cent less energy per pint by 1982 if the brewing industry's energy-saving target proves successful. Its current annual energy bill is \$75.6 million.

Replies to a Brewer's Society questionnaire received from members responsible for 64 per cent of beer production gave estimates of between two and 33 per cent in energy savings over the next four years. The weighted average was 10.4 per cent. Remaining companies said they were considering energy-saving measures but were not yet able to give numerical estimates.

The Government's Department of Energy is hoping to persuade other industries to follow the brewers' lead. Savings are expected to come from "good-housekeeping" measures and plant investment.

China Joins Global Weather Prediction Experiment

The World Meteorological Organization (WMO) recently announced in Geneva that China has agreed to take part in a year-long global experiment aimed at extending the range of weather prediction.

China's agreement represented an about-face and is seen as a major boost to the test effort, given the huge landmass involved. Chinese ships will also participate in the experiment, the WMO said.

Beginning next Dec. 1, scientists from the WMO's 147 member states will use the latest electronic gear—including earth satellites, balloons, ocean buoys, special aircraft, and high speed computers—to monitor intensively the entire earth's atmosphere and the surface of the sea, factoring data collected into weather projections.

New Electric Taxi Designed For Use in West Germany

West Germany has just inaugurated its first environmentally-friendly electric spa taxi to insure that patients seeking rest and recuperation will not be disturbed by air and noise pollution.

Bavarian Minister for the Protection of the Environment, Alfred Dick, announced at the inauguration ceremony that the state had supported the project and that the electric vehicles would transport visitors from central parking areas in the three-spa town of Griesbach to the hotels and cure centers. The project was actually begun in 1976, but the first electric taxi did not start rolling until last April. The eight-seat vehicle—first of a series—will provide free transportation for spa guests.

Australian Chemical Engineers Develop Farm Waste Digester

A farm waste digester which accelerates the production of biogas has recently been designed by a University of Sydney research team led by David McCann, a chemical engineer in the university's School of Chemical Engineering. The digester is built in tower form to encourage retention of bacteria which process the farm waste.

According to McCann, the digester is designed so that it will enable farmers to dispose of offensive unhealthy wastes more quickly than by conventional means. The tower digester cuts pig manure digestion, for example, to less than three days because the tower—made of readily available concrete piping and insulation to maintain a controlled temperature of 35 degrees centigrade—ensures high microbial population.

The biogas process produces a mixture of about 70 per cent methane, 30 per cent carbon dioxide, and a trace of hydrogen sulphide.

The hydrogen sulphide is removed by passing the gas through iron oxide. The remaining gas mixture is combustible and burns a little hotter than coal-based household gas. If the carbon dioxide is removed by running the biogas through a lime slurry, the pure methane which remains burns with much the same heat as natural gas.

Philippines to Erect First Solar-Powered Ice Plant

Philippine Natural Resources Secretary Jose J. Leido, Jr. has announced that the country's first solar-powered ice plant will be set up at the Navotas Fish Market complex later this year. According to Leido, the plant, estimated at about \$200,000 will be jointly put up by the Department of Natural Resources and the University of the Philippines' College of Engineering. Leido said solar power will account for 60 per cent of the plant's energy requirement, thus reducing the cost of fish preservation.

Czechs Build Waste Water Plant to Clean Elbe River

One of the most complicated waste water treatment plants ever designed is being built in the East Bohemian Synthesia chemical works in Pardubice, Czechoslovakia, to prevent further pollution of the Elbe River. The construction will take more than ten years and will cost more than \$17 million.

The plant—to be put into operation progressively as sections are completed—will be made up of a station for the treatment of acid waters and another for efficient biological cleaning. It is expected that two million cubic meters of polluted water both from the factory and the city of Pardubice will be treated annually.

India Develops Crops That Will Grow in the Desert

The Central Salt and Marine Chemicals Research Institute at Bhavnagar (Gujarat State) in India has developed a new technology of "soil-less" cultivation by which sandy deserts can become fertile land.

Its large-scale experiments have already succeeded in evolving salt-resistant varieties of various crops such as onion, sugar, sun-flower, watermelon, and cotton.

The Director of the Institute, D.J. Mehta, is confident that these crops can be grown with diluted salt or brackish water in the near future.

Peru to Join International Whaling Commission

Peru has taken initial steps to become a member of the International Whaling Commission (IWC), according to Felipe Benavides, Peru's leading conservationist and head of PRODENA, the local branch of the World Wildlife Fund.

The Peruvian application will be formally made at the summer session of the IWC in Cambridge and London when international quotas are to be decided.

Peru has often been criticized for its irresponsible attitude to whaling in the Pacific Ocean. One Japanese whaling company, Victoria del Mar (Vicmar), based in Paita, the northern fishing town, is officially allowed to operate off the Peruvian coast. The company has been accused—though not publicly—of killing a blue whale some months ago when it was found harpooned on a beach just south of Lima.

Besides Peru, there are five countries—Chile, South Korea, Spain, Cyprus, and Japan—which do not acknowledge the IWC whaling quotas. Felipe Benavides says that he is "worried that Chile is not following the Peruvian example."

Oilseed Refinery Owner in Athens Sued by Government

An Athens Public Prosecutor has filed a suit against a Greek industrialist on charges of violating pollution regulations.

The suit arose because of protests made by the inhabitants of Elefsis, an industrial zone town near Athens, who claimed that an oilseed refinery there was endangering their health.

In their protest, addressed to the Prime Minister and the Ministries of Justice, Industry, and Public Order, the inhabitants said that many pupils from the local four primary schools "fainted from the plant's fumes while others got respiratory disorders." The protest added that many adults "have complained of frequent headaches."

New Plan Seeks to Alleviate Mexico's Population Problem

A noted Mexican architect has tackled the population explosion problem by preparing a five-year National Urban Development Plan for his country. The plan could become law through decree by Mexican President Jose Lopez Portillo.

Pedro Ramirez Vazquez, Secretary of Public Works and Human Settlements and builder of the world-famous National Anthropological Museum in Mexico City, believes that only by making "other" places more desirable will the massive migration to Mexico's major cities be diminished. There are no legal means to halt the migration, he observed, since the Mexican Constitution guarantees unrestricted travel and free choice of residency to all citizens.

Under the plan, Mexico City's maximum population would be 20 million persons. Presently, it has an estimated 12 million. Guadalajara and Monterrey would have from three million to five million inhabitants each.

Eleven other cities would each have a population of around one million; 17 cities would have 500,000 to one million inhabitants, and 74 cities would contain 100,000 to 500,000 persons. Ramirez Vazquez said the plan entails the creation of jobs, housing, transportation systems, schools, medical facilities, and public services in areas targeted for growth.

Chinese Go On Stream With Methane Power Station

The first methane power station in Kwangtung province in China has recently started operations in Hsinhua commune in Hua County. The station now supplies electricity to factories for grinding chaff, pumping water, pulverizing feed, lighting, and closed-circuit broadcasting. At the station, the methane, kept in cylindrical gas storage cells, is eventually converted into fuel which feeds a 24-horsepower diesel engine. The generator's capacity is 12 kilowatts.

Conservation Courses Made Obligatory in Colombia

The state government of Cundinamarca and Bogota, Colombia's capital, has decreed obligatory courses in natural resource conservation for all high school students. The new course will include a minimum of one hour per week of classroom study in addition to field work. The aim of the course is to create interest in and concern for the country's environment among Colombian youth.

Voluntary youth brigades already are active in conservation work in Cundinamarca. Recent projects included free distribution of an ecological map of Colombia throughout the state.

Report Huge Reforestation Program in Vietnam

A total of 70 afforestation centers have been built in the southern part of Vietnam since 1975, the Vietnam News Agency reported recently.

It said 209,950 acres of land have been afforested and tens of millions of saplings have been planted in the South.

The Southern Forestry Service has trained thousands of forestry technicians. Many nurseries have been built in Lam Dong, Nghia Binh, and Quang-Nam-Danang provinces capable of cultivating from one to two million saplings a year. In 1976-77, the people in Nghia Binh province planted 40,755 acres of forest, including 4,940 acres of coconut and 1,333 acres of cinnamon, the agency said.

Plan Nationwide Survey of Japan's Natural Environment

The Japanese Government has set aside \$1.85 million in fiscal 1978/79 for a nationwide survey of the natural environment.

The survey is the second in a series conducted every five years to gather information on the actual state of Japan's natural environment in accordance with Article 5 of the Nature Conservation Law. The first study was carried out in 1973.

In the upcoming survey, distribution maps will be drawn showing the state of primeval forests, swamps, alpine plants and other important communities, forests forming traditional landscapes, such as those around shrines and temples, and woods in the Musashino Plains, and plant communities in danger of extinction due to reckless cutting.

Surveys will also be conducted on the geographical distribution of fauna, and the changes in shoreline, the state of marine pollution, and the use of coastal land.



World Environment Report

20 JUL 1978

VOL. 4, NO. 14

Copyright © 1978. Center for International Environment Information.

JULY 3, 1978

Sweden to Emphasize Alternative Energy at Expense of Nuclear

STOCKHOLM—During the next three years Sweden will be putting more money, time, and effort into research and experiments with alternative energy sources more friendly to the environment—at the expense of nuclear power studies.

“Earlier in the present energy research program we made a reapportionment on a smaller scale from nuclear power research to, for example, the development of windpower generators,” Minister of Energy Olof Johansson said recently in presenting the plan. “Now we are following up that reapportionment.”

A hefty slice of the \$217 million program is earmarked for development of organic substances—so-called energy forests, forest waste, peat, and similar domestic combustibles—for use as motive and other power. A sum of \$26 million is set aside for this work.

Another \$22 million is to be spent on developing wind-power generators including the construction of two large windmills. One will be based on the island of Gotland in the Baltic Sea. A site for the other has not been chosen but studies of wind frequency and strength have been made in the most southern part of Sweden and in the province of Uppland north of Stockholm.

Researchers into Sweden's future energy needs have predicted as many as 3,700 such windmill installations would be required. Seven major Swedish engineering firms have expressed interest in bidding for the work. But local farming organizations in Skaane, southernmost Sweden, already are protesting against the possible windmill project claiming that far too much valuable farming acreage would be sacrificed and that the windmills would be a nuisance. “From the air, Sweden would look like a porcupine,” said one spokesman.

Sweden already has one small, wind-powered generator working experimentally near Gayle, two hours' drive north of Stockholm, but its operational results have not yet been published.

Erik Arrhenius, an expert on Sweden's energy commission's group on safety and environment, has been quoted as predicting that by the turn of the century organic combustibles could be producing about 15 per cent of Sweden's energy needs, providing the government opts to go into the project on a big scale. The fast-growing renewable energy forests would be planted mainly with bushy types of willow and poplar as well as alder trees.

According to published estimates, about 7.5 million acres of marsh or other wetlands would have to be planted, or about the equivalent of Sweden's present-day farmland.

The government does not appear to be putting much money as yet into solar energy although there are a number of private and communal projects under way for study in conjunction with technical schools and building research organizations. One such is in a suburb of Vaxjoe where 50 houses are under construction. Outside Stockholm a privately financed experiment is going ahead with 26 various types of energy-saving devices.

In the background is the big question mark over Sweden's future energy policy. Prime Minister Thorbjorn Faelldin's Center Party campaigned and won the last election on a promise to phase out nuclear power over the next 10 years. Its partners in the coalition government, the Moderates and Liberals, on the other hand, favor completion and operation of the nuclear energy plants started under the previous Social Democratic government. Just how this disagreement will be resolved hasn't yet been clarified.

SPECIAL DISPATCH TO WER

Irish Society Questions Use Of Nuclear Dump Off Nation's Coast

CORK—A huge Atlantic nuclear dump is expanding off the South Coast of Ireland, where thousands of tons of waste have already been deposited, according to a charge by the Irish National Cooperative Society, which represents cooperative organizations throughout the nation.

The Secretary of the movement, Mr. John O'Halloran, has spearheaded a claim on behalf of the thousands of members of the Society, asking the Irish Government to

In This Issue

Marine Resources	2
Model Chemical Plant	2
Weather Modification	3
UNEP's Governing Council	4
Poverty vs. Environment	4
Roads From Waste	5
In Brief	6

ban further dumping at any distance of less than 1,000 miles off Ireland because of the unknown radioactivity hazards.

According to Mr. O'Halloran, a Glasgow-registered ship, the GEM, is to be used to collect 2,500 tons of waste at the Belgium port of Zeebrugge in the near future and dump it about 300 to 400 miles south-west of Ireland off the coasts of Cork and Kerry. After dumping, the vessel will return to Sharpness in the Severn Estuary near Bristol for another 2,500 tons of waste from Britain, for dumping at the same site.

Mr. O'Halloran claimed that this dumping would take place through July and said the site was "right in the path of the Gulf Stream" which flows around the Irish Coast. He said the situation was worrisome because any radioactive leakage would be potentially disastrous for the Irish fishing industry.

TOM MacSWEENEY

Pakistan Meeting Assesses Marine Resources in Afro-Asian Community

ISLAMABAD—Admiral Mohammad Shariff, Pakistan's Chief of Naval Staff, has underscored the need for devising practical measures for the development of oceanographic research through regional cooperation and mutual assistance.

Inaugurating a recent six-day regional ad hoc meeting of TEMA (Training, Education and Mutual Assistance in Marine Sciences), Admiral Shariff said that over the past few decades the oceans had become increasingly the arena of confrontation between states because of, among other factors, technological developments enabling man to exploit the marine environment for its hidden and tremendous resources.

He said the Afro-Asian ocean community had indeed a major stake in the development of marine resources because countries bordering the north Afro-Asia ocean have been constantly beset by shortages of food and raw material even though these were available, given the proper technology, very near their shores.

The admiral said that Pakistan needed to exploit its marine resources and develop its seafood industry. For this purpose, investigations of fisheries biology, stock assessment and handling, processing and marketing of fish were urgently required.

He said the conversion of the Institute of Marine Biology at the University of Karachi into an institute of marine sciences or the establishment of a national institute of oceanography would go a long way in fulfilling Pakistan's need to achieve self-reliance in marine science investigations, and that the cause of the development of marine sciences would be well served if an international agency such as UNESCO or NORAD were to help in the establishment of such a regional center in Pakistan.

MOHAMMED AFTAB

Chinese Chemical Plant Cited As Environmental Model for Industry

HONG KONG—As China has stepped up its pace of ambitious industrialization, the country's factories have been forced to expand production at a dizzying rate — thus exacerbating the problem of pollution control. But according to a recent Peking Radio report, one such factory at least — the Liaoyuan Chemical Works in Shanghai — has coped with the problem so successfully that its environmental program could serve as a model for the rest of China's heavy industry.

More than 100,000 cubic meters of harmful gases and more than 10,000 tons of liquid and solid wastes used to be discharged from Liaoyuan daily. These effluents corroded sewers and destroyed nearby vegetable farms. Now, however, the report says that more than 90 per cent of the solid waste is being recycled and no corrosive liquid is being discharged into the sewers. The new technological process annually saves 200,000 tons of water and recovers more than 1,000 tons of hydrochloric acid from what was previously a harmful liquid. However, no details of how the new process works were provided by Peking Radio.

The workers and technicians of the Chemical Works have also cooperated in evolving a simple power-saving device which, costing only \$3,500, helps recover 90 per cent of the coal dust that used to go up the chimney, thus saving more than 900 tons of coal annually. In fact, the total investment the factory has made for environmental protection since 1972 amounts only to one tenth of the value it now recovers from waste materials every year.

SPECIAL DISPATCH TO WER

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$150 per year. \$20 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Jan De Pinto
Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in WER, which in no way represents the official view of UNEP.

Book Review: An Environmentalist Looks at the Weather

It's true that everybody talks about the weather, but it's no longer true that nobody does anything about it. If Fitzhugh Green, who wrote "A Change in the Weather" (W.W. Norton and Company, Inc., New York, \$9.95), is correct, new technology has the power, often effectively, to deal with the weather, affect the climate, and thus modify our environment in significant ways.

Formerly the Associate Administrator of the U.S. Environmental Protection Agency—and former naval officer, diplomat, explorer, and journalist—Green has tackled an important and formidable subject without recourse to technical jargon. Simply and entertainingly, he examines what our society has done involuntarily and voluntarily to upset or to amend our complicated biosphere.

"A Change in the Weather" is divided into three sections, plus illustrations, notes, bibliography, and index. Many of the chapter headings indicate the scope of the undertaking: Cloud Surgery to Make Rain; Snow, Ice, Sea, Sky, and Earth Surgery to Improve the World; Instant Good Weather; Environmental Warfare; Unintended War on Weather, Cli-

mate, and Environment; Counterattack on Unintended Ecocide.

As Green says in his foreword: "Today's Astro-dome in Houston may well evolve into totally enclosed cities, safe from the vagaries of climate and dirty air... A Princeton University physicist has a blueprint for building huge, self-sustaining satellites for colonies of adventurous scientists.

"Programs are in progress to modify the wasteful, destructive aspects of weather, climate, ocean currents, deserts, and earthquakes... We are attempting to improve the environment on a grand scale [but] we are inadvertently putting a crimp in it... The result may be a new Ice Age or... a warm-up of the air and oceans."

But having considered all the "bad" and the "good" aspects of this global question and their probable effects on the environment, Green is not pessimistic. He believes there is "fair weather ahead" due to national and indeed transnational environmental legislation as it affects not only pollution control, and conservation, but perhaps as important — weather modification.

A.W.

Turkey Creates New Top Level Environmental Affairs Post

ISTANBUL—A new post of Under-Secretary for Environmental Affairs, reporting directly to the Prime Minister, is to be created soon in Turkey, it was announced here on June 5, World Environment Day. Its main task will be to coordinate and secure closer cooperation between various groups involved in environmental research, planning and control, to conduct nationwide studies about environmental problems, to draw up effective measures to cope with these problems, to seek financial means to take anti-pollution measures, and to establish cooperation with agencies in this field.

Various events, including press conferences, seminars, radio and television programs were held on World Environment Day, and the public was for the first time informed of the seriousness of environmental problems in Turkey. Speakers, who included experts and members of environmental organizations recently established in Turkey, complained that former governments and local administrations ignored environmental issues but hailed the present Government's efforts and its decision to establish a major environmental post.

Selahattin Yildirim, Secretary-General of the Union of

the Marmara Municipalities, said that as a result of pollution the number of fish species in the Marmara Sea has declined from 14 to five, and fish have completely disappeared from the Izmit Bay in that Sea due to heavy industrial waste. More than 70 tons of chemical waste annually is discharged into that Bay, he reported. "Environmental pressures, from pollution to excessive traffic noise, have become a serious threat to the physical and mental health of the nation," Yildirim said.

Many ecologists complained about the lack of effective legal measures to combat pollution and other environmental problems. For example, the penalty for blowing an automobile horn is still only a 15 lira fine (65 cents) and the maximum fine for causing sea pollution (by industrial plants) is 5,000 liras (\$200).

Speaking on this subject at a recent news conference, Engin Ural, Secretary-General of the newly-established Foundation for Turkey's Environmental Problems—a private group—called on the Government and Parliament to initiate legislation "to cope with environmental problems in accordance with the present day conditions and needs."

SAM COHEN

Delegates of 70 States Attend UNEP's Governing Council

NAIROBI—The sixth annual session of the Governing Council of the United Nations Environment Programme (UNEP), held in Nairobi recently and attended by representatives of 70 states, stressed the vital importance of incorporating environmental considerations into all forms of development planning, reviewed the activities of UNEP over the past year, and re-allocated part of its budget for the remaining period of UNEP's 1978-1981 medium-term plan.

Summing up the work of the Governing Council, UNEP's Executive Director, Dr. Mostafa K. Tolba, told *World Environment Report* that it had dealt with a greater range of controversial issues than ever before.

Dr. Tolba singled out the Council's insistence that UNEP should be fully involved in preparations for a special session of the UN General Assembly in 1980 to assess progress towards a new international economic order, and be directly represented at the General Assembly's special session on disarmament, as significant. He commended the Council for adopting recommendations on shared natural resources (*WER*, March 13, p. 4), and for inviting the General Assembly to adopt them formally. "This is an important step forward in international cooperation," he commented.

The Council also considered the implementation of the action plan to combat desertification, following the UN Conference on Desertification held in Nairobi in 1977 (*WER*, Oct. 10, 1977, p. 3). There will now be a special unit in the UNEP secretariat in Nairobi to handle work on desertification.

Many delegates were critical of delays in establishing the new Habitat Center in Nairobi (*WER*, Jan. 30, p. 2), and expressed concern that an Executive Director for Habitat had not yet been appointed. The Council instructed UNEP to maintain the closest possible link with the new Center.

In the sessional committee of the Council, many delegates underlined the importance of the International Register of Potentially Toxic Chemicals (IRPTC) in the dissemination of information on hazards. Several delegates said chemicals had become the main issue in a number of international environmental programs. Representatives from developing countries urged stronger steps to bar exports of potentially harmful chemicals (*WER*, Oct. 24, 1977, p. 4).

The Committee debate on regional seas programs was lengthy; the good progress on the Mediterranean was welcomed, and the Kuwait delegate described the decision for a similar plan for the Gulf (*WER*, May 22, p. 4). Some delegations regretted proposals to cut the budget for regional seas programs, but most states agreed that UNEP's role should be a catalytic one, with responsibility gradually shifting to the countries directly involved.

The final result was adoption of a recommendation

calling on the Mediterranean states to take increasing financial responsibility for their Action Plan, with the aim of assuming full responsibility at least by the end of 1983.

Expenditure by the UNEP Fund Program in 1977 reached \$22.3 million—a 50 per cent increase over 1976. Governments not already contributing to the Fund were urged to do so; a delegate noted that less than half the UN membership (149 states) were contributors. Other states were urged to increase their contributions wherever possible, in order to achieve the 1978-1981 target of \$150 million.

(On this subject, Dr. Tolba later expressed confidence that the target would be met; in the first year of the plan, pledges totalled \$112 million but they had now risen to \$125 million.)

Forward commitments of up to \$10 million in 1980 and \$4 million in 1981 were authorized by the Council. The Executive Director was also authorized to consider 1978 and 1979 as a single financial period, for which the sum of \$61.6 million was allocated—apportioned to 11 Fund program activities.

Among the decisions adopted by the Council were:

- The Environment Fund to contribute \$700,000 to the budget of the Secretariat of the Convention on International Trade in Endangered Species for 1978-79;
- Urgent steps to be taken to allocate more funds for environment projects in Asia and the Pacific (to bring about a better balance with other regions);
- A study to be made of the possibility of having the Governing Council meet less frequently than once a year;
- UNEP, in cooperation with other UN agencies, should advise countries affected by soil erosion.
- The UN Sahelian Office in New York, and its field office at Ouagadougou, Upper Volta, to be enlarged and operate as a joint UNEP/UN Development Program venture.

CHARLES HARRISON

Chilean Says Poverty Most Serious Threat to Nation's Environment

SANTIAGO—Chile's National Planning Office Director Robert Kelly recently told Chile's news media that the most serious environmental problem the country faces is human poverty rather than the contamination or extinction of natural resources. Chile has classified almost 21 per cent of its population as living in extreme poverty.

"The poorer people are, the less able they are to understand the need to care for natural resources. It's understandable that poorer people use natural resources in a way which will most easily contribute to their subsistence, in a way which uses up natural resources," said Kelly. "Rather than falling into an exaggerated environmental protection policy, logic dictates that the first step in protecting the environment is to eliminate extreme poverty."

Like some other developing countries, it appears that Chile is rejecting any curtailment of its economic growth in order to meet environmental protection goals. The country has staked achievement of social improvement goals on an economic policy aimed at pumping up the economy through rapid growth of eight or more per cent per year. Government economists hope that the trickle down effects of rapid growth will raise the country's living standards. Nevertheless, Chile seems to be attempting to develop an environmental policy that will attempt to reconcile growth and environmental constraints.

The planning office's strategy suggests two lines of action in environmental planning. One is aimed at conserving natural resources, the other at promoting human potential.

ODEPLAN, the planning office, has recommended that studies be done on the dynamics of renewable resources and on the environmental impact of foreign and national investment programs. In cases where the social and private benefits and costs conflict, ODEPLAN recommends that the government encourage environmental protection measures through a system of bonuses and tax credits. ODEPLAN also proposes that the government encourage companies which product pollutants as by-products of industrial activity to interest other companies in processing and marketing them. The government planning agency suggests that subsidies might be used to encourage this type of project.

On the human resources side, ODEPLAN notes the need to continue campaigns to raise hygienic standards in Chilean housing, potable water, and sewage and drainage systems. It also finds it necessary to study relationships between the birth and death rates, nutrition, sanitation, infant mortality, preschool mortality, productivity, child development, learning capacity, and social adaptation.

NINA SERAFINO

OECD Reports on Waste Material Use in Road Construction

PARIS—The Organization for Economic Cooperation and Development (OECD), which has conducted a great deal of research on environmental pollution and conservation through its specialized groups and committees, has recently issued a 168-page report on the more widespread use of waste materials in road construction.

The report recommends that governments promote concerted action between research, administration, and industry to foster new technologies. It says a comprehensive material utilization strategy would also make available hitherto unused wastes for other competing uses, since road construction constitutes only one form of utilization.

The study is the product of OECD's Road Research Group on the Uses of Waste Materials and By-Products in Road Construction, set up in July 1968. It sums up its

conclusions by saying that "the greater use of wastes from industry and other by-products — already attaining mountainous proportions — will help efforts to minimize resource depletion, environmental depreciation, and energy consumption."

The report contains a review of the various types of waste, the quantities produced, and road and non-road uses in the twelve participating OECD countries. It also summarizes research undertaken and experience gained in this field and gives a general country-to-country assessment (although specific waste locations are not pinpointed).

However, the Group admits that even with all the positive arguments that can be presented for the use of waste materials and by-products, there is unfortunately a large number of limiting factors which inhibit their use. "Some, such as raw domestic refuse, are inherently unsuitable while others, such as colliery shale, have very variable properties," it says. "Also important is the understandable conservatism of engineers who prefer to use the well-tried and tested natural materials."

The Group reports: "It is possible to establish certain general criteria for a waste to be useable in road construction: The annual quantity available at any one location should be at least 50,000 metric tons; reasonable transportation distance; material must not be highly toxic; and material not too soluble in water in terms of potential settlement and/or water pollution."

Among the wastes with maximum or good potential are blast furnace and other metal slags, sulphur, colliery spoil, oil shale residue, and quarry waste. Many of these waste products are plentiful. The annual production, for example, of colliery spoil is 90 million metric tons (U.S.); 56 million (UK); 60 million (W. Germany).

Wastes and by-products from mining and quarrying activities can be expected to increase in many countries, particularly as governments are being urged by another OECD body, the International Energy Agency, to anticipate the foreseeable end of world oil supplies by switching, as far as feasible, to coal and alternative energy sources.

From the report's extensive summary and conclusions, these points stand out:

- With the significant exceptions of blast furnace slag and steel slag, few waste materials or by-products are suitable for use in the pavement layers... A more practicable possibility is the stabilization of waste materials and by-products with cement, lime or bitumen so that they can be up-graded for use in sub-base and road-base construction;
- If it is accepted that environmental considerations are important or even vital, there will be frequently spinoff benefits, such as the benefit gained by the removal of waste tips when the tip is used for road construction purposes;
- Chemical and physical factors may inhibit the use of wastes and by-products. Water pollution by leaching may or may not be a hazard but, in any case, the report mentions reliable devices to prevent it.

PETER DEWHIRST

In Brief . . .

Oil Pollution Incidents Off UK in Sharp Rise

Ten per cent more oil pollution incidents took place along the shores of the United Kingdom in 1977 than in the previous year, and the numbers have been rising since 1975, according to the annual report of the Advisory Committee on Oil Pollution of the Sea (ACOPS)—a non-statutory body with members from a wide-range of statutory and voluntary organizations dealing with the environment.

ACOPS recorded a total of 642 incidents. The causes of the majority of those that occurred outside ports could not be identified. Despite the publicity given to pollution from recent tanker accidents off the coasts of Brittany and Norfolk, ACOPS stresses that most damage to the environment comes from the steady and chronic pollution of tankers illegally discharging and cleansing their tanks at sea.

The report describes the Government's attitude as "complacent" and attributes it to the spasmodic and therefore misleading figures with which it is supplied by the three separate Government departments with responsibility for marine pollution. ACOPS would prefer the establishment of a British central register of oil spills.

Establish Brazil's First Private Oceanographic Base

The Brazilian Foundation for the Preservation of Nature (FBCN) is currently raising funds to establish the country's first private Oceanographic Research Center and general purpose base. Paulo Crocchia, of the FBCN's Sector of Natural Resources, said the project is still in the planning stages but that approaches for financial aid are already being

made to the government and private enterprise. The purpose of this "Oceanographic Base" is to provide technical support for universities, researchers and all those studying the biology, geology, chemistry, and botany of the sea floor.

The FBCN was established in Brazil 20 years ago but only recently has it turned its attention to the ocean. It is now offering diving and underwater macrofilming courses. It has also undertaken a campaign to make professional fishermen aware of the danger of predatory fishing.

New Dutch Device Saves On Washing Machine Detergent

The amount of detergent required for each individual can be reduced considerably when use is made of a new return flow reservoir developed in the Netherlands that can be installed in any washing machine. The detergent savings result in lower phosphate deposits in the environment and decreased usage of water and electricity.

Detergent wastage occurs at the beginning of a wash cycle when the flexible hose, filter housing, and the pump beneath the drum are virtually empty. If, as usually happens, the detergent is flushed into the machine with the first water, a large amount of the detergent will disappear immediately into the flexible hose and the filter housing. In practice, it would suffice first to add water before filling the soap container. However, if a pre-wash is done, the pre-filling would be necessary for both the pre-wash and the main wash steps.

The return flow reservoir not only saves labor but also allows for fully-automatic operation of the machine. Every time after the machine has emptied, sufficient water flows back into the drainage system. A product of Van Zegveld B.V. of Barendrecht, the Netherlands, the return flow reservoir is made of chemical-resistant and heat-resistant polypropylene. It is now available for export.

W. Germany to Erect Nuclear Plants in Gulf States

West Germany is prepared to supply nuclear plants to Gulf States for power generation or water desalinization, Research and Technology Minister Volker Hauff said recently during his visit to Kuwait. He also proposed that Gulf countries should cooperate in settling up a joint nuclear plant that would produce 1,200 megawatt of power—enough to meet consumption requirements in the Gulf states.

In later meetings, Dr. Hauff and Kuwait's Minister of Electricity and Water, Mr. Abdullah Al Ghanim, agreed that first priority in the two countries' joint scientific efforts should be given to energy research, water desalinization, and bio-technology. The two ministers stated that a first joint research project in solar electricity production is already under way. Additional joint projects in the fields of solar heating and cooling, as well as reverse osmosis for treating sea and brackish water, were agreed upon in principle. Both sides agreed to conclude as soon as possible a bilateral agreement on technological cooperation.

Tighten Noise Pollution Controls in Philippines

The Philippine National Pollution Control Commission (NPCC) has recently stepped up its efforts to control noise pollution. In a recent order, the first of its kind issued by NPCC, Interco Manufacturing Corporation in Zamboanga City was ordered to stop operating three of its generators during nighttime. During daytime, the manufacturing plant's operations were limited to only one generator at a time. According to NPCC, the noise levels coming from the plant have exceeded the tolerable level of 85 decibels. The plant has been given a month to install adequate noise control facilities or face possible closure and fines.

Explore Conduit Between Mediterranean and Dead Sea

The possibility of constructing a conduit between the Mediterranean and the Dead Sea is being explored by an Israeli government-appointed committee.

The purpose of such a conduit would be to exploit the 400 meter drop between the Mediterranean and the landlocked Dead Sea—the lowest place on the face of the earth—for hydroelectric power generation. It would also replenish the mineral-rich Dead Sea which has been shrinking at the rate of one foot a year, threatening the long-term development of Israel's major chemical industries.

Among aspects being studied is the impact on flora and fauna around the Dead Sea if its level were to be raised by the introduction of a billion cubic meters of water a year.

Pakistan to Sink Tubewells To Control Waterlogging

The government-owned Water and Power Development Authority (WAPDA) in Pakistan will spend \$43.3 million during the current year to control waterlogging and salinity.

A WAPDA director said that 423 tubewells would be sunk in Punjab Province, 78 in North Western Frontier Province, and 214 in Sind.

Chinese Recycle Coal Slag For Heating and Brick Making

A total of 3,600,000 tons of coal slag and soot have been collected in the eastern Chinese province of Chekiang in the past six years, according to a report from the New China News Agency. The agency said the coal slag and soot collected is enough to supply urban areas of the province with a whole year's coal substitute.

Authorities in the province have also started the recycling of coal slag. Four to six tons of coal slag give out as much heat as a ton of coal. The slag is used to produce bricks and tiles. It is also used as a fuel in the production of lime. In 1977 alone, Chekiang produced 1,000 million bricks and tiles in which one third of the raw materials came from coal slag. Previously, coal slag was piled up, discarded, or used to fill ponds.

Argentina to Assist Bolivia Build Nuclear Capacity

Argentina has signed an agreement under which it will assist Bolivia in building up its nuclear energy capacity. The agreement is similar to ones signed earlier with Peru and Ecuador (*WER*, June 20, 1977, p. 3) whereby Argentina supplies equipment and technology for small nuclear reactors.

Bolivia is to establish a research center with Argentine aid, process raw material, and develop security techniques. Argentina for its part will help in the construction of the nuclear center which is to be constructed 70 km from the Bolivian capital of La Paz at Viacha on the high plateau region.

Like the Peruvian Institute of Nuclear Energy (IPEN), a nuclear energy presence has been created in Bolivia but so far its activities have been minimal. The Bolivian agency's work to date has been carried out with American aid. The Argentine aid will be supplementary to continuing U.S. assistance.

Meanwhile, Peru has recently received 15 kilos of enriched uranium from Argentina along with one ton of electronic equipment for its first zero-type reactor. Installation of the reactor started seven weeks ago and according to Dr. Juan Jose Gil Gerbino, chief of the zero-type project, tests should begin shortly on the reactor at IPEN's headquarters in Santa Catalina, Lima.

EPA Meets With OECD On Regulating Toxic Chemicals

Senior U.S. Environmental Protection Agency officials, including Steven D. Jellinek, Assistant Administrator for Toxic Substances, met in Paris recently with representatives of the Organization for Economic Cooperation and Development to work out details of cooperative agreements to regulate toxic chemicals. Two areas of joint cooperation already are under way: consistent test methodologies and data requirements, and information exchange mechanisms.

Now Jellinek and others will begin work on four other areas: consistent laboratory test practices, protection of confidential data, consistent methods of analyzing economic impacts of regulations, and an international glossary. One of EPA Administrator Douglas M. Costle's principal goals since assuming office has been to achieve international control of toxic substances. EPA officials say European governments are now more interested in controlling toxic substances, and are more willing to accept U.S. test findings.

Irish Try Use of Waste Heat for Growing Crops

Irish specialists from the State Agricultural Institute will attempt to use normally discarded waste heat generated by the peat-powered National Electricity Supply Board in Athlone, County Westmeath. They claim it is the first experiment of its kind outside the Eastern bloc.

A new type of greenhouse, made of double-polythene, will cover ten acres planted with fruits and vegetables. It has resulted in savings of up to 35 per cent in heating during a trial period and a special system has been devised to overcome humidity problems.

Indian Scientists Extract Crude Oil From Shrubs

The sap and rosin of some shrubs may one day yield crude oil and a substitute base for various petrochemicals, according to experiments being carried out by Oil India Ltd. and the Indian Petroleum Research Institute at Dehra Dun, about 150 miles outside Delhi.

When these plants reach the proper height they can be cut near the ground and run through a crushing mill in almost the same way as is done with sugarcane. Because the plants will regrow from the stumps, replanting will be required only once every 20 years. The sap thus obtained yields crude hydrocarbons which can be processed directly in the existing refineries, yielding between 10 to 50 barrels of oil per acre annually. The cost of crude hydrocarbons from the latex is estimated to be \$10 a barrel.

Holland Gains Control of Its Water Pollution Problems

Water pollution in the Netherlands finally has been brought under control through strong national legislation, tough enforcement, and active cooperation between industry and government, according to a recent report of the Ministry of Health and Environment.

For many years, the problem of water pollution has been especially acute in the Netherlands because of its geographical location at the lower reaches of several of West Europe's industrially-contaminated and highly trafficked rivers, particularly the Rhine and the Maas.

Since 1971, when the Ministry of Health and Environment was established, Holland has had a well-defined national policy for fighting pollution. The Surface Waters Pollution Act is one of 22 laws passed by Parliament over the years to guide the country in coping with air and

water pollution and threats arising from chemical wastes, solid waste, nuclear energy, and pesticides, among others.

After the water pollution regulations took effect, the volume of untreated industrial effluent dumped into the rivers declined sharply. As the industrial firms responsible for the pollution were subject to stiff fines, they have invested heavily in effluent treatment plants.

As of January 1977, the Netherlands had 519 waste water treatment plants in operation with a total purification capacity of 16,677,605 population equivalents (p.e.). The greater part of this capacity, amounting to 10,239,000 p.e., was reserved for domestic waste water, while the remainder, some 6,438,605 p.e., was for industrial effluent. It is anticipated that by 1980, the national treatment capacity will reach about 20.5 million p.e. which will be very close to the saturation point.

Major pioneering work is being carried out on water treatment facilities. Extensive monitoring systems also have been installed, and a national automatic analysis system is scheduled for completion this year. It is estimated that in 1977 alone, private enterprise in Holland expended \$29.5 million for treatment equipment.

Charge Santiago's Level Of Air Pollution Unacceptable

Dr. German Corey, head of the environment program in the Ministry of Health in Santiago, Chile, has concluded in a government report that air pollution in the city has reached unacceptable levels, citing a registration of 300 micrograms per cubic meter of sulphurous anhydride—close to the permissible maximum level of 365 micrograms.

The Under Secretary of Health also complained that Santiago's pollution controls are insufficient, "especially when nobody will cooperate."

Two Universities to Study Pollution in Persian Gulf

Case Western Reserve University and Kuwait University have begun a joint environmental research project which is expected to help control pollution in the Persian (Arabian) Gulf. Project Director is Wilbert Lick, professor of Earth Sciences at the University's Case Institute of Technology.

"Case will develop the numerical computation methods needed to predict the currents and dispersion of pollutants in the Gulf," explains Prof. Osman Mawardi, head of the Case Energy Research Office, who negotiated the agreement. "The scientists in Kuwait will do the field testing, and will eventually be able to apply the mathematical models to other problems."

Professor Lick said the models can be used to determine the fate of pollutants entering the water, to study the effects of currents on plankton and on sediment dispersion. "The model considers the factors that force the currents, such as the tides, winds, and changes in temperature and salinity." Lick has developed similar hydrodynamic models of Lake Erie which have been used to study the effects of thermal discharges from power plants, and were incorporated into studies of the proposed Lake Erie jetport.

The current project is based partly on the premise that Lake Erie and the Persian Gulf share several characteristics and problems. "The Gulf is somewhat bigger than Lake Erie, but it's also quite shallow," said Lick. "However, it does have a tidal effect Lake Erie doesn't have." Lick hopes also that future studies can examine chemical or biological factors of pollution.

Pollution problems in both areas have to be addressed by a multiplicity of governmental bodies. Kuwait, concerned that pollution will harm its important shrimp fishing industry, has taken a lead in exploring the problem.



World Environment Report

INDEX

VOLUME 4, 1978

JANUARY-JUNE

A

Acid Precipitation

- Czechoslovakia, June 19, p. 3
- U.K. blamed for sulphur rain in Scandinavia, Jan. 16, p. 1

Aerosol Propellants

- Pollution-free alternative developed (PEPO), Mar. 13, p. 6

Agriculture

- Animal effluent treated by Arcub process, Jan. 30, p. 8
- Citrus fruit plague control in Argentina, Jan. 16, p. 6
- Czech farmland protection, Jan. 2, p. 2
- Odor-control system for sty and stable, Jan. 2, p. 1
- ECE seminar on aerial survey methods, Jan. 2, p. 6
- Pesticide pollution levels in Asia, Feb. 27, p. 1
- Pesticides overused in Colombia, Jan. 2, p. 6; June 5, p. 7; June 19, p. 8
- Taiwan know-how extended to Haiti, Jan. 2, p. 7
- Waste conversion to protein urged, May 22, p. 6

Air Pollution (see also Smoking)

- Bio-indicator monitoring with moss, lichens, Apr. 10, p. 8
- Bombay, India, pollution levels, May 8, p. 5
- Caracas motor vehicles, Feb. 27, p. 3
- Carbon dioxide from coal, U.S. HEW warning, Feb. 13, p. 7
- Carbon monoxide, Jan. 30, p. 4; Feb. 27, p. 3; Apr. 24, p. 3; May 8, pp. 5, 6; June 19, p. 6
- Cartagena Bay, Colombia, Apr. 24, p. 1; June 19, p. 8
- Cut by Hahn combustor furnace, Jan. 30, p. 7
- Cut in Munich, Bavaria, May 8, p. 6
- Czech problems, June 19, p. 3
- ECE seminar on fine particulate pollutants, Jan. 2, p. 2
- German progress in abatement reviewed, June 5, p. 1
- German charge Czechs with cross-border pollution, Apr. 24, p. 8
- Hydrocarbons, Apr. 24, p. 3; May 8, p. 6
- Indian Congress considers legislation, June 19, p. 2
- Japanese long-term measures, Jan. 30, p. 3
- Japan's air quality found improved, May 8, p. 7
- Laser detection system used in Argentina, June 19, p. 7
- Lead in car exhaust cause nerve damage, Feb. 13, p. 5
- Malaysia regulates diesel exhaust fumes, Feb. 13, p. 6
- Metallic dust in Madras as health hazard, May 22, p. 5
- Mexico City, Jan. 30, p. 5
- Monitoring in Bavaria, Jan. 2, p. 8; Apr. 10, p. 8; pp. 5, 6; May 22, p. 5
- Particulates, Jan. 2, p. 2; Jan. 30, p. 4; Apr. 24, p. 3; May 8, pp. 4, 6; May 22, p. 5; June 19, p. 6
- Peking factories "censured," May 22, p. 4
- Pesticides (BHC, DDT), in Asia, Feb. 27, p. 1
- Philippine NPCC closes offending steel plant, Apr. 24, p. 6
- Reduced in Athens by switch from mazout to diesel, Mar. 27, p. 2
- Santiago, Chile, Jan. 30, p. 4
- Sao Paulo, Brazil, Feb. 13, p. 7; Apr. 24, p. 3
- Singapore revises emission standards, June 19, p. 6
- Subject of ECE Senior Advisors meeting, May 8, p. 4
- Sulphur oxides, Jan. 16, p. 1; Jan. 30, p. 3; Mar. 27, p. 2; Apr. 24, pp. 1, 3, 8; May 8, pp. 4, 5, 6, 7; May 22, p. 5; June 19, p. 6
- U.S.-Mexican border cooperation agreements, Mar. 27, p. 1

Airports

- Burmese workers risk deafness, May 8, p. 7
- Japan plans home soundproofing near airports, June 19, p. 5
- Noise pollution effects studied by UN task force, June 19, p. 3

Alcohol

- Alcogas motor fuel will save oil in Philippines, Mar. 27, p. 6
- Production technology for fuel discussed by ECE, June 5, p. 4

Algeria

- Sewerage project receives World Bank loan, May 22, p. 6

Amazon River and Basin

- Amazon Pact discussions joined by Venezuela, Jan. 16, p. 2

- Amazon Pact text approved by eight nations, June 19, p. 1
- Misuse of chemicals destroys jungle areas, Apr. 10, p. 6
- Venezuelan forest protection law extended, Apr. 10, p. 8

Animal Fodder

- Microbial protein production studied, Jan. 16, p. 5
- Production from waste matter urged, May 22, p. 6

Arabian Sea

- Pesticide pollution levels, Feb. 27, p. 1

Argentina

- BANADE loans to industry carry ecology stipulation, May 22, p. 1
- Chemical engineers study renewable resources, Jan. 30, p. 8
- Deforestation problems, Jan. 30, p. 6
- Insect control with sterile fruit flies, Jan. 16, p. 6
- Laser detection of air and water pollutants, June 19, p. 7
- Lowlands reclaimed as ecology belt by sanitary landfill, Feb. 13, p. 4; May 22, p. 6
- Pampas deer near extinction, Feb. 27, p. 7
- Reforestation slowed by red tape, Feb. 13, p. 6
- Tannery pollution controls on River Plate, Mar. 13, p. 2
- Third Forestry Congress, Apr. 24, p. 8

Asbestos

- Controls urged by Common Market, Jan. 2, p. 1
- Polypropylene matrix as alternative in cement, June 5, p. 5
- Raybestos controversy in Ireland resolved, Feb. 13, p. 7

Asia

- Pesticide pollution dangers, Feb. 27, p. 1
- Recycling Association formed, May 22, p. 8

Asian Development Bank

- Pakistani water project aided, Feb. 13, p. 8

Australia

- "Sixxit" offered to neutralize oil spills, Mar. 13, p. 6
- Unions enter uranium mining and exports dispute, Apr. 10, p. 6
- Wildlife reserve on Lord Howe Island, Jan. 2, p. 8

Austria

- Environmental protection agencies coordinated, Mar. 13, p. 6
- Hann combustor furnace praised, Jan. 30, p. 7
- Solar kit for home water heating available, Jan. 16, p. 6
- Wildlife Research Center, Mar. 27, p. 8
- Windmill power station to be tested, Feb. 13, p. 8

B

Baltic Sea

- Convention, and Danish compliance measures, Feb. 27, p. 4
- Oil pollution control measures discussed, June 19, p. 6

Belgium

- Nuclear accident in Tihange reported, Mar. 13, p. 3
- Pollution-free spray can developed, Mar. 13, p. 6

Benn, Tony

- Energy saving measures announced, Mar. 13, p. 5

Bharati, Iqbal Krishna

- Carbon gasification suggested as energy source, Feb. 27, p. 5

Birds

- Eider duck hunting ban in Sweden continues, Feb. 27, p. 8
- Reserve on Lord Howe Island, Australia, Jan. 2, p. 8

Bolivia

- Amazon Pact approved, June 19, p. 1

Bottles

- Options for waste reduction proposed by OECD, June 5, p. 6

Brazil

- Amazon Pact approved, June 19, p. 1
- Environmental health pact with Venezuela, May 8, p. 6
- Illegal wild game trade in litigation, Jan. 2, p. 7
- Industrial growth slowed in polluted Sao Paulo, Feb. 13, p. 7; Apr. 24, p. 3
- Sewage in Rio's Guanabara Bay, May 8, p. 8
- Sewage treatment project SANEGRA for Sao Paulo, June 19, p. 4
- "Theoretical ecologists" criticized, June 19, p. 6

Bulgaria

- Reforestation studied by UN Joint Committee, Feb. 13, p. 5

Burma

- Airport workers risk deafness, May 8, p. 7

C

Canada

- Reforestation loan to Colombia, Apr. 10, p. 8

Carcinogens

- Asbestos, Jan. 2, p. 1
- PVC emissions, June 5, p. 2

Center for International Environment Information (CIEI)

- Advisory Committee meeting and elections, June 19, p. 4
- Progress report on WER, Jan. 30, p. 1

Central Treaty Organization (CENTO)

- Symposium on bio-conversion of agro-industrial wastes, May 22, p. 6

Chemical Pollution (see also Carcinogens; Lead; Pesticides; Toxic Chemicals)

- Amazon jungle tree destruction charged, Apr. 10, p. 6
- EEC control plans, Feb. 13, p. 1; Mar. 27, p. 4
- International cooperation urged by EPA's Costle, Jan. 16, p. 3
- Mediterranean pollutants, Feb. 13, p. 3
- Subject of UNEP annual report, Apr. 10, p. 2; June 5, p. 4
- Sweden begins chemical products register, Jan. 2, p. 4
- Tannery effluents, Feb. 13, p. 6; Mar. 13, p. 2
- Venezuela imposes controls on metals industries, Feb. 13, p. 1

Chile

- Air pollution problems in Santiago, Jan. 30, p. 4
- Solar furnace considered for mineral treatment, Jan. 30, p. 2

China

- Delegation studies Bavarian anti-pollution controls, Jan. 2, p. 8
- Ground water search with gamma ray method, Mar. 13, p. 7
- Ground water storage method developed, May 8, p. 7
- Low-grade fossil fuels used in electric power plants, Feb. 27, p. 6
- Peking factories "under censure" for pollution, May 22, p. 4
- Peking tree-planting program, Apr. 24, p. 7
- Scrap iron recycling increased, June 5, p. 7
- Solar energy light-buoys at Tientsin port, Apr. 10, p. 8
- Waste in raw materials criticized, Jan. 16, p. 7

Coal

- Exploration program in Philippines, May 22, p. 8
- German expansion of use criticized, Apr. 24, p. 1
- Liquefaction pilot plant (SRC) in operation in Japan, Mar. 13, p. 8
- Low-grade, for electric power generation in China, Feb. 27, p. 6
- Use may lead to CO₂-caused climatic changes, Feb. 13, p. 7

Coastal Water Pollution

- Cartagena Bay, Colombia, Apr. 24, p. 1
- Greek ordinance, Jan. 16, p. 1
- Mediterranean land-based sources, Feb. 13, p. 3; May 22, p. 1
- Mexican Baja California, Jan. 2, p. 5
- Persian Gulf conference, May 22, p. 4; June 5, p. 4
- Protection measures for Japan's Seto Inland Sea, June 5, p. 7

Colombia

- Abocol disaster revives environment vs. economy debate, Apr. 24, p. 1
- Amazon Pact approved, June 19, p. 1
- Canadian reforestation loan, Apr. 10, p. 8
- Cartagena Bay air pollution, Apr. 24, p. 1; June 19, p. 8
- Cartagena Bay water pollution, Apr. 24, p. 1
- Clinker Cement warned of possible closing for air pollution, June 19, p. 8
- Coral reef destruction to draw lines, June 5, p. 8
- Environmental problems in Medellin, Jan. 2, p. 7
- Flood control projects on Sinu River get loan, Jan. 16, p. 8
- INDERENA on verge of bankruptcy, Jan. 30, p. 8
- Pesticides as health hazard, Jan. 2, p. 6
- Pesticide control program announced, June 5, p. 7
- Pesticides outlawed in coffee growing, June 19, p. 8
- Skin exports criticized, Jan. 16, p. 5
- Wildlife hunting decree overturned, Jan. 30, p. 7

Conservation (see also **Parks; Wildlife**)

- Coral reef protection in Colombia, June 5, p. 8
- Coral reefs and mangrove swamps in Singapore, Jan. 16, p. 7
- Linden tree endangered in Colombia, Jan. 16, p. 5
- Mexican biosphere reserves La Michilia and Mapimi, May 22, p. 8
- Sri Lankan tropical forest to be saved, Feb. 13, p. 4
- Threatened plant species discussed in British book, Apr. 10, p. 5

Coral Reefs

- Protection in Colombia, June 5, p. 8
- Protection in Singapore, Jan. 16, p. 7

Costle, Douglas M.

- At NATO CCMS roundtable, Apr. 10, p. 1
- At Toxic Substances Conference in Stockholm, Apr. 10, p. 4; May 8, p. 1
- Interview re. EPA international agenda, Jan. 16, p. 3

Czechoslovakia

- Air pollution and acid precipitation, June 19, p. 3
- Forest protection law, Jan. 2, p. 2
- German complaint of cross-border air pollution, Apr. 24, p. 8
- Nuclear power prospects, Mar. 27, p. 6
- Paperworks closing restores purer waters, Feb. 27, p. 6
- Polarograph monitors trace metals, May 8, p. 7

D**Danube River**

- Oil spill pollution at Budapest, Apr. 24, p. 8

Deforestation

- Amazon jungle destruction by chemicals, Apr. 10, p. 6
- Argentina, Jan. 30, p. 6
- Himalayan ecology endangered, May 8, p. 8
- Philippines timber shortage forecast, Apr. 24, p. 8

Denmark

- Bran warning, correction of WER report, Jan. 2, p. 5
- Legislation on waste collection and recycling, May 8, p. 5
- PVC factory barred by EPA, June 5, p. 1
- Sea pollution investigations by special ships, Feb. 27, p. 4

De Rosen, Leon

- UNEP industrial seminars booklet, Mar. 13, p. 7

Dick, Alfred

- Announcements of pollution control measures, Jan. 2, p. 1; Jan. 30, p. 4; Mar. 13, p. 4
- On environmental engineering as career specialty, Mar. 27, p. 2
- On hunting and conservation as partnership, May 22, p. 7
- Supports nuclear power over coal in Germany, Apr. 24, p. 1
- Toad tunnel project in Bavaria explained, Feb. 27, p. 8

Disease (see also **Carcinogens**)

- Consequence of metallic dust pollution in Madras, May 22, p. 5
- Leprosy transmission by Indian mosquito, Jan. 2, p. 5
- Malaria discussed in UNEP annual report, Apr. 10, p. 2; June 5, p. 4
- Mesothelioma, Jan. 2, p. 1
- Respiratory ailments from Bombay air pollution, May 8, p. 5

E**East China Sea**

- Pesticide pollution levels, Feb. 27, p. 1

Economic Commission for Europe (ECE)

- Aerial pollution monitoring seminar, Jan. 2, p. 6
- Combined heat and power (CHP) seminar planned, Apr. 10, p. 7
- Energy problems discussed at Geneva meeting, Apr. 10, p. 4

- Energy technologies for future assessed, June 5, p. 3
- Fine particulate pollutants studied, Jan. 2, p. 2
- Foundry experts seminar in Geneva, Jan. 30, p. 6
- Gas Committee schedules meetings, Mar. 13, p. 2
- In Joint Committee on Forest Working Techniques, Feb. 13, p. 5
- Land-Use Policies Seminar planned, Mar. 27, p. 5
- Participant in noise pollution study, June 19, p. 3
- Participant in Toxic Substances Conference, May 8, p. 1
- Polymer wastes recycling seminar planned, Feb. 27, p. 7
- Senior Advisors meeting in Geneva, May 8, p. 4
- Symposium on Human Settlements in Arctic, June 19, p. 7
- Technical Requirements Relating to Motor Vehicles published, May 22, p. 2
- Urban renewal symposium planned, Mar. 27, p. 7

Economy

- Effects of energy policies on growth discussed by ECE, Apr. 10, p. 4
- Growth of GDP held possible with energy conservation, June 19, p. 1
- Vs. environment, debate revived in Colombia, Apr. 24, p. 1

Ecuador

- Amazon Pact approved, June 19, p. 1

Electric Power (see also **Hydroelectric Power; Rural Electrification**)

- Combined cycle stations planned in New Zealand, Apr. 10, p. 6
- Combined heat and power (CHP) station in U.K., Mar. 27, p. 7
- Combined heat and power (CHP) seminar of ECE, Apr. 10, p. 7
- Czech consumption and fuel-source shift, Mar. 27, p. 6
- Geothermal projects in Indonesia, Jan. 16, p. 8
- German sources and their relative merits, Apr. 24, p. 1
- Low-grade fossil fuels used in Chinese plants, Feb. 27, p. 6
- Technologies of future assessed in ECE report, June 5, p. 3
- Venezuelan projects, June 5, p. 7
- Windmill power station in Vienna to be tested, Feb. 13, p. 8

El Kassas, Mohamed

- Recipient of Pahlavi Environment Prize, June 5, p. 4

Energy (see also **Fuel; Geothermal Energy; Nuclear Energy; Solar Energy; Wave Energy; Wind Power**)

- Alternatives discussed at EEC Nuclear Hearings, Jan. 2, p. 3; Mar. 13, p. 3
- Carbon gasification as alternative, Feb. 27, p. 5
- ECE report assesses 14 technologies, June 5, p. 3
- EEC policy proposals, Mar. 27, p. 4
- Problems outrun policy changes, says ECE, Apr. 10, p. 4
- U.S. program gets warning against coal burning, Feb. 13, p. 7

Energy Conservation

- Balanced management urged for urban areas by OECD, May 22, p. 5
- British measures and budget announced, Mar. 13, p. 5
- IEA study shows compatibility with economic growth, June 19, p. 1
- Subject of UNEP annual report, Apr. 10, p. 2; June 5, p. 4
- U.K. monitors heating fuel consumption, Jan. 16, p. 7; June 5, p. 8

Environmental Engineers

- Career specialization in Bavaria, Mar. 27, p. 2

Environmental Impact Statements

- EEC requirement for titanium plants, Feb. 13, p. 1
- Panama Canal Zone, Feb. 13, p. 2
- Pesticide programs of U.S. AID in LDCs, Mar. 13, p. 1; Mar. 27, p. 3
- U.S. agencies disagree on overseas activities EIS, Mar. 13, p. 1

Environment Liaison Centre (ELC)

- Address and purpose, Apr. 10, p. 3
- Role discussed in Gallon interview, Jan. 30, p. 5

European Economic Community (EEC) (Common Market)

- Asbestos control urged, Jan. 2, p. 1
- Attacked by FOE on nuclear policies, Jan. 30, p. 7
- Council of Europe suggests criminal law against polluters, Jan. 30, p. 6
- Environmental policies proposal outlined by Jenkins, Mar. 27, p. 4
- Lead levels directive for drinking water, Jan. 2, p. 4
- Nuclear Energy Hearings, Brussels, Jan. 2, p. 3; Mar. 13, p. 3
- Nuclear fusion project JET, Feb. 27, p. 5
- Nuclear safety standards catalogue published, Mar. 27, p. 7
- Participant in noise pollution study, June 19, p. 3
- Participant in Toxic Substances Conference, Apr. 10, p. 4; May 8, p. 1
- Pollution control research in steel production funded, Jan. 16, p. 7
- PVC packaging regulated, May 8, p. 7
- Uranium prospecting to be financed, Apr. 10, p. 7

F**Fertilizer**

- Sewage sludge used in Britain, June 19, p. 4
- Water pollution caused by plant in Malaysia, Apr. 24, p. 8

Fisheries

- Artificial reef protection works in Malaysia, Apr. 24, p. 7
- Baja California coastal pollution, Jan. 2, p. 5
- Effect of pesticides in rice paddies on fish, June 19, p. 8
- Irish Sea studied for heavy metals level, May 22, p. 1
- Mediterranean agreement on fish farming, Apr. 24, p. 2
- Peruvian "Operation Eureka" study, Jan. 2, p. 6
- Poisoning in Peruvian river remains mystery, Jan. 16, p. 6
- Singapore speeds protection of spawning areas, Jan. 16, p. 7

Flood Control

- Colombian projects get Inter-American Bank loan, Jan. 16, p. 8

Fluorocarbons

- Monitoring stations, Feb. 27, p. 4

Food (see also **Fisheries**)

- Bran warning by Denmark, correction, Jan. 2, p. 5
- Microbial protein production studied, Jan. 16, p. 5
- Pesticide poisoning in Colombia, Jan. 2, p. 6
- Production and distribution flaws subject of UNEP report, Apr. 10, p. 2
- Production from waste matter urged, May 22, p. 6; June 5, p. 4
- Systems analysis model SARUM 76 predicts world shortage, Feb. 13, p. 4

Food and Agriculture Organization (FAO)

- In Joint Committee on Forest Working Techniques, Feb. 13, p. 5
- Mediterranean mariculture meeting sponsored, Apr. 24, p. 2

Forestry (see also **Deforestation; Reforestation**)

- Czech forest protection law, Jan. 2, p. 2
- Sri Lanka tropical forest to be saved, Feb. 13, p. 4
- Third Argentine Forestry Congress, Apr. 24, p. 8
- UN Joint Committee symposium in Bulgaria, Feb. 13, p. 5
- Venezuela extends protective law to Amazon jungle, Apr. 10, p. 8
- World Bank loans to LDCs, Apr. 10, p. 7

France

- Environmental candidates ("green ones") defeated, Mar. 27, p. 1
- Mediterranean coast pollution, and Convention, Feb. 13, p. 3

Friends of the Earth (FOE)

- Seventh Annual Meeting, Jan. 30, p. 7
- Windscale nuclear expansion opposed, Apr. 24, p. 4

Fuel

- Alcogas will save oil in Philippines, Mar. 27, p. 6
- Alternatives of future discussed in British report, June 5, p. 2
- Diesel fuel use reduces Athens air pollution, Mar. 27, p. 2
- Diesel replaced by LPG in Singapore taxis, June 19, p. 8
- Fossil fuel technologies assessed by ECE, June 5, p. 3
- Low-grade fossil fuels used in Chinese electric power generation, Feb. 27, p. 6
- Methane and alcohol technologies assessed by ECE, June 5, p. 4
- Water-kerosene mixture with "Xotherm" binder, Jan. 2, p. 8

G**Gabaldon, Arnoldo Jose**

- Agreement with CIEI for Spanish edition of WER, Jan. 30, p. 1
- Environmental law enforcement in Venezuela, Feb. 27, p. 3

Gallon, Gary T.

- ELC Manager, Jan. 30, p. 5; Apr. 10, p. 3

Garbage (see also **Solid Waste Disposal**)

- Buenos Aires land reclamation uses fill, Feb. 13, p. 4; May 22, p. 6

Geothermal Energy

- Philippine projects, Mar. 27, p. 7; May 22, p. 7
- Power projects in Indonesia, Jan. 16, p. 8
- Yangpaching, Tibet, plant completed, Mar. 13, p. 7

Germany (East)

- Environment Pact with Sweden renewed, June 19, p. 6

Germany (West)

- Air pollution monitoring in Bavaria, Jan. 2, p. 8; Apr. 10, p. 8

- Complaint of Czech cross-border air pollution, Apr. 24, p. 8
 Earth-filter odor-control system developed, Jan. 2, p. 1
 Environmental engineering graduates in Bavaria, Mar. 27, p. 2
 Environmental improvements in Munich, May 8, p. 6
 Environmental progress review, June 5, p. 1
 Negative report issued on solar energy feasibility, May 22, p. 3
 Noise insulation windows in Bavaria, Mar. 13, p. 4, May 8, p. 6
 Nuclear power advocated over coal, Apr. 24, p. 1
 Pyrolysis waste disposal system in Bavaria, Jan. 30, p. 4
 Toad protection in Bavaria expanded, Feb. 27, p. 8

Glass Recycling

Denmark, May 8, p. 5

Great Britain

- "Active noise reduction" device developed, Jan. 16, p. 8
 Alternatives to asbestos cement found in polypropylene, June 5, p. 5
 Animal effluent treated by Arcub process, Jan. 30, p. 8
 Blamed for acid precipitation in Scandinavia, Jan. 16, p. 1
 Combined heat and power (CHP) plant, Mar. 27, p. 7
 Clash over abuse of Exmoor National Park, Feb. 27, p. 2
 Electric-powered transport seen for future, June 5, p. 2
 Energy consumption down while GDP grows, June 19, p. 1
 Energy saving measures and budget announced, Mar. 13, p. 5
 Fertilizer pellets made from sewage sludge, June 19, p. 4
 Heating fuel consumption monitored, Jan. 16, p. 7; June 5, p. 8
 Industrial obsolescence experiment at Rochdale, May 8, p. 3
 Lead in drinking water, Jan. 2, p. 4
 Legal aid asked for environmental groups, Jan. 30, p. 1
 Pesticide storage legislation needed, May 22, p. 7
 Pollution control patents on upswing, June 19, p. 6
 SARUM 76 Global Model presented, Feb. 13, p. 4
 Segregated ballast tank system for tankers opposed, Mar. 27, p. 4
 Waste heat recovery, TIGER project, Jan. 2, p. 7
 Wind power uses for LDCs to be studied, May 22, p. 8
 Windscale cancer death case settled by BNFL, Jan. 30, p. 8
 Windscale report by Justice Parker, Apr. 24, p. 4
 Wyre Forest made nature preserve, Apr. 10, p. 7

Greece

- Anti-smoking campaign, Apr. 10, p. 3
 Deforestation for Christmas trees criticized, Jan. 16, p. 7
 Diesel fuel use reduces Athens air pollution, Mar. 27, p. 2
 Industrial pollution control training course, Feb. 27, p. 6
 Marine pollution ordinance, Jan. 16, p. 1

Greenland

- ECE symposium on human settlements in Arctic, June 19, p. 7

H**Habitat**

- UNHHSF headquarters in Nairobi, Jan. 30, p. 2, May 8, p. 1

Haiti

- Agricultural know-how obtained from Taiwan, Jan. 2, p. 7

Health [see also Carcinogens; Disease]

- Brazil and Venezuela sign agreement, May 8, p. 6
 Effects of noise pollution reported in UN study, June 19, p. 3
 Iron ore dust in Madras a serious hazard, May 22, p. 5
 Nerve damage to children from lead in car exhaust, Feb. 13, p. 5
 Sodium and chlorides as major hazards, May 8, p. 8
 Water pollution as cause of Sao Paulo infant mortality, June 19, p. 4

Heyerdahl, Thor

- Recipient of Pahlavi Environment Prize, June 5, p. 4

Himalayas

- Deforestation as danger to ecology, May 8, p. 8

Hong Kong

- Environmental report criticized, May 8, p. 6
 Waste control measures opposed by industry, Feb. 27, p. 7

Housing

- A subject for ECE Land-Use Policies Seminar, Mar. 27, p. 5
 Vietnam's shortage may force sea settlement, Feb. 13, p. 8

Human Settlements [see also Habitat]

- "Child's Right to Play" discussed, Feb. 27, p. 8
 Symposium on Planning and Development in Arctic, June 19, p. 7

Hungary

- Fish kill from ammonia pollution, Feb. 13, p. 6
 Hospital fined for polluting lake, Mar. 13, p. 7
 Metalloleukemia factory halts lead processing, Jan. 16, p. 4
 Oil spill pollution at Budapest, Apr. 24, p. 8
 Water disinfection measures ordered, Apr. 24, p. 6

Hydroelectric Power

- Assessed in ECE report, June 5, p. 3
 Guri Dam in Venezuela, June 5, p. 7

I**India**

- Air pollution bill in Congress, June 19, p. 2
 Ban on rhesus monkey exports, Feb. 27, p. 6
 Bombay pollution problems, May 8, p. 5
 Carbon gasification suggested as energy source, Feb. 27, p. 5
 Cyclone seeding suggested, Apr. 24, p. 7
 Drinking water filter for homes, Jan. 2, p. 7
 Environmental collaboration with U.S. planned, Mar. 27, p. 8
 Frogs' legs exports endanger natural insect control, Mar. 27, p. 5
 Himalayan deforestation endangers ecology, May 8, p. 8
 Metallic dust in Madras a health hazard, May 22, p. 4
 Mosquito bites and leprosy, Jan. 2, p. 5
 Nuclear power plant projects, Jan. 16, p. 6
 Pesticide air pollution, Feb. 27, p. 1
 Project Tiger, Jan. 30, p. 8
 Shrub yields substitute for synthetic wax, Mar. 13, p. 6
 Solar cells silicon to be made of rice husk, Mar. 13, p. 8
 Solar heater for drying milk developed, Feb. 27, p. 8
 Solar-powered pump at oil station planned, Apr. 24, p. 6
 Solar turbo powerpack system developed, June 19, p. 7
 Water pollution from tannery effluents, Feb. 13, p. 6
 "Xotherm" process saves kerosene fuel, Jan. 2, p. 8

Indian Ocean

- PCB pesticide pollution levels, Feb. 27, p. 1

Indonesia

- Geothermal energy potential, Jan. 16, p. 8
 Machine and metals factories closed for polluting, Feb. 13, p. 6

Industrial Wastes

- Central treatment system studies in Thailand, May 8, p. 8
 Control measures opposed by Hong Kong industries, Feb. 27, p. 7
 Conversion to protein urged at CENTO meeting, May 22, p. 6
 Mercury separation from paper mill wood residues, May 22, p. 3
 Mexican coastal waters polluted by California industries, Jan. 2, p. 5
 Plastics products from aluminum and nylon wastes, Jan. 16, p. 6
 "Red sludge" controls adopted by EEC, Feb. 13, p. 1
 Thai rivers polluted, Mar. 13, p. 7, May 8, p. 8
 Venezuela imposes controls on metals industries, Feb. 13, p. 1

Industry

- Air emission standards set in Singapore, June 19, p. 6
 Anti-pollution equipment costs, Japan, Jan. 30, p. 4
 "Anti-Pollution Technical Manual," Japan, May 8, p. 5
 Argentinian bank loans carry ecology stipulation, May 22, p. 7
 Cartagena Bay, Colombia, air and water polluters, Apr. 24, p. 1, June 19, p. 8
 Compliance with Mexican environment law, Feb. 13, p. 5
 Curtailment of growth in Sao Paulo, Feb. 13, p. 7, Apr. 24, p. 3
 Foundry experts discuss energy conservation and emission reductions, Jan. 30, p. 6
 Korea fines marine polluters, Feb. 13, p. 8
 Metalloleukemia plant in Budapest barred from lead processing, Jan. 16, p. 4
 Peking factories "under censure" for pollution, May 22, p. 4
 Polluters in Indonesia shut down, Feb. 13, p. 6
 Polluters in South Korea on rise, May 22, p. 8
 Pollution control training course in Greece, Feb. 27, p. 6
 Tannery pollution combated, Feb. 13, p. 6, Mar. 13, p. 2
 Thailand tightens industrial pollution laws, June 5, p. 8

Insect Control [see also Pesticides]

- Frog population crucial in India, Mar. 27, p. 5
 Spruce bark beetle lure replaces DDT in Sweden, June 19, p. 2
 Sterile fruit flies used in Argentina, Jan. 16, p. 6

Inter-American Development Bank

- Loan to Colombia for flood control dams, Jan. 16, p. 8

Intergovernmental Maritime Consultative Organization (IMCO)

- Compromise on oil tanker ballast systems, Mar. 27, p. 4

International Cell Research Organization (ICRO)

- Kuwait seminar on microbial protein production aided, Jan. 16, p. 5

International Energy Agency (IEA)

- Study shows GDP growth compatible with energy conservation, June 19, p. 1

International Labor Organization (ILO)

- In Joint Committee on Forest Working Techniques, Feb. 13, p. 5
 Participant in Toxic Substances Conference, Apr. 10, p. 4; May 8, p. 1

International Referral System for Sources of Environmental Information (IRS)

- Growth of system, Jan. 16, p. 8

International Solar Energy Society

- Congress held in New Delhi, Mar. 13, p. 5

Ireland

- Asbestos plant, Jan. 2, p. 1
 Asbestos controversy resolved, Feb. 13, p. 7
 Fisheries experts worried over heavy metals in Irish Sea, May 22, p. 1
 Nuclear energy policy debate, Mar. 27, p. 8

Israel

- Lake Kinneret protection plan approved, Jan. 16, p. 2
 Nuclear plant to be sited in Negev Desert, Mar. 27, p. 5

Italy

- Mediterranean marine life protection program, May 22, p. 1
 Offers technical aid for Philippine geothermal projects, Mar. 27, p. 7

J**Japan**

- Air quality improvement, May 8, p. 7
 "Anti-Pollution Technical Manual" for industry, May 8, p. 4
 Auto noise problems, Jan. 30, p. 3
 Auto noise standards, Mar. 27, p. 6
 Coal liquefaction pilot plant (SRC) in operation, Mar. 13, p. 8
 Electrolytic ferrite formation system of MPEC removes metal from waste water, Feb. 13, p. 7
 Long-term environmental plan and investments, Jan. 30, p. 3
 PCN and BHT pollution, Feb. 27, p. 1
 Protection measures for Seto Inland Sea, June 5, p. 7
 River pollution caused by slag yard dam collapse, June 5, p. 5
 Solar heating project largest in world, Jan. 16, p. 8
 Soundproofing of homes near airports planned, June 19, p. 5
 Waste water treatment uses Reverse Osmosis Permeator, Jan. 16, p. 6
 Wind power experiments conducted, May 22, p. 6

Jenkins, Roy

- Outlines EEC environmental plans, Mar. 27, p. 4

K**Keckes, S.**

- Regional Seas Program Activity Center (PAC) headed by, Feb. 13, p. 2

Kenya

- Aerial survey of rare animals, May 8, p. 8
 Environment study to be aided by UNEP, June 5, p. 6
 Quarry land rehabilitated, Feb. 27, p. 1
 Wildlife protection controls, Jan. 2, p. 4

Kuwait

- Microbial protein production seminar held, Jan. 16, p. 5
 Persian Gulf conference hosted by, May 22, p. 4

L**Land Reclamation**

- Buenos Aires lowlands sanitary landfill, Feb. 13, p. 4; May 22, p. 6
 Vietnamese need described, Feb. 13, p. 8

Land Use

- ECE Seminar planned, Mar. 27, p. 5
 Energy management stressed as part of planning, May 22, p. 4
 Farmland protection in Czechoslovakia, Jan. 2, p. 2
 Forest preservation in Czechoslovakia, Jan. 2, p. 2

Latin America

Amazon Pact progress, Jan. 16, p. 2; June 19, p. 1

Law of the Sea Conference. See UN Law of the Sea Conference**Lead**

Car exhaust blamed for nerve damage to Swedes, Feb. 13, p. 5
In drinking water in U.K., Jan. 2, p. 4
Hungary bans Metallokemia factory, Jan. 16, p. 4

Lebanon

Mediterranean Convention ratified, Feb. 13, p. 3

Legislation

Air pollution bill before Indian Congress, June 19, p. 2
Danish waste collection and recycling, May 8, p. 5
"Flexible" enforcement admitted by Mexico, Feb. 13, p. 5
Forest protection, Czechoslovakia, Jan. 2, p. 2
Greek marine pollution ordinance, Jan. 16, p. 1
Nuclear shipping controls imposed by Peru, Feb. 13, p. 8
Recommendations by Council of Europe, Jan. 30, p. 6
Thailand tightens industrial pollution laws, June 5, p. 8

Litigation

Illegal wild game trade in Brazil, Jan. 2, p. 7
Need for expansion discussed by Council of Europe, Jan. 30, p. 6
Windscale cancer death case settled by BNFL, Jan. 30, p. 8

Lourd, Philippe Le

Mediterranean Oil Spill Combatting Centre, Feb. 27, p. 2

M**Maihofer, Werner**

German Interior Minister reviews environmental progress, June 5, p. 1

Malaysia

Chemical Fertilizer Plant causes water pollution, Apr. 24, p. 8
Diesel exhaust fumes to be regulated, Feb. 13, p. 6
Fishery protection by artificial reefs, Apr. 24, p. 7
Malacca oil-spill cost reimbursement settled, Feb. 27, p. 7
Malacca Strait tanker regulations criticized, Mar. 13, p. 8
Orang-utan of Sabah endangered, Feb. 13, p. 7
Palm oil milk effluents pollute rivers, Apr. 10, p. 8

Malta

Mediterranean Convention ratified, Feb. 13, p. 3; Feb. 27, p. 2
Oil Spill Combatting Centre, Feb. 27, p. 2

Marine Pollution (see also Coastal Water Pollution; Oil Spills)

Additions to 1973 Convention re: tanker ballast systems, Mar. 27, p. 4
Danish use special ships for investigation, Feb. 27, p. 4
Greek ordinance, Jan. 16, p. 1
Korea fines offending industries, Feb. 13, p. 8
Mediterranean land-based sources, Feb. 13, p. 3; May 22, p. 1

Mediterranean

Convention takes effect, Feb. 13, p. 3; Feb. 27, p. 2; Mar. 27, p. 4; June 5, p. 4
Fish farming agreement reached, Apr. 24, p. 2
Marine life protection program, May 22, p. 1
UN Conference at Monte Carlo, Feb. 13, p. 3

Mercury

Colombia's Bay of Cartagena polluted, Apr. 24, p. 1
Separation from wood residues in Sweden, May 22, p. 3

Metals Industries

Closing in Indonesia for pollution, Feb. 13, p. 6
Cold core making and moulding recommended, Jan. 30, p. 6
Pollution controls imposed in Venezuela, Feb. 13, p. 1
Use of recycled metals in Denmark, May 8, p. 5

Methane

Production technology discussed in ECE report, June 5, p. 4

Mexico

Air quality cooperation with U.S. along border, Mar. 27, p. 1
Biosphere reserves La Michilia and Mapimi, May 22, p. 8
Christmas bonfires exacerbate Mexico City air pollution, Jan. 30, p. 5
Coastal waters polluted by California industries, Jan. 2, p. 5
Enforcement of environment law called "flexible," Feb. 13, p. 5

Mining

Pipeline project studied for tailings disposal, May 22, p. 8
Quarry land restoration in Kenya praised, Feb. 27, p. 1

Slag yard dam collapse causes cyanide spill in Japan, June 5, p. 5
Solar furnace considered in Chile, Jan. 30, p. 2
Uranium, safety dispute in Australia joined by unions, Apr. 10, p. 6

Monaco

Mediterranean Convention ratified, Feb. 13, p. 3

Monitoring

Air pollution, in Bavaria, Jan. 2, p. 8; Apr. 10, p. 8
Air pollution, with bio-indicator mosses and lichens, Apr. 10, p. 8
ECE seminar on aerial means, Jan. 2, p. 6
Fluorocarbon monitoring stations, Feb. 27, p. 4
Heating fuel consumption in U.K., Jan. 16, p. 7; June 5, p. 8
Infra-red scanning for heat loss, June 5, p. 8
Japanese long-term plans, Jan. 30, p. 3
Laser detection of air and water pollution, June 19, p. 7
Swedish budget allocation, Mar. 13, p. 2
Trace metals, in water and air, by polarograph, May 8, p. 7

Motor Vehicles

Alcogas fuel production planned in Philippines, Mar. 27, p. 6
Cause of air pollution in Caracas, Feb. 27, p. 3
Diesel exhaust to be regulated in Malaysia, Feb. 13, p. 6
Diesel to be replaced by LPG in Singapore taxis, June 19, p. 8
Electric engine seen replacing internal combustion, June 5, p. 2
Exhaust standards tightened in Switzerland, Mar. 13, p. 6
Japanese exhaust and noise standards set, Mar. 27, p. 6
Lead exhaust blamed for nerve damage to Swedes, Feb. 13, p. 5
Noise pollution effects studied, June 19, p. 3
Swiss voters reject Sunday traffic ban, June 19, p. 5
"Technical Requirements" publication by ECE, May 22, p. 1

N**New Zealand**

Combined cycle power stations planned, Apr. 10, p. 6
Taupo Pureora forest saved by bird lovers, Feb. 27, p. 8

Noise Pollution

"Active noise reduction" device developed in U.K., Jan. 16, p. 8
Auto noise ceilings set in Geneva, Mar. 27, p. 6
Bavarian grants for insulation windows, Mar. 13, p. 4; May 8, p. 6
Burmese airport workers risk deafness, May 8, p. 7
Hong Kong report criticized, May 8, p. 6
Japanese auto problems, Jan. 30, p. 3
Japanese auto standards, Mar. 27, p. 6
Japan plans soundproofing of homes near airports, June 19, p. 5
Sao Paulo, Brazil, Feb. 13, p. 7
In steel production, EEC funds for research, Jan. 16, p. 7
Textile factories in Colombia, Jan. 2, p. 7
UN task force studies effects, June 19, p. 3

Non-Governmental Organizations (NGOs)

Environmental role coordinated by ELC, Jan. 30, p. 5

North Atlantic Treaty Organization (NATO)

CCMS discusses inner cities problems, Apr. 10, p. 1

Nuclear Energy

Accident at Tihange, Belgium, Mar. 13, p. 3
Czech prospects, Mar. 27, p. 6
EEC hearings in Brussels, Jan. 2, p. 3; Mar. 13, p. 3
Fast-breeder (FBR) economies discussed at EEC, Jan. 2, p. 3
FOE annual meeting discussions, Jan. 16, p. 6
Indian capacity projections, Jan. 16, p. 6
Irish project debated, Mar. 27, p. 8
Israel's first plant to be sited in Negev, Mar. 27, p. 4
Joint European Torus (JET) fusion project, Feb. 27, p. 5
Pakistan scheme for glacier melting, Jan. 16, p. 4
Philippine prospects, Feb. 13, p. 8
Radiation safety rules set in Peru, Jan. 30, p. 6
Safety standards catalogue published by EEC, Mar. 27, p. 7
Ships visiting Peru under control of new law, Feb. 13, p. 8
Technologies of PWR, HWR, GCR, AGR, and fusion assessed in ECE report, June 5, p. 3
Windscale cancer death case settled by BNFL, Jan. 30, p. 8
Windscale report by Justice Parker, Apr. 24, p. 4

O**Oil**

Drilling program in Philippines, May 22, p. 8
Lubricating oil recovered for re-refining, May 8, p. 6

Mazout replaced by diesel in Athens central heating, Mar. 27, p. 2

Tar sand and oil shale technologies assessed, June 5, p. 3

Oil Spills

Addition to 1973 Marine Pollution Convention, Mar. 27, p. 4
Amoco Cadiz, long-term effects, May 8, p. 3; June 5, p. 7
Baltic Sea nations discuss control measures, June 19, p. 6
Bamboo boom barrier devised in Philippines, June 5, p. 8
Budapest streets and water polluted by spill, Apr. 24, p. 8
Malacca Strait spill costs to be paid by tanker owner, Feb. 27, p. 7
Mediterranean Convention controls, Feb. 27, p. 2
Mediterranean statistics, May 22, p. 1
Neutralization compound found in "Sixit," Mar. 13, p. 6
Persian Gulf treaty for coordinated action, May 22, p. 4
Segregated ballast tank systems, IMCO compromise, Mar. 27, p. 4
Tanker rule tightening urged at UNCLOS, June 5, p. 7

Organization for Economic Cooperation and Development (OECD)

And acid precipitation in Scandinavia, Jan. 16, p. 1
Bottle reuse and recycling proposals, June 5, p. 6
At Brussels Nuclear Hearings of EEC, Jan. 2, p. 3
Energy management need for urban areas stressed, May 22, p. 5
Participant in noise pollution study, June 19, p. 3
Participant in Toxic Substances Conference, Apr. 10, p. 4; May 8, p. 1

Ozone Layer

Fluorocarbon problem, Feb. 27, p. 4; Mar. 13, p. 6

P**Packaging**

PVC wrap regulated by EEC, May 8, p. 7

Pahlavi Environment Prize

Recipients, Apr. 10, p. 3; June 5, p. 4

Pakistan

Dolphin resurgence in Indus River, Apr. 10, p. 8
Ibex hunting permitted again, Feb. 27, p. 7
Solar energy for rural areas, Apr. 10, p. 6; Apr. 24, p. 7
Water problems and proposed solutions, Jan. 16, p. 4
Water project aided by Asian Development Bank, Feb. 13, p. 8

Panama Canal Zone

Environmental safeguards contained in Treaty, Feb. 13, p. 2

Pan American Health Organization

Border air pollution projects coordinated, Mar. 27, p. 1

Paper and Pulp

Mercury separated from wastes, in Sweden, May 22, p. 3

Parks

Buenos Aires ecology belt, Feb. 13, p. 4; May 22, p. 6
Exmoor, Britain, abuse by farmers charged, Feb. 27, p. 2
Panama Canal Zone, Feb. 13, p. 2
Wyre Forest, Britain, Apr. 10, p. 7

Pauisson, Valfrid

Host of Toxic Substances Conference in Stockholm, May 8, p. 1

Persian Gulf

Anti-pollution treaties and action plan drawn up, May 22, p. 4; June 5, p. 4

Peru

Amazon Pact approved, June 19, p. 1
Humboldt penguin endangered, Apr. 24, p. 6
Nuclear shipping legislation, Feb. 13, p. 8
Operation Eureka studies fish, Jan. 2, p. 5
PRODNA fights destruction of sea lions, Apr. 24, p. 3
Radiation safety rules tightened, Jan. 30, p. 6
Reforestation needed, Feb. 27, p. 6
River fish poisoning a mystery, Jan. 16, p. 6

Pesticides

AID programs subject to EIS, Mar. 13, p. 1; Mar. 27, p. 3
Colombia charged with indiscriminate use, Jan. 2, p. 6
Colombian control program announced, June 5, p. 7
Outlawed in Colombia coffee growing, June 19, p. 8
Pollution incident in Britain may prompt storage rules, May 22, p. 7
Pollution of Asian air and waters, Feb. 27, p. 1
Use in rice paddies affects fish farming, June 19, p. 8

Philippines

Alcogas fuel will save oil, Mar. 27, p. 6
Asked by WWF to provide sea turtle sanctuary, Feb. 27, p. 7
Bamboo boom barrier against oil spills, June 5, p. 8
Epsom salt from salt making waste, Jan. 16, p. 8
Geothermal energy projects, Mar. 27, p. 7; May 22, p. 7

Mineral depletion forecast, Mar. 27, p. 8
 Mine tailings disposal by pipelines studied, May 22, p. 8
 Nuclear power prospects, Feb., p. 8
 Oil and coal exploration program, May 22, p. 8
 Solar air-conditioner developed, Jan. 30, p. 7
 Solar energy not widely accepted, Feb. 13, p. 6
 Steel plant closed for air pollution, Apr. 24, p. 6
 Timber shortage forecast, Apr. 24, p. 8

Plastics

PVC factory barred by Danish EPA, June 5, p. 1
 PVC packaging regulated by EEC, May 8, p. 7
 Red mud PVC, PET, wood plastic composite developed in Taiwan, Jan. 16, p. 6
 Waste recycling seminar planned by ECE, Feb., p. 7

Polychlorinated Biphenyls (PCBs)

Asian water polluted, Feb. 27, p. 1

Printz, Albert C.

AID environmental coordinator interviewed, Mar. 27, p. 3

Program Activity Center (PAC) on Regional Seas

Established by UNEP, Feb. 13, p. 2

Publications

"Anti-Pollution Technical Manual" for Japanese industry, May 8, p. 4
Environmental Programs of Intergovernmental Organizations, Apr. 24, p. 5
Forestry (World Bank), Apr. 10, p. 7
 IRPTC (toxic chemicals) Bulletin, May 8, p. 2
 Nuclear Safety Standards, catalogue of EEC, Mar. 27, p. 7
Red Data Book—Vascular Plants, Apr. 10, p. 5
Technical Requirements Relating to Motor Vehicles (ECE), May 22, p. 2
 UNEP industrial seminars booklets, Mar. 13, p. 7

Q**Quintana, Cesar**

UNHSC administrator, Jan. 30, p. 2

R**Radiation**

BNFL to pay judgment in Windscale case, Jan. 30, p. 8
 Peru tightens rules, Jan. 30, p. 6

Recycling

Agro-industrial waste conversion to protein, May 22, p. 6
 Asian Recycling Association formed, May 22, p. 8
 Danish legislation, May 8, p. 5
 Flakt recovery process for solid wastes, May 22, p. 6
 Polymer waste seminar planned by ECE, Feb. 27, p. 7
 Scrap iron recovery rises in China, June 5, p. 7
 Sewage sludge as fertilizer in Britain, June 19, p. 4
 Sewage sludge into reinforced concrete aggregate, June 19, p. 4
 Waste heat into electricity, British TIGER system, Jan. 2, p. 7
 Waste matter into new plastics products, Jan. 16, p. 6
 Waste recovery ship in South Pacific, May 8, p. 6

Reforestation

Argentine plan slowed by red tape, Feb. 13, p. 6
 Canadian loan to Colombia, Apr. 10, p. 8
 Czech legislation, Jan. 2, p. 2
 Peking tree-planting program, Apr. 24, p. 7
 Peruvian needs, Feb. 27, p. 6
 Pine seedling plantings in Venezuela, May 22, p. 2
 Trees for carbon gasification, Feb. 27, p. 5
 UN Joint Committee symposium in Bulgaria, Feb. 13, p. 5

Renewable Resources

Argentina plans congress for chemical engineers, Jan. 30, p. 8

Richardson, Elliot L.

Urges stricter tanker rules at UNCLOS, June 5, p. 7

Rural Electrification

Pakistan uses solar technology, Apr. 10, p. 6; Apr. 24, p. 7
 Solar turbo powerpack system in India, June 19, p. 7

S**Saudi Arabia**

Sanitation project in Riyadh, Jan. 30, p. 7

Scandinavia

Acid precipitation blamed on U.K., Jan. 16, p. 1

Sewage Disposal

Algerian project granted World Bank loan, May 22, p. 6
 in Rio's Guanabara Bay, May 8, p. 8
 SANEGRA project for Sao Paulo, June 19, p. 4

Sludge recycling solutions in Brazil and Britain, June 19, p. 4

Swedish program and budget, Mar. 13, p. 1; June 5, p. 8
 Treatment capacity of West Germany, June 5, p. 1

Shared Natural Resources

California-Mexican waters, Jan. 2, p. 5
 Definitions discussed, Mar. 13, p. 4
 Regional Seas Program Activity Center (PAC), Feb. 13, p. 2
 A subject for ECE Land-Use Policies Seminar, Mar. 27, p. 5
 UNEP accord on draft principles, Mar. 13, p. 4; June 5, p. 4

Shore, Peter

And acid precipitation in Scandinavia, Jan. 16, p. 1
 And Windscale nuclear controversy, Apr. 24, p. 4

Singapore

Greek anti-smoking campaign, Apr. 10, p. 3
 Venezuelan ban at sports events opposed, June 19, p. 8

Solar Energy

Air conditioner developed in Philippines, Jan. 30, p. 7
 Congress of experts in New Delhi, Mar. 13, p. 5
 Family home kit for hot water in Austria, Jan. 16, p. 8
 Heater for drying milk devised in India, Feb. 27, p. 8
 Japan has largest solar building, Jan. 16, p. 8
 Light-buoys in port of Tientsin, China, Apr. 10, p. 8
 Mineral treatment and power generation in Chile, Jan. 30, p. 2
 NATO CCMS Pilot Study, Apr. 10, p. 1
 Negative report issued in West Germany, May 22, p. 3
 Oil station pump in India to be solar-powered, Apr. 24, p. 6
 Pakistani plans for development, Apr. 10, p. 6; Apr. 24, p. 7
 Philippines lag in acceptance, Feb. 13, p. 6
 Silicon for solar cells to be made of rice husk in India, Mar. 13, p. 8
 Singapore buildings get solar heated water, Mar. 27, p. 6; June 5, p. 8
 Turbo power pack system developed in India, June 19, p. 7

Solid Waste Disposal

Buenos Aires landfill and lowlands reclamation, Feb. 13, p. 4
 Danish legislation on collection and recycling, May 8, p. 5
 Dry recovery process of Flakt in Sweden, May 22, p. 6
 OECD urges bottle laws for waste reduction, June 5, p. 6
 Pyrolysis system planned in Bavaria, Jan. 30, p. 4
 Riyadh, Saudi Arabia, Jan. 30, p. 7
 Swedish budget expanded, Mar. 13, p. 1

South China Sea

Pesticide pollution levels, Feb. 27, p. 1

South Korea

Han River polluted, Mar. 13, p. 7; Apr. 10, p. 6; May 22, p. 7
 Marine polluting industries fined, Feb. 13, p. 8
 Polluting factories increase in number, May 22, p. 8
 Seoul traffic problem and solution, May 22, p. 7
 Wildlife protection program, Mar. 27, p. 8

Spain

Mediterranean coast pollution, and Convention, Feb. 13, p. 3

Sri Lanka

Sinhajaya tropical rain forest saved, Feb. 13, p. 4
 UN Task Force urges environmental policy, Jan. 30, p. 6

Steel Industry

Air polluters closed in Philippines, Apr. 24, p. 6
 Pollution control research funded by ECE, Jan. 16, p. 7
 Scrap recycling in Denmark, May 8, p. 5

Strong, Maurice

Awards and prizes, Apr. 10, p. 3; Apr. 24, p. 5; June 5, p. 4

Sukan, Frank

Turkey's first environment minister, Apr. 10, p. 5

Swamy, A.A.

On solar energy development aid by UNIDO, Mar. 13, p. 5

Sweden

Chemical products register begun, Jan. 2, p. 4
 Eider duck hunting ban continues, Feb. 27, p. 8
 Environmental protection spending, Mar. 13, p. 1; Apr. 10, p. 1
 Environmental Pact with East German renewed, June 19, p. 6
 Lead in car exhaust blamed for nerve damage, Feb. 13, p. 5
 Mercury separation from wood residues, May 22, p. 3
 Sewage treatment plants funded, Mar. 13, p. 1; June 5, p. 8
 Solid waste recycling by Flakt dry recovery process, May 22, p. 6
 Spruce bark beetle control experiments, June 19, p. 2
 Wetlands mapping and management plan completed, June 5, p. 2

Switzerland

Auto exhaust standards tightened, Mar. 13, p. 6
 Auto noise ceilings set in Geneva, Mar. 27, p. 6
 Sunday traffic ban defeated in referendum, June 19, p. 5

T**Taiwan (Republic of China)**

Agricultural know-how given to Haiti, Jan. 2, p. 7
 Plastics products inventions, Jan. 16, p. 6

Thacher, Peter

At UN Conference on Mediterranean, Feb. 13, p. 3

Thailand

Industrial pollution laws tightened, June 5, p. 8
 Industrial waste treatment studied, May 8, p. 8
 River pollution, Mar. 13, p. 7; May 8, p. 8

Tibet

Geothermal plant in operation, Mar. 13, p. 7

Tolba, Mostafa K.

Annual "State of the Environment" report of UNEP, Apr. 10, pp. 2, 3; June 5, p. 4
 Discussions in Moscow, and Hon. Doctorate, Mar. 27, p. 7
 Pahlavi Prize winners announced, June 5, p. 4
 On permanent UNEP and HABITAT headquarters, May 8, p. 1
 On Persian Gulf Action Plan, May 22, p. 4; June 5, p. 4
 On Shared Natural Resources Accord of UNEP, Mar. 13, p. 4; June 5, p. 4
 At UN Conference on Mediterranean, Feb. 13, p. 3
 On UNEP's IRS system, Jan. 16, p. 8
 War materials remnants report, Mar. 27, p. 8

Toxic Chemicals [see also Carcinogens; Lead; Mercury Pesticides]

Cyanide pollution incident in Japanese rivers, June 5, p. 5
 Detection methods for trace elements, June 19, p. 7
 ECE meeting in Geneva urges control, May 8, p. 4
 EEC measures for disposal, Feb. 13, p. 1; Mar. 27, p. 4
 Heavy metals in Irish Sea a concern to fisheries, May 22, p. 1
 Heavy metals in male vs. female bones, June 19, p. 7
 International cooperation conference in Stockholm, Apr. 10, p. 4; May 8, p. 1
 International cooperation stressed by EPA's Costle, Jan. 16, p. 3
 Mediterranean pollutants, Feb. 13, p. 3

Train, Russell E.

Tyler Award recipient for 1978, Apr. 24, p. 5

Transportation [see also Motor Vehicles]

Electric power seen replacing internal combustion, June 5, p. 2
 Sunday ban rejected by Swiss voters, June 19, p. 1

Treaties and Conventions

Amazon Territories Pact, Jan. 16, p. 2; June 19, p. 1
 Baltic Sea, Feb. 27, p. 4; June 19, p. 6
 Environmental health pact, Brazil-Venezuela, May 8, p. 6
 Environmental warfare ban to be ratified by USSR, June 19, p. 8
 Marine Pollution Convention of 1973, additions by IMCO for segregated ballast tank systems, Mar. 27, p. 4
 Mediterranean Convention, Feb. 13, p. 3; Feb. 27, p. 2; Mar. 27, p. 4; June 5, p. 4
 Panama Canal Treaty, Feb. 13, p. 2
 Persian Gulf treaties and action plan, May 22, p. 4; June 5, p. 4
 Swedish-East German Pact renewed, June 19, p. 6
 Texts presented in new publication, Apr. 24, p. 5
 Trade in Endangered Species, EEC support, Mar. 27, p. 4
 U.S.—USSR Joint Environmental Committee, Jan. 16, p. 3

Tunisia

Mediterranean Convention ratified, Feb. 13, p. 3

Turkey

Environmental cabinet post created, Apr. 10, p. 5

Tyler Award

Recipients, Apr. 24, p. 5

U**United Nations**

Centre on Housing, Building and Planning (CHBP), May 8, p. 2
 Joint Committee on Forest Working Techniques, symposium in Bulgaria, Feb. 13, p. 5
 Task Force on Human Environment visits Sri Lanka, Jan. 30, p. 6
 Task force on noise pollution, June 19, p. 3

UN Development Program (UNDP)

Mediterranean mariculture to be financed, Apr. 24, p. 2
 Yugoslav water needs study funded, Apr. 24, p. 6

UN Educational Scientific & Cultural Organization (UNESCO)

Kuwait seminar on microbial protein production aided, Jan. 16, p. 5

UN Environment Fund

- U.S. contribution for 1978, Feb. 27, p. 4
- Swedish contribution for 1978, Mar. 13, p. 2

UN Environment Programme (UNEP)

- Accord reached on Shared Natural Resources principles, Mar. 13, p. 4; June 5, p. 4
- Annual "State of the Environment" report, Apr. 10, pp. 2, 3; June 5, p. 4
- GEMS (Global Environmental Monitoring System), Jan. 2, p. 2
- Industrial seminars booklets, Mar. 13, p. 7
- International Referral System (IRS) growing, Jan. 16, p. 8
- IRPTC (toxic chemicals) Bulletin, May 8, p. 2
- Joint activities agreement with USSR, Mar. 27, p. 7
- Kenyan environment study planned, June 5, p. 6
- Kuwait seminar on microbial protein production aided, Jan. 16, p. 5
- Mediterranean Conference sponsored at Monte Carlo, Feb. 13, p. 3
- Mediterranean mariculture meeting sponsored, Apr. 24, p. 2
- Mediterranean Oil Spill Combatting Centre, Feb. 27, p. 2
- NGO participation through ELC described, Jan. 30, p. 5
- Participant in Toxic Substances Conference in Stockholm, Apr. 10, p. 4; May 8, p. 1
- Permanent headquarters site and plans, May 8, p. 1
- Persian Gulf anti-pollution conference sponsored, May 22, p. 4
- Regional Seas Program Activity Center (PAC), Feb. 13, p. 2
- 6th World Environment Day, Apr. 10, p. 3; June 5, p. 4
- War materials remnants discussed, Mar. 27, p. 8

UN Habitat and Human Settlements Foundation (UNHHSF)

- Headquarters in Nairobi, Jan. 30, p. 2; May 8, p. 1

UN Industrial Development Organization (UNIDO)

- Solar energy development, Mar. 13, p. 5

UN Law of the Sea Conference (UNCLOS)

- Tanker rule tightening urged by U.S., June 5, p. 7

United States

- Air quality cooperation with Mexico along border, Mar. 27, p. 1
- Contribution to UNEP, Feb. 27, p. 4
- EIS for Panama Canal Treaty, Feb. 13, p. 2
- Energy consumption rate of increase slowed, June 19, p. 1
- Environmental collaboration with India planned, Mar. 27, p. 8
- Federal agencies disagree over EIS for overseas activities, Mar. 13, p. 1
- HEW warns against carbon dioxide from coal, Feb. 13, p. 7
- Navy ships and shore facilities, environmental program, Mar. 13, p. 7
- Tanker rules tightening urged at UNCLOS, June 5, p. 7
- U.S.-USSR Joint Environmental Committee work, Jan. 16, p. 3

U.S. Agency for International Development (AID)

- Environmental coordinator, Printz interviewed, Mar. 27, p. 3
- Pesticide programs, Mar. 13, p. 1; Mar. 27, p. 3
- Santiago air quality study funded, Jan. 30, p. 4
- Supports protection of environment in LDCs, Feb. 13, p. 2

Uranium

- Australian unions enter dispute on mining safety, Apr. 10, p. 5
- EEC plans to finance prospecting, Apr. 10, p. 7

USSR

- Joint activities agreement with UNEP, Mar. 27, p. 7
- Ratification of environmental warfare ban OK'd, June 19, p. 8
- U.S.-USSR Joint Environmental Committee work, Jan. 16, p. 3

V**Venezuela**

- Amazon Pact approved, June 19, p. 1
- Amazon Pact discussions joined, Jan. 16, p. 2
- Environmental health pact with Brazil, May 8, p. 6
- Environmental law enforcement described, Feb. 27, p. 3
- Forest protection law extended to Amazon jungle, Apr. 10, p. 8
- Hydroelectric power advanced with Guri Dam, June 5, p. 7
- Pine reforestation program, May 22, p. 2
- Pollution controls imposed on Guayana metals industries, Feb. 13, p. 1
- Smoking ban at sports events opposed, June 19, p. 8

Vietnam

- Housing shortage, and land reclamation need, Feb. 13, p. 8

W**Warren, Charles**

- On need for EIS for overseas U.S. activities, Mar. 13, p. 1

Waste Heat

- British TIGER system for recovery, Jan. 2, p. 7
- Combined heat and power production, Mar. 27, p. 7; Apr. 10, p. 7
- Heat transfer technology discussed in ECE report, June 5, p. 4

Waste Matter (see also Garbage; Industrial Wastes; Recycling; Solid Waste Disposal)

- Asian Recycling Association formed, May 22, p. 8
- Danish legislation, May 8, p. 5
- Recycling of polymer wastes to be subject of ECE seminar, Feb. 27, p. 7
- Use of agri-industrial wastes for food production urged, May 22, p. 6; June 5, p. 4

Waste Water Purification

- Electrolytic ferrite formation system of MPEC, in Japan, Feb. 13, p. 7
- Reverse Osmosis Permeator, Jan. 16, p. 6

Water Pollution (see also Coastal Water Pollution; Marine Pollution; Oil Spills)

- Caused by collapse of slag yard dams in Japan, June 5, p. 5
- Chemical Fertilizer Plant in Malaysia, Apr. 24, p. 8
- City water disinfection ordered in Hungary, Apr. 24, p. 6
- Czech river recovers after closing of paper works, Feb. 27, p. 6
- EEC control measures, Feb. 13, p. 1; Mar. 27, p. 4
- Fish kill from ammonia in Hungarian river, Feb. 13, p. 6
- Han River, South Korea, Mar. 13, p. 7; Apr. 10, p. 6; May 22, p. 7
- Hungarian hospital fined, Mar. 13, p. 7
- Japanese long-term measures, Jan. 30, p. 3
- Laser detection system used in Argentina, June 19, p. 7
- Palm oil mill effluents in Malaysian rivers, Apr. 10, p. 8
- PCB from pesticides in Asian waters, Feb. 27, p. 1
- Peking factories "censured," May 22, p. 4
- Pesticide incident in York, England, May 22, p. 7
- "Red sludge" controls adopted by EEC, Feb. 13, p. 1
- Sao Paulo SANEGRA project, June 19, p. 4
- Sewage in Rio's Guanabara Bay, May 8, p. 8
- Tannery effluents in India, Feb. 13, p. 6
- Tannery effluents in River Plate reduced, Mar. 13, p. 2
- Thai rivers, Mar. 13, p. 7; May 8, p. 8

Water Resources (see also Waste Water Purification)

- Asian Development Bank aid to Pakistan, Feb. 13, p. 8
- Bombay, India, May 8, p. 5
- Discussions for use of snow and ice urged, Jan. 16, p. 4
- Gamma-ray locating technique used in China, Mar. 13, p. 7
- German progress reviewed, June 5, p. 1
- Ground water storage method, China, May 8, p. 7
- India develops home filter, Jan. 2, p. 7
- Lead levels, United Kingdom, Jan. 2, p. 4
- Pakistan problems and proposed solutions, Jan. 16, p. 4
- Sodium and chlorides in drinking water as health hazard, May 8, p. 8
- Yugoslav provincial master plan completed, Apr. 24, p. 6

Wave Energy

- British patent for "bobbing duck," June 19, p. 6
- Technology assessed in ECE report, June 5, p. 4

Weather

- Cyclone intensity reduced by seeding, Apr. 24, p. 7
- U.S. HEW warning on climatic effects of carbon dioxide, Feb. 13, p. 7

Wetlands

- Sweden completes mapping and management plan, June 5, p. 2

Wildlife (see also Birds)

- Aerial survey of rare animals in Kenya, May 8, p. 8
- Argentine pampas deer near extinction, Feb. 27, p. 7
- Brazilian court case brought for illegal exports of wild game, Jan. 2, p. 7
- Colombian ban on hunting overturned, Jan. 30, p. 7
- Colombian skin exports criticized, Jan. 16, p. 5
- Dolphin resurgence in Indus River in Pakistan, Apr. 10, p. 8
- Humboldt penguin endangered in Peru, Apr. 24, p. 6
- Kenyan ban on skins and hunting trophies, Jan. 2, p. 4
- Orang-utan of Sabah (Malaysia) endangered, Feb. 13, p. 7
- Pakistan permits limited hunting of ibex, Feb. 27, p. 7
- Panama Canal Zone, Feb. 13, p. 2
- Project Tiger in India, Jan. 30, p. 8
- Research Center established in Vienna, Austria, Mar. 27, p. 8
- Reserve on Lord Howe Island, Australia, Jan. 2, p. 8
- Sea lion destruction fought in Peru, Apr. 24, p. 3
- South Korean protection program, Mar. 27, p. 8
- Toad tunnel project expanded in Bavaria, Feb. 27, p. 8
- Wyre Forest a British nature reserve, Apr. 10, p. 7

Wind Power

- Electric power plant to be tested in Austria, Feb. 13, p. 8
- Japanese experiment with two windmill types, May 22, p. 6
- Study of uses in LDCs financed by British ODM, May 22, p. 8

Wood Residues

- Mercury separation method devised in Sweden, May 22, p. 3

World Bank

- Forestry development loans to LDCs, Apr. 10, p. 7
- Loan to Algerian sewerage project, May 22, p. 6
- Loan to Brazilian SANEGRA project, June 19, p. 4

World Environment Day

- History and purpose, Apr. 10, p. 3; June 5, p. 4

World Health Organization (WHO)

- International Register of Potentially Toxic Chemicals, May 8, p. 2
- Lead in drinking water standard, Jan. 2, p. 4
- Participant in poise pollution study, June 19, p. 3
- Participant in Toxic Substances Conference, Apr. 10, p. 4; May 8, p. 1
- Sodium and chlorides found major hazards, May 8, p. 8
- Yugoslav water needs study coordinated, Apr. 24, p. 6

World Wildlife Fund (WWF)

- Australian branch to be set up, Apr. 24, p. 7
- Mediterranean marine life protection program, May 22, p. 1
- PRODNA fights sea lion kill in Peru, Apr. 24, p. 3
- Red Data Book on plant species published with WWF grant, Apr. 10, p. 5
- Sea turtle sanctuary in Sulu Sea urged, Feb. 27, p. 7

Y**Yamada, Hisanari**

- Japan's Environment Agency head, June 5, p. 5

Yugoslavia

- Mediterranean Convention ratified, Feb. 13, p. 3
- Water needs master plan for Kosovo province, Apr. 24, p. 6

World Environment Report . . .

Is the first and only publication of its kind: an eight-page, biweekly newsletter that keeps you informed of significant happenings on today's world environment scene. *WER's* staff of 50 correspondents posted around the world monitors the environmental activities of governments, corporations, international organizations, scientists, universities, and citizens groups. It is published by the Center for International Environment Information, a private, non-profit organization established by the UN Association of the USA with the support of the UN Environment Programme. The Center alone is responsible for all material presented in *WER*.



World Environment Report

VOL. 4, NO. 13

Copyright © 1978. Center for International Environment Information.

JUNE 19, 1978

New Study Says Energy Conservation Actually Boosts Oil Production

PARIS—Odd as it may seem, measures designed to save energy that have been inaugurated by Western industrialized nations following the 1973 oil crisis have actually helped boost, rather than hinder, production. That is the principal conclusion of a study conducted recently by the International Energy Agency (IEA), an intergovernmental organization based here comprising most Western nations.

The IEA study shows that in the past five years the effect of energy-saving innovations—such as the adoption of new industrial production methods, the wider use of insulation in homes and offices, and the imposition of automotive speed limits—has been to decrease by as much as two-thirds the amount of extra energy needed to raise oil production by a constant amount, reversing the trend toward increasingly energy-intensive development in the pre-1973 period.

While energy consumption in the IEA countries rose by 1.26 per cent per year from 1972 to 1977, the energy coefficient—that is, the extra tons of equivalent oil needed to raise the Gross Domestic Product (GDP) by \$1,000—dropped by 1.06 to .48, or by about 55 per cent. According to the IEA study, the United Kingdom was the only country to convert less energy into more output, reducing its energy consumption in the period 1972-77 from 215 to 212 million tons of equivalent oil. Of the other countries, all of whose energy consumption rose with output, the United States registered the most dramatic change downward in energy coefficient, from 1.11 in 1960-72 to .34 in 1972-77.

Meanwhile, the U.S. rate of energy consumption slowed substantially during the period 1972-77, from 4.5 per cent annually in the pre-1972 period to .88 per cent in the past five years. In the IEA countries as a whole, energy consumption (in tons of extra oil equivalent) per unit of GDP dropped from 1.51 in 1972 to 1.41 in 1977, reversing the upward trend up to 1972 begun at 1.45 in 1960.

IEA officials in Paris emphasize that their findings are not yet conclusive because the member countries must still confirm the national statistics. But experts at the IEA, including its executive director, Dr. Ulf Lantzke, say that it can definitely be affirmed that the lower energy coefficients reflect in part the impact of new energy-saving technologies, and that the changes in technologies

will gradually mean that industrialized countries can expand their economies without simultaneously increasing their dependence on energy imports as heavily as they did in the past.

Finally, it is clear from the IEA study that while the fully industrialized countries were stabilizing, and even reducing, their energy-growth rates, the still-developing countries, which are only beginning to build their industrial base, were expanding energy consumption as a part of GDP. In Spain, for example, energy consumption per unit of GDP rose from 1.20 in 1972 to 1.35 in 1977. The country's energy coefficient, similarly, worsened from 1.10 to 1.63 tons in the same period. Its energy consumption, meanwhile, rose by 6 per cent per year in the period—much faster than it did in any other IEA-member country.

GARY YERKEY

Eight South American Nations Approve Text of Amazon Pact

CARACAS—Eight South American countries unanimously approved the text of the proposed Amazon Pact during the third pre-treaty meeting recently held here. Signing of the agreement is set for early July by the foreign ministers of Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Surinam, and Venezuela.

The blueprint for exchange of information and joint research in tropical ecology, medicine, agriculture, forestry, fishing, water and power resources is intended to open "rational" development of the Amazon basin's more than seven million square kilometers.

"One of the principal challenges the Amazon presents us is the need to develop a new technology suited to the natural conditions," said Venezuela's Jorge Mantellini,

In This Issue

New Insect Killer	2
Noise Pollution Survey	3
Acid Rain Fallout	3
Sao Paulo Sewage Project	4
Sludge Fertilizer	4
Driving Ban Defeated	5
In Brief	6

of the Ministry of Foreign Affairs, stressing the linking of communications systems, waterways' utilization, and the promotion of economic, cultural, and technological exchange.

The pact will "reaffirm before the world that, as we have exclusive jurisdiction over this immense region," said Mantellini, "so also do we accept and fulfill the responsibility of initiating its development without destroying its ecological balance, of using its immense potential riches in a rational way."

More important for Bolivia, however, the Amazon Pact means hope of getting a port on the Atlantic, via the Madeira and Amazon Rivers. The Bolivian delegate said that of the 28 points discussed only three or four articles were "controversial," among them being operative mechanisms, and preservation and exploitation of the hydrographic basins.

HILARY BRANCH,
LILI STEINHEIL

Swedes Use Non-Polluting Lure In Place of DDT to Kill Insects

STOCKHOLM—Swedish forestry researchers hope to lure to death the spruce bark beetle and other insects which cause millions of dollars of damage in this country's forests.

Biologists and chemists are stepping up the war on harmful insects with methods friendly to the environment, replacing banned poisonous pesticides such as DDT.

Published estimates indicate that insects now cost the Swedish forest industry up to \$200 million annually in damage. About half of newly planted spruce and fir trees, for example, were killed or damaged by beetles in Southern Sweden during 1976.

The new weapon, based on a Norwegian concept being put into practice for the first time against the Swedish spruce bark beetle, capitalizes on smell signals.

The lure is a plastic pad impregnated with an artificial compound combining the odor of healthy and infected spruce trees, and actually copies the collective smell that thousands of beetles emit when they attack a tree.

"As soon as we have attracted the beetles to a specially selected tree we will cut it down and transport it to a mill," project leader Jan Regnander explained at a recent press conference. "There, the beetles will be killed in a debarking machine or drowned by submerging these 'trap-trees' in water."

An estimated 150,000 of the impregnated pads will be needed in the province of Vaermland alone, where some 400,000 spruce trees were attacked by the beetles last year.

The first experimental stage of the war is expected to last about three years at a cost of nearly \$2 million. The results will be closely monitored as studies continue with similar methods.

SPECIAL DISPATCH TO WER

India's Parliament Considers Its First Air Pollution Bill

NEW DELHI—India's Housing Minister Sikandar Bakht has submitted to parliament the nation's first comprehensive bill to prevent, control, and abate air pollution. The legislation will empower all state governments to prohibit the use of any fuel that is likely to cause air pollution.

Under the bill's provisions, various control boards will lay down standards for the quality of air and the establishment of testing laboratories. No industrial plants will be allowed to operate in an air control pollution area, and management will be held personally liable. Violation is punishable with fines ranging up to \$600. A two-time offender will face a jail sentence of up to six months.

The Housing Minister told legislators that the National Environmental Engineering Research Institute at Nagpur (Central India) recently conducted a survey and reported that Calcutta, Bombay, and Delhi were experiencing steadily increasing levels of air pollution. He also charged that 354 industrial units in Delhi are air and water polluters.

Meanwhile, the government has expressed deep concern over the high level of pollution at Agra, the seat of the Taj Mahal, and has decided to close down two nearby power stations. Small industries emitting smoke will be shifted. Railways have been advised to replace the coal-based locomotives with diesel locomotives at Agra's marshalling yard. Henceforth, no new industry will be permitted to locate west of the Taj Mahal.

R. MURALI MANOHAR

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$150 per year. \$20 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Jan De Pinto
Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in WER, which in no way represents the official view of UNEP.

UN Task Force in Geneva Surveys Global Menace of Noise Pollution

GENEVA—A 10-nation United Nations task force has found that noise is a common denominator: It annoys people throughout the world in the same way and to the same degree — regardless of differences in national temperament.

The new report on national approaches to community noise problems was prepared by a task force set up by the Economic Commission for Europe's (ECE) Senior Advisors to Governments on Environmental Problems. Three international bodies — the World Health Organization, the Organization for Economic Cooperation and Development, the European Economic Community — and a private foundation, Stichting Concauwe, cooperated in producing the survey.

The report stated that road traffic created by far the major community noise problems. Other nuisances, in descending order, were: airport area noise from planes; factories; construction sites. The truck was most often named as public noise enemy number one.

After examining the measurement of the impact of noise on the community and its effects, the report dealt with the identification of major noise sources, noise control technology, legal measures, monitoring, and noise research.

Surveys of the effects of aircraft noise in Sweden and Britain suggested that there was an upper limit to the level of annoyance, the report said. After 50 pass-bys in 24 hours, a further increase in the number of passing aircraft did not lead to a proportionate increase in disturbance in Sweden. Between surveys of the Heathrow area near London in 1961 and 1967, air traffic increased by 35 per cent, but the proportion of residents who mentioned aircraft noise when asked what they did not like about their neighborhood rose only from 10 to 11 per cent.

A report from West Germany said that there were serious grounds for connecting noise with hypertension. An increase in the susceptibility to ulcers and gastritis of residents living close to large airports was noted by Soviet research workers, who suggested there may be a connection with continuous noise.

The report noted that Sweden's urban population totalled some 6.6 million, of whom over 2.5 million were "affected" by traffic noise and nearly three-quarters of a million were described as "seriously disturbed."

A model that predicted the increase in road traffic noise in Britain over a 15-year period showed that if the present trend continued, it would affect two out of every five people, while 10 per cent would be seriously disturbed.

In the United States, 97.2 million people were classified as "impacted" by noise; of these, 34 million were disturbed by urban traffic and six million by freeway traffic. Greece, Norway, and the Soviet Union also cited road traffic as the main source of noise.

Commercial aircraft noise disturbed about 2.5 million

people in Britain and most of them lived within a 10-mile radius of Heathrow Airport. The impact of aircraft noise in the United States was estimated at about one-quarter of that of road traffic.

Italian reports spoke not only of the worsening problem of airport noise, but also described factory noise as the least acceptable from the community point of view. A 1975 Athens survey stated that 50 per cent of the population was "highly annoyed" by traffic noise, against 26 per cent by factories, and 2.5 per cent by car horns.

The report described steps that have been taken to reduce noise, both at the source and by other approaches, such as changes in methods of operation and the use of barriers and shields. Experiments in Poland, Sweden, West Germany, France, Britain, and the U.S. have shown that it is possible by construction modifications to reduce significantly the noise levels of cars, buses, and trucks.

A noise monitoring program in Rome, according to the report, showed that the city was suffering from serious acoustical pollution, with noise levels considerably higher than those of London.

Among the monitoring techniques that have been developed in a number of countries was the plotting of noise maps for separate sources. These can be combined by overlaying to identify the points of acute noise pollution.

WILLIAM G. MAHONEY

High Index of Czech Air Pollution Laid to Acid Rainwater Fallout

PRAGUE—Thirty-seven metric tons of solid waste and 29 tons of gaseous waste per capita falling each year in the form of acid rainwater on Czechoslovakia — a country forced by economic necessity to burn low-quality lignite — makes its air pollution index one of the highest in Europe, Czech environmental authorities reported recently.

Solid fuels combustion in power stations and households accounts for 3.6 million tons of solid and gaseous wastes, the source of acid rainfall. This then leads to corrosion, crop damage, and increased incidence of respiratory diseases representing an annual loss of 3.5 — 4.4 billion Czechoslovakian crowns. Of this sum 1.5 billion goes for health damage, a like amount for corrosion damage, 200-250 million for crop damage, 180 million for forestry damage, and at least 160 million for damage to farm animals and poultry. (The tourist rate of exchange is just under 10 crowns for a dollar.)

Northwest and western Bohemian forests have been suffering from air-pollution for decades and their devastation is well-known, but newly-built power stations are also spoiling forests in eastern Bohemia. It is estimated that by 1985 roughly 40 per cent of all forests in the Czech Republic will be damaged by pollution.

IVA DRAPALOVA

CIEI's Advisory Committee Elects Three New Members

NEW YORK—At its ninth Advisory Committee meeting held here in June, the Center for International Environment Information — publisher of *World Environment Report* — unanimously elected three new members to the Committee: Dr. Sidney R. Galler, Deputy Assistant Secretary for Environmental Affairs, U.S. Department of Commerce; Walter A. Hamilton, Vice President, The Conference Board; and Martha Stuart, President, Martha Stuart Productions.

The Advisory Committee meets twice annually to advise on Center policy and guide its programs. The Committee Chairman is George P. Lutjen, Publisher, Newsletter Publishing Center, McGraw-Hill, Inc.

A.W.

Plan Massive Sewage Project For Unsanitary Sao Paulo

SAO PAULO—Brazil's municipal planners, now fully awakened to the undeniable environmental link between the area's primitive sanitary conditions and its appalling infant mortality rate (83.5 infant deaths per 1,000 in 1976) are concentrating energy and funds in a number of top priority measures.

The most impressive of the new environmental projects is SANEGRAN, a master plan calling for a \$4.7 billion sewage collection and treatment system of massive proportions that will dramatically improve the long neglected sanitation status of South America's largest and fastest growing metropolis. The full plan will be implemented in modular stages between 1978 and the year 2000. "This is not just a dream for the generation of the year 2000," asserts Planning Director Prof. Eduardo R. Yassuda. By 1983, he says, delivery of the first stage, which has received a \$110 million World Bank kick-off loan, will bring improvements of a magnitude to change the image of Sao Paulo from that of a doomed to a progressive city, "a model for Latin America."

SANEGRAN is an enormous financial burden for developing Brazil to assume, but its goals are considered well worth the expense. They include the collection of 90 per cent of the area's sewage and its treatment at a secondary level at three huge treatment stations, removing 85-90 per cent of pollutants by the activated sludge method. The city plans the capacity to treat 95m³/second of sewage at roughly 20 cents per cubic meter. Experts from the U.S., Britain, West Germany, and South Africa helped the Brazilians to design a reliable, conservatively priced package.

There is much to correct. Today, less than half of greater Sao Paulo's more than 11 million people are

served by sewers. Millions must draw their household water from contaminated wells. In addition, the city dumps 95 per cent of its domestic and industrial sewage untreated into the small River Tiete making the river an open sewer of three parts water to one part pollutants running through the city. The river empties into the largest reservoir in the area, the Billings, today black and foul and unfit even for recreation, a tragic esthetic and economic loss to the region. The pessimistic prediction is that unless corrective measures are taken now, the contents of the river will reverse in proportion, reaching the truly catastrophic level of one part water to nearly three parts of lethal cargo by the year 2000.

By 1983, an additional 5,500 kilometres of collectors and trunk sewers will be laid, more than doubling the city's present network. Some 55 per cent of the area's population will have service, including all of the area's dense urban center. Most significant, emphasizes Yassuda, is the qualitative improvement: In five years 40 per cent of the area's total sewage will be treated at a secondary level, an enormous jump from less than five per cent at a primary level (30 per cent efficiency) today.

Disposal of the digested sludge from the treatment plants serving a city of Sao Paulo's size is a monumental logistical problem. In addition to the conventional method of using the mineralized sludge to fill the area's mammoth sand and gravel quarries and to thus reclaim valuable urban land, a unique solution with almost ecological symmetry is being investigated.

Digested sludge can be used to make lightweight aggregate for reinforced concrete, which is in great demand in rapidly industrializing Brazil. The economical process uses gas released by the sewage treatment process for the operation. Prof. Carlos Dias Brosch of the Sao Paulo Institute of Technical Research, discoverer of this revolutionary use for sludge, plans to further test its usefulness in his small research factory.

LIBBIE S. MATHES

British Supermarkets Sell Sewage Sludge For Garden Fertilizer

LONDON—Sewage sludge, in treated, pellet form, now is being sold as garden fertilizer on supermarket shelves in some parts of the northern English county of Yorkshire, thanks to the enterprise of its Regional Water Authority.

Like most highly urbanized and industrialized areas in Western Europe and the United States, Britain faces problems in sludge disposal and hopes to increase its use as an agricultural nutrient. As a replacement fertilizer, sludge contains nitrogen and phosphorous, but can also contain toxic trace elements of metals such as zinc, copper, and nickel where the sludge comes from industrial effluent.

Some British farmers are wary of using sludge on their soil because lack of proper information has in the past led to overdosing and crop damage. In 1973 the water industry was reorganized and the National Water Authority created. The 1974 Control of Pollution Act required industry to clean up its own effluent before discharge. Both these factors, in the opinion of agricultural scientist, Dr. E.G. Coker, are helping towards a more informed use of sludge in agriculture.

Experiments are taking place at the Water Research Center (WRC), the research arm of Britain's National Water Authority, under the direction of Dr. Coker and his colleague, Dr. R.D. Davis, to measure both the beneficial and toxic contents of various sludge types and their uptake by plants. A broad selection of crop plants is being used, including cereals, root and salad plants, and various grasses.

Dr. Coker points out that metal trace elements are contained in the natural environment and are only dangerous when concentrated. They therefore need to be "spread thinly in time and space." Dr. Coker said that he and his colleagues are looking for the right kind of agricultural slots into which sludges would fit. He thinks farmers will then soon see the economic advantages.

BARBARA MASSAM

Swiss Voters Reject Environmental Plan to Restrict Sunday Driving

GENEVA—Swiss voters recently crushed by a two-to-one margin an environmental proposal to ban all motorized traffic the second Sunday of every month to save energy and reduce pollution. The rejection was not unexpected because the government, automobile and oil industries, and the hotel, restaurant and other tourism-linked industries had rolled out their heavy artillery to defeat the move.

Students at the Burgdorf Technical College in the German-speaking section of Switzerland had initiated the proposal. Environmentalists collected the 100,000 signatures required under Swiss law to stage a national referendum.

The government had warned that approval of the proposal would amount to a violation of individual liberties, would be economically and politically disastrous, and would mean violation of international travel conventions and agreements already approved and accepted by Switzerland. The proposal would have stopped all international and national motorized travel on the ground, in the air, and on lakes except for emergency and urgent cases.

The issue divided the Swiss left. The Communists opposed the proposal while the Socialists urged their voters to approve it. The center and right were opposed.

WILLIAM G. MAHONEY

May Soundproof All Homes In Vicinity of Japan's Airports

TOKYO—All rooms in every private home in the vicinity of 14 airports throughout Japan are scheduled to be soundproofed at the expense of the Japanese Government over the next few years if the Ministry of Transport can obtain sufficient funding for the massive task. According to Ministry calculations, the work—involving more than 60,000 dwellings—could cost as much as \$1.3 billion.

Actual soundproofing of these homes probably will not start, however, for at least a year or two. Much will depend on whether the Ministry can convince the administration of Prime Minister Takeo Fukuda to include funds for the job in the fiscal budgets for the years ahead.

Transport Ministry officials contend that a considerable amount of the necessary funding could come eventually from increased taxes on commercial aircraft using the Japanese airfields and other taxes on airport operations.

Although soundproofing of homes near Japanese airports began in 1974 at government expense, only one room in each home has been soundproofed and only those houses under the actual flight paths have been eligible for the work. In addition, homeowners have frequently complained that the soundproofing has been only partially successful.

In an attempt to resolve the problem, according to the Ministry, the policy was revised in late 1977 to provide soundproofing for two rooms in each of the homes included in the program—providing there were five or more family members actually living in the house on a regular basis. Where implemented, however, this too has led to disappointments being expressed by the owners.

Although the present cost of soundproofing a single room in Japan is figured at approximately \$6,000, Transport Ministry experts claim they have reason to believe this can be reduced while providing more effective materials.

It is hoped that private industry can come up with the answers before the end of March next year, in time for the Ministry to begin work on the fiscal 1979 budget estimates. Some Ministry officials admit that they expect opposition from the Finance Ministry over including all 60,000 homes in the program.

As some in the Prime Minister's Office see the issue, it might prove cheaper in the long run, given the likelihood of increased legal claims for compensation by irate residents, to go ahead with the program for all 60,000 homes.

Some residents' organizations already have filed suit with the Japanese Supreme Court seeking closure of airports in their vicinity or greatly reduced aircraft noise levels. These organizations are demanding damages and monthly compensatory payments.

A.E. CULLISON

In Brief...

Pollution Control Patents On Upswing in Great Britain

Proof of an increased interest in preserving the environment comes from a rather unlikely source—the 95th annual report of the British Comptroller of Patents. This says that patent specifications submitted in 1977 continued a growing ecological trend, particularly in devices to control pollution and conserve energy.

The report notes more specifications for controlling vehicle exhaust fumes and reducing noise in road drills and machinery. Inventions for producing alternative energy from the sun, wind, and water also increased. The most notable of these was another wave energy machine called the "bobbing duck"—a device mounted on a raft which converts wave movement into electrical energy by means of a fluid pump. With its 600 miles of Atlantic coastline, wave energy is considered Britain's most feasible form of alternative energy in the future.

Rio's Governor Scores 'Theoretical Ecologists'

At the recent inauguration of a system to control the seasonal flooding of the rivers that run through Teresopolis, a mountainside resort city 50 miles north of Rio de Janeiro, Governor Faria Lima scored "theoretical ecologists."

"There are some theoreticians who spend their time filling pages and more pages of newspapers with discussions about the obvious in ecology and talking of impractical things. Not even the United States has sufficient resources to bring an end to environmental pollution," the governor said.

He was referring to ever increasing criticism in the Brazilian press

charging the government with neglect of deforestation and erosion.

The governor said authorities here are doing the best they can and that they demonstrate their concern for the environment by financing flood control projects and other sanitation services to improve the quality of life. This new project, he said, included the construction of 170 meters of an underground gallery to divert flood waters, the construction of a new bridge, and the rerouting of the city's main thoroughway away from the low-lying river bank.

Singapore Amends Its Clean Air Standards Regulations

The Singaporean government has recently amended the Clean Air (Standards) Regulations to reduce the amount of pollutants that may be emitted into the air.

According to Tan Guong Chin, Senior Engineer of the Anti-Pollution Unit, the limit of solid particles allowed to be emitted from premises will be reduced from 0.4 grams to 0.2 grams per cubic meter. The concentration of acid gases allowed to be emitted from sulphuric acid manufacturing plants will be revised from 6 grams to 3 grams per cubic meter. Sulphuric acid allowed to be emitted from other factories will be reduced from 0.2 grams to 0.1 grams per cubic meter. The permissible level for emission of hydrogen chloride will be reduced from 0.4 gram to 0.2 gram per cubic meter, whereas the level for emission of chlorine gases and heavy metals such as antimony, cadmium, and mercury will be reduced by half to 0.01 gram per cubic meter.

Tan also pointed out that a new permissible level for the emission of carbon monoxide will not be allowed to exceed 1 gram per cubic meter of effluent gases. It is expected that the revised standards will not cause inconvenience to industries because many of the industries have already installed the correct equipment and others will be given six months to comply with the new regulations.

Seven Baltic Nations Meet On Marine Oil Pollution

After three days of discussions held recently in Gdansk, Poland, seven East and West European states with Baltic coastlines have recommended measures to fight oil pollution in the sea. Taking part were Denmark, Finland, East and West Germany, Poland, the Soviet Union, and Sweden.

According to news agencies reporting on the meeting, among the measures recommended was one to ban the use of chemicals to break up oil spills and replace this system with better methods to skim oil from the water's surface.

The seven nations are all signatories to the 1974 Helsinki Convention on ecological protection of the Baltic Sea region. Annex 6 to this convention pertains to fighting oil spills on the sea surface.

The first working meeting was held in Gdansk last October.

This second meeting limited itself to charting principles of cooperation between the Baltic countries in the event of a catastrophe such as a collision involving oil tankers.

Sweden, E. Germany Renew Bilateral Environment Pact

Sweden and East Germany have renewed their bilateral agreement on cooperation in environmental matters for another two years.

Delegations from the two countries discussed progress in reducing air pollution since the original 1976 agreement was signed, and also laid down a program for the next two years which will concentrate on the care of water, especially on methods of limiting the suffocation of lakes and seas because of pollution. East German experts also will visit Sweden to consider methods of reducing pollution from automobile exhaust and techniques to de-sulphur fossil fuels and gases in smoke.

Solar Driven Turbo Power Pack Developed in India

The National Aeronautical Laboratory (NAL) in Bangalore, India, has developed a new turbo power-pack system for using sunlight for pumping water and generating electricity in rural areas.

The NAL claims it is probably the first of its kind in the world. Its uniqueness lies in the fact that a temperature as low as 60 degrees centigrade is enough to drive the turbine and generate one kilowatt of power. The NAL turbine, specially designed for solar applications, is driven by acetone gas.

Acetone is normally a liquid. In the NAL design, however, liquid acetone is directly changed into gas by the heat collected on flat-plate solar panels. This gas is passed through the turbine and spins it at 10,000 revolutions per minute. Then the spent gas is condensed into liquid and used again in a closed cycle.

Laser Beams Used to Detect Pollution in Argentina

The use of laser beams to establish the presence of pollutants in air and water is currently under study at the Argentine Optical Research Center (CIOP) under the joint supervision of the National University of La Plata, the National Council of Scientific and Technical Research (CONICET), and the Buenos Aires Province Materials Testing Laboratory (LEMIT).

The project, which originated in 1976, involves two different techniques for the identification of pollutants. Under one method, the fluorescent quality of the pollutant is excited by bombarding it with the laser beam's ultraviolet rays. The other method operates through the detection of the "Raman spectrum," which also responds to bombardment with laser beams.

Both systems are designed to operate with the laser being placed at

a considerable distance from the target. Thus, aircraft or control towers will be able to pinpoint the pollutant.

The equipment being used by Argentine scientists for their current tests is, because of its bulk, wholly impractical for on-the-spot detection operations, but work is already reported to be underway on a fully operational standard detector.

The pollution detecting laser will be used—CIOP Director Dr. Mario Garavagli predicts—to identify factories and processing plants that are polluting Argentina's air and water.

ECE Sets Human Settlements Symposium in Greenland

The United Nations Economic Commission for Europe (ECE) announced in Geneva that the planning and building of human settlements in severely cold climates will be discussed in August at a symposium in Godthab, Greenland.

The ECE's Committee on Housing, Building and Planning, which is organizing the Symposium on Human Settlements Planning and Development in the Arctic with the Danish Government as host, stated that the idea of holding such a meeting was launched at the Conference on Security and Cooperation in Europe. The Final Act of this Conference cited the problems of life in cold conditions as a subject of topical interest which might serve as the basis for projects benefitting the countries concerned.

The ECE spokesman declared that Greenland towns and villages that will be seen by participants have changed radically over the past quarter century. Planning philosophies and technologies from milder climates have been adapted to the rigors of an Arctic land and the new building areas provide the frame for a complex society with a standard of living similar to that of communities in Denmark.

Chemists Seek New Methods To Detect Trace Elements

Chemists who met in Geneva recently to seek more accurate methods of detecting toxic trace elements in the environment also pondered an age old problem—the role of sex.

A paper presented to the 8th International Symposium on Analytical Chemistry for Detecting Pollutants gave them a valuable clue: some metallic trace elements clearly prefer one sex to another.

The study of trace elements in human bones notes that the bone tissues studied regularly contained trace elements of cadmium, zinc, nickel, iron, and strontium, and that iron traces showed a clear preference for the bone tissue of males, while zinc and nickel concentrations were much higher in female bone tissue.

Although puzzled by these facts, the scientists agreed that the toxic effects of certain heavy metals such as lead and cadmium demand a tighter control over their concentrations in rivers, lakes, and oceans. One such method presented by a Californian researcher suggested a new polarographic system to measure more accurately copper and cadmium in sea water.

Two Swiss scientists presented a study of trace elements in the Aar River. Utilizing an analysis by neutron activation, they came to the reassuring conclusion that all of the elements found—more than 20—were at levels well below that fixed by the World Health Organization for drinking water.

University of Geneva analytical chemists have been seeking better ways to detect trace elements in sweet water. Their efforts have led to the use of an atomic absorption technique to measure the quantities of mercury down to astonishing precision: one billionth of a gram.

Other chemists—notably a team from the Free University of Brussels—have been studying trace elements in plants—in particular the toxic elements cadmium and fluor.

Singapore's Taxis to Try LPG in Place of Diesel

In an effort to cut down pollution, the Singapore government is studying the feasibility of using liquified petroleum gas-powered taxis instead of diesel ones. An official spokesman said recently the government is hoping to learn the technique of using LPG to power taxis from Japan and Holland, where many vehicles are gas-powered. He said the government also anticipated that it will have to spend considerable time in convincing taxi drivers that it is technically safe and economically viable to use LPG as a source of power.

Because it is a gas, LPG is completely burned in the engine chamber leaving no residue to pollute the air. Diesel-powered taxis, together with trucks and buses, have been the cause of many smoke pollution complaints in Singapore where LPG costs twice as much as diesel fuel.

USSR to Ratify Convention For Peaceable Environment

The Foreign Affairs Commissions of the two houses of the Supreme Soviet of the USSR have unanimously approved a Convention—originally signed by 33 countries in Geneva in May of last year, and since then ratified by about 60 states—prohibiting the use of the environment for military or hostile purposes.

The two groups recommended that the Presidium of the Supreme Soviet ratify the Convention. The Chairman of the Foreign Affairs Commission of the Soviet of Nationalities, Boris Ponomarev, expressed the hope that the U.S. and other countries would soon ratify the Convention.

In reporting on the approval, the Soviet news agency Tass quoted Ponomarev as stating that there were serious grounds for fear that influencing the weather and geophysical processes could be used for destructive military purposes. He cited press

reports which raised the possibility of influencing the ozone layer in the upper layers of the atmosphere to intensify the penetration of ultraviolet radiation over certain areas.

He noted that clouds could be seeded to cause or intensify rains which could cause floods, destroy roads, dams, and river crossings.

Deputy Minister of Foreign Affairs Georgy Korniyenko declared that "the importance and urgency of the solution to this problem is dictated by the fact that an ever-growing number of states is now involved in research to modify processes occurring in nature and linked with possible changes of climate and other geophysical phenomena."

Properly Used, Insecticide Deemed Safe in Fish-Farming

The International Rice Research Institute (IRRI) in Los Banos, the Philippines, has discovered that fish can be raised in rice paddies even after the application of insecticide. Experiments conducted by IRRI in Nueva Ecija in cooperation with the Central Luzon State University showed that the carbofuran granules released in rice paddies caused 100 per cent fish mortality. However, the insecticide was found to have no effect on fish placed in the rice paddies a week after application.

Colombia Prohibits Pesticide use in Growing of Coffee

The Colombian Government has prohibited the use of chlorinated hydrocarbons in the growing of coffee. This includes DDT, BHC, and other derivatives used in pesticides. The measure was taken to protect Colombia's share of the international coffee market (Colombia is the world's second largest exporter) following charges that chemical residuals were present in coffee exports.

Oppose Venezuelan Ban On Smoking at Sports Events

Although his ministers followed suit recently when Venezuela's non-smoking President Carlos Andres Perez banned cigarettes from the weekly cabinet meetings, a much more comprehensive government proposal to outlaw the sale and advertisement of cigarettes at live or televised sports events is in trouble. "Baseball would collapse if the government prohibited smoking and the sale of beer in the stadiums and in television advertising at sports events," said a local league president.

Since Venezuela's 12.5 million population is made up of 80 per cent city dwellers, their annual consumption of one billion packs of cigarettes adds to the general air pollution. But cigarettes are cheap (\$.30 a pack), the tobacco is excellent, and the industry supports 130,000 people, not including vendors. The industry pays about \$1 billion in yearly taxes.

Polluting Cement Plant In Colombia May Be Shut Down

The Colombian subsidiary of Clinker Cement has been given 60 days by the Ministry of Health to end contamination of the bay of Cartagena, the country's principal Caribbean resort. If the pollution is not controlled, the Ministry could close the recently built plant, the largest cement processing factory in Latin America.

Health Ministry officials report that they have received numerous complaints from other Cartagena industries about the quantity of fallout from the Clinker plant when the installation's anti-pollution filters are not in operation. Spokesmen for these industries believe that the Clinker filters should be self-cleaning, thereby eliminating the need to remove them for periodic cleaning. According to Ministry calculations, the cement plant's enormous chimney stack throws off 10 tons of polluted solids a day.



World Environment Report

30 JUN 1978

VOL. 4, NO. 12

Copyright © 1978. Center for International Environment Information.

JUNE 5, 1978

Significant Environmental Gains Over Decade Posted by W. Germany

BONN—In a review of progress made over the last decade in cleaning up the West German environment, Federal Interior Minister Werner Maihofer announced recently that air pollutants had been reduced by up to 70 per cent in various parts of the Federal Republic and that the percentage of waste water and sewage subject to complete biological treatment had increased from 38 to about 70 per cent.

As an indication of future progress, he said that there was a backlog of some \$4 billion worth of environmental protection work waiting to be carried out in addition to that related to power plant construction. Roughly half of this work is either waiting approval or has been deferred for one reason or another.

The biggest gains in air pollution control were scored in basic industry areas. At Bochum and Dortmund in the Ruhr District, dust fallout has been reduced by 50 and 40 per cent respectively, while at the Saarland city of Voelklingen there was a 70 per cent improvement.

In the widely separated cities of Frankfurt, Munich, Wuertzburg and Nuernberg, where internal combustion engines rather than steel mills and coke ovens are the principal polluters, the concentration of lead compounds in the atmosphere has been reduced by 70 per cent.

In 1976 alone, \$700 million was invested in the construction of public sewage treatment plants, three times as much as in 1970. Since a major part of all sewage in Germany, whether treated or untreated, eventually finds its way into the Rhine, the death rate of fish in that stream, according to Minister Maihofer, is still unacceptably high. "However," he added, "sensitive species are now establishing colonies in the Rhine, and we are now standing at the beginning of further development."

Minister Maihofer emphasized that pollution control measures could not succeed if carried out on a purely national basis. In a land mass as small as Europe, the pollutants of one country are easily carried over to neighboring countries; and strict environmental protection laws in one country, if not matched in others, could soon become economically ruinous for the industries forced to comply with the stricter law.

The Interior Ministry is now working with other interested Ministries on the draft of a law to control the introduction of new chemicals. According to Maihofer, it will break new ground on standards of safety and

inspection, and it is the aim of the government to persuade other European Community countries to adopt laws with the same standards. Germany is also pushing for a Community-wide agreement governing the lead content of gasoline.

To establish country-wide standards governing the designation of industrial areas, the Interior Ministry is preparing a "Handbook of Ecological Planning." Its object will be to bring into alignment state and regional guidelines for the establishment of industrial sites, with consideration of noise, air, and water pollution in relation to the sites' natural surroundings. Eventually, the characteristics of all such areas will be stored in computers and will be available for comparison and for future industrial development.

J.M. BRADLEY

Denmark's EPA Disallows Building of PVC Factory

COPENHAGEN—For the second time, Denmark's Environmental Protection Agency has disallowed the building of a polyvinyl chloride (PVC) factory at Stigsnaes, Skaelsor, about fifty miles from Copenhagen. It has stuck by its 1977 decision which had ruled against local and town councils that favored the project (*WER*, Aug. 15, p. 3).

It is believed that Denmark, where environmental protection laws are among the world's strictest, is the first country to refuse permission to build a PVC plant.

The factory was to have been built by two foreign firms, Swedish KemaNord and Norsk Hydro, at a cost of some 50 million dollars and would have given work to 100 persons. It was estimated that it would produce 100,000 tons of PVC per year for Denmark's plastics industry.

In This Issue

Electric Engines	2
Energy Technologies	3
World Environment Day	4
Asbestos Substitute	5
Slag Pollution	5
Refillable Containers	6
In Brief	7

The negative decision was taken because of the possibility that PVC gas emissions lead to cancer.

Elo Hartig, a civil engineer speaking for Denmark's Council of Industries, said that there were about 100 PVC factories in the world and that over the past 40 years only 60 such workers have been cancer victims with no cases of cancer reported in persons merely living near the PVC factories.

It was unfortunate, Hartig maintained, that Norsk Hydro and Swedish KemaNord have been prevented from constructing the Danish factory because they would have installed the most stringent safeguards against large concentrations of PVC gas escaping into the atmosphere. He also pointed out that vinyl chloride used to be used as a sedative with no injurious affects.

CONSTANCE CORK

British See Electric Engines Replacing Internal Combustion

LONDON—Electric forms of transport are inevitable in the long run, says a report from Britain's Advisory Council on Energy Conservation, and it suggests planning and research begin now.

About 70 per cent of the fuel now used in cars and light vans could be replaced by battery power, it estimates, since so many cars in Britain average less than 100 miles per day. This could reduce annual primary energy demand by about 40 million tons of coal equivalent.

The report acknowledges that this is unlikely to be an attractive alternative for motorists while North Sea oil lasts, and it also recognizes that it would take a great deal of change in the infrastructure of the transport industry and in transport patterns to achieve.

The crunch will come in the "post-oil period" around the late '80s, the report states. It rejects the chances of alternative fuels from non-fossil sources, such as methanol or hydrogen, becoming useful on any large scale because of manufacturing or economic difficulties.

It considers Syncrude, a liquid hydrocarbon fuel resembling petrol, already being manufactured in South Africa, a likely substitute. But in Britain coal costs ten times more to extract and, moreover, it would mean diverting it from a more effective use in domestic heating.

In the "post fossil-fuel era," perhaps in the middle of the next century, ways of synthesizing natural hydrocarbons would be ruled out by the "sheer logistics" of the operation, the report speculates. Electric vehicles would then be inevitable.

The report notes the present disadvantages of electric transport for long trips, heavy vehicles, defense, air, and shipping needs. Unlike the internal combustion engine, however, it does not waste energy, is non-polluting, and can make use of electricity from a variety of sources, such as industrial waste-heat.

BARBARA MASSAM

Sweden Completes Plan to Map And Manage Nation's Wetlands

STOCKHOLM—At the request of the Swedish Government, the National Environment Protection Board (NEPB) recently completed a plan for mapping the country's wetlands. The long-term aim is care and management of the wetlands as a natural resource.

About one-fourth of Sweden's area is considered wetland—shallows, marshes, swamps, water-logged meadows, beaches, and other flooded regions. The work is expected to take five years at a cost approaching \$3 million.

The wetlands embrace plant and animal life not to be found in any other environment and additionally serve as important water magazines. However, during this decade interest has grown in exploiting as well as in conserving the wetlands. There is talk of utilizing them for the production of wood, so-called energy forests, and energy-giving reeds and peat, and for farming after drainage—plans which often conflict with environmental and recreational interests.

"The survey will be all embracing," said project leader Carl-Erik Johansson of the NEPB. "When the work is complete, we should have a picture of which wetlands to preserve for environmental reasons. We also will have a basis for judging how wetlands should be utilized in the future. The research also will provide the basis for management of the wetlands. The survey takes into account various interests—hydrological, geological, botanical, zoological, geomorphological, archeological, cultural, historical, and recreational."

SPECIAL DISPATCH TO WER

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$150 per year. \$20 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Jan De Pinto
Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

SPECIAL REPORT: ECE Completes Assessments of Energy Technologies

GENEVA—Environmental and technical aspects of 14 technologies for the production of energy have been assessed in a paper prepared for the Senior Advisors to the UN's Economic Commission for Europe (ECE) Governments by the ECE Secretariat.

Two other such papers had been prepared earlier and in all some 45 energy technologies have been reviewed, and taken together the studies provide a complete file of assessments on energy technologies.

Seven of the technologies in the new paper concern nuclear fission while five sections deal with techniques now being developed or with new technologies used with potential sources of energy. There is a section on hydroelectric power and another revised section on use of tar sands.

Light Water Reactors

The ECE paper points out that pressurized light water reactor (PWR) plants constituted about 60 per cent of the total nuclear installed capacity in Europe and North America in 1976. It concluded that PWR will very likely continue to account for the major share of nuclear capacity. A "probably harmless" low-level radioactive pollution is unavoidable during normal operation, the paper commented, but the disposal of highly radioactive wastes has still not been satisfactorily solved. The same observation was made about boiling light water reactors which account for about 29 per cent of installed nuclear power capacity in the ECE countries. However, radioactive contamination of the environment at the power station and in normal operation is lower than with the pressurized reactors, the report said.

Heavy water reactors (HWR) will probably maintain a modest share of total installed nuclear capacity in ECE countries, but are likely to be put to greater use elsewhere because of their independence from enrichment facilities, the ECE paper declared.

Gas Cooled Reactors

The report stated that although gas-cooled reactors (GCR) also operate independently of enrichment plants, they are likely to lose ground to advanced gas cooled reactors (AGR) which do not, because of the greater efficiency in conversion of the latter. The paper foresees a significant increase in the share of AGRs in total installed nuclear capacity in the ECE region. Environmentally, the conclusions in the cases of HWR, GCR, and AGR are the same as those for PWR, the paper stated.

It added the probability is that the environmental considerations will be similar for high-temperature gas cooled reactors, which offer greater efficiency in the

conversion of fuels into energy. This type of reactor is entirely dependent upon enrichment or reprocessing yet to be demonstrated.

Fast Breeder Reactors

Fast breeder reactors (FBR) represent probably one of the most sophisticated industrial technologies ever developed, it said, and the investment costs in prototypes are huge. These costs should, however, diminish considerably if a "breeder economy" is chosen. FBRs use cheap uranium-238 stocks but, on the other hand, depend on the reprocessing facilities. The paper mentions the "strong concerns" that have been expressed in some countries about the environmental problems that might arise under abnormal operation conditions.

The experts found that nuclear fusion is unlikely to meet a substantial fraction of energy needs before the middle of the next century. Although the technology has so far revealed no serious environmental problems, and leakages of tritium into the air and water could probably be held at very low levels, an environmental assessment based on experiments has not yet been made.

Hydroelectric Power

It said that the planned installed capacity of hydroelectric power plants in Europe in 1985 is 240,000 MWe—15 per cent of the total electricity supply. Pumped storage plants equipped with reversible turbines are playing an increasingly important role in the storage of energy, the paper said. In Europe and North America, 25 per cent of the economically exploitable hydro-power potential was harnessed in 1971, and this renewable form of energy could continue to be an important element in meeting electricity needs.

Among future developments, the paper saw the possibility of very large installations, flooding huge areas, as for example in the sub-Arctic regions of Canada, on the one hand, and "micro-hydro" plants meeting local needs on the other. Small-scale applications of hydro-power create only marginal environmental problems and seem preferable to large projects, the paper commented, in assessing this form of energy generation as "environmentally compatible."

Fossil Fuel

Tar sand and oil shale reserves constitute one-third of total world reserves of recoverable fossil fuel, and therefore have great potential importance, the ECE study found. To be economical, however, the production of oil from tar sands must be on a very large scale. Moreover,

there are environmental problems of several kinds: emissions of noxious gases and water pollution in varying degrees; the use of very large areas of land; great amounts of solid waste; noise; changes in the landscape; and destruction of wildlife.

However, the ECE paper said that a field of technology that could significantly reduce the amounts of waste heat released to the environment and allow the tapping of some new sources of energy involves new heat transfer media such as molten sodium, helium, or carbon dioxide. The present technology increases the conversion efficiency of thermal power plants by transferring heat from the boiler at higher temperatures than would be technically feasible with water, and makes it possible to use small temperature differences to produce electricity. While limited so far to gas-cooled reactors and to industrial demonstration plants, this is a technology that will probably have an important future role.

Methane and Alcohol

The ECE report noted that the production of methane and alcohol by photosynthesis is a simple and efficient way of creating energy that will undoubtedly play a growing role, particularly in agriculture. The paper stated that the production of methane and alcohol from organic wastes is probably the best non-conventional energy technology from the environmental point of view. It provides "clean" energy, is a potential way of combatting water pollution, or managing organic wastes from municipal sources, agriculture and food industries, and decreasing air pollution from internal combustion engines.

It said that the exploitation of natural differences in ocean temperatures to produce electricity is attractive from the environmental standpoint. This is the only large-scale, centralized application of "alternative" energy technology which has no significant environmental impact, the ECE declared. The technology—now applied only in a few small pilot plants in the ECE region—would work best in tropical seas or where there are warm currents. Once construction of the offshore power plants is completed, the techniques employed are relatively simple, it said. No energy storage facilities are needed.

Wave Energy

The ECE found that the use of wave energy is a pollution-free technology that deserves more support in research and development. It said that the economic efficiency of the technology has not yet been demonstrated and only small-scale prototype experiments now exist. The paper suggested that in the future, wave power might be used to pump seawater into large storage reservoirs on cliffs. The water would then flow back to the sea through classical hydroelectric plants. This system could be used in conjunction with other non-conventional sources of energy such as wind and solar power.

WILLIAM G. MAHONEY

World Environment Day: Pahlavi Prize; UNEP's Progress Report

NAIROBI—The \$50,000 International Pahlavi Environment Prize, presented annually by the Government of Iran for the most outstanding contribution in the environmental field, has been awarded jointly to the Egyptian desert scientist Prof. Mohamed El Kassas and to the Norwegian explorer Dr. Thor Heyerdahl.

Announcement of the 1978 award was made by the UN Environment Programme's Executive Director, Dr. Mostafa K. Tolba, at the annual UNEP Governing Council meeting in Nairobi. The presentation takes place at UN Headquarters in New York on World Environment Day—June 5.

This is the third award of the Pahlavi prize. It went in 1976 to Dr. Maurice Strong, the first Executive Director of UNEP, and in 1977 was shared by the French oceanographer Jacques-Yves Cousteau and the British ornithologist Sir Peter Scott.

Professor El Kassas was Vice President of the International Coordinating Council for the Man and Biosphere (MAB) program from 1970 to 1972, and Vice President of the Scientific Committee on Problems of the Environment (SCOPE) of the International Council of Scientific Unions from 1972. He was a senior advisor for the UN Conference on Desertification, held in Nairobi in 1977.

Dr. Thor Heyerdahl is famous for his Kon-Tiki expeditions. In recent years he has focused attention on the pollution of the world's oceans, and in April this year he set fire to his reed boat off the port of Djibouti as a protest against the wars in the Horn of Africa which had prevented him from landing in Ethiopia and in Yemen. The reed boat, based on a design of the ancient Sumerian civilization, had sailed from the Persian Gulf.

At the same annual Governing Council meeting, Dr. Tolba reported on UNEP's progress over the last year, with particular reference to the UN Conference on Desertification and the Intergovernmental Conference on Environmental Education. He also noted the "important breakthrough" last February when representatives of 26 countries adopted 15 draft principles regarding shared natural resources.

Among other highlights singled out by Dr. Tolba of UNEP's activity during the past year were the Convention for the Protection of the Mediterranean Sea against Pollution and the successful outcome of the Regional Conference on the Protection and Development of the Marine Environment and the Coastal Areas held in April in Kuwait.

Finally, in his 1978 report on The State of the World Environment, Dr. Tolba drew attention to four pressing environmental matters: the long-term effects of man-made chemicals on the environment; the threatening resurgence of malaria; the use of waste residues to increase food production; and conservation of energy.

CHARLES HARRISON

UK Scientists Create New Material To Replace Asbestos Cement

LONDON—A further step towards reducing the environmental health hazards of asbestos was announced recently by the Construction Materials Research Group of the University of Surrey, Guildford.

A new material invented by Dr. D.J. Hannant in collaboration with Mr. J.J. Zonsveld, to replace asbestos cement, is being developed by the Group. It consists of a cement matrix containing reinforcing layers of stretched polypropylene film which has been "fibrillated," i.e. treated to produce a split film which can be expanded into a continuous open network.

Asbestos cement has been widely used in the building industry for many years as a cheap, strong, weatherproof material for making sheets for building panels, corrugated roofing sheets, pipe insulation, and guttering. Polypropylene fibers have formerly been considered as too inflexible a reinforcing agent for materials in direct tension or flexure. The flexibility and strength of the new material suggests that it may have wider use than simply the replacement of asbestos cement.

Patent applications have been filed in twenty countries. Manufacturing techniques are under development and the new material is expected to be on the market within two years.

BARBARA MASSAM

Collapse of Slag Yard Dams In Japan Pollutes Two Rivers

TOKYO—Collapse of dirt-filled dams at a slag yard on the Izu Peninsula, about 70 miles south of the Japanese capital, during a recent series of earthquakes in the area caused a subsequent flow of sludge containing deadly sodium cyanide into a nearby river. Within hours the highly poisonous sludge had contaminated both the Mochikoshi and Kano Rivers. Millions of dead fish floated to the surface and Japanese authorities hurriedly ordered fishermen to stop fishing. Cities in the vicinity which normally draw their water from the rivers were told to obtain their supplies elsewhere. By the following day the cyanide, sweeping seaward in huge milky patches had spread to Suruga Bay, approximately 100 miles south of Tokyo. So far, however, no one has been poisoned by the cyanide.

The incident, nevertheless, has shocked the Japanese Government into a re-examination of the laws and regulations governing construction of such dams around slag yards throughout the country. Current legislation requires that these dams be built strong enough to withstand either exceptionally heavy rain or strong earthquakes over a 100-year period. Yet the dams did not survive the quakes. Officials of Japan's powerful

Ministry of International Trade and Industry (MITI), therefore, are looking into the precautions and safeguards taken at the failed dams.

Over the next few months, according to early reports from MITI authorities, safety standards at all such dams from one end of the country to the other will be closely examined. If the dams which collapsed were built in accordance with the regulations, one MITI official explain the standards may have been too low and will need to be raised. However, it was emphasized that there is reason to suspect that those charged with building the dams skimmed during construction. This could have resulted in improperly built slag dams and subsequent heavy damage to the local environment.

Prefectural officials in the area of the mining operation have estimated the concentration of the poisonous sludge in Suruga Bay at 0.012 parts per million (ppm). The lethal level has been set at 0.01 pm for fish. Approximately 100,000 tons of waste material containing the sodium cyanide is thick along the banks of the Kano River.

Meanwhile, officials of the National Police Agency (NPA) have launched a criminal investigation into the collapse of the dams in the belief that the pollution would not have occurred if it was not for human negligence. The mining firm could be charged with violation of the Mining Safety Law, the Emissions Disposal Law, and the Water Pollution Prevention Law.

Prime Minister Takeo Fukuda met the situation by ordering those ministers in his cabinet directly involved to draw up a new bill for submission to the Diet (parliament) which would contain provisions for establishing limits on the amounts of such poisonous substances as cyanogen in waste matter at slag yards around the nation. The bill is expected to pass easily through the Diet.

This disaster most probably will provide strong support for recent recommendations by the Central Council for Control of Environmental Pollution (CCCEP) that new water pollution controls be adopted calling for water pollutants being restricted by quantity instead of density as at present in Japan. In the Council's report to Environment Agency Director General Hisanari Yamada it was emphasized that under existing controls it is impossible to attain environmental standards in some areas, particularly in waters having only a few outlets to the sea.

As a result, it is considered likely in Japan that new and stricter control measures to prevent contamination of offshore waters and inland seas will soon be introduced. Environment Agency officials predict that the major target of the legislation will be industrial plants.

Under the new legislation, if it finally is passed by the Diet, pollution sources will be permitted to discharge only a certain amount of pollutants based upon the total volume of these same or similar pollutants in the area. Council executives explained that they want the law to contain a provision setting up a permissible amount of pollutants for each area based upon specific environmental standards in the region which recognize the immediate danger in any locality.

A. E. CULLISON

UNEP Begins Major Study Of Kenya's Environment

NAIROBI—The United Nations Environment Programme (UNEP) based here has begun a major study of the environmental situation in Kenya—the first time UNEP has undertaken such an in-depth study aimed at testing basic concepts in the environmental field.

In conjunction with the Kenya Government, UNEP specialists will study trends in population growth and economic structure, and will prepare forecasts of future patterns of demand on the natural environment (for land settlement, farm development, rural and urban development, and health improvement).

UNEP is providing \$249,100 of the \$334,745 cost of the project. Specialists from the Kenya Government, technical assistance experts working in Kenya, private consultants, and university staffers will all take part.

Preparation has already begun on a detailed study covering Kenya's main environmental problems and identifying available data (and the gaps in available data). Later, the experts will analyze their findings and present a final report to the government in mid-1979.

Mr. Philip Ndegwa, a Kenyan economist who is UNEP's deputy assistant director, said the study would show how and why environmentally-sound development patterns should be followed. UNEP plans later to carry out similar studies in other parts of the world, using the experience gained in the Kenyan study project.

CHARLES HARRISON

OECD Recommends Refillable Bottles to Replace Throw-Aways

PARIS—The mounting volume of household waste in the developed countries is a source of great concern not only because it is a form of pollution in itself but also because it is expensive to collect and dispose of. One of the largest sources of such waste—up to 12 per cent—consists of emptied beverage containers.

Now the Environment Committee of the Organization for Economic Cooperation and Development (OECD), based here, has proposed and OECD's Council has recommended that Member governments take specific action to reduce the use of, and endeavor to recycle, throw-away containers, and to promote the use of refillable bottles, preferably in standardized size.

To implement the general recommendation, the Council evaluated various options:

- **A Ban on Non-refillable Containers**—Although this is the simplest option for governments wishing to encourage the use of refillable containers, it would not guarantee that the containers were in fact returned. Moreover, the simplicity of the measure—an obvious

advantage from an administrative point of view—might entail high costs of industrial dislocation if a large part of the beverage industry were already using throw-away containers.

- **Mandatory Deposits**—All containers would carry a refundable deposit. This measure would discourage the use of non-refillable containers because it would offset the convenience of the throw-away containers by making them more expensive for the consumer. It is less simple to administer than a ban, but its main advantage is that it is the litterbugs who would forfeit the deposit and thus pay for their own pollution. This measure would also create less dislocation than a ban because the adjustment would be more gradual.

- **The "Oregon Bottle Bill" Approach**—The 1972 Bottle Bill of the State of Oregon in the U.S., primarily designed to prevent litter, combines the advantages of ban and mandatory deposit and minimizes their drawbacks.

All beverage containers carry a deposit, and metal cans with detachable parts (i.e. the ring tabs which open many canned drinks are both dangerous and difficult to collect) are prohibited so as to reduce litter.

During the first year of the law's operation, the volume of beverage-container litter fell from 43 per cent to 19 per cent of total litter, despite a trend for littering to increase. Significant decreases were also noted in household solid wastes.

The success of this measure in Oregon is mainly attributable to the fact that there is a two-tier deposit, one at the consumer and one at the retail level. Thus there is a double incentive to return the bottle to the bottler.

- **A Production Tax**—To provide an incentive to producers to reduce solid waste, some experts have proposed that charges be levied at the time of manufacture to cover the cost of disposal.

The concept is an appealing one because the external costs of dispersal are "internalized" in the cost of production, and change is effected through normal market mechanisms rather than regulatory methods.

- **Standardization**—This would probably increase actual returns as well as the number of times a refillable bottle is used. Such a policy has been adopted with considerable success in several OECD countries. In Norway, for example, making beer and soft drink containers of a compulsory size has yielded a 99 per cent return rate, with the same bottle being refilled 35 times on average. The Norwegian Government believes that these advantages outweigh the system's inflexibility and its main drawbacks—that it is difficult to make improvements or cost-saving innovations in bottling without replacing the entire stock of standard containers, and that with such a system the shape of the bottle cannot be used as a marketing device to differentiate products.

- **A Litter Tax**—Reduction in litter has been achieved where such a system has been applied, and when funds have been provided for clean-up campaigns, but the tax had no marked effect on the use of different container systems nor, of course, on the volume of urban waste.

PETER DEWHIRST

In Brief...

Stricter Rules for Tankers Urged at LOS Conference

The United States has appealed at the United Nations Law of the Sea Conference being held in Geneva for stricter regulations to prevent ships from polluting the world's oceans.

U.S. Delegate Elliot L. Richardson made the plea in the wake of a series of break-ups by giant tankers that have fouled seas and coastal areas.

Richardson told delegates in a committee session that unless pollution regulations were tightened, it would not be possible to agree upon an international treaty on the law of the sea.

He specifically cited the recent disaster off the coast of France. The lesson of the "tragic accident" involving the Amoco Cadiz—the super-tanker that spilled a huge oil slick off the Brittany coast—was that all coastal areas must receive better protection against pollution, the American delegate declared.

Although the priority objective of the conference was to agree upon a convention acceptable as law, he continued, "unless the environmental and scientific research texts are improved they will not promote this objective and may well impede it." He urged a review of that part of the draft convention that eliminates the right of coastal states to impose punishments other than monetary penalties for pollution violations in their territorial waters.

"We agree," he said, "that further clarification of the coastal state's right to intervene in cases of a maritime casualty is desirable."

The seventh session, however, ended inconclusively after eight weeks, with the sticky issue of mining the minerals in the deep-sea bed remaining unresolved. The next LOS session is scheduled for August in New York.

Japan Moves to Protect Seto Inland Sea Habitat

Environmental protection is being extended to Western Japan's Seto Inland Sea, an area of about 8,500 square miles blessed with a rich natural habitat.

Although the area surrounded by the three main islands of Honshu, Shikoku and Kyushu was designated as Japan's first national park in 1934, Japan's economic boom in the late 1950s led to one-third of the nation's heavy industries—steel, petroleum refining, petrochemicals, and paper-pulp—being concentrated along the coastal areas of the Sea. This development had an adverse effect on the surrounding sea water and the marine life.

Recently, the government has taken a series of measures to upgrade that environment. These include the strengthening of controls on effluent, the limiting of the construction of factories, and the introduction of regulations on land reclamation. The government is also carrying out a project for halving the pollution loading amount, expressed in terms of chemical oxygen demand of industrial effluent.

Venezuela Proceeds With Completion of Guri Dam

The signing of the largest civil contract in Venezuela's history, \$1,209 billion for the construction of the final stage of Guri Dam, will result in the flooding of 4,250 square kilometers in Bolivar State when the height of the present dam on the Caroni River is raised to a total of 535 feet.

The project actually calls for the construction of an entire new dam on top of the present 10-year-old one. When complete, Guri will have an installed capacity of 9.5 million KW, more than double the nation's present capacity. The first two of ten new generating units should be ready

in 1982, and the rest by 1986.

Employing some 10,000 workers, the final stage will make Guri the second largest dam in the world, after the Itaipu project on the borders of Brazil and Paraguay (planned capacity 12 million KW).

Despite this giant leap in hydroelectric power, Venezuela is actively considering installing a nuclear power plant on the Caribbean coast, and a thermoelectric plant, to operate on heavy crude, is already under construction in Moron, on the coast.

Set Nation-Wide Pesticide Control for Colombia

The Colombian Agriculture and Livestock Institute has announced a nation-wide program for the control of pesticides in cooperation with the Agriculture and Livestock Development Fund. The program will include biological and ecological studies of the principal insect plagues in the country, plant varieties immune to such plagues and the introduction of seeds of such insect-resistant plants.

Laboratory studies also will be carried out to determine the resistance of insect plagues to traditional pesticides and pesticide residuals in foods. The long-term aim of the program is to develop biological alternatives to chemical controls through the use of insects beneficial to plant life.

China's Recovery Rate of Scrap Iron in Sharp Rise

China recovered 13.8 million tons of scrap iron last year, an increase of 12.3 per cent over 1976 figures. The statistics were released during a national conference on the recovery of waste metal recently held by the State Planning Commission in Honan province.

Sweden Funds Construction Of 48 Sewage Water Plants

Another \$10.2 million was distributed recently among Swedish communities as a contribution to 48 new sewage plants by the Department for Protection of the Environment. Several of the plants have already been completed. The total cost of the 48 installations is approximately \$22 million.

Since 1968, when the environment department was set up, it has distributed over \$326 million toward this work, with the result that sewage water of the entire Swedish population of eight million is being adequately treated.

Singapore Hotel Installs Solar Water Heaters

The Shangri-La Hotel of Singapore will be the first hotel in the island republic to install solar water heaters. The Solectra Pte. Ltd., recently awarded the contract, will soon install such heaters in the first three floors of the hotel. The rest of the hotel, including the new extension, will be fitted at later stages.

The daily average solar energy radiating on Singapore is equivalent to 250,000 tons of fuel oil. To put it another way, five days worth of solar energy is equivalent to the Public Utilities Board's energy use for all of 1977.

Filipino Engineers Develop Bamboo Boom for Oil Spills

Philippine Navy engineers have recently developed an anti-pollution device using bamboo and rice stalks to control oil spills. According to Lt. Florencio E. Reyes, Philippine Coast Guard Deputy Chief at the National Operation Center for Oil Pollution, the anti-pollution equipment, called

bamboo boom barrier, is simple to operate and can be used in collecting floating debris at sea or river banks. Reyes said the 350-foot-long device is towed by a coast guard cutter and anchored at the oil spill site. A "skimmer" is then used to siphon oil slicks scattered in the area. The bamboo barrier, with rice hay attached to it, is used to absorb any remaining oil spillage.

UK to Use Infra-Red Scans To Pinpoint Heat Loss

Some of Britain's largest industrial organizations will be contributing towards a government-sponsored research program to help pinpoint heat loss, and therefore reduce fuel bills, in industrial and commercial buildings.

The project is being coordinated by the Harwell Laboratory, Oxfordshire, and the \$85,000 cost will be shared by the Department of Energy and the consortium of industrial organizations taking part.

Three aerial surveys using infra-red scanning techniques will be made over large industrial areas in the South, Midlands, and North-West of England. The flights will be made at night to eliminate the reflection and warming effects of the sun, and will be scheduled at times of optimum weather conditions.

The emission of infra-red radiation picked up by the instruments aboard the aircraft will be collated with ground level information about inside and outside temperatures of the buildings and about wind temperature and humidity, to build up a "temperature map."

The immediate results should locate faults such as poorly insulated roofs or leaks from pipes carrying hot water or steam. As a long-term measure, the results should enable energy managers to calculate the most economic and effective methods of energy conservation, particularly where they have to deal with large areas of space heating.

Colombia Sets Hefty Fines For Coral Reef Destruction

Colombia's wildlife service INDERENA has announced fines of up to \$13,000 for destruction of coral reefs in the National Underwater Rosario Coral Park off the Caribbean coast. The chain of 20 islands near the seaport of Cartagena has been the scene of frenetic building activity in the past three years. Because most of the islands' land area has been filled by the vacation homes of Colombia's well-to-do, real estate speculators are now constructing man-made islands on the coral reefs to build more houses.

Part of the coral reef already has been destroyed by pollution and local fishermen using dynamite to catch fish. Large areas of mangrove also have been cut down for the construction of houses.

Thais Tighten Laws For Industry Polluters

The Thai Ministry of Industry will be given absolute power to order the closure of factories found guilty of pollution or operating without licenses, Deputy Industry Minister Boonying Nandhabhiwat said recently. Under the present legislation, factories found guilty of pollution or operating without licenses can be closed only on court orders. The new revised draft bill will give authority directly to the Ministry. Factories that fail to renew operating licenses will be fined 20-30 per cent of the normal license renewal fee.

Under the new bill, companies that agree to set up factories in the provinces will not be required to pay any fees, Boonying said. Factories using machinery of less than seven horsepower and employing less than 10 persons will also not be required to apply to the Ministry of Industry for permits. This is aimed at boosting household industries.



World Environment Report

12 JUN 1978

VOL. 4, NO. 11

Copyright © 1978. Center for International Environment Information.

MAY 22, 1978

Italian Ship Publicizes Marine Life Protection in Mediterranean

ROME—The Italian Navy and the World Wildlife Fund (WWF) have jointly launched a campaign to protect marine life in seven Mediterranean states. The schooner *Amerigo Vespucci*, training vessel of the Italian naval forces, is currently criss-crossing the central Mediterranean to publicize the audio-visual message in 17 ports.

The 4,000-ton tall ship, with a group of environmentalists aboard, will sail a total of 3,200 miles over a 10-week period. After visiting Genoa, Monaco, Toulon, and Cagliari in Sardinia, she dropped anchor in Tunis and Valletta (Malta) in late April, then goes on in May to Patras in Greece, Brindisi, and Split. That will be followed by visits to Venice, Trieste, Ancona, Catania, Naples, Civitavecchia, and La Spezia.

The environmental exhibition—displays, films, and lectures—aboard the *Vespucci* is expected to attract more than 100,000 visitors, primarily young people. Special trains will carry people from the hinterland to the ports of call. School teachers will get a special educational kit to be used in their lessons later in the year. The UN Environment Programme has provided a varied assortment of printed matter.

It is estimated that only once in 80 years is the water in the Mediterranean changed completely by the Atlantic streams flowing through the Gibraltar Straits. The Italian branch of the WWF estimates that, although anti-pollution legislation is being enforced both at the national and the international level, the almost closed basin is absorbing 795,000 tons of oil, as 350 million tons of oil (almost a quarter of the world total) are shipped through the Mediterranean. The sea is also polluted by the industrial waste and the untreated sewage of tens of millions of people living in coastal areas, a population that doubles in the tourist season.

The 30,000 member branch of Italy's WWF is spending \$350,000 in three years to promote the protection of the Mediterranean habitat along 5,000 miles of Italian shoreline. One of the contemplated actions is the establishment of marine parks in areas where endangered species live. Meanwhile, public institutions are promoting international rules to keep oil tankers a safe distance from the coasts, and they are bolstering law enforcing machinery to block the dumping of pollutants into the sea. WWF-Italy is also campaigning against overfishing by scuba divers that is menacing some species of grouper

and other big-bodied fishes. Sport fishing is now restricted to weekends and feast days in Italy. Another proposal is to outlaw underwater breathing equipment for sportsmen.

The cost of the \$50,000 educational exhibition aboard the *Vespucci* is being shared by the European Commission in Brussels, 91 Italian saving banks, and some shipbuilding and computer industries. The Italian Navy is bearing the sailing expenses for the crew of 150 officers and men.

VITTORIO PESCIALLO

Fisheries Scientists in Ireland Concerned Over Heavy Metals

CORK—Fisheries scientists of the Irish Government will shortly undertake an intensive monitoring program in the Irish Sea to detect trends in pollution levels, especially of heavy metals, a national conference on coastal pollution off Ireland was recently told in Cork.

Dr. Myles Parker of the Aquatic Environmental Unit, Irish Department of Fisheries, said that the Irish Sea had been selected for special study because of the elevated levels of heavy metals noted there. He emphasized that these slightly-raised levels posed no health hazards as yet. The Irish side of the sea was relatively clean, he said, but extensive pollution had been found on the British side, particularly around Liverpool Bay.

The investigation will concentrate on monitoring levels of such heavy metals as cadmium, copper, chromium, mercury, lead and, especially, zinc. Past investigations have shown that zinc is, perhaps, the main threat.

The fish concerned in the studies include cod, whiting, plaice, herring, and sprat. If elevated pollution levels are

In This Issue

Vehicle Regulation	2
Replenishing Wood Stocks	2
Negative Solar Report	3
Mercury Removal	3
Gulf States Treaties	4
OECD Energy Report	5
In Brief	6

found in these fish, action can be taken at an international level under the Oslo and Paris Conventions for prevention of pollution of the sea.

The fisheries scientists will also evaluate the sludge and chemical waste in Ireland's two offshore dumping grounds near Dublin and Cork. TOM MacSWEENEY

ECE Publishes Environmental, Technical Requirements for Cars

GENEVA—The United Nations Economic Commission for Europe (ECE) has published for the first time a collection of internationally agreed upon environmental and technical requirements for the construction of motor vehicles and their equipment and parts.

The introduction points out that not only European governments, but also those of Canada, the United States, Australia, and Japan, and the motor vehicle manufacturers of the main producing countries take part in the work of the Group of Experts, a subsidiary body of the ECE's Inland Transport Committee. The contents, therefore, represent the greatest possible measure of international agreement on the subject.

The two volume- compilation is entitled: Technical Requirements Relating to Motor Vehicles, Equipment and Motor Vehicle Parts. The first edition is in French; English and Russian editions are in preparation. The price is \$25 or equivalent in other currencies. It can be obtained by writing the ECE Secretariat, Palais des Nations, 1211 Geneva 10, Switzerland.

The ECE's 1958 Agreement and the regulations and technical annexes that have been issued over the succeeding years aim at removing obstacles to international trade in motor vehicles by eliminating differences in technical requirements from one country to another, to improve safety, and to limit the undesirable effects on the environment of noise and pollution from vehicles.

The publication has five sections. The first is concerned with environmental questions of noise, electrical interference, and exhaust gas pollution. This is followed by a section dealing with head-rests, safety belts, and protective measures in the cabs of trucks.

The various aspects of construction are covered in a third section that deals with 12 separate requirements: interior fittings; external projections; arrangements of pedals; protection of vehicle against unauthorized use; braking systems; safety belt anchorages; the strength of seats and their anchorages; strength of locks and hinges; construction features of public transport vehicles; prevention of fire risks; and the behavior of vehicles in cases of front-end and rear-end collisions.

The fourth section deals with lighting and signalling equipment, and the fifth with safety helmets for motorcyclists and their passenger, signals used to warn of breakdowns, and tires. WILLIAM G. MAHONEY

Venezuela Imports Pine Seedlings To Aid Declining Wood Stocks

CARACAS—Shortly after his recent appointment as Venezuela's Director of Reforestation, agronomist J.J. Cabrera Malo said that because of over-cutting, "there have already been cases of near extinction of our native species such as mahogany, cedar, and pardillo."

A total ban last year on lumbering in giant Bolivar State (238,000 square kilometers or one quarter of Venezuela) and a freeze on new logging permits in the rest of the country (by law logging must be accompanied by replanting) are a recognition of timber over-exploitation.

Cabrera Malo pins his hopes on commercial pine forests to relieve pressure on native species. In a pioneer project sponsored by the Venezuelan Guayana Corporation, Cabrera Malo developed more than 100,000 acres of Honduras pines in the arid savannas of Uverito, Monagas State.

Ten years ago he designed a machine with a capacity for planting 30,000 pine seedlings a day. During the upcoming rainy season, 18 such machines will plant an average of 500,000 seedlings per day in Uverito, well over 15 million per year. One hundred and eighty million trees will cover 350,000 acres upon completion of the Uverito project by 1984, when harvesting for pulp will begin (for wood, the target date is 1997).

According to Environment Ministry sources, the projected demand for wood in Venezuela will be three million cubic meters by 1980. The country today relies on imports of Canadian, U.S. and Chilean pine.

HILARY BRANCH,
LILI STEINHEIL

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$150 per year. \$20 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Jan De Pinto
Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

W. German Report Says Solar Energy Economically Unsound

BONN—Solar energy enthusiasts in West Germany were dealt a setback by a report recently issued by the German Federation of Heating, Air Conditioning, and Plumbing Technology, and financed by the Federal Ministry of Research and Technology. Their conclusion: within the reach of current technology, there is no prospect of using solar energy economically as a source of heat. The report went on to say that solar energy would not make a significant contribution to the total heat supply in the foreseeable future. Its maximum contribution to total energy supplies would not exceed two per cent by the year 2000, and there was no assurance that even that amount would be economical.

The Federation also warned the public against the large number of unreliable firms that had entered the solar energy field in recent years. Some of these speak glibly of "zero rates" for solar heat, without making clear to prospective clients what the true costs of solar energy collection and conversion are. Nevertheless, the report recommended that research in the field continue to be pushed in the hope that significant breakthroughs would emerge.

In the interest of conservation of energy and reducing air pollution, the Federation called for the expansion of district heating systems. Such collective technology has produced cheaper heat than individual heating plants which normally waste high-temperature condensations. In cases where power plant waste heat is inadequate, heat pumps may often be employed economically.

The report emphasized that old domestic heating plants are extremely wasteful of fuel and are a major cause of air pollution. In West Germany, it is estimated that at least two million such heating plants are ready for replacement, a move that would cut their owners' fuel bills by 20 per cent. While noting that proper insulation will also produce worthwhile fuel savings, rarely will it match that of an efficient heating plant.

A separate study prepared by the Federal Association of Solar Energy (BSE) confirmed the economic conclusions of the Federation. The BSE comprises 23 firms engaged in the manufacture and installation of solar energy equipment. It estimates that solar energy would not be able to replace oil as a primary energy source until its price had risen to about three times its current level.

Despite these discouraging reports, there is no lack of interest in West Germany in the utilization of solar energy. The Federal Ministry of Research and Technology is subsidizing a multi-million-mark research and development program. It has built seven conversion plants, including four residences, and is considering the building of additional ones, there being one recommendation that up to 1,000 solar heated houses be built. Some of those already built also employ heat pumps.

Other organizations active in the field include the German Research and Experimental Foundation for Air

and Space Travel (DFVLR), the Technical Supervisory Association (TUV), which is primarily interested in safety, the Association of German Engineers (VDI), and the Working Group for Solar Energy (ASE).

Several of these groups offered solar energy exhibits at the International Fair held at Hannover, while at the same time the VDI held an international solar energy seminar in Dusseldorf. Among the participants in the latter were the U.S. Department of Energy and a NATO energy study group.

J. M. BRADLEY

Swedes Devise Method for Removing Mercury From Waste Wood Fiber

STOCKHOLM—Sweden has found a way of making some progress toward cleaning up one of its oldest pollution problems—and making it pay as well.

For years great banks of sediment—a mixture of waste wood fibers and quicksilver run-off—have been building up in the watercourses outside paper mills. According to published estimates there are 8.5 million cubic meters of such fiber banks containing five tons of dangerous mercury.

The Department for the Protection of the Environment has long been interested in the possibility of removing these sources of mercury poisoning, one of the main reasons for blacklisting so many streams and bays as fishing grounds. The mills, in turn, saw a chance of recovering millions of tons of wood fiber which would be valuable in making paper and cardboard.

Consequently, Sweden's Institute for Research into the Car of Water and the Air (IVL) was commissioned to investigate. It developed a new technique that would sanitize the environment and also enable the recycling of a raw material.

The method, combining dredging and centrifugal equipment, has proved practical in Oerserum Bay near the Vaestervik paper mill on the Baltic Sea.

"It isn't only a question of dredging up the old banks of fiber and storing on land the sludge mixed with quicksilver," said Hampus von Post, the IVL project leader. "We also wanted to develop a method of separating out the fiber which still could be used."

"With a centrifuge, we obtain three streams, one with fiber, one with mud, and one with water," continued von Post. "In all three the quicksilver content remains acceptably low."

The Vestervik mill, in turn, succeeded in making cardboard useful for matching boxes from the fiber recovered from the sea bottom.

Encouraged by these results, IVL investigated the situation at another 30 mills and found that at least 12 had conditions suitable for the use of dredging in combination with a centrifuge to achieve similar results. The behavior of currents in the water plays a big role, von

Post explained, and the fiber banks themselves must be thick and the water no deeper than 15 meters to make the clearing out operation feasible.

SPECIAL DISPATCH TO *WER*

Gulf States Reach Agreement On Two Anti-Pollution Treaties

NAIROBI—After a ten-day conference in Kuwait, representatives of the Gulf states reached agreement on two anti-pollution treaties and on an action plan for environmentally-sound development in this area. Bahrain, Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates participated in the conference, which was convened by the United Nations Environment Programme (UNEP) and hosted by the Government of Kuwait.

The delegates agreed (1) to establish a marine emergency mutual aid center in Bahrain, to coordinate action against oil spills; (2) to create a regional trust fund of \$6.3 million; and (3) to set up in Kuwait a regional organization to manage the Action Plan.

Under the first of the treaties, the signatories pledge to prevent, abate, and combat pollution from ships, from the dumping of wastes, and from the land in all forms. The second treaty calls for cooperation in dealing with pollution from marine emergencies, among them tanker collisions and blow-outs caused by oil drilling.

Around a billion tons of oil (60 per cent of the world's ship-carried volume) originates in the Gulf. There are also 20 existing or planned major industrial centers along the coast.

The Action Plan for the Gulf was described by Dr. Mostafa K. Tolba, Executive Director of UNEP, as aimed at reconciling the environmental and developmental needs of the region. For example, he said, it provides for coordination in national water management policies and practices, and for common progress to develop solar energy and aquaculture.

One of the principal tasks of the Plan is the establishment of a permanent pollution monitoring system. This will assess the origin and magnitude of oil pollution, and will study the effects of pollutants on human health and on marine ecosystems.

A UNEP spokesman said the Plan puts more emphasis on applied research and development rather than on academic research. One such effort will involve the strengthening of marine meteorological services for the entire Gulf area.

Marine pollution in the Gulf primarily affects coastal areas, and is accentuated by the fact that the Gulf, although over 700 miles long, averages a little over 115 feet deep—while waters less than 32 feet deep stretch for many miles offshore. The sea is very salty and warm, and has a limited capacity for breaking up and absorbing industrial waste and urban sewage.

Dr. Abdul Rahman Abdullah Al-Awadi, Kuwait's Minister of Public Health, presided over the meeting. He warned that the Gulf is the only body of water which receives the waste and residues of industrial and urban activities in the eight states. "This obliges us to make a special effort to protect it, because it is the only source of our drinking water, besides being our principal place for recreation."

The two treaties will come into force when they have been formally ratified by five states; this is expected to take one to two years. But work on the cooperative programs approved at the Kuwait conference is to start without delay.

UNEP is to provide a secretariat for the Action Plan, until a regional organization for the protection of the marine environment is set up. Dr. Tolba said UNEP would provide up to \$500,000 in 1978 and 1979, on the assumption that the states themselves assume financial responsibility later.

The eight governments are expected to contribute \$5.8 million over the next few years. CHARLES HARRISON

Peking Tightens Environmental Rules for Polluting Factories

HONG KONG—At first, farmers in the Wangszuying People's Commune on the outskirts of Peking were puzzled by their crop problems. Wheat was not growing properly. Fruit trees did not bear. Sunflowers, rape, and other oil-bearing crops flowered but yielded no seed.

It didn't take long to find the source of their problems. The trouble was caused by the Peking Coking Plant and Peking Dyestuff Plant, which had been pouring large amounts of poisonous waste into three streams that provide the commune with irrigation water. Moreover, smog and gas from the two plants blackened the air, not only adding to the problems of crop growth but also causing a serious increase in disease among commune members.

Complaints to the factories resulted in payment for the commune losses but little was done to eliminate the problem of plant pollution until some of the commune members wrote to the Peking Municipal Environmental Protection Office.

As a result of these 200-odd letters and action taken directly by the office without public protest, more than 100 factories and plants in Peking have now been put "under censure" by the environmental authorities.

Peking Radio's report on the pollution problem did not explain precisely what is meant by "under censure," but it did say that plants were being required to update technological processes, do more recycling of waste materials, take steps to reduce noise, and institute other measures that do not require large-scale capital expenditures. SPECIAL DISPATCH TO *WER*

OECD Report Stresses Need For Balanced Energy Policy Decisions

PARIS—A report recently issued here by the Organization for Economic Cooperation and Development (OED) says that energy conservation measures have contributed to significant environmental improvements in urban areas. But it stresses the need for energy policy decisions to strike a balance between all relevant elements, such as economic, security of supply, and environmental considerations.

The cost of energy to the consumer, for example, might rise between three and twelve per cent for reducing sulphur oxide pollution and emissions of particulate matter. Such environmental costs should be included in the costs of energy, says the OECD.

The OECD report, titled "Environment and Energy Use in Urban Areas," was prepared as part of an overall study on energy related environmental issues by an OECD Task Force on Energy and Environment. It is addressed primarily to those involved in formulating environment and energy policies at local, state, and central government levels and although the conclusions of the study have general applicability for all OECD member countries, the OECD Secretariat points out that national priorities for policy action will, of course, differ.

The report welcomes recent changes in marketing practices and rate structures to encourage the efficient use and savings of energy, and recommends, for example, the introduction of energy efficiency labelling for all major consumer appliances. It advocates the development of land use policies which could lead to energy savings—a long term goal here is a saving of three per cent—while the promotion of rational energy distributions systems such as district heating could help to meet environmental requirements.

The OECD study, its second on the relationships between energy and environmental objectives, provided the basis for recommendations by the OECD Council for further action in OECD Member-countries to reduce the adverse environmental impact of energy use in densely populated areas. Among several primary factors taken into consideration by the Council were: that the products of combustion, produced in providing energy for the household and commercial sectors, contain noxious substances such as sulphur dioxides, nitrogen oxides, and particulates, which are health hazards; and that increasing energy consumption in the household and commercial sectors contributes significantly to total energy use and that there is a need for policy action to reduce adverse environmental impacts from energy production and use in areas of high population density.

The recommendations of the OECD Council are:

- Management of energy demand should be a major element of combined environmental and energy policies in the household and commercial sectors.
- Effective energy conservation measures, which provide specific environmental benefits, taking into account eco-

nomical and social costs, should be selected and given priority.

- The energy distribution system and the utilization of clean fuels in high density urban population areas should be progressively improved to meet environmental requirements.
- Land use planning for urban areas should formally incorporate an evaluation of environmentally desirable energy systems such as district heating, and of urban designs which might lead to the reduction of the environmental impact of energy use.
- Public information programs be implemented that stress the environmental benefits of energy conservation.

In implementing these recommendations, the report urged adherence to these general conclusions: Management of energy should be compatible with environmental objectives; energy pricing policies should take account of environmental costs; financing arrangements for the retrofitting of existing buildings and the long term development of district heating should be facilitated; increased thermal and lighting efficiency in new commercial and public buildings and new residences should be introduced through changes in building codes; comprehensive public education programs should be provided on the economic and environmental benefits of improved energy use and conservation.

PETER DEWHIRST

Iron Ore Dust at Madras Harbor Creates Severe Health Hazards

NEW DELHI—A recent governmental survey of metallic dust pollution has found that 83 per cent of the people living in the Madras Harbor area complained of health hazards including infection of skin and eyes; 81 per cent said their food was rendered unfit for consumption because of dust particles; 83 per cent said their clothes took on a reddish hue because of the iron content; and 74 per cent complained about property damage.

Physicians in the area said there has been increased incidence of bronchial asthma, allergic reactions, skin infections, and conjunctivitis, and an increased likelihood of tuberculosis, silicosis, and bronchial carcinoma.

The chief cause of these complaints and ailments arise from the handling each year of 2.3 million tons of iron ore at Madras Harbor. The Department of Environmental Engineering in Guindy (Madras) and the National Labor Research Institute are working on a program to find out how best to suppress the dust. The local joke is that Indians are being slowly converted into "Red Indians" by iron dust and at every meeting they sing Martin Luther King's song: "We shall overcome."

As an interim measure, the port authorities are sprinkling water on the iron ore until anti-pollution equipment is installed to suck the dust at all transfer points.

R. MURALI MANOHAR

In Brief . . .

World Bank Loan to Algeria For Huge Sewerage Project

The World Bank has approved an \$82 million loan for its first sewerage project in Algeria. The government is providing another \$72.21 million.

The \$154.21 million project consists of the construction of combined sewer interceptors, the first stage of a sewage treatment plant, and technical assistance to Societe des Eaux de l'Agglomeration d'Alger (SEDAL). It aims at helping the government achieve its objective of reducing water pollution and its associated health hazards in the capital city of Algiers.

The project's benefits include improvement of public health, provision for storm drainage and flood protection, increased use of the land near the river, employment generation, improved environmental esthetics, and the use of the river and the bay for fishing and recreational activities.

Japanese Experiment With Powerful Windmills

The Nippon Telegraph and Telephone Public Corp. of Japan (NTT) and Tokai University have recently begun full-scale tests on the utilization of wind power. As with solar energy, the key problem in the utilization of wind power is how to capture large amounts of what is inherently low-density energy.

NTT's experiments involved two kinds of windmills. The first was a horizontal-axis propeller type with a diameter of 26 feet installed on a 34-foot tower. Power can be generated in winds of up to 65 feet per second.

In the vertical-axis Darrieus-type windmill, the maximum usable wind velocity is 45 feet per second. A shortcoming of the Darrieus wind-

mill is that the wind alone will not set the blades in motion, necessitating a built-in anemometer and motor unit to start the blades rotating.

These two windmill generators are currently the largest in Japan, with an output of 500 watts in a weak wind of 15 feet per second, and a maximum of about two kilowatts in a wind exceeding 25 feet per second. The rotation of the blades is automatically brought to a halt if the wind velocity exceeds the design specifications, and the blades are constructed to resist even typhoon winds of up to 198 feet per second.

Sweden to Get First Plant For Reclaiming Solid Waste

Sweden's first commercial plant for the mechanical recovery of valuable materials from municipal solid waste—scheduled to go into operation in Stockholm in 1980—will be based on a resource recovery system developed by AB Svenska Flaktfabriken (Flakt), Parent Company of the multinational Flakt Group.

According to Lars Olsson, president of Flakt, Inc., Old Greenwich, Connecticut, which markets the system in the U.S., the Stockholm plant, when fully operational, is expected to reduce by 50 per cent the 75,000 tons of waste incinerated there annually.

The system is based on the dry recovery process, which involves the use of air as a medium. Materials are separated by air classification as the key step in the process.

According to Olsson, the system makes it possible to recover 75 per cent of all paper, two-thirds of all plastics, and 90 per cent of all ferrous metals in household waste. An organic residue of 25 per cent by weight constitutes an excellent raw material for compost. The remaining material contained in the waste, about 20 per cent by weight, is incinerated.

Pakistani Scientist Urges Turning Waste into Protein

"Conversion of huge amounts of agricultural and industrial wastes to biomass can provide protein-rich food which can be used either as animal feed or directly consumed by human beings. Some of the agricultural wastes available in Pakistan can also be successfully converted into power or into alcohol to replace gasoline."

These observations recently were made in Islamabad by the Chairman of the Pakistan Council of Scientific and Industrial Research (PCSIR), Dr. A. Ghani, at a three-day CENTO symposium on biological conversion of Agro-Industrial Wastes into Food and Feed Stuff.

Dr. Ghani said Pakistan currently produces around 25 million tons of agricultural waste and many more million cubic metres of industrial waste. Turkey and Iran have similar problems in agricultural wastes and refinery bi-products respectively, he added.

Reclaim Land in Buenos Aires To Form Ecological Belt

The government of the province of Buenos Aires in Argentina has expropriated 800 hectares of waste land in the district of San Martin, north of the city of Buenos Aires, on the left bank of the Reconquista River. This land, plus other parcels, is destined to become part of an ecological belt to be built around the Argentine capital.

Work on the project first began in the northern sector of Buenos Aires province in the lowlands of the Bancalari district where land-filling operations take in as much as 900 tons of the capital city's garbage per day, thus gaining two hectares of usable land every month. The newly filled areas are to be turned into parks and recreation areas.

Philippine Oil Co. Locates Big Geothermal Reserve

Pablo Malixi, Philippine National Oil Company (PNOC) Vice President for energy exploration and Director of PNOC-Exploration Development Corporation, has announced that surveys and tests conducted in the mountain area of Palinpinon-Dauin, Negros Oriental, indicate the presence of a big geothermal reserve. Actual production work, he says, will start before June.

Malixi also pointed out that the Philippine Department of Energy will attempt to generate 1,300 megawatts of geothermal power by 1985. To achieve this goal, at least \$1.3 billion will be needed. Despite the great cost, geothermal development is still cheaper by 20 per cent and 80 per cent respectively than the development of oil-fired power generating plants and nuclear energy.

Seoul Copes With Traffic And Han River Pollution

Koo Ja-choon, Mayor of Seoul, South Korea, recently described the city's future projections as "an ambitious blueprint of city planning to rescue Seoul from the worsening environmental problems toward which the city is sliding." Koo pointed out that traffic jams and environmental contamination are the most urgent problems. To ease traffic congestion, the government plans to complete the whole subway system, including the third, fourth, and fifth lines, by the end of 1995. In addition, two trunk roads, linking the northern part of Seoul with the south, are expected to be completed by the end of this year.

As for environmental pollution, it has been ascertained that the degree of contamination of the Han River is now above the permissible extent set by the World Health Organization.

This finding has led the city to establish an activated carbon filtering system, the first to be introduced in the country, which will absorb harmful organic substances that cannot be eliminated by normal precipitation filtering systems.

Claims Hunters Help Rather Than Harm the Environment

Environmentalists and hunters are often considered natural enemies. Thus eyebrows were lifted recently in Munich when the annual assembly of the Bavarian Hunters Association invited the State's Minister for the Protection of the Environment, Alfred Dick, to be the guest speaker. When Dick spoke, the surprise was even greater.

Hunters, he declared, are partners in the overall effort to protect the environment. In the true meaning of the word, Dick stated, hunting is not a hobby, nor a sport, but a legal task and obligation towards society.

The objective of modern hunting legislation, he pointed out, is the protection of nature. He stressed that conservation had many aspects including maintenance of a healthy game stock and the countryside in which it can live, as well as avoidance of unbearable damage caused by game to agriculture and forestry. Hunting and environmental protection thus go hand-in-hand Dick stated.

The threat to species, he said, stems not from whether or not the game is legally protected. The decisive factor, he continued, is biotype poverty—inroads made by economic and technical developments. He cited the overbuilding of the countryside, which to an increasing degree is destroying cover and food sources for game; uncontrolled recreation traffic which disturbs and frightens game; pollution that drives water-dependent game away; and the chemicals that have affected soil and plant growth.

Pesticide Storage Found Problem on British Farms

Britain's most serious incident of pesticide pollution may lead to legislation regulating the storage conditions for pesticides on farms.

The main water supply to the city of York was recently cut off for nearly twelve hours following a fire in a farm shed containing pesticides, including paraquat. Firemen's hoses washed these into a ditch connected with the River Kyle, one of the sources of the city's water supply.

A British Standards (non-mandatory) code of practice is issued to farmers advising them how and where to store pesticides. The National Farmers Union would like stiffer regulations but thinks legislation would be impracticable in such a fragmented industry. The Farmworkers Union thinks the incident illustrates the increasing dangers to which their members are exposed. They are expected to call for compulsory medical checks.

Anti-Pollution Provisions Required for Bank Loan

Argentina's National Development Bank (Banco Nacional de Desarrollo—BANADE), concerned over the level of industrial pollution in this South American country, has inserted an ecology clause into its industry and mining loan contracts.

From now on, any company undertaking a mining or industrial project and seeking a BANADE loan will have to include adequate anti-pollution provisions in its plans.

BANADE officials, however, do not draw the line there. The bank is also offering to finance up to 100 per cent of the cost of cleaning up already installed industrial complexes. It will grant loans payable in eight years at an interest rate of 5.25 per cent a year to companies that will use the money to install treatment systems for their waste.

Recycling Association for All Asia Formed in Manila

The first Asian Recycling Association has been formed in Manila to promote recycling and non-waste technology throughout Asia. It is represented by recyclers from Pakistan to Korea and Hawaii to New Zealand, and will publish a newsletter plus conduct a waste materials exchange.

Mexico Developing Two New Biosphere Reserves

The Instituto de Ecologia of Mexico is developing two biosphere reserves—La Michilia and Mapimi—in the State of Durango. The La Michilia reserve is being created in a dry oak pine forest in which intensive work has been performed in the peripheric area to improve rural conditions. The Mapimi reserve is located in the desert where a new laboratory is conducting studies on animal population dynamics.

UK to Finance Wind Power In Developing Countries

A feasibility study into the use of wind power for agriculture in developing countries is to be financed by Britain's Ministry of Overseas Development (ODM).

It will be carried out by the Thermal Power Group of the Cranfield Institute of Technology, Bedfordshire.

Because developing countries are least able to pay the higher fossil fuel prices, they can not expand their use of conventional agricultural technology to improve production.

The Group will study both the power requirements of such developing countries as Zambia, the Sudan, Upper Volta, Yemen, and Korea, and

the designs of windmill most suited to them. By studying local wind conditions, the Group hopes that windmills of simple design can be put to use for activities like grinding corn, drying grain, and pumping water for irrigation. Those with few working parts would need little maintenance and be unlikely to break down.

Windmills that could provide power for small workshops will also be looked at, but these would require a more sophisticated design to provide a constant energy supply through storage batteries.

The Thermal Power Group will collaborate with the Overseas Department of the ODM-financed National Institute of Agricultural Engineering, and their research findings will be recorded in an information bank which can be drawn on by developing countries.

Philippines Seeks New Oil and Coal Deposits

Efforts are underway in the Philippines to exploit native sources of energy. The Department of Energy has intensified the search for oil in Central Luzon and coal in Cagayan and Panay, and has recently awarded a service contract to Houston Oil and Mineral Corporation for the drilling of nine wells in potential oil reservoirs in Central Luzon. The drilling program will take seven years at an estimated cost of \$8.5 million.

Meanwhile, a non-exclusive coal exploration permit has been granted to the Utah Exploration Inc. covering the Cagayan and Panay basins. Both basins were pinpointed in an earlier survey as potential areas of large coal deposits, and the present activity will actually identify specific economic-size coal blocks for exploration. The demand for coal in the Philippines is anticipated to increase dramatically with the planned conversion of several cement plants from oil to coal.

Japanese Agency Studies Filipino Mine Wastes

The Japan International Cooperation Agency (JICA)—a semi-government body extending technical assistance to developing countries—is expected to undertake a feasibility study of a pipeline project for the disposal of mine wastes (tailings) from the Baguio mining district of Benguet to the Lingayen Gulf (Pangasinan) in the Philippines.

According to Ajrushigee Yoshida, JICA Resident Representative to the Philippines, the project will include the building of a dam-like structure to collect mine tailings from at least four of the six major copper producers in Benguet and the laying of a long pipe to convey the wastes for dumping into the Lingayen Gulf. A 13-man JICA mission has visited the project site and a final report on their investigation is expected to be submitted to the Philippine government shortly.

Number of Pollution-Causing Factories Rises in S. Korea

The South Korean Ministry of Health and Social Affairs has announced that about 23 per cent of 7,055 pollution-prone factories surveyed in early 1977 were found to emit more pollutants than permitted. According to the Ministry, the number of pollution-causing factories has been on the increase in recent years. In 1972, 8.8 per cent of the factories were listed as pollution-causing, and rose to 13.2 per cent in 1974 and 21.4 per cent in 1976. However, the number of pollution-causing factories actually penalized has declined in recent years. In 1975, 126 licenses of such factories were cancelled. This dropped to 73 in 1976 and 63 in 1977. The number of factories ordered to suspend their operations also declined from 118 in 1974 to 90 in 1977.



World Environment Report

22 MAY 1978

VOL. 4, NO. 10

Copyright © 1978. Center for International Environment Information.

MAY 8, 1978

Environmental Specialists Confer In Stockholm on Toxic Substances

STOCKHOLM—Environmental specialists from 16 industrial nations and several international organizations met here recently and agreed on at least four priorities in connection with international cooperation in the control of toxic substances (*WER*, April 10, p. 4).

The list on what needs to be done internationally includes: development of uniform standards for laboratory work and effective means of enforcing them; development of consistent data requirements and testing methods including risk limits; mechanisms to facilitate the exchange of information relating to toxic substances and administrative actions; and a need to examine the problems of confidentiality of data to ensure international exchange of information on toxics and to provide adequate protection for legitimate trade secrets.

The conference, which discussed the issues and problems for three days from April 11 to 13 at Haesselby Castle just outside Stockholm, also agreed to request the Organization for Economic Cooperation and Development (OECD) to set up a special steering committee to coordinate the work among the various countries.

Delegates to the conference came from Australia, Austria, Belgium, Canada, Denmark, West Germany, Finland, France, Italy, Japan, The Netherlands, Norway, Switzerland, Great Britain, the United States, and the host country Sweden. Aside from the OECD, representatives attended from the UN's Economic Commission for Europe (ECE), the UN Environment Programme (UNEP), the International Labor Organization (ILO), the World Health Organization (WHO), and the European Community.

The conference was held at a very opportune time, a spokesman told a news conference, because a number of countries currently are preparing new legislation dealing with the regulation of toxic chemicals.

Another source also emphasized that the timing of the conference was important because many countries already have made some individual progress in controlling toxics. However, he added, "If that work isn't coordinated internationally, it could lead to unnecessary waste of the scanty resources." Director General Valfrid Paulsson, of Sweden's National Board for Protection of the Environment and the conference host, told newsmen that the most concrete result of the meeting was promises from several countries to provide increased financial

support to the OECD to strengthen the work in the field of chemical controls.

Even before the conference opened, Swedish environmentalists had emphasized that the meeting would be "informal" without making any clearcut decisions. In the main, they said, the get-together gave the delegates an opportunity to identify practical and mutual problems, promote cooperation in legislating on toxic substances, discuss what tools to use on the international level, exchange practical experiences in chemical control, and express views on how common problems could most suitably be solved on the international level.

Douglas M. Costle, Administrator of the U.S. Environmental Protection Agency (EPA) led the American delegation which included Steven D. Jellinek, Assistant Administrator for toxic substances in the EPA, and Dr. Donald R. King, Acting Deputy Assistant Secretary for Environmental and Population Affairs in the Department of State.

SPECIAL DISPATCH TO *WER*

New Permanent Headquarters Chosen For All Kenya-Based UN Groups

NAIROBI—Permanent headquarters for the UN Environment Programme (UNEP), the new Commission on Human Settlements (HABITAT), and also accommodations for other UN organizations operating in Kenya, is due to be constructed on 100 acres at Gigiri, five miles from the center of Nairobi, by 1982. The UN General Assembly recently approved proposals for the project, with a target cost of \$24 million.

Dr. Mostafa K. Tolba, UNEP Executive Director, interviewed at his headquarters at Gigiri, explained that

In This Issue

Toxic Chemicals Bulletin	2
Cadiz Oil Spill	3
Ecology vs. Obsolescence	3
Environment Manual for Industry	4
Waste Recycling	5
Air Pollution in Bombay	5
In Brief	6

the new UN Center would take the place of temporary buildings now occupied by UNEP. UNEP began operations in 1973 in Nairobi's Kenyatta International Conference Centre, in offices made available by the Kenya Government. In 1976, UNEP moved to the Gigiri site, where new (but temporary) office buildings had been constructed for its use; the UNEP Headquarters currently consists of a series of two-story office blocks, set in landscaped surroundings which in turn are surrounded by acres of growing coffee.

One of the considerations for the new headquarters to be built by 1982 is that they, too, shall be environmentally sound. Since no space heating is needed in the Nairobi climate, this simplifies the tasks of the architects who will design the new headquarters, but they are also expected to avoid high rises and to utilize the aesthetic attractions of a semi-rural setting where buildings can be surrounded by flowers and shrubs. The present temporary headquarters has a small car park for each office block, avoiding the need for a massive central parking area and making for easy access to each working area; this principle is expected to be used in the eventual permanent plan.

For the present, there is no accommodation on the UNEP site for HABITAT, and the HABITAT staff will be housed in the Kenyatta International Conference Centre.

Dr. Tolba said that "The permanent headquarters plan is to be very simple, with no high rises—two or three stories at the most. Every possible means will be used to conserve the environment. We want an environmentally-sound building, as a showpiece for what UNEP is advocating."

In addition to offices, the new headquarters will contain conference rooms for the UNEP Governing Council and the Habitat Commission.

Of the \$24 million already approved by the General Assembly, \$4 million is available during 1978/79 to cover the cost of final drawings, and the advance purchase of some necessary equipment.

"We hope the final drawings will be ready by June, 1979," Dr. Tolba added. The plan is likely to involve a central core with a number of wings, with provision for additional wings to be added later if these are needed. The final shape of the buildings, however, is still under consideration.

Questioned on Habitat's future, Dr. Tolba said it would have its own governing body, and would involve the transformation of the existing UN Centre on Housing, Building and Planning (CHBP), which would move from New York to Nairobi, probably this July or August. The Human Settlements Foundation is already operating in Nairobi (*WER*, Aug. 1, 1977, p. 5). An Executive Director for Habitat has still to be appointed.

Welcoming the decision to site Habitat alongside UNEP, Dr. Tolba said: "My attitude is that these are both parts of the human environment—there should be very close links between UNEP and Human Settlements."

CHARLES HARRISON

UNEP's New IRPTC Bulletin To Provide Data on Toxic Chemicals

GENEVA—The United Nations Conference on the Human Environment, held in Stockholm in 1972, recommended that the United Nations, with the active support of Governments and appropriate scientific and other international bodies, develop plans for an International Registry of Data on Chemicals in the Environment. The Register was to be based on available scientific data on the environmental behavior of the most important man-made chemicals, and would contain production figures on the potentially most harmful chemicals, together with their pathways from factory, through use, to ultimate disposal or recirculation.

Since then, considerable progress has been made by the United Nations Environment Programme (UNEP) towards making the Register operational. In 1976, a Programme Activity Centre was established for the International Register of Potentially Toxic Chemicals (IRPTC) at WHO Headquarters in Geneva, with one of the main objectives being to facilitate access to existing data on effects of chemicals on man and his environment.

To help achieve this objective, UNEP is now publishing the *IRPTC Bulletin* semi-annually. Inquiries about the Bulletin should be addressed to: The Director, International Register of Potentially Toxic Chemicals (IRPTC), United Nations Environment Programme (UNEP), c/o World Health Organization, Room L 32, Avenue Appia, 1211 Geneva 27, Switzerland

SPECIAL DISPATCH TO *WER*

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$150 per year. \$20 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Jan De Pinto
Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

Amoco Cadiz Oil Spill Effects May Last 10 Years, Says German Study

BONN—Although the surface pollution resulting from the March breakup off the coast of Brittany of the oil tanker Amoco Cadiz is gradually disappearing, a study prepared by Drs. Olav Giere and Olaf Pfannkuch of the Zoological Institute of the University of Hamburg concludes that the effects of the oil spill might well last for as long as ten years, not only along the seacoast but at substantial depths as well. Their conclusions are supported by a study of Dr. Giere's of a smaller spill near the Spanish port city of Coruna in May, 1976.

In that case, investigating to depths as great as 180 feet, he found that minute oil particules settling slowly to the sea bottom were taking a heavy toll of microorganisms, to the impairment of the entire food chain. A second effect he observed was that while oysters and mussels, for example, were able to survive substantial amounts of oil contamination in the water, their ability to reproduce was drastically reduced. This effect of the spill became evident only a year or two after the event. He expects the same sequence to follow in the case of the Amoco Cadiz spill.

The two Hamburg researchers expressed the view that the effect on microorganisms would be even more severe. As these were either killed outright or made incapable of reproduction, the entire food chain in the polluted area would be disrupted to the detriment of other organisms that had not been directly injured by the oil.

In the Brittany area, inhabitants of the coastal strip are unwittingly compounding the damage already caused by gathering excessive quantities of seaweed which has a ready market in the cosmetics industry. Deprived of their normal livelihoods of fishing and working at resorts, many who had never done so before are now harvesting seaweed and other algae for income. The thinning out of this growth is destroying the habitat of a wide variety of marine life, thus, directly and indirectly, cutting into the available supply of food.

J.M. BRADLEY

Try New Ecologic Approach to Industrial Obsolescence in UK

LONDON—An experiment in inner-city regeneration in a northern England industrial town has attracted so much attention from environmentalists and settlements experts at home and abroad that the local Borough Council has printed its own report—"Industrial Obsolescence, The Rochdale Approach"—the demand for which they describe as "overwhelming."

Rochdale, Lancashire, was once a center of the textile industry spawned by the industrial revolution of the 18th and 19th centuries. The legacy of this is a town center containing soot-black mill chimneys, derelict and obso-

lete buildings, and a choked and polluted canal system. In 1975, with the textile industry dwindling still further, its unemployment rate exceeded the national average.

Wholesale redevelopment was economically impossible, but Rochdale planners also questioned its benefit to community and environment. They decided to apply to areas of industrial obsolescence the area-based improvement techniques already tried by housing authorities.

From 1974 to 1976 a plan was formulated under the leadership of Borough Planning Officer, Roger Hargreave, and Industrial Development Officer, Geoff Mallinson. They chose for their pilot project the Crawford Street area, one mile from the town center, containing 51 hectares of land and some 50 firms.

The strategy consisted of a three-point action plan: building on derelict sites; rehabilitation of existing premises; and landscaping and generally improving the environment. By thoroughly mapping the areas they hoped to pinpoint local needs street by street and building by building. Opinion surveys and questionnaires helped ensure interest and participation by residents, workers, and executives.

Rochdale Metropolitan Borough Council decided to allocate one per cent of its annual budget for 25 years to improvements in the local environment. The planners made full, ingenious use of every relevant type of grant available through central and local government. These included aid for land reclamation, building improvements, industrial developments, and anti-pollution devices.

A wide range of local authority and voluntary services have also been involved or co-opted. Many local industrialists and businessmen, for example, were persuaded to invest money in regenerating or expanding their businesses.

Now that the program has been gently rolling forward for two years, some visual amenities have certainly improved—decorated gable ends of houses by local artists, shrubs giving advertisement to the local nurserymen, canal stretches cleared by unemployed under the Government's Job Creation Scheme. When they began landscaping a park, a brewery was persuaded into seeing its potential for increased patronage and invested \$130,000 in the local pub.

All is not plain sailing, however, since environmental and industrial interests easily conflict.

Roger Hargreave's modest aim is a 20 per cent improvement in the environment. By replacing largeness of expenditure with the snowball process of self-help, by trying to bring public action down to human scale, the program has certainly aroused interest and approval.

Whether it will all be anything more than an admirable local exercise will be assessed shortly. The Department of the Environment is financing a \$61,000 contract to evaluate the economic and physical impact of the pioneer experiment at Crawford Street. If it is favorable, there are many other areas of industrial obsolescence in the north of England anxious to learn from Rochdale.

BARBARA MASSAM

Tokyo's Environment Bureau Issues Anti-Pollution Manual for Industry

TOKYO—After three years of research, the Tokyo Metropolitan Government's Bureau of Environmental Protection has issued a manual for use by industry executives in their efforts to reduce operational pollution. Titled "Anti-Pollution Technical Manual," the document gives guidelines for controlling pollution and provides for periodic inspections of industrial facilities.

The manual states that metropolitan anti-pollution experts will henceforth regularly monitor all industrial and manufacturing procedures to determine whether the guidelines are being followed. Visiting specialists will be empowered to order companies to correct their polluting practices within a reasonable time.

Tokyo's manual, based on extensive research conducted by the Social Engineering Institute, a private study organization, covers 43 types of industries. It outlines procedures to be used to pinpoint pollution sources in various operational phases and advises on ways to trace pollution back to its original sources. The publication also prescribes ways in which Japanese companies can halt the pollution.

In addition to waste pollution, the manual considers smoke, odor, water, and noise pollution. Changes in the layout of plants, for example, are suggested as one way of reducing decibels.

The manual, which reinforces the Tokyo Metropolitan Anti-pollution Ordinance and its new standards, has been distributed citywide to individual corporations and industry associations plus all local administrative entities. Officials of Tokyo's Bureau of Environmental Protection believe that when the procedures outlined have been fully carried out there will be a radical reduction in almost every area of industrial pollution. However, that may take some time because many of the corporations involved are still suffering from the prolonged economic recession.

Nevertheless, the detailed and highly technical manual should prove invaluable to the more than 100,000 companies and organizations in the capital and its immediate surrounding areas. Even for those plants which have successfully eliminated or drastically reduced pollution over the last few years, it should prove of great interest because it makes Tokyo's environmental regulations explicit and tends to tighten up previous laissez faire attitudes and ambiguities in interpretation.

City authorities have hinted that they expect corporations in their jurisdiction to consider the manual as removing all excuses for lax attitudes. They have emphasized, for instance, that in Tokyo (as in many other cities throughout the world) there are many firms that make special efforts to pass inspections and do so with flying colors. But, they charge, at times between inspections company executives tend to pay little if any attention to pollution control efforts.

A.E. CULLISON

ECE Meeting in Geneva Urges Control of Toxic Substances

GENEVA—United Nations environmental experts agreed here recently on the urgency of halting the spread of potentially toxic substances and on the need for control of toxic wastes.

The experts were taking part in a meeting of Senior Advisors to the Economic Commission for Europe (ECE). In a report to them, the ECE Secretariat referred to the massive application of an increasing number of chemical substances that have created a serious threat to the environment and human health. There was an international consensus that toxic chemicals and waste materials had to be brought under control, an ECE spokesman said.

The Senior Advisors suggested during the debates that the prevention of further deterioration of the environment should be taken as a principle. They emphasized the importance of developing alternative products and processes, and felt that special attention should be given to legal and economic incentives to promote new technologies.

In dealing with the problems associated with the disposal of toxic wastes, it was felt that international cooperation was desirable in developing methods for their treatment, safe disposal and storage, re-use and recycling. There was particular concern over the increasing amounts of pesticides and herbicides required by agriculture.

The Senior Advisors favored the continuation of the cooperative program for the monitoring and evaluation of the long-range transmission of air pollutants in Europe beyond the end of its first phase in December 1980. They considered that the present work, which concentrates on sulphur dioxide, might be extended to include other important air pollutants. This issue could be taken up at the next meeting of the steering body for the program in December 1978, they decided.

The work of eight task forces was reviewed. The one dealing with fine particulates had completed its work and it was decided to publish a manual of the data. Other task forces are dealing with: economic assessment of environmental damage; odors; recycling, re-use and recovery of municipal and industrial solid wastes; environmental indicators; elaboration of guidelines for the control of emissions from the inorganic chemical industry; elaboration of guidelines for the control of emissions from the non-ferrous metallurgical industries; and noise.

Starting in their own backyard, so to speak, the Advisors considered a case study on the recovery of waste paper and the use of recycled paper at the Palais des Nations—European Headquarters of the UN. They agreed that as a followup to the study, test runs should be made to determine the suitability of recycled paper for offset printing and duplication and the possibility of reducing the volume of paper produced for ECE environ-

mental meetings by limiting the need for and the length of the documents.

The Senior Advisors also discussed arrangements for the Seminar on Integrated Physical, Socioeconomic and Environmental Planning. This will be held in Norway in June 1979.

WILLIAM G. MAHONEY

Denmark Tightens Legislation On Waste Collecting and Recycling

COPENHAGEN—New environmental legislation now before the Danish parliament is expected to become law in early autumn. One of its key provisions is to make municipalities responsible for collecting and recycling waste materials.

Aiding the municipalities will be such companies as Retur Papir Ltd. which handles 75 per cent of waste paper collected in Denmark, and Genfiber Ltd. which is a private research company associated with the Environmental Ministry and supported by banking and industrial interests.

Retur Papir specializes in providing manufacturers of recycled paper with the necessary quantities of waste paper and guides municipalities in the best ways of collecting and transporting waste. The company's director, Soren Vissum, cautioned, however, "that waste paper should never be collected unless a plan has been made for its disposal, despite the tempting fact that one ton of garbage may have the energy equivalent of 200 liters of oil.

"We can suggest, for instance, that the waste of a municipality be taken to an incinerator plant that can sort out what is to be burned, and what can be recycled. But household waste paper, except for newspapers and magazines, usually has to be burned. The tiniest spot of egg on an egg carton could completely damage a recycling sequence."

The new research company of Genfiber will be working with the state to investigate all recycling possibilities, including the building of Denmark's first newsprint plant.

With regard to metal waste, Mr. Mogens Biilann, of Denmark's Environmental Protection Agency, said: "In Denmark, 95 per cent of all used cars end up in the steel plant at Frederiksvaerk—the country's only steel producing plant—mainly because the scrap price level is deliberately maintained to prevent the problem many countries face of abandoned old cars littering the countryside."

The Frederiksvaerk steel plant has a capacity of about 700,000 tons of steel a year. Soon this will be augmented when a shredding machine for scrap is opened in Hadsund.

"If the world economy improves," said Mr. Biilann, "we shall get more of the good quality scrap from old industrial and agricultural machinery as newer types of

machinery are introduced."

As a member of the European Economic Community, Denmark can buy scrap from member countries, but the cheap steel that was being dumped into Denmark from Japan and Communist countries is no longer attractive because of an EEC import duty.

Speaking to the problem of glass recycling, Mr. Torben Hansen, also of Denmark's Environmental Protection Agency, said a study was being conducted about the merits of replacing milk cartons with milk bottles. Also under study is the concept of using a standard-sized bottle for many different types of liquid. Such a bottle for different types of wine is already widely used in Denmark, making for easier recycling.

CONSTANCE CORK

Massive Air Pollution in Bombay Cause of Respiratory Ailments

NEW DELHI—Nearly 23 per cent of India's entire industrial belt lies in Maharashtra State, with 60 per cent of the industrial units concentrated in and near Bombay. It is this concentration that has so sharply increased air and other pollution.

A recent governmental survey of the area showed that the air is polluted at the rate of 1,000 tons every four hours. The pollutants consist of 38.4 per cent carbon monoxide, 33.4 per cent sulphur dioxide, and 9.8 per cent oxides of nitrogen, the remainder being a variety of gases, chemicals, dust, and such biological material as spores, viruses, bacteria, and seeds.

At one residential area called Chembur in Bombay, the survey showed that the residents inhaled a total of 190 tons of sulphur dioxide every day and that most were suffering from cough, constant sneezing, asthma, bronchitis, chest pain, and fatigue.

The exhaust gases emerging out of nearly 300,000 automobiles in Bombay at 0.10 ppm. have also been causing respiratory irritations by photochemical effect.

To add to the woes of Bombay inhabitants, the municipal water supply, although chlorinated, is not filtered—allowing sediments of sand, spores, and dead microorganisms to remain in the drinking water. Moreover, 300 million gallons of untreated factory sewage routinely flows into the sea, lowering the oxygen concentration considerably and killing the fish.

Dr. P.J. Deoras, Vice President, Society for Clean Environment, Bombay, has suggested a comprehensive plan to cope with the problem. His recommendations include the allotment of specific regions for industry, housing, offices, and recreation; no further expansion of industries at present sites; an altered traffic pattern; the development of small townships to decongest Bombay; and a comprehensive afforestation program.

R. MURALI MANOHAR

In Brief...

Hong Kong Environmental Report Severely Criticized

A recent report on Hong Kong's pollution has come under attack from many environmental circles. The report, by Environmental Resources Ltd., was criticized by Dr. Stuart Reed for neglecting environmental planning. Dr. Reed, an experienced environmental advisor to the Hong Kong government, said adequate environmental planning would eliminate the need for laws. "In the development of new towns," he said, "there should be environmental constraints in relation to overall development. Regrettably such long term planning was not emphasized in the report." Dr. Reed also added that certain parts of the report needed amendment, and he is now making his own recommendations to the government.

Prof. Douglas Payne, of the University of Hong Kong's Chemistry Department, said the report ignored the importance of making the public aware of their involvement with the environment. He said the report "should have reminded the people that noisy and smoky vehicles, the wastes in the harbor, in the streets and in garbage cans, are their own contribution."

Dr. Norman Ko, from the University of Hong Kong's Mechanical Engineering Department, attacked the report for not recommending laws to protect workers from industrial noise and for not making realistic proposals to combat traffic and aircraft noise. According to Dr. Ko, at least 120,000 workers now suffer from permanent hearing damage. "Instead of spending so much money to secure the report, the government can make a simple gesture by requiring people who work in noisy environments to wear hearing protective devices," he said, because the noise level in some textile factories is as high as 90 to 100 dBA when the average acceptable measurement is 78 dBA.

Venezuela, Brazil Agree On Environmental Health Pact

The reciprocal agreement signed by Venezuela's President Perez with Brazil calls for "joint use of experiences acquired" in environmental health fields such as tropical ecology, health administration, and, especially, research and training in tropical epidemiology, pathology, prophylaxis, and therapeutics.

Special emphasis will be given to joint research programs on infectious or parasitic diseases such as malaria, yellow fever, leishmaniasis, tripanosomiasis, micosis, and viral hepatitis. The joint programs, to be launched as soon as procedure is set up, will have an indefinite duration.

Munich Makes Giant Strides In Reducing Air Pollution

Dr. Max Fischer, Bavarian Secretary of State for Environmental Protection, declared in Munich recently that cleaner air, less noise, and "more green in the grey city" are necessary to reduce sickness among city dwellers.

He noted, however, that Munich has made giant strides towards improving its quality of life. From 1965 to 1976, he said, the sulphur dioxide content of Munich's air dropped by 74 per cent thanks to anti-pollution measures supported by the State Ministry for Environmental Protection. Such a reduction was obtained, he said, chiefly by switching from coal and oil fuelled heating installations to natural gas and to centralized heating systems.

During the same period the dust content dropped 36 per cent, Fischer said. Measurements conducted by the Ministry showed that from 1970 to 1975 the carbon monoxide load dropped by 50 per cent (even though the number of vehicles increased), nitrogen oxide was cut by 40 per cent, and hydrocarbons by 60 per cent.

Since 1975, he stated, the Ministry

has spent about \$12.5 million to install more than 4,000 anti-noise windows in 1,700 apartments and public buildings, as well as providing streets with noise-reducing surfaces and setting up new recreation areas.

Panama Firm to Run Waste Recovery Ship in Pacific

I. R. Holdings S. A. of Panama, a company involved in the recycling of waste materials internationally, is planning to run a waste recovery factory ship in the South Pacific. According to company spokesmen, the ship will collect lubricating oil from various ports. Then the oil will be re-refined and blended to "equal to new quality" and re-delivered to users.

At present an initial route encompassing North Queensland, New Guinea (Port Moresby and Bougainville), Nauru, New Caledonia, and Fiji is being planned. In addition to lubricating oil, the ship will also handle a variety of other wastes including the recovery of silver from photographer's hypo solution.

Strict Anti-Littering Laws Help Keep Singapore Clean

Singapore, visually considered one of the cleanest cities in the world, owes its reputation in part to a marked decrease in littering offences in recent years. In 1973, the number of prosecutions for littering reached 9,578, but the number declined to 3,823 in 1977. The average fine imposed during that period increased from \$10 to \$14, while the maximum fine increased from \$18 to \$40.

This punitive action was enforced by the Ministry of the Environment's deployment of 100 public health auxiliaries, plus the siting of 4,500 wire-meshed baskets and 550 standing-type bins in strategic places.

EEC Revises Standards For Plastic Wrapping of Foods

Not many years ago European housewives shopped with baskets or stringbags in the supermarkets where the pears now come ready-wrapped in transparent plastic.

One of the most-used plastic wraps for foodstuffs is polychloride vinyl or PVC. It is an extract of the gas known as vinyl chloride or CV, which has proved harmful and a cancer risk among animals.

The Council of Ministers of the European Community has therefore adopted a directive, to take effect by November, 1979, which prohibits more than one milligram of gas in a kilo of finished plastic product destined to come in contact with food.

In addition, as of the same date, any trace of the gas in foodstuffs or potable water will be prohibited.

Czechs Develop Polarograph To Monitor Trace Metals

Czechoslovakia has developed and is marketing an advanced polarograph which permits a quick and relatively cheap monitoring of trace components of such heavy metals as lead, cadmium, mercury, and zinc in water and in the atmosphere.

The method employs an electrolytic cumulation of traced elements on the surface of a special electrode, followed by the dissolving of the resultant amalgam or metal coat and monitoring by a polarograph. A special rotating disc electrode has also been developed that increases the sensitivity of the classical Jaroslav Heyrovsky polarograph a thousand fold. (Heyrovsky had been awarded a Nobel prize for his discovery in 1959.)

The pulsating polarograph sold under the trade name LP9 can be used in all areas of chemical micro-analysis such as medicine, biochemistry, agriculture, and the food-

stuffs industry.

An even more advanced automated polarograph PA2 is being prepared for production. It is claimed the polarographic method is not only extremely sensitive but costs only a fraction of the expensive atomic absorption spectrometric method for the same purpose.

Chinese Scientists Find Way To Store Underground Water

After three years of intensive study, scientists in the northern Chinese province of Hopei have successfully found ways to store underground water for agricultural purposes. They have also worked out the quantity of water to be tapped each year. This data is important for the efficient exploitation of subterranean water and the building of irrigation projects.

In the past two decades, drought, floods, and the salinity of the soil have kept farm production in the province down. Local peasants have undertaken projects for controlling the rivers, improving the soil, and sinking wells, but drought still remained their main problem.

The study began in 1973 and covered a 13,899-square-mile area in the Haiho River Basin, which comprises about a third of the farmland in the province. Basically, the scientists located the million-year-old dividing line separating the quarternary and the tertiary—between 990 feet to 2,178 feet underground. Data collected at 1,700 observation posts showed the patterns of change in the level, the quantity and constituent elements of the subterranean water and provided forecasting information about the formation and development of the areas where the level of the subterranean water drops.

The scientists and farmers in the province have also devised a method of storing surface water by injecting it into the ground, thus forcing the water level up by more than a foot.

Ambient Air Quality in Japan Shows Slight Improvement

The Japanese Environment Agency has recently announced the monitoring data on the state of air pollution in the country for fiscal 1976/77. According to the Agency, sulfur dioxide concentration in the ambient air has been declining throughout the country since fiscal 1967/68, but the rate of decline slowed from fiscal 1975/76 to fiscal 1976/77.

As to the comparison with the ambient air quality standard for sulfur dioxide, in fiscal 1976/77, 88 per cent of all the available monitoring stations reported the attainment of the standard, compared to 80 per cent in fiscal 1975/76.

The Agency also disclosed that in fiscal 1976/77, the concentration of nitrogen oxides in the air stayed at the previous year's level. Carbon monoxide concentration in the ambient air levelled off in fiscal 1976/77 from the previous year, while oxidants showed a decrease.

Airport Workers in Burma Risk Deafness From Noise

Medical specialists attending the recent Eye, Ears, Nose, and Throat Surgeons Conference in Burma said that workers at Rangoon's Mingladon International Airport run the risk of noise-induced deafness. In a report presented at the conference, the specialists said of the 148 deaf airport workers examined, 86 or nearly 60 per cent got their disability through aircraft noise. The report also pointed out that noise-induced deafness is more common among those over 45 years old and with over 10 years of service in the airport. The report recommended several preventive measures including noise reduction, providing workers with ear plugs, and the use of pre-employment audiometry.

Sodium and Chlorides Found Major Health Hazards by WHO

The World Health Organization (WHO) has warned that sodium and chlorides rank among the major health hazards of drinking water and has announced the second in a series of three conferences to consider the problem.

A WHO Working Group will shortly meet in The Hague to discuss relevant criteria and guidelines. The meeting is being sponsored jointly by WHO and The Netherlands Government. WHO said that a number of international experts specializing in the medical or technical aspects of the problem will take part.

A similar meeting on lead and nitrates in drinking water was held in London in September of last year. Another meeting, on health effects of saline waters containing calcium and magnesium, is scheduled for Belgium.

Sewage Pollution Combated In Rio's Guanabara Bay

Baia de Guanabara, the bay framed by such famous Rio de Janeiro landmarks as the Sugarloaf Mountain and the Hunchback Mountain with the Christ figure on top, is saturated with garbage. Now, in an attempt to save it from becoming a festering cesspool, the surrounding municipalities have formed the Group to Combat Pollution in Guanabara Bay.

The group's coordinator, Commander Ronaldo Francisco Santoro, said regular meetings will be held by the various municipalities and environmental, maritime, and other groups in an effort to coordinate guidelines on how best to fight the pollution. The group's main objective is to determine what can be done best with the limited funds that are available.

The problems are staggering. Santoro said recently that the bay has the capacity to absorb the sewage

from a population of 1.4 million whereas the population surrounding the bay surpasses seven million and most of the sewage is poured into the bay raw. Aside from the domestic sewage, considerable amounts of industrial sewage are also being poured into the bay daily, and there are small but frequent oil spills from the tankers that supply the bay's big oil terminal.

Bombay Ecologist Warns Of Endangered Himalayas

The Himalayan Club in India, which celebrates its golden jubilee this year, has warned that the natural habitat of the Himalayan ranges is in grave danger of being irreversibly damaged by mounting pressures of population, tourism, and commercial mountaineering.

The mountains stretch in an arc from Afghanistan through Pakistan, India, Nepal, and Bhutan to Burma, forming an ecological Gibraltar whose fate will affect the well-being of hundreds of millions. From the Himalayas flow the major rivers of the Indian sub-continent—the Indus, the Ganga, and the Brahmaputra—which annually bring life and sometimes death to Pakistan, India, and Bangladesh.

Mr. A.D. Moddie, President of the Club in Bombay, said that the rampant deforestation in these areas was the root cause of vagaries in temperature and as a result, the flora and fauna of the once richly forested tract was rapidly diminishing. The accusing finger was pointed at the government's massive development programs that are destroying the natural resources of the region and the environment.

Among the suggestions to protect Himalaya's ecosystem are a cutback of the mushrooming small-scale industries, and a curtailment of mining operations unless technology is used that protects the environment.

Thailand Studies Central System For Waste Treatment

The Thai Industrial Works Department is currently studying the feasibility of a central system for the treatment of industrial wastes to prevent water pollution caused by factories in Bangkok. According to Vira Susangkarakan, Deputy Director General of the Department, the study is expected to be completed sometime this spring.

The system, estimated at a cost of \$1 million, is similar to the industrial waste treatment system for the sugar factories along the Maeklong River. The system includes running a pipeline along groups of factories, with the waste water discharged into the pipeline and passed through a water treatment system for purification.

Numbers of Rare Animals In Kenya Exceed Prior Estimates

Aerial surveys carried out in Kenya with aid from the Canadian Government have shown that the numbers of some rare animal species are far higher than earlier estimates had indicated. Kenya's Minister for Tourism and Wildlife, Mathews Ogutu, who announced the first results of an aerial survey project set up two years ago, said it had now been shown that there were about 14,000 Grevy's zebra in Kenya, although earlier estimates had put the number as low as 1,500.

Nevertheless, the study has shown that numbers of several species of wildlife are falling fast in some areas. In one area of Kenya, the number of Grevy's zebra had fallen from 7,000 to 2,500 in seven years. The count also showed about 60,000 elephants and 1,800 rhinos in Kenya—excluding mountain and thick forest areas where aerial surveying was impossible.



World Environment Report

28 APR 1978

VOL. 4, NO. 9

Copyright © 1978, Center for International Environment Information.

APRIL 24, 1978

Debate Waged Over Petrochemical Pollution in Cartagena Bay

BOGOTA—The recent explosion of a urea reactor in the Colombian seaside resort of Cartagena has revived the debate over industrialization versus environment and social priorities in this South American nation.

The worst disaster in Colombia's petrochemical industry's history, the explosion at Cartagena's Abocol plant caused the deaths of 22 workers. Another 150 people suffered asphyxiation, most of them in the fishing village of Pasacaballos adjacent to the city's petrochemical sector. Some 70 of the victims were children of the fishermen.

The Abocol disaster reopened a decade-long debate over pollution of the city's once pristine bay by Colombia's petrochemical sector, which is headquartered in Cartagena in the suburb of Mamonal. Some 50 chemical and petrochemical plants are located in Mamonal along the southern shore of one of the largest natural bays in South America. Only one of the companies, a refinery, has installed an adequate system of filter controls to prevent pollution. Among the worst offenders is a large, government-owned soda plant which was temporarily closed for dumping mercury in the bay.

While the entire city has suffered the effects of this pollution, the worst hit are the 8,000 inhabitants of Pasacaballos, which was the first suburb of Cartagena and established long before the appearance of any petrochemical plant. Once a picturesque fishing village, Pasacaballos now literally stinks from the fumes of the adjacent chemical plants. Although 50 of the country's largest companies are located next door, not a cent in taxes goes to the improvement of Pasacaballos, which has no running water, no paved streets, no health clinic, and only one telephone.

According to Prof. Arthur Simon, an ecologist who formed part of a government commission charged by Colombia's Tourism Corporation with making a study of the bay, the authorities have been repeatedly warned of the need to establish air pollution controls in Mamonal. Simon also pointed out that the government itself is divided in purpose, with one sector urging Mamonal's further industrialization while the Tourism Corporation wants to develop a tourist resort on the nearby island of Baru, which is supposed to depend on Pasacaballos for workers and supplies. Meanwhile, the city's free port authority is going ahead with plans to build a port to

attract "clean" industries and tourists at Pasacaballos.

Pasacaballos' plight contrasts with a successful anti-pollution campaign by the northern suburbs of Cali, the largest city in southwestern Colombia, where the people were able to pressure the government to close a large sulphuric acid plant called Quin Industries. The factory produced 3,000 tons per month of ammonium sulphate and phosphorus fertilizers and 2,100 tons of sulphuric acid. Although Quin was able to postpone closure for two years with the argument that charges of pollution were "purely political," surrounding homeowners eventually convinced the Health Ministry to carry out its original decision to shut the factory. The contrast between Pasacaballos and Cali was thus another example of what ecologists have been saying for years—that the principal victims of pollution in Latin America are the poor.

PENNY LERNOUX

Claim Nuclear Rather Than Coal Power Needed in West Germany

MUNICH—Bavaria; the southern state that historically has marched out of step with its northern German neighbors, now has sharply challenged the West German Socialist Party's decision to stress coal power expansion. The Socialists rule in Bonn in coalition with the miniscule Free Democratic Party.

What this country needs to fill the energy gap, according to a recent statement by Bavarian Minister for Environmental Protection Alfred Dick, is expansion of clean nuclear power.

The Socialist plan to step up coal mining and use would cause serious ecological damage as well as vio-

In This Issue

Fish Farming	2
Special Report: Sao Paulo	3
Sea Lions	3
UK Nuclear Debate	4
Book Review	5
Tyler Ecology Award	5
In Brief	6

lating existing environmental laws, Dick declared.

Bavaria, Dick said, had a primary energy consumption of about 50 million tons of hard coal in 1975 and 54 million tons in 1976, which means an average yearly increase of 2.9 per cent. By 1995 consumption will have climbed to 88 million tons. Over the same period, the share of fuel oil will drop from the present rate of about 70 per cent (of the total energy use) to less than 50 per cent, he said.

According to experts' projections, the share of solid fuels will shrink from the present 11.5 per cent to 5.3 per cent and the share of water power from the present 7.7 per cent to about 3.6 per cent by 1995.

The gaps created by these sharp drops, Dick declared, can only partially be offset by natural gas. He predicted that its present share of 10 per cent might rise to 17 per cent.

Dick stated that "even if in the field of nuclear energy we do not increase output from the present one per cent to more than 25 per cent by 1995—as scientific projections have foreseen—it is still clear that a considerable increase is needed."

If coal production is sharply stepped up, he warned, it would cause in Bavaria alone an annual additional pollution of about 200,000 tons of sulphur dioxide, 60,000 tons of nitrogen oxide, 20,000 tons of fine particles, and 0.2 Curie radium 226 (also radioactive elements).

The peaceful use of nuclear energy is by far the more environmentally friendly energy source, the Minister stated, and "is definitely the better choice of energy."

SPECIAL DISPATCH TO WER

fish farming in the Mediterranean is clearly indicated by the surprising fact that only one-third of the fish and shellfish consumed in the region is actually pulled out of the Mediterranean. The remaining two-thirds come from imports or from the ocean-going fleets of Mediterranean countries. It added that, while the catch in the Mediterranean amounts to only 1.8 per cent of the world total, Mediterranean fish have an extremely high market value.

The demand already exceeds the supply, and the situation is getting worse, the statement said. In 1974, the last year for which reliable statistics are available, 750,000 tons of fish were caught in the Mediterranean. It is estimated that by 1985 the region's rapidly increasing population will need some 5,500,000 tons.

To fill the gap in their knowledge and to strengthen their capabilities in the field of mariculture, the experts drew up a cooperative program to exchange scientific information, facilities, and transfer of technology, and to provide for the training of specialists in mariculture centers to be shortly selected by UNEP.

"Some of the work to improve fish farming practices will be centralized in pilot plants, one located in the northern part of the Mediterranean and the other on the North African coast," said Mohamed Tangi, a Moroccan economist in charge of the socio-economic activities in UNEP's Mediterranean Action Plan.

The statement added that the United Nations Development Program (UNDP), whose immediate priorities include increasing food production, could be one of the principal financing organizations for Mediterranean fish farming.

KYRIACOS CONDOULIS

Mediterranean Nations Reach Agreement on Fish Farming

ATHENS—Experts from 11 Mediterranean countries have reached agreement here on a program to develop fish farming as a means of meeting rapidly rising seafood demand in the region.

At a recent five-day meeting, organized by the Greek government and jointly sponsored by the Food and Agriculture Organization (FAO) and the United Nations Environment Programme (UNEP), government-appointed delegates decided to give priority to the cultivation of mollusks, especially mussels and oysters, because they are easily bred and rich in protein. Other priority fish are grey mullet, sea bass, sea bream, and eels. With more research there could also be a boost in the production of shrimps and prawns, the experts suggested.

"Although all of these species are already being cultivated in the Mediterranean, most countries in the region have not mastered the advanced technology necessary for industrial-scale production," said Michael Mistakidis, senior aquaculture official for the FAO.

An official statement said the necessity of developing

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$150 per year. \$20 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Jan De Pinto
Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in WER, which in no way represents the official view of UNEP.

SPECIAL REPORT: Sao Paulo Curbs Pollution by Denying Tax Incentives to New Industries

SÃO PAULO—The proud slogan "Sao Paulo can not stop!" has become the realistic admonition "Sao Paulo must stop!" as Brazil's largest urban concentration (11 million people) and its major industrial complex (70,000 industries) fight to share limited quantities of clean air and water in a restricted area (*WER*, Feb. 13, p. 7).

To tackle the problem of Greater Sao Paulo's industrial pollution and density, the government of Brazil has issued the harsh "Resolution 14"—according to which government financial and tax incentives will be denied to new industries locating in the Greater Sao Paulo area. While not expressly prohibiting the establishment of new industries, Resolution 14 will effectively curtail growth because these incentives are crucial to the success of many of Brazil's industries.

Sao Paulo's Mayor, Olavo Setubal, has expressed basic support for the government policy of "decentralization" which will both alleviate the urgency of Sao Paulo's situation and give needed impetus to the underdeveloped interior areas of the country. Setubal has asked for clarification of the "exceptions" mentioned in the Resolution, however, and along with other state officials has recently sent a letter to Planning Minister Reis Velloso with suggestions for its implementation. The letter stated that the area has 53,000 small, non-polluting industries employing less than 50 workers each, many in vital sectors of the economy such as electronics, optics, graphics, text book printing, and scientific and medical instruments. These industries, the letter said, should not be penalized for locating in Sao Paulo in the future.

The correction of the present unacceptable levels of water, air and noise pollution is being handled more quietly, though no less seriously. The director of the Sao Paulo State Company of Environmental Technology (CETESB), Dr. Nelson Nufussi, claims that the state's budget for research and correction of environmental problems is double the combined amount spent in all other Latin American countries, including Mexico.

The State of Sao Paulo passed its first comprehensive Environmental Pollution Law in May of 1976 and is going about its implementation steadily and effectively.

A \$4.7 billion program to handle domestic and industrial sewage collection and treatment for the entire area was begun this year. By 1983 when the first stage is functioning there should be impressive improvements in the state of public health and the pollution levels of the area's rivers.

The chronic problem of the daily atmospheric concentrations of particulate matter (PM), SO₂ and CO, is what now most concerns Nufussi and other city planners. During the four winter months (June through September) when daily thermal inversion make dispersal of pollutants difficult—inversions regularly last four and five days—the problem is at its most acute. Daily average

levels in the Greater Sao Paulo area for winter 1977 were PM—102 micrograms/meter³; SO₂—120 micrograms/meter³; and CO—14 parts per million. Daily highs were well above these figures, and daily averages of PM and SO₂ were considerably higher in the heavily industrialized areas of the city.

The problem of particulate matter (more acute in Sao Paulo than in Mexico City) is being addressed by a law soon to be signed which will require existing industries to reduce their PM emissions by 75 per cent. The law will demand 90 per cent control for all new industries. Currently 60 mammoth industries cause 80 per cent of the total PM pollution of the area. The World Bank is financing the purchase and installation of equipment for this program which is expected to be fully operational in two years.

SO₂ pollution is worst in the city's area where there are 3,000 large industries, mainly refineries, fertilizer and petrochemical plants. The worst polluters have been convinced to burn low-sulphur oil over the winter months at an increased cost to them of 20 per cent. This cut SO₂ levels by 13 per cent in the area for the winter of 1977 over 1976 even though the atmospheric conditions for dispersal were judged to be considerably worse for the period.

CO levels have been partially controlled by the introduction of 20 per cent ethyl alcohol in all gasoline used in Greater Sao Paulo. Winter 1977 showed an improvement of 18 per cent over winter 1976 as a direct result of this alcohol use. Overall there were 45 days in 1977 when carbon monoxide concentration reached the "alert" level of 15 ppm (or 17,000 micrograms per cubic meter) over an eight-hour period. This compared to 77 such days in 1976. Aiming for a long-range solution to the problem, new cars produced in 1982 will be required to have devices to remove 70 per cent of the CO and 75 per cent of all hydrocarbons.

LIBBIE S. MATHES

Conservationists Fight Peru's Decision to Kill Sea Lions

LIMA—Local wildlife conservationists are calling on international support in their fight to protect 3,400 sea lions that the Ministry of Fisheries has authorized to be killed.

A public row has already blown up in Lima over the decision. Vice Admiral Francisco Mariategui, Minister of Fisheries, who is responsible for the government resolution, claims that the sea lions which inhabit most of the rocky islets and guano islands off the Peruvian coast

rip the nets of fishermen and consequently "valuable catches" are lost.

The government has launched a major press campaign explaining how "destructive" the sea lions are, while "fishermen" belonging to FETPCHAP—the fishermen and craftsmen union—have backed the government openly through letters to the press.

FETPCHAP also claims that although PRODENA, the local branch of the World Wildlife Fund, follows "noble principles," it does not understand the magnitude of the problem.

For its part, PRODENA, led by Felipe Benavides, says that there are only 30,000 sea lions left on Peru's coast compared with 400,000 only 40 years ago. As a leading figure in world wildlife conservation and winner of the Paul Getty Prize in 1976, he goes even further and accuses the fishermen of illegally fishing close to shore near the rocks and beaches which are the natural habitat of the sea lions.

Meanwhile, whales are becoming more and more scarce in Peruvian waters although only one Japanese company is still permitted to hunt them in the northern coast.

All anchovy fishing has finally been banned though it is still "very much on the danger list," according to a local wildlife expert.

Other sea animals that are fast becoming endangered include sea turtles, sea otters, and shell fish.

LORETTA McLAUGHLAN

British Debate Continues Over Windscale Nuclear Expansion

LONDON—Plans to expand Britain's nuclear reprocessing plant at Windscale should be allowed to proceed, recommends Mr. Justice Parker, Inspector at the 100-day public hearing into the issue held last autumn (*WER*, Dec. 5, p. 1). Expansion of the oxide reprocessing plant includes capacity to reprocess the spent fuels of other countries.

Publication of Mr. Justice Parker's report had been delayed until March while Secretary of State for the Environment, Mr. Peter Shore, sorted out a legal tangle to enable its recommendations to be debated in Parliament before a final decision is taken.

Although disappointed at the report's findings, environmentalists are fighting back hard and are determined that the Parliamentary debate shall not be a toothless endorsement. Friends of the Earth (FOE), a leading opponent, has distributed a booklet containing their contra-arguments to every British Member of Parliament. With other opposing groups they are planning a mass rally in London's Trafalgar Square with expected attendance of 10,000.

In his report, Mr. Justice Parker comes down firmly on

the side of keeping the British nuclear industry alive and ready to expand in the future if this should prove necessary. Arguments about alternative energy sources did not convince him that nuclear expansion would be unnecessary, and he speaks of the need for an "energy mix" to avoid repetition of the sort of energy dependence which the oil crisis demonstrated.

If there is to be a nuclear industry and some reprocessing is going to take place at some time, the report argues, then it is better for this to be as efficient and safe as possible from the beginning. On balance, expansion increases this safety.

The building of a larger plant to reprocess fuels from other countries does not, in Mr. Justice Parker's opinion, conflict with the non-proliferation treaty and President Carter's initiative. Non-nuclear-weapon countries, he suggests, would be under less pressure to produce their own plutonium if they are able to obtain this from other countries' reprocessing facilities. Nor did he consider it an overriding threat that the exportation of plutonium could lead to the making of an atomic bomb, since some alleviation could be given by "technical fixes," i.e. incorporating the plutonium with new fuel elements.

On the issue of public hostility to nuclear expansion, the report acknowledges its existence but thinks it difficult to know its extent. Lack of the proper information might explain some of the hostility, it suggests, and criticizes both the nuclear industry for its sparse information and objectors for creating fear.

Environmentalists gain some small comfort from the report's recognition that stronger safeguards are needed. The nuclear industry, it suggests, should tighten up its precautions, and an independent body should be set up to monitor security at Windscale and fuel transmissions to and from there. It also endorses the recommendation of the Royal Commission on Environmental Pollution for the setting up of a single inspectorate concerned solely with the safety and control of all radioactive discharges. The extra risk to the local population at Windscale is also mentioned, but considered so small as not to outweigh the advantages of expansion.

In response to the report, Tom Burke, director of FOE, said that the question every Briton should now be asking is "Should Britain become plutonium supplier to the world?" In the view of FOE, the report "misconstrues disastrously the international implications of the proposed development." It also "finds it hard to credit the extent to which he (Mr. Justice Parker) appears to have overlooked or misunderstood key aspects of the arguments, especially those relating to waste management, energy economics, and foreign policy."

British Nuclear Fuels, Ltd. has welcomed the report as a kind of vindication of its view of the nuclear role. Objectors hope that resistance to this view will swell to the point where British politicians will have to recognize that people in Britain are as deeply concerned as those in other European countries, where anti-nuclear demonstrations have been more vociferous.

BARBARA MASSAM

Book Review: Intergovernmental Organizations and the Environment

Over the past few years there has been a rapid increase in the number of intergovernmental organizations that are actively studying and regulating environmental matters. This has given rise to numerous multilateral treaties, and the effect of human activity on the environment has become a paramount consideration in the policy formulation of many large organizations, public and private alike.

Heretofore, however, officials and businessmen have had to seek out documents from a confusing and often outdated variety of sources. To meet the need for a single comprehensive source on international environmental issues, organizations, and treaties, Martinus Nijhoff BV Publishers, of The Netherlands, has recently issued a 700-page, loose-leaf publication called "Environmental Programs of Intergovernmental Organizations," edited by Dr. P.L. de Reeder.

Part I of the book contains data on such major intergovernmental organizations as the UN Environment Programme, Economic Commission for Europe, European Economic Community, World Health Organization, World Bank, amongst others.

Clear and systematic information is provided for each organization, including name, address, members,

aim, environmental program, activities, and publications. Although the European chemical industry's interests have been taken as the general frame of reference, this has deliberately been interpreted in a broad sense, so that other activities (nature conservation and urban development) have also been included. However, activities concerning nuclear energy and its consequences have been excluded.

To provide the user with a practical guide, organization charts with names of environmentally active or responsible officers are listed, as are environmental reports and publications issued by these organizations.

Part II contains the official texts of recent important multilateral treaties in the environmental field (Conventions of Oslo, London, Paris, and the recent Rhine Conventions). They are presented in French, English, and German whenever they exist, with information on the status of each Convention as well as the organizational aspects of its implementation.

Price for the basic volume is \$80 (200 guilders), and the subscription to a semi-annual updating service is \$.12 (.30 guilders) per page. Copies may be secured from Martinus Nijhoff, P.O.B. 269, 9-11 Lange Voorhout, The Hague, The Netherlands.

Tyler Ecology Award Won By WWF's Russell E. Train

Russell E. Train, President of World Wildlife Fund-U.S., is the 1977 recipient of the John and Alice Tyler Ecology Award for his contributions to mankind in the field of ecology and environment. The \$150,000 award is the largest tax-free cash award made in America and in the field of ecology.

In his Los Angeles acceptance speech entitled "The Environment Today," Mr. Train, former head of the U.S. Environmental Protection Agency, expressed confidence that the country's energy and pollution problems would be solved "in time." But, Train said, "time is running out rapidly for the natural systems of the earth, and particularly for the survival of species."

The Tyler Award was established in 1972 as an international competition to be administered by Pepperdine University in Malibu, California. Past recipients of the award include:

1973: The award was divided among Dr. Arie J.

Haagen-Smit, professor emeritus, California Institute of Technology (discovered photochemical smog); Dr. G. Evelyn Hutchinson, professor emeritus, Yale (ecological theories); and Mr. Maurice F. Strong, former head of the United Nations Environment Programme, and Director of the International Union for Conservation of Nature and Natural Resources (IUCN) (environmental communications).

1974: Dr. Ruth Patrick, chairman of the board of the Academy of Natural Sciences, Philadelphia (limnologist).

1975: Award was divided among Dr. Charles Elton, professor emeritus, Oxford University (animal ecology); Dr. Rene Dubos, professor emeritus, Rockefeller University (microbiologist, experiments in pathology); and Dr. Abel Wolman, professor emeritus, The Johns Hopkins University (sanitation and water engineering).

1976: Dr. Eugene Odum, University of Georgia (contributions to ecology).

In Brief...

Indian Oil Firm Uses Solar Power to Pump Its Crude

Oil India, in conjunction with Bharat Heavy Electricals Ltd., has initiated the installation of an experimental solar-powered plant at its pump station at Dumar in the eastern state of Bihar. The station connects the oil fields in Assam with refineries in the north-eastern region.

This experimental plant will be fitted with a single tracking paraboloid dish capable of producing energy of about 15 KW and is expected to be completed before the end of the year at an estimated cost of \$600,000.

Oil India's trunk crude oil pipeline system has nine pump stations on the route. Between these stations there are autonomous points for telecommunications, telemetry and cathode protection controls, called repeater stations, which presently use diesel power.

The pump station at Dumar has been selected because it receives the maximum sunshine. The average power requirement of the repeater station is approximately 5 KW per hour. Sunshine can be expected on an average of 8 hours a day and an output of 15 KW per hour is envisaged.

Water Disinfection Measures Ordered in Hungarian City

Radio Budapest reported recently that Hungarian public health authorities had ordered disinfection measures after a number of persons had become ill from drinking polluted water in Vac, north of the Hungarian capital.

The report said that the sickness resulted from polluted water seeping

into the city's water supply system. Consequently, Hungarian public health authorities have ordered the Vac water works to increase disinfection measures and have instructed the public to boil all water before using it.

Yugoslavia Completes 4-Year Study of Water Supply Needs

The World Health Organization (WHO) has announced in Geneva that Yugoslavia has completed a four-year study of the water supply and waste disposal needs of its southern province of Kosovo and prepared master plans to cover the entire province, which has a population of more than 1.2 million.

The studies prepared include master plans for community water supply and urban waste disposal, together with preliminary engineering feasibility studies, and final designs for water supply networks to meet the needs of 12 major towns in Kosovo, including the capital, Pristina.

Detailed designs for the sewerage, stormwater drainage, and waste treatment plant have been made for the economically important tourist town of Pec. Work has already begun in there on the construction of the main sewer and stormwater collection systems.

The project was funded by the United Nations Development Program (UNDP), with WHO serving at the executing agency through its regional office in Copenhagen. The government delegated responsibility for work to the Institute for Town Planning in Pristina. Hydroprojekt Praha, a Czech engineering firm, was appointed as consulting engineers.

The UNDP contribution exceeded \$950,000 and the Government contributed the equivalent of \$710,000. To meet the needs of Kosovo by 1990, the master plans envisage an outlay of \$530 million for water supply and \$275 million for liquid waste disposal.

Philippine Agency Closes Nation's Biggest Steel Plant

The Philippine National Pollution Control Commission (NPCC) recently ordered the country's biggest steel plant, the Philippine Blooming Mills, to stop operating two of its nine furnaces. According to NPCC, stack samplings and inspections showed that the plant has failed to install pollution abatement devices to control smoke coming from the two furnaces. The smoke, consisting mainly of iron oxide (rust), poses not only a nuisance but also a health hazard to people living in Mangghan, Pasig region. The plant has already sent some of its engineers abroad to select the anti-pollution devices best suited to its highly pollutive open-hearth furnaces.

Peru's Penguins Endangered By Guano Harvesting

Now it is the turn of penguins in Peru to face extinction. At least, that will be the case for the last 300-400 Humboldt penguins (*Speniscus humboldti*) if the state fishing company, Pescaperu, decides to go ahead with its plans to harvest guano (bird droppings used as fertilizer) on the islands where they live.

The decision has been postponed for years but now the company has announced a plan to start a guano collection off Matorca and surrounding islands inhabited by the penguins.

Dave Duffy, an American biologist working in the area, has asked the company to postpone the collection until the baby penguins have learned to swim. His request is "under consideration" but sources say that it is unlikely that there will be a postponement.

Duffy also charges that fishermen living near the islands continue to hunt Humboldt penguins for their own consumption.

Malaysians Build Artificial Reef to Protect Fisheries

Malaysian Agriculture Minister Datuk Shariff Ahmad recently announced that an artificial reef to keep away illegal trawlers and to rehabilitate fishing grounds will be developed on the west coast of the country. Illegal trawler fishermen, he says, have hauled away a significant portion of seafood and destroyed their breeding grounds. It is expected that the reef will put a stop to the illegal activities. Datuk Shariff pointed out that experimental projects on the development of artificial reefs at Pulau Aman and two smaller islands, Telor and Raya off the northern part of the west coast, have been successful.

World Wildlife Fund to Set Up Branch in Australia

The World Wildlife Fund (WWF) based at Morges, Switzerland, recently announced that it will soon set up a national organization in Australia with the full support and encouragement of the government there.

Australian Prime Minister Malcolm Fraser recently received WWF Director General Charles de Haes to discuss the proposed organization. Afterwards the Prime Minister declared that "I am delighted that the World Wildlife Fund has responded so positively to the suggestion that it should establish a branch in Australia. There is wide recognition of the need for the WWF to begin operating here because Australia has some of the world's most remarkable animals and plants, many of which are endangered or confined to limited areas because of changes in land use."

"It is now accepted," he continued, "that an essential ingredient in national and international action to save these species from becoming extinct is money—for research, for

management, and for the purchase of essential habitats. The WWF has a proven record as an internationally successful fund-raising organization for conservation action, which relies on sound business principles in its operations."

U.S. Solar Energy Expert Lauds Pakistani Progress

An American solar energy expert said in Karachi recently that Pakistan has made impressive strides in its use of solar technology that had been developed by the industrialized nations, and he lauded Pakistan's plans to set up four solar stations within the next two years.

Prof. J. Taylor Beard, Department of Mechanical and Aerospace Engineering, University of Virginia, told *World Environment Report* that in this connection he had exchanged views with the Pakistan Science Foundation and faculty of the Universities of Peshawar, Lahore, and Karachi. He stated that Pakistan's main problems of energy utilization lies in electrifying thousands of villages, pumping of water for irrigation, and lowering the ground water table to fight water-logging and salinity. By contrast, Professor Beard said that in the United States solar energy is being adapted primarily for space and water heating and air conditioning at a governmental cost of \$300 million a year.

Considering the requirements of Pakistan for electrification of at least 40,000 villages, he said that in American terms it would cost \$15,000 per kilowatt of solar energy whereas fossil fuel costs only \$100 per kilowatt. But he added that if the technology is transferred it can be adapted in Pakistan at much lower cost because of comparatively cheaper manpower and raw material. In any event, he estimated that by the year 2000, the cost would drop below \$100 per kilowatt.

Large Tree-Planting Program Gets Underway in Peking

The annual tree-planting season is now underway in Peking, China. City authorities expect to plant 480,000 trees this spring along the 25-mile long Boulevard of Eternal Tranquility, in residential areas, the Summer Palace, and the recently reopened Peihai Park. Even factories are getting into the act and the giant iron and steel works in the western suburbs plans to look like a garden in five years "in an attempt to solve the problem of industrial pollution, to protect the environment, and to improve workers' health."

Planting in China began in earnest after the Communist takeover in 1949, both to improve the environment and to provide timber. Chinese cities generally are pretty grimy and the need to give them a country atmosphere is officially recognized.

Cyclone Intensity in India Reduced with Silver Iodide

Although the occurrence of cyclones cannot be prevented, their intensity can be reduced by "seeding them" with silver iodide, according to Dr. A.A. Rama Sastri, Director of the Regional Meteorological Centre at Madras.

But he warns that there is also a possibility of the treated cyclone moving in an unpredictable manner. The technique of seeding cyclones has not been perfected in India due to the restricted space available in the Bay of Bengal, unlike the vast area in the Atlantic Ocean which the U.S. has at its disposal.

Although cyclones can cause havoc, the meteorologist says, "without them there would be little or no rain in many arid zones. Cyclonic systems also transport heat from equatorial zones to the poles and thus help to prevent extreme variations in temperature."

Budapest Oil Spill Pollutes Streets and Danube River

The streets of Budapest and a section of the Danube River recently were polluted by oil when a transformer was damaged, permitting about 14 tons of oil to run out.

Radio Budapest reported that the transformer was being transported by rail to the Budapest "Ganz" Electric Works when a gas pipe damaged it. It said that the large amount of oil rapidly covered the surface of a main street ("Martirok Utja") and a number of side roads, hampering traffic for several hours. Then the spilled oil flowed into street sewers and from there into the Danube. The radio report stated that oil quickly polluted parts of the river near Budapest, especially that section around the island of Csepel—where the Danube runs through the southern industrial quarter of the Hungarian capital. The radio warned that the pollution might affect Budapest's water supply.

Germans Charge Czechs With Cross-Border Air Pollution

Bavarian officials have protested to Czechoslovakia over what they call a smell of "cat defecation" wafting across the Iron Curtain and offending noses in northeast Bavaria.

The Bavarian Environmental Protection Ministry believes that the offensive odors so familiar to cat owners actually are sulphur dioxide emissions from a soft coal hydration plant near Sokolov in Czechoslovakia. But thus far they have not been able to provide absolute proof of this. The Bavarian area affected covers the towns of Arzberg-Wunsiedel-Self-Hof, all near Nurnberg.

In February and March of 1977, the Ministry's measuring vehicles found traces of sulphur carbon and carbon oxide sulfide which are created during coking processes,

together with even more malodorous combinations such as sulphur-hydrogen, mercaptan, and thioether. Since then, the Ministry has set up a permanent measuring station near Wunsiedel.

According to State Secretary Max Fischer, more details will have to be obtained on the area emissions situation. Thus far the station has only obtained reports from laymen—i.e. border crossers. In addition to measuring results, he said, more detailed information is needed on noxious substances emitted from the suspected plant or others.

Dr. Fischer has been in touch with the Czechoslovak-Bavarian Border Commission as well as with the West German Embassy in Prague in an effort to halt or reduce the stench.

Buenos Aires to Host Third Argentine Forestry Congress

The city of Buenos Aires will play host between September 25 and 30 to the Third Argentine Forestry Congress. The congress will be accompanied by a forestry and timber exhibition and conference based on the theme: "The Woods: Multiplier of Riches."

Previous forestry congresses were held in Buenos Aires in 1969 and in Posadas (Misiones province) in 1974.

The actual meeting place for the congress this year will be at the Cultural Center of the Municipality of Tigre on the outskirts of the city. Exhibitions and lectures for the congress will include pre-solicited studies as well as voluntary studies by local experts.

Subjects for discussion during the congress will include: policies aimed at facilitating national forestation plans; critical costs of timber in Argentina; forestry research; forestry protection; forestation studies; forestation in arid and flood zones; national and regional forestry policies; and relations between foresters and timber-consuming industries.

Acute Timber Shortage Forecast in Philippines

A recent study by the Population, Resources, Environment and Philippine Future (PREPF)—an agency consortium of the Development Academy of the Philippines, the University of the Philippines School of Economics, and the University of the Philippines Population Institute—revealed that the country will have an acute timber shortage after the year 2000 if the government reforestation program cannot match the rate of forest denudation.

According to PREPF, the government's reforestation program calls for only 3.2 million acres to be reforested out of the present 11.6 million acres of denuded forest. This will not begin to supply the country's future timber requirement. PREPF suggested one alternative: The strict regulation of wood exports to save part of the available timber for domestic use in the next century. But this will be difficult to implement in view of the country's balance of payments problem.

Malaysian Chemical Plant Damages Flora and Fauna

The (Asian) Chemical Fertilizer Plant in Kedah, Malaysia is reported to discharge a great deal of waste gas and water. The plant, the largest of its kind in Southeast Asia producing chemical fertilizers, herbicides and insecticides, has damaged the health and livelihood of the people. Recent reports showed that people bathing in the river have developed skin diseases and eye troubles. Fish and prawns have died in ponds and livestock has been poisoned. Paddy fields have been ruined and rice seedlings, vegetables, bananas and coconuts have withered. Because of all this, an anti-pollution campaign has been mounted in Kedah.



World Environment Report

14 APR 1978

VOL. 4, NO 8

Copyright © 1978. Center for International Environment Information.

APRIL 10, 1978

Inner Cities Problems in NATO States Discussed in Brussels

BRUSSELS—The roundtable discussion of the Committee on the Challenges of Modern Society (CCMS), meeting recently at NATO, focussed on the problems of the inner cities in the NATO states. In opening remarks, U.S. Environmental Protection Agency (EPA) Administrator Douglas M. Costle pointed out that while the U.S. has spent billions of dollars since the 1930s to preserve its cities, billions of dollars have also unintentionally been spent to undermine them.

Highway, sewer, and water systems have encouraged industry and the affluent to move to the suburbs, as have banks which prefer mortgaging suburban homes. "Federal tax policies," he said, "have shaped investment to favor new construction rather than rehabilitation; they favored use of raw materials rather than the reuse of scrap."

Costle said that the U.S. Department of Transportation has announced a policy to restructure Federal transportation programs in urban areas to be more responsive to the national goals of energy conservation, urban revitalization, and environmental protection. The transportation department and the EPA have been working together to coordinate air quality and noise pollution goals with transportation planning. The U.S., he pointed out, is trying to shift away from single focus programs to those that achieve multiple objectives.

The day before the CCMS roundtable, an ad hoc group of representatives met to review progress reports on environmental studies being conducted in pilot countries. Final reports on six of the 11 current studies will be submitted to the autumn 1978 plenary session. Those cover: advanced water treatment; solar energy; geothermal energy; rational use of energy; automotive propulsion systems/low pollution power systems development; nutrition and health.

Phase II of the disposal of hazardous wastes project started last January and has been divided into four areas, with the lead countries collecting and updating information on the state-of-the-art in each area. The French have already received a great deal of information in the field of surface treatment wastes, while Germany has just circulated a questionnaire concerning incineration technologies in NATO countries, anticipating answers by the end of the year.

In the landfill research area, Canada will use its

evaluation of the first phase results to form new project activities. The U.S. will consider technical and economic aspects of new biological, chemical, and physical treatment methods and processes, concentrating on the pre-treatment of wastes for safe disposal.

The final Solar Energy Pilot Study meeting, hosted by Germany, will take place April 17 and 18 in Dusseldorf, immediately followed by a major international conference on "Performance of Solar Heating and Cooling Systems" sponsored by the pilot study group. The conference agenda consists of invited papers on performance of operational solar heating and cooling system projects in CCMS countries, survey lectures, and an open forum discussion. This April 19-20 conference is the culmination of the pilot study's work.

JOAN INFARINATO

Swedish Industry to Invest Large Sums to Protect the Environment

STOCKHOLM—Over the next five years, Swedish industry is expected to invest approximately \$652 million on equipment and measures to protect the environment. The estimate was made by the National Board for Protection of the Environment (NBPE) in connection with a long-term analysis it is undertaking.

Roughly half of this spending will be made by the pulp and paper industry. Other industries involved are chemical, petroleum and coal, textile, leather, graphics, iron, steel and metal works, mining of iron ore, and quarrying of stone.

In making its estimate, the NBPE predicted that the

In This Issue

Energy Waste	2
World Environment Day	3
Smoking Ban	3
Toxic Substances	4
Threatened Plants	5
New Environment Ministry	5
In Brief	6

work of protecting the Swedish environment will continue at the same rate as over the last ten years during which, it said, important results were achieved. But the NBPE also noted that there still is much to be done within industry to achieve a satisfactory standard of environmental protection.

In its investment estimate, the NBPE took into account not only equipment designed solely to eliminate the discharge of harmful substances but also other types of equipment that contribute to reducing the damage.

SPECIAL DISPATCH TO *WER*

UNEP's Tolba Says Half of All Energy Used Goes to Waste

NAIROBI—More than half the energy put into daily use—in transport, industry, agriculture, households, and other consumer sectors—is wasted due to losses induced by technology and by man, according to Dr. Mostafa K. Tolba, Executive Director of the UN Environment Programme (UNEP). He makes this assertion in his "State of the Environment" report to be presented here at the annual Governing Council of UNEP from May 9-25.

This year's report focuses on issues of chemicals and the environment; on environmental disease (malaria); on the use of agricultural and agro-industrial residues for increasing the base of food production; and on the conservation of energy.

Energy Conservation—rising global demand for energy has been met to an increasing extent by the use of fossil fuels. But these resources are limited, and must be regarded as depleting assets; energy policies, therefore, are being re-examined, with special emphasis on conservation, Dr. Tolba says. "Energy conservation does not mean going without; it means going further with what is available," he adds.

Dr. Tolba notes that space heating requirements in homes and commercial buildings in Sweden are 30 to 40 per cent lower than in the United States because of the use of more energy-efficient structures. He also points out that the ordinary light bulb converts only a twentieth of the electrical energy it receives into light, while fluorescent bulbs convert over a fifth.

Railroads and waterways are more efficient than aircraft and automobiles. In fact, automobiles are the least efficient form of transport, yet they use most of the energy in this sector.

Enormous energy savings could be achieved if urban refuse, animal waste, and agricultural residues were processed for energy extraction, and if more scrap metal was recycled, and returnable bottles substituted for cans.

Environmental Disease—The same chemical properties which made DDT and chloroquin so successful against malaria are at the root of the present worldwide resur-

gence of the disease. Strains of malaria parasites resistant to known drugs are spreading rapidly—reported malaria cases in India increased from 40,000 in 1966 to 1.43 million in 1972 and to about 6 million in 1976.

The most frequently discussed requirement is a vaccine against the plasmodium parasite which carries malaria; progress towards this has only recently begun to be made, the report notes.

"At the present state of knowledge and technology, some combination of effective and ecologically sound measures against larval forms and other breeding habitats, controlled application of insecticides against adult vectors, and safe chemotherapy appears to be the rational approach to malaria control."

Food Production—Hunger and malnutrition today stem chiefly from inadequate distribution of resources and know-how. If residues now regarded as wastes are seen as valuable and unused raw materials, the report says, it will be possible both to reduce pollution and other undesirable environmental impacts and to increase the pace of food production.

For example, yearly production of grain crops leaves about 1.7 billion tons of straw, much of which is at present unutilized.

Opportunities to recycle and use agricultural and agro-industrial residues are enormous, and are limited only by lack of incentives and of appropriate research and development, the report concludes.

"As residues come to be recognized as potentially valuable resources, pressures will mount to ensure that they are adequately utilized and thus will contribute to national development."

CHARLES HARRISON

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$150 per year, \$20 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Gayle Wood
Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which is no way represents the official view of UNEP.

Sixth Annual World Environment Day To Be Marked on June 5th

On June 5, the United Nations Environment Programme (UNEP) will sponsor its sixth annual World Environment Day. Created by the UN Conference on the Human Environment held in Stockholm in 1972, World Environment Day provides a special time for activities which focus world attention on mankind's efforts to solve environmental and resource problems.

It is a time when representatives from environmental organizations around the world coordinate regional activities to demonstrate their concerns, a time when governments assess their efforts, and a time when the media reflect on the year's past efforts.

During this period, Dr. Mostafa K. Tolba, Executive Director of UNEP, gives his annual report on the state of the world's environment.

In connection with World Environment Day, Iran presents the Pahlavi Prize of \$50,000 to the world's outstanding environmentalist. First awarded in 1976, it was presented to past UNEP Executive Director, Maurice Strong. In 1977, it was jointly awarded to

Captain Jacques Cousteau and Dr. Peter Scott.

As the years pass, World Environment Day has gradually changed its focus from that of a North American/European effort aimed at anti-pollution and finite resource conservation, to a worldwide effort focussing not only on pollution but on the problems of development without destruction and the provision of better health and living standards to the people in developing areas of the world. Attention has also been focussed on new sources of environmentally-sound energy and appropriate technologies.

World Environment Day also provides an opportunity for environmentalists everywhere to participate in appropriate activities.

Further information about World Environment Day can be obtained from Mr. Gary T. Gallon, Manager, Environment Liaison Centre, P.O. Box 72461, Nairobi, Kenya. The Centre is coordinating the worldwide environmental effort of non-governmental organizations.

Greece Mounts Anti-Smoking Drive By Banning Radio-TV Tobacco Ads

ATHENS—The Greek Government has taken its first step in an anti-smoking drive by prohibiting advertising of tobacco products on radio and television.

The new ban was ordered by Minister of Social Welfare Spyros Doxiadis, who said "the move will hopefully contribute to a decrease in smoking by Greeks, believed to be the heaviest smokers in Europe."

Statistics showed that cigarette consumption increased from 12.1 billion cigarettes in 1960 to 20 billion in 1976, while in the first nine months of 1977 alone Greeks smoked 21.1 billion cigarettes. Regarding the annual consumption for Greeks aged 15 years and older, the average was 2,822 cigarettes in 1976, almost treble the 1,011 cigarettes in 1960.

Doxiadis said that once problems created for the tobacco trade in the industrial and commercial sectors are realistically tackled, "then further measures will be taken up."

The Minister specified these planned measures as a ban on advertising tobacco products in the printed press as well, the placing of health warnings on cigarette packs,

and the expansion of the smoking ban to more enclosed public places, such as government offices, schools, and post offices. Thus far smoking has been forbidden in cinemas, theaters, and in public transport.

Doxiadis also said that his ministry plans a nationwide campaign through radio and television and in public gatherings "to enlighten Greeks on the dangers of smoking."

He added that Greece is a major tobacco producing country and that the state taxation income, representing seven per cent of all tax income from goods, is also an important consideration. "But I don't think that the anti-smoking drive will seriously affect the industry, as surveys have shown in countries where such campaigns have been conducted," he said.

Doxiadis, a physician by profession and a confirmed non-smoker, last January issued a circular to his ministry staff requesting them to reduce smoking as much as possible and to respect non-smokers. "I hope the other ministries will follow our example," he said.

KYRIACOS CONDOULIS

16 Nations Send Experts to Toxic Substances Conference in Stockholm

WASHINGTON—Environmental experts from the U.S. and 15 other nations will gather April 11 in Stockholm's Hasselby Castle for three days of conferences on international cooperation in the control of toxic substances. Included among the delegates invited by the Swedish government will be representatives of the Organization for Economic Cooperation and Development (OECD), the UN Environment Programme (UNEP), the World Health Organization (WHO), the European Community (EC), and the International Labor Organization (ILO). Douglas M. Costle, Administrator of the Environmental Protection Agency (EPA), will lead the U.S. delegation.

Although the draft agenda includes such specific topics as the confidentiality of data and the risks of non-tariff barriers to trade, the whole tenor of the meetings will be informal. "The hope and goal," says Alice B. Popkin, Associate Administrator of the EPA's Office of International Activities, is to help the industrialized nations "harmonize their domestic practices" and to "outline the issues needed for international action."

The conference is in part the outgrowth of several meetings Costle and his deputy, Barbara Blum, had with environmental officials in Europe last year. Those talks, Popkin says, underscore a widespread "need and desire to do something about international control of toxics." Last October, in an address to the Committee on the Challenges of Modern Society at NATO headquarters in Brussels, Costle first called for an international convention to control the movement of toxic substances in world commerce. "We now have a unique and, I fear, fleeting opportunity to insure that our evolving national regulatory programs are consistent in their approaches to the problems we all face," he said, striking a theme he will repeat in Stockholm.

Popkin and other U.S. environmental officials hope the Stockholm talks will form the basis for a continuing dialogue and exchange of information on toxic substances, and lead eventually to the kind of convention Costle envisions. One obvious benefit of such mutual exchanges is that they would reduce the need for replicating expensive scientific studies. Even more important, perhaps, closer cooperation among the industrialized nations—"letting the computers talk to each other," as Popkin puts it—would produce an early warning system and pinpoint a dangerous new substance "before it becomes a disaster." Finally, a systematized flow of information would be a boon to developing nations that lack an adequate supply of trained toxicologists.

Popkin does not expect Stockholm to produce a "final commitment" to an international convention on toxic chemicals, a goal that Costle thinks may take five years to achieve. Rather, she says, it will enable the industrialized nations to assess their priorities, look at the gaps, and

enable them to "identify what can be done with the existing institutions" in the meantime.

While Popkin is emphatic in pointing out that Stockholm is a "first step," she is nevertheless hopeful that the talks will obviate "years of meetings." The important thing, she sums up, is "not to lose this opportunity."

PETER PHILIPPS

ECE Charges Energy Policies Do Not Match New Problems

GENEVA—The industrialized world's leading energy experts will meet here later this month to discuss urgent questions that are expected to affect the energy economy of Europe and North America for at least the next two decades.

The UN's Economic Commission for Europe (ECE), sponsor of the meeting, has prepared a report for the session which declares that new energy issues that have arisen in the 1970s have not so far been matched to a great enough degree by changes in the energy policies of the countries considered.

"Growing imbalances in the energy system could have severe repercussions for the economies of the countries of the region within a decade and almost certainly by the turn of the century," the report warns. It states that "it is imperative" to adopt policies giving far more attention to international cooperation and trade, demand management (especially through conservation), and better supply management, including the faster development of unconventional forms of energy.

In introducing the study, ECE Executive Secretary Janez Stanovnik of Yugoslavia declared that the time is ripe to assess the medium- and long-term effects of new energy issues and to consider the contribution ECE could make to easing the passage from a growth-oriented economy based on comparatively cheap and abundant supplies to one characterized by high energy prices, finite fossil fuel resources, and environmental, technological, and socio-economic constraints.

He identified seven new issues:

- The impact on energy demand of energy costs rising in relation to other production factors.
- The need for changing patterns of demand, especially through energy conservation in such key areas as human settlements, transport, and industry.
- The effect of "stringent constraints" on oil and uranium reserves, reaching "dramatic proportions" by the year 2000.
- Continuing delays in completing energy research and development programs, particularly for nuclear power, and receding horizons for new energy technologies.
- The increasing importance of the use of land and the climatic consequences of energy strategies.
- Increased demands for capital for energy.

- The need to diversify and improve energy supplies through trade and projects of common interest to ECE countries.

The energy strategies so far adopted may be adequate if a number of conditions are met, the study suggests. These include an average economic growth rate of not less than four per cent a year for the region as a whole; large enough increases in prices paid by consumers for energy to curb demand and encourage exploration of high-cost distant resources; unfettered trade in energy; the feasibility on all counts of key research and development projects; the availability of capital to expand the production, conversion, and transport of energy; a greater role for nuclear power and coal; the acceptance of the environmental consequences of present strategies; and the channelling of supplies of hydrocarbons to sectors where substitution is not possible.

WILLIAM G. MAHONEY

British Book Analyzes Rare, Threatened Plant Species

LONDON—Since plant recording began in Britain in the seventeenth century, 19 species have become extinct. A further 46 will be lost by the end of this century unless some action is taken now.

All of these, plus a further 95 plants described as "vulnerable," are included in a total of 321 British plants described as rare and threatened in a "Red Data Book—Vascular Plants," compiled and written by Dr. F.H. Perring and Lynne Farrell of the Institute of Terrestrial Ecology, a research institute of the Government's National Environment Research Council.

The book, published by the Society for the Promotion of Nature Conservation and produced with a grant of \$4,550 from the World Wildlife Fund, gives three main causes for the decline of these plants, which represent 10 per cent of British wild plants. They are changes in land use, grazing, and natural causes. Agricultural practices constitute the main changes in land use.

Under the 1975 Conservation of Wild Creatures and Wild Plants Act, 21 plant species are protected, but the Red Book lists a further 100 in urgent need of protection. In the meantime, Nature Conservancy Council continues to acquire National Nature Reserves. In its third Annual Report, published last December, the Council lists the acquisition of eight more, plus additions to six others. Nevertheless, 50 per cent of sites containing rare plants are still not protected.

The authors hope their research will provide a basis for action. "It is becoming increasingly important to balance legitimate developments of industry and agriculture on the one hand, with the conservation of the environment on the other: wise decisions demand correct facts."

BARBARA MASSAM

Turkey Establishes Its First Environmental Cabinet Post

ISTANBUL—Premier Bulent Ecevit's new Government has decided upon strong measures to counteract pollution and other environmental problems. As an earnest, Minister of State Faruk Sukan has been assigned to deal with the country's environmental problems. This is the first time in Turkey's history that such a Cabinet post has been created.

Minister Sukan promptly announced a series of meetings with various officials and experts during the next few months "in order to set up the necessary organization" and to seek "solutions to the serious environmental problems, particularly in the industrial area of Izmit, the Golden Horn in Istanbul and in the Bay of Izmir."

The Minister recalled that heretofore environmental problems were not taken seriously in Turkey. "This neglect has led to the current grave situation," he said. "Now there is a wide-spread acknowledgement of the importance and urgency of the problem. But first of all an effective organization is needed to deal with the situation. The Government is planning to set up such a structure that will devise a program for short-term as well as long-term measures.

"Closer cooperation and coordination between the various branches of the Government concerned with environmental problems will also be established. We shall have to introduce new laws and to amend the existing ones to be able to fight effectively against pollution. Before taking such action we shall, of course, study similar legislation, policies, and experiences of other countries—particularly countries in the process of industrialization—and try to adapt them."

As a first practical step, the Turkish Government has added provisions to the country's new five-year development program as it affects environmental conditions. New industrial ventures and investments in various parts of the country will henceforth have to take these conditions into considerations.

Meanwhile, a report prepared by experts for the Ministry of Industry and Technology revealed "a dangerous increase of pollution" in Istanbul, due primarily to industrialization. The report points out that the rapid expansion of Istanbul in the last few years (present population exceeds four million) has led to the creation of large, densely populated residential areas in what used to be strictly suburban industrial zones 10 or 15 years ago. Three cement plants as well as dozens of chemical and manufacturing factories are now within city limits, inside or near residential quarters, "threatening the lives of tens of thousands of people," the report says.

The experts suggest two alternatives: either to set up filtering systems in all the industrial plants (particularly the cement and chemical factories) or—as a long-term measure—to remove these plants to other places.

SAM COHEN

In Brief...

Pakistan to Concentrate On Solar Energy in Rural Areas

Sheikh Manzoor Ahmed, Pakistan's Secretary for Science and Technology, said in Islamabad recently that resources of solar energy would be developed and organized and mainly applied in the remote rural areas of the country for fighting waterlogging and salinity, and for setting up agro-based industries.

Presiding over the two-day national seminar "Prospects and Challenges of Solar Energy" at the Science Center, the Federal Secretary said that in order of priorities "we will concentrate on developing solar energy in the 40,000 remote villages that are out of reach of the national electric grid."

To meet the challenge of the energy crisis, the only alternatives are that "Pakistan go nuclear and go solar," he said. Nuclear energy, he added, has its limitations and can best be applied in the urban areas. But Pakistan's foundation and its survival depend mainly on the development of its rural areas, some of them extremely remote, where the bulk of population resides.

New Zealand to Substitute Small Power Plants for Large

The New Zealand Government has decided, primarily for environmental reasons, to scrap plans for a 1,400 MW conventional steam power station and replace it with a number of smaller recuperative combined cycle power stations. The move followed widespread opposition to the proposal for one large base load station sited in a rural coastal area near Auckland.

The decision was a bold move by the New Zealand Electricity Department which has not previously had experience with combined cycle stations.

As plans for the conventional station bogged down, the Government in 1977 commissioned a report from Preece, Cardew and Ryder, of London, on the comparative capital costs of conventional plant and the more recently developed combined cycle alternative. Simultaneously, officials were sent overseas to assess the operational experience and reliability of combined cycle, factors that had previously sparked departmental caution.

The studies confirmed the advantages that adherents had been claiming for the technology: lower cooling water requirements, the economic viability of small generating units, lower capital cost and construction time, and higher thermal efficiency—an important consideration in view of the proposed premium gas fuel to be used.

BOD of S. Korean Rivers Exceeds WHO Standards

A recent survey conducted by the South Korean Ministry of Health and Social Affairs shows that the Biological Oxygen Demand (BOD) of water in the downstream of the Han River has reached 9.4 ppm. This is much higher than the 6 ppm recommended by the World Health Organization as the maximum permissible level for potable water supply sources.

In addition, the survey indicates that tributaries of the Han such as the Chungnyang, Anyang, Chonggye, Kongdok, and Hongje are so polluted that the water is not even suitable for industrial purposes. The Ministry has urged the expansion of sewage systems and the reinforcement of supervision over the disposal of waste water from nearby factories.

Charge American Billionaire With Misuse of Chemicals

Camilo Martin Vianna, the president of the Brazilian Society for the Preservation of Natural Resources, has accused multimillionaire Daniel Ludwig of using chemicals to destroy Amazon trees and large areas used as pasture on his six-million-hectare estate.

According to Sr. Vianna, the identical chemicals were used by the U.S. Army to destroy jungle areas in Vietnam when it fought North Vietnam guerrillas.

Sr. Vianna further charged that if the process continued, the Amazon jungle could become a desert within 40 years.

Australian Unions Demand Uranium Mining Safety

Australian trade unions recently voted to allow the existing uranium export contract to be honored but to block new mining projects in the country. According to spokesmen for firms involved in two major uranium projects, Ranger and Jabiluka, the Australian Council of Trade Unions and the government are expected to meet soon to discuss union demands for assurances on safeguards for uranium mining and exports and the protection of aboriginal rights in the mining areas.

George MacKay, Managing Director of Ranger and Chairman of the Australian Uranium Producers' Forum, said the union-government discussions will lead to some delay in the development of the projects. In the meantime, EZ and Peko-Wallsend Ltd., the Ranger partners, will also hold talks with the government on legislation on existing Ranger agreements. There will also be talks with the aboriginal Northern Land Council over financial payments and other terms and conditions.

World Bank to Lend \$500 M For Forestry Development

Warning that forest areas in developing countries could disappear altogether within 60 years, the World Bank recently announced that in the next five years it plans to lend some \$500 million in the forestry sector, and to change radically its approach to forestry development. The outline of the problem, and the ways in which the Bank will seek to help bring a halt to dwindling forest resources in the developing world are contained in a new report, "Forestry."

The forest area in developing countries today totals more than 1,000 million hectares, or only one-half of what it was at the turn of the present century. Population pressure, the report states, is the principal cause of the rapid over-exploitation of what is—or at least should be—a renewable resource, which endows the world with benign ecological effects and whose uses are all but limitless.

"Humans are, out of perceived necessity," the forestry study notes, "destroying the basis of their own livelihood as they violate the limits of natural systems."

The most vulnerable are the poor of the world, the paper adds. "Their search for the basic requirements of food and fuel often force them to hasten the destruction of their own productive environment," the Bank study continues.

"The way ahead," the paper states, "is to establish fuelwood plantations; shelter belts; fruit, nut, and fodder trees; and rural forestry protection works, including reforestation of eroded catchment areas and sand dune stabilization."

In its first 31 years (fiscal 1946-76), the World Bank's lending for forestry and forest industries amounted to about \$240 million for 17 projects. About a third of the projects were accounted for by investments in industrial plantations, designed to supply logs and pulpwood for the domestic market.

Copies of "Forestry" may be obtained by writing to: The World

Bank, Publications Unit, 1818 H Street, N.W., Washington, D.C. 20433, U.S.A.

ECE Espouses Combined Heat And Electricity Production

The United Nations Economic Commission for Europe (ECE) announced in Geneva recently that a seminar on the combined production of electric power and heat will be held at the Congress Center in Hamburg, Germany, Nov. 6 to 8, 1978.

An ECE spokesman said that combined heat and electric power production has served both domestic and industrial needs in some countries for many years, but that new aspects of the subject have surfaced since the oil crisis.

He noted that combined heat and power production has become part of the debate on energy saving, maximum efficiency in large enterprises, and environmental protection. It also enters into discussions on making better use of capital invested in production and distribution systems, on the application of nuclear energy, and the introduction of heat pumps, storage heating, and integrated heating and cooling systems, he said.

Britain's Wyre Forest Now A National Nature Reserve

Wyre Forest, one of the largest surviving areas of native woodland in Great Britain, has been declared a new National Nature Reserve by the government's Nature Conservancy Council (NCC).

The 590 acres of the new reserve lie on the boundaries of the midland counties of Hereford, Worcester and Salop, an area which is also a

meeting point for several native woodland types. These include the sessile oak of northern and western Britain and the pedunculate oak of the south. The service tree and small-leaved lime are like those of the limestone woodlands in the south and west of Britain.

The Wyre Forest contains scarce plants, such as the columbine, lily of the valley and wood cranesbill, and rare insects such as the terrestrial caddis fly. It is rich in animal life—the fallow deer, the otter, dormouse, and several bat species—and its breeding birds include pied flycatchers, wood and grasshopper warblers. 320 species of fungi have been recorded.

EEC to Finance Further Uranium Prospecting

The Commission of the European Communities has agreed to loosen its purse strings for further uranium prospecting in Community territory. Encouraged by a significant find in Kvanefjeld in south west Greenland, the Commission accepted the proposal of Guido Brunner, Commissioner for Energy, to offer a further 5 million units of account (about \$6.25 million) for prospecting.

Covering the period between now and 1980, the funding offered is usually between 30 and 70 per cent of the cost of a given project. This is the third offer made by the Commission for uranium exploration, bringing the total to 11 million units of account or about \$13.75 million.

The drilling program in Greenland, jointly financed by the Commission and the Danish government, has turned up reasonably assured resources of 27,000 tons, 11,300 more than expected and 16,000 tons of estimated additional resources, 4,000 more than expected. Present Community consumption is around 3,000 tons a year.

Canada Aids Colombia On River Basin Reforestation

The Canadian government has made a \$6.5 million loan to Colombia for a conservation and reforestation program in severely eroded river basins. The Canadian loan will help underwrite a 10-year reforestation and soil conservation program begun in 1976. Total cost of the project, which will benefit some 5,000 families on 100,000 acres, is \$10 million.

Require Land Clearing Permits In Venezuela's Amazon Region

By Presidential decree, the long-standing Forest, Soils and Water Law has been extended to cover Venezuela's Amazon federal territory, consisting of roughly 175,750 square kilometers of jungle bordering on Brazil.

The population of isolated Indian tribes (about 26,000) now will be required to apply for permits to burn the land they clear for farm plots, and to fell trees for making pirogues.

Since all permits for wood-cutting in the Amazon Fed Territory have been suspended, landowners must now report the amounts cut to date to the Environment Ministry or suffer the penalty of confiscation of their stock.

Monitoring Air Pollution With Moss and Lichens

The State of Bavaria has established a two-and-one-half year research program to determine how moss and lichens can be used in a bio-indicator network to monitor air pollution.

The Bavarian Ministry for the Protection of the Environment announced in Munich recently that it has directed the Hydrological Department of the University of Bayreuth to conduct the research to determine how certain so-called environmental (organic) chemicals—i.e., biocides, polycyclic aromatic hydrocarbons, polychlorinated biphenyls, and heavy metals—divide or mutate as far as space and time is concerned.

It is hoped that the results of this research will help the State in building up its bio-indicator network to the point where all essential environmental chemicals in the air can be registered and their effects on vegetation controlled.

It is assumed that the environmental chemicals are stored in moss and that the researchers will be successful in excluding the influences upon moss of the stones, soil, and trees upon which it grows.

Malaysia Moves to Control Palm Oil Mill Effluents

Malaysian Minister for Science, Technology and Environment Ong Kee Hui announced that new regulations to control and reduce pollution by palm oil mill effluents will be introduced for a four-year period. The regulations, which require all palm oil mills in peninsular Malaysia, Sabah, and Sarawak to install anti-pollution systems, will affect about 110 palm oil mills in the country. It is expected that pollution by palm oil effluents will be reduced by 75 per cent within the first year of the new regulations.

At present, 42 rivers in the country are grossly polluted and 16 others are moderately polluted from palm oil effluent discharge. Some of the grossly polluted rivers are the Sungei Klang, Sungei Melaka, Sungei Perak, Sungei Muar, and Sungei Johore.

China Uses Solar Energy To Power Light-Buoys

China has succeeded in applying solar energy to light-buoys at Tientsin port. In 1977, a light-buoy with a 290-watt solar battery was manufactured and installed. Previously, light-buoys in Tientsin have switched from kerosene, acetylene, and propane to chemicals for the supply of power.

Pakistan's Dolphins Thrive In Fresh-Water Sanctuary

The Blind Dolphin of the Indus River in Pakistan, which appeared to be threatened with early extinction, is now increasing in numbers following conservation measures taken by the Pakistan authorities with assistance from the World Wildlife Fund (WWF).

Prof. Georg Pilleri and Ms. Jane Knuckey of the Brain Anatomy Institut, Bern, Switzerland, have discovered that there are now 198 dolphins in an 81-mile-long sanctuary between the Sukkur and Guddu dams, nearly 30 of them babies. This compares with 50 counted in January, 1975.

The Indus dolphin (*Platanista indi*) is one of the few species of freshwater dolphins—others are in the Ganges, Yangtze, Amazon, Rio de la Plata, and Orinoco. Living in murky water, sight has little value to the Indus dolphin and it has become blind, relying on highly-developed sonar or echo-location for free movement and feeding.

They once lived in large stretches of the Indus, but in the past 60 years dams have been constructed that have restricted their movements and split up the population. Isolation and concentration permitted their easy capture by fishermen.



World Environment Report

14 APR 1978

VOL. 4, NO. 7

Copyright © 1978. Center for International Environment Information.

MARCH 27, 1978

Mexico and U.S. Mount Joint Attack on Border Air Pollution

CIUDAD JUAREZ, Mexico—An international “handshake agreement” between health authorities in this Mexican border city and their counterparts in neighboring El Paso, Texas, is clearing the way for a two-nation attack on air pollution in the area. No international treaty-signing was involved; the project arose from the realization by concerned officials that only through joint action could their mutual environmental problems be solved.

Since establishment of the first agreement between Ciudad Juarez and El Paso officials in 1972, similar programs have been initiated in four other border twin-city areas: Brownsville, Tex., and Metamoros, Mexico; McAllen Tex., and Reynosa; Eagle Pass, Tex., and Piedras Negras; and Del Rio, Tex., and Ciudad Acuna. All were the result of “the goodwill expression of cooperative efforts of border health authorities,” said Dr. Boris Velimirovic, chief of the Pan American Health Organization border field office in El Paso which is coordinator of all the projects.

In an interview with *World Environment Report*, Dr. Velimirovic emphasized that although the actual programs are “under the joint responsibility of the local authorities, we coordinate the actions and evaluate the program with the parties involved. Up to now, this is an air monitoring program only, since there are not as yet any agreed upon international air standards to be enforced.

“However, the U.S. Environmental Protection Agency (EPA) and the Mexican Subsecretariat for Environmental Improvement are actually conducting efforts toward the agreement of environmental health standards for the border, including air,” he said.

Sources of the air pollution were identified as a copper and lead smelter, two oil refineries, and auto traffic on the U.S. side, and in Mexico, a large cement plant, open burning at dumps, blowing dust from dirt roads, car traffic and open burning for heat, primarily from tires. This data was given *WER* by Ruben Kretzschmar, section chief of environmental health services for the El Paso City-County Health Department.

An international air pollution conference, hosted by El Paso last year and drawing Mexican observers, was aimed at convincing officials of the EPA and other agencies and individuals involved that an international

solution is the “only logical approach” to the problem, Kretzschmar said. The next step is to arrange a meeting between representatives of the Mexican and U.S. Governments with, it is hoped, resulting agreement to create an officially-sanctioned joint program. The program would include an emissions data bank, meteorological data, and a listing of all major and minor pollution sources.

The environmental health chief said the final solution would “have to be a treaty between both countries to create an International Environmental Commission,” similar to the existing International Boundary and Water Commission. An International Joint Commission already exists for the U.S.-Canadian border, he said.

KATHERINE HATCH

‘Green Ones’ Lose French Election But Will Continue Political Fight

PARIS—Last year, when environmental candidates (known as the “green ones”) ran in the Parliamentary elections for the first time, they surprised themselves and probably everyone else by winning nearly 10 per cent of the vote. This year, however, although they fielded 200 candidates against those of the major political parties, they could only muster slightly more than two per cent of the first round vote and 12.5 per cent is needed to enter the second, final round.

However, this setback at the polls may be misleading as an indication of the strength of the eco-political movement in France. For one thing, many voters were preoccupied with the forecasts that the major leftist parties might capture the majority of the first-cast votes.

In This Issue

Environmental Engineers	2
Diesel Fuel	2
AID's Coordinator	3
Tanker Ballast Compromise	4
Israel's Nuclear Plant	5
Stockholm Settlements Meeting	5
In Brief	6

But they did not, and such lack of public enthusiasm undoubtedly hurt the environmentalists as well.

Nevertheless, the ecologists, as they are also called, professed not to be dismayed. They maintained that their "main goal was to inform the public on environmental issues. Even if we had received 10 per cent of the ballot, we could not have won any seats due to the unfairness of the electoral system.

"Our national coalition *Ecologie 78* intends to remain neutral and will neither take sides nor instruct our constituency with regard to the runoff," said the party's national spokesman, Brice Lalonde, 32, who was a candidate from the Left Bank.

Lalonde is considered by many French ecologists to be the most ideologically pure of all the environmental politicians. When asked why he would not approve of plastering Paris's walls with campaign posters, Lalonde pointed out that to use posters you have to cut down trees.

For the future, Lalonde is thinking of environmental political "combat" extending over the next two decades. "Our target," he says, "is to encourage the fusion of the economy with the ecology." Finally, he adds, "I hope we shall never pretend we've always been right, or have the overall answers. However, we do and can give the best advice."

PETER DEWHIRST

Bavarian Academy Graduates Its First 'Environmental Engineers'

MUNICH—The first seven "environmental engineers" have been graduated from Bavaria's special environmental protection academy.

Environmental Protection Minister Alfred Dick recently presented them to the press here and declared that important tasks were awaiting them. He predicted that they would enjoy outstanding careers in governmental, communal, and private sector ecological work.

Another 22 will be graduated in the summer of this year, followed by a new class at the end of each semester. Their eight semester course qualifies them as physical-engineers with a specialty of "physical chemistry with emphasis upon environmental techniques."

This new field of study had been developed with the support and assistance of the Bavarian Environmental Protection and the Education and Culture Ministries.

A survey conducted in 1973 on educational programs showed the need for 450 environmental engineers in the state economy and another 150 in the public and private sectors. A Ministry spokesman said that their tasks will range from "environmental diagnosis" to "environmental therapy" and would involve air purification, anti-noise measures, garbage and waste removal, and water protection.

SPECIAL DISPATCH TO WER

Atmospheric Pollution in Athens Reduced by Use of Diesel Fuel

ATHENS—The ban on the use of mazout (heavy fuel oil) for central heating in apartment buildings and for use in manufacturing industries and its replacement by diesel oil has considerably reduced atmospheric pollution in Athens, according to a recent government report.

A Ministry of Social Welfare announcement said the reduction was over 70 per cent in comparison to last year, and that it could drop further if the measures were intensified.

The use of diesel oil in place of mazout for central heating was first ordered by the government in 1976 only for apartment buildings around the Athens Acropolis to try to save the 2,500-year old monuments from continuing decay. Mazout had proved to be most responsible for atmospheric pollution in the capital, and a major threat to the priceless structures. Late last year that ban was extended to manufacturing industries in the area as well.

The announcement said that measurements taken in December, the peak fuel-using month, showed that the quantity of sulphur dioxide in the atmosphere never exceeded 60 micrograms per cubic meter of air, while the minimum was 26 micrograms. In the same period of 1976, the average rate was 170 micrograms, while the maximum several times reached the 257 mark.

According to international standards the average rate per cubic meter of air should be 80 micrograms per 24 hours.

The announcement also said that strict control will be effected to check that chimneys and heating apparatuses are clean to assure perfect combustion.

KYRIACOS CONDOULIS

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$150 per year. \$20 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Gayle Wood
Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in WER, which in no way represents the official view of UNEP.

SPECIAL REPORT: An Interview With AID's Environmental Coordinator

WASHINGTON—Albert C. Printz, Jr., is probably the only U.S. Government official whose job was created in an out-of-court settlement. It came about in 1975, when the State Department's Agency for International Development (AID) settled a suit brought by the National Resources Defense Council, the Sierra Club, the Audubon Society, and the Environmental Defense Fund and, among other things, agreed to establish a new office to oversee its assistance programs: Coordinator for Environmental Affairs. In this capacity, Printz makes sure that AID considers the environmental effects of programs it funds in developing countries, a function to which he brings 15 years' experience in pollution control.

The suit by the four environmental groups, Printz says, "kind of brought everything to a halt," and led to the formulation of a two-part policy that has governed AID projects ever since. For one thing, the Agency decided to help developing countries to better understand and evaluate the potential environmental consequences of proposed development projects, as well as how to take effective environmental protection measures. For another, AID decided that before any development project is undertaken it would identify and consider the environmental consequences in consultation with the host country.

One-Man Show

These twin objectives translate into a formidable task, as AID's 750-page environmental impact settlement (EIS) on its pest management program attests. Remarkably, for so far-reaching and complex a set of issues, Printz's is a one-man show plus a secretary working out of an unpretentious office in the State Department. Besides keeping a low profile, Printz also likes to work informally with the handful of environmental officers of the Agency's various regional bureaus. "We get together on a need basis," he says.

Before the 1975 suit, AID paid scant attention to the potential environmental hazards of projects it helped fund, and it complied with requests for various pesticides, fungicides, and herbicides rather routinely. Today, all AID undertakings must conform to the concepts embodied in the National Environmental Policy Act of 1969. In a policy directive issued in August, 1975, the Agency asserted that "quality-of-life improvements in the developing world can be realized and sustained only by the acceptance of the principle that environmental planning must be an integral component of national development plans and programs."

Printz puts it more succinctly. "The suit forced us to take a more responsible look at our programs," he says, and "we are beginning to show leadership among the developing nations."

Although he broke new ground when he assumed his post, Printz feels that he has succeeded in helping to turn

AID's management around. Thus, in a fairly dramatic departure from the past, the Agency now works to prevent harmful environmental effects by incorporating safeguards early in the design of overall development strategies and projects. In addition, where harmful environmental effects are unavoidable, the Agency tries to achieve its objectives by alternate means.

Not the least part of AID's new approach involves closer consultation with host countries and stepped up efforts to help LDCs train their own environmental experts.

Environmental Analyses

In recent years there has been a marked shift away from capital projects to "humanitarian projects," but every project, be it in the remotest corner of the world, now undergoes the same sort of environmental scrutiny that is accorded a domestic project. AID activities within specific nations are subject to environmental assessments in which both the host government and the country's citizens are encouraged to take part. For activities that are not "country-specific," such as pesticide procurement, AID develops an EIS. Depending on a particular pesticide's registration status in the U.S., all pesticide projects now require a risk/benefit evaluation, except in emergency situations.

"The EIS process opens the door to other nations' projects to be reviewed by U.S. courts," Printz points out.

Although AID's new rules and regulations have been in effect only since June 30, 1976, Printz feels that the Agency has made great strides in "turning around its image" in the eyes of environmental groups that once considered AID callous about programs in developing nations. He attributes much of that success to internal training programs directed at "sensitizing AID officers to environmental matters." Part of that training is carried out in two-week sessions at Clark University in Massachusetts, where AID personnel study case histories and are taught to integrate environmental analyses with overall development activities.

Printz has been involved with the environment all his working life. Before joining the State Department, he held several posts in the Environmental Protection Agency (EPA), including those of director of the nationwide discharge permit program, and chairman of the American Section of the International Working Group on Abatement and Control of Pollution from Dredging Activities, an offshoot of the Great Lakes Water Quality Agreement. Printz majored in sanitary engineering at the University of Florida (his native state), where he received a BS in 1959 and an MS in 1960. Before joining the EPA at the time of its creation, he spent eight years in the Great Lakes region in various water pollution control programs of the Departments of Interior, and of Health, Education and Welfare.

PETER PHILIPPS

IMCO in London Compromises On Oil Tanker Ballast Systems

LONDON—The expected clash between the United States and Britain over oil-pollution policy, particularly in relation to the segregated ballast tank system, ended in a compromise agreement at the London conference of the Inter-governmental Maritime Consultative Organization (IMCO) held last month.

The United States pressure for compulsory installation of segregated tanks extended not only to newly-built ships but also to existing ones, and there had been rumors of unilateral action. Some pollution of the sea occurs when tankers discharge the water pumped into their oil tanks as ballast on return journeys, for this absorbs the sediment and remains of the oil originally filling the tank. By carrying additional, segregated tanks solely for the use of water ballast on return journeys, this problem could be eliminated.

At present Britain uses a system of crude oil washing and claims that the degree of pollution remaining in the discharge after this does not justify the expense of adapting existing tankers. The cost of such retrofitting is estimated at \$4,875 million world wide, of which \$292.5 million would have to be spent on British ships. The British Government does not want to see the higher transport costs which would result from such large capital outlay adding to the British oil import cost.

The compromise reached was for the two systems to be declared as optional alternatives. The Conference therefore agreed that, as additions to the 1973 Marine Pollution Convention, to come into effect by 1981, the alternative systems should be fitted to existing tankers over 40,000 tons and newly-built tankers of more than 20,000 tons.

In an attempt to reduce accidents and oil spills at sea, the Conference agreed that all ships between 1,600 and 10,000 gross tons should carry radar, and those over 10,000 tons should have two radar sets, each capable of operating independently. It was also agreed that duplicated or dual steering gear should be fitted to all tankers of more than 10,000 gross tons. To back up these measures, the Conference agreed on tighter inspection and more frequent surveys.

ALAN MASSAM

European Commission's President Outlines Environmental Policies

BRUSSELS—In announcing the European Commission's program for 1978 in Strasbourg recently, Commission President Roy Jenkins outlined ambitious plans in the environmental policy field and took the European Council to task somewhat for not moving quickly on Commission proposals in the energy field.

In the environmental area, the Commission will concentrate on water management, environmental impact of chemicals, noise abatement, prevention of environmental degradation, and nature conservation.

The Commission's plans for sending water protection proposals to the Council for approval include: measuring methods and sampling frequency of water pollution, the quality of water for agricultural use, and a system of imposing charges for water pollution.

If negotiations now under way are successful, the Commission will also ask the Council to sign and conclude the protocol on the Protection of the Mediterranean Sea against pollution from land-based sources.

With regard to the environmental impact of chemicals, the Commission will produce a proposal to control hazardous industrial activities in which highly toxic or persistent substances are used. It also intends to set up a Scientific Advisory Committee on Toxicology. As for the impact of new substances on man and the environment, the Commission will take preparatory steps for negotiations with the U.S. Environmental Protection Agency for the mutual exchange of data covered by American legislation and pending Community legislation.

During the second half of 1978 the Commission will make new proposals on noise abatement for household equipment and certain types of construction equipment. It will also recommend a reduction of noise caused by light propeller aircraft.

Noise Abatement

During the year the Commission also plans to report on procedures adopted by Member States for assessing the environmental impact of any measures that could lead to environmental degradation. It will also recommend the application throughout the Community of the Washington Convention on International Trade in Endangered Species of Wild Flora and Fauna.

Jenkins suggested that the European Economic Community should take the lead with a more ambitious program in the field of new sources of energy, such as solar, geothermal, and wind and wave power, as well as in developing existing sources.

The Commission plans to press for Council agreement on its proposals for financial support to priority projects in the areas of energy savings, alternative sources of energy, oil and gas exploration, and the use of coal in power stations.

During 1978 the Commission also intends to promote energy-saving among consumers by first issuing a proposal for a directive on labeling of household appliances and, later, a number of proposals on energy consumption by buildings, motor vehicles, domestic appliances, and industry. In addition, the Commission will send communications to the Council on whether the structure of energy prices is compatible with energy saving objectives. During the second half of the year the Commission also plans to make a proposal on a nuclear stockpiling policy.

JOAN INFARINATO

Israel's First Nuclear Plant To be Sited in Negev Desert

JERUSALEM—The siting of Israel's first nuclear power station in the northern Negev desert, rather than on the Mediterranean coast, is deemed feasible in a recent preliminary study prepared for the government's Environmental Protection Service (EPS).

The nuclear plant had initially been proposed for a site on the coast between the cities of Ashkelon and Ashdod. At the behest of the EPS, a Tel Aviv consulting firm determined that sea-water lakes measuring 10 square kilometers could be created at several points in the Negev some 30-50 kilometers from the coast without contaminating any fresh water resources in the underground table. These lakes would serve as cooling ponds for the power station's condensers. They could also be used for boating and fishing, helping turn a barren desert into an environmentally sound recreational area.

The report said that the lakes could be constructed and water piped to them at three to five per cent of the cost required to build a nuclear station with two 900 megawatt units which such a lake would serve. Annual operating costs would be 2.3-4.3 per cent of the cost of the electricity produced, according to the report.

Siting the power station inland would reduce the risk to neighboring towns and keep Israel's limited shoreline free for conservation and recreational purposes. The preliminary study has been forwarded by the EPS to interested parties for comment.

ABRAHAM RABINOVICH

India's Export of Frogs' Legs Poses Insect-Crop Problem

NEW DELHI—Export of frogs' legs is posing an ecological problem in India.

Today, India's frogs' legs are flooding the markets of Europe and the U.S. and Indian exports have leaped five times within a couple of years.

In 1974-75, India exported 466 tons of frogs' legs and earned more than 81 million while this year the figure jumped to 3019 tons valued at more than 85 million.

Indian scientists have begun to complain that the rate at which frogs are disappearing from the rice fields and wetlands, where they protect crops by devouring damaging insects, is disastrous.

Dr. P. J. Deoras, formerly of the Hoffkine Institute, Bombay, said: "One frog consumes 20,000 insects in four months. Here is a natural predator which keeps our crops free from pests. And what are we doing? We are killing it and using pesticides instead to control crop-damaging insects—forgetting that pesticides are among the worst pollutants."

To make sure that ecology is unaffected by a rapid

decrease in the frog population, the government has banned the export of frogs' legs during the breeding season—from mid-June to mid-October. But, scientists and conservationists fear that the government's ban during breeding months will not solve the situation. They have therefore suggested that "frog farms" be established, as has been done in Japan, to ensure an adequate supply.

R. MURALI MANOHAR

ECE Sets Stockholm Meeting On Land-Use Planning for Housing

GENEVA—A spokesman for the United Nations Economic Commission for Europe (ECE) said here recently that increasing concern over the problems of land use and land-use planning is finding a reflection in the activities of his organization.

He noted that arrangements were made at a January meeting in Geneva for the Seminar on Land-Use Policies to be held in Stockholm June 12-17. This seminar, he said, will pay particular attention to housing and related services and will serve as a follow-up to the discussion of the same subjects at the annual session of the Committee on Housing, Building and Planning in September 1977.

The four themes selected for discussion at the Stockholm seminar cover a broad and complicated array of problems: the respective roles of development controls and public land ownership in land-use policies; methods of ensuring that land is used for the purposes intended; ways of re-distributing the benefits arising from land-use policies; and the application of general land-use policies and instruments to the problems and opportunities of the existing man-made environment.

Illustrating the problems in a note prepared for this meeting, the ECE Executive Secretary pointed out that urbanization and industrialization are making countries in Europe and North America increasingly interdependent and creating situations in which local decisions on the allocation of land can have far-reaching consequences.

He gave examples: selection of sites for industrial plants or power stations may help to determine the quality of air and water in places far beyond the borders of the countries in which they are installed; decisions on major transport routes and terminals can have direct and indirect effects on other countries; the development of tourism based on natural resources shared by several countries threatens to destroy natural, social, and man-made environments; there is a danger of excessive encroachment on agricultural and forest land.

The spokesman commented that the degree of information available to governments on land use is far from satisfactory in relation to the needs of policy making, and there is no adequate framework for the exchange of information on the subject.

WILLIAM G. MAHONEY

In Brief...

Japanese Set Strict Emission Controls for All Vehicles

Japan's Environment Agency has announced a series of strict emission control standards for trucks and buses and noise level limits for all vehicles, including motorcycles. According to the Agency, the emission control standards, to be introduced in 1979 for diesel engine buses and trucks equipped with a direct fuel injection pump, call for a 17 per cent reduction of the average nitrogen oxide emission to 540 parts per million (ppm) from the present 650 ppm. Other diesel engine vehicles will have to be lowered 11 per cent from 380 ppm to 340 ppm. However, imported cars will be exempted from these restrictions until March 1981.

The new noise standards to be enforced from 1979 will also apply to cars, large buses and trucks from January 1 while motorcycles, small buses and trucks will be subject to the limits from April 1. According to the Agency, the new noise tolerance levels for buses and trucks, regardless of weight or horsepower, will be lowered to 86 phons from the present range of 87-89 phons.

Philippines to Save Energy With Alcohol-Gas Mixture

The Philippine National Oil Company (PNOC) recently announced that an alcogas project, planned to produce motor fuel from a mixture of 15 per cent alcohol and 85 per cent gasoline, will enable the country to save about \$3.5 million annually in oil imports by 1980. According to PNOC, the estimate is based on the amount of alcohol to be used in the project.

Rufo S. Bernardo, PNOC alcogas project coordinator, said a feasibility

study is now being prepared to determine the economic viability of the project. He pointed out that the project will use anhydrous alcohol (waterless or 100 per cent alcohol) produced locally from sugarcane.

It is expected that the alcogas complex will be built either in Negros Occidental or Panay, drawing raw materials from a plantation area of 12,350 acres. The new complex, at a cost of \$23 million, will have facilities for cane crushing, juice processing, fermentation, by-product processing, and dehydration of the alcohol product.

50% of Czech Power by 2000 Will Be Nuclear Derived

Although Czechoslovakia is presently placing emphasis on exploitation of domestic fuels and energy resources with stress on solid fuels, future plans call for a sharp increase in nuclear power plants.

The Czechoslovak news agency Ceteka reported recently that conventional thermal power stations will still account for more than 80 per cent of energy output in the country in 1980, hydroelectric plants about 12 per cent, and nuclear power plants 6.4 per cent.

But after 1990, the agency reported, the share of nuclear power plants will climb to about 33 per cent and by the turn of the century to 50 per cent.

The report said that last year Czechoslovakia generated 66,400 million kilowatt hours and mined 121.2 million tons of coal and lignite. Fulfillment of planned economic growth this year demands that electric power plants increase their output by 3.6 per cent and that last year's coal mining volume be increased by 2.4 million tons, it stated.

It is estimated that the average electric power consumption will be rising by an annual average of 5.5 per cent by 1980 and that it will reach 135,000 million kilowatt hours.

Geneva Intensifies War on Vehicle Noise Pollution

In reply to a question posed in the State Council, Geneva Cantonal authorities have stated that the war on noise pollution will be intensified.

The Canton established a special anti-noise brigade within its police department in 1974 to control vehicle decibel emissions in six specific zones where ceiling norms have been established. These are: hospital and sanatorium areas; residential zones; mixed commercial and residential areas; commercial zones; industrial zones; and major traffic arteries. The permissible decibel ceilings differ for day and night and according to traffic density in the area. For example, in a hospital zone with heavy traffic the ceiling during the day is 50 decibels and 45 at night.

Cantonal authorities reported that during the first two years the anti-noise brigade checked 2,000 motorcycles and temporarily confiscated 900 of these for mandatory noise-reduction repair. From 1974 through 1977 the brigade monitored 8,360 motorcycles and confiscated 2,157 of these for violations. In the same period the brigade confiscated and held, pending necessary repairs, vehicle registration papers for 3,220 motorcycles, automobiles, and trucks.

Singapore Condominiums To Get Solar Heated Water

Solar energy will be used to heat water for the first time in a condominium housing project in Singapore. According to Dr. Chiam Joon Tong, Managing Director of Soletra Pte. Ltd., which designed and supplied the solar equipment, the use of solar energy will result in substantial savings when compared with conventional electricity. This solar energy system only needs four hours of sunshine a day and can heat water up to 60 degrees Celsius.

USSR and UNEP Agree on Nine Joint Activities

Dr. Mostafa K. Tolba, Executive Director of the UN Environment Programme (UNEP), received an honorary Doctorate of Science from Moscow State University during a visit to the USSR at the end of February.

During his four days in Moscow, Dr. Tolba met with the Chairman of the USSR Council of Ministers, Alexei Kosygin, at the Kremlin and discussed the further development of international cooperation on the environment.

Dr. Tolba visited Moscow at the invitation of the State Committee of the Council of Ministers for Science and Technology. He had extensive talks with several Soviet organizations and Ministries. Nine agreements on joint activities between the USSR and UNEP were signed, and possibilities were discussed for concluding a general agreement between the Council for Mutual Economic Assistance (CMEA) and UNEP.

New Nuclear Safety Standards Set by European Commission

The Commission of the European Communities has just published a new edition of their catalogue classifying technical safety standards, rules and regulations for nuclear power reactors and nuclear fuel cycle facilities.

The new publication, designed to encourage the gradual harmonization of technological safety standards in nuclear installations, updates and revises the first edition produced in 1975.

The catalogue, drawn up by the Nuclear Standards Committee of the German Standards Institute in Berlin, contains about 2,800 standards, 50 per cent more than in the first edition. Some 300 of the 1,900

documents listed in the 1975 catalogue were dropped because they were obsolete or had been withdrawn. Some documents have been revised and, of course, new ones added.

Of the 145 organizations represented in the catalogue, 41 appear for the first time. The organizations operate in 31 countries, including 12 from Eastern Europe.

Although the catalogue is as up-to-date as possible, the field is changing and expanding so rapidly that a third edition will probably be necessary before 1980.

ECE to Sponsor Third Major Seminar on Urban Renewal

The UN Economic Commission for Europe (ECE) recently announced that it will sponsor an international symposium in Geneva in May on urban renewal and the quality of life.

The spokesman said that the debates will focus on strategies, planning, and public participation in the process of renewing, rehabilitating, and conserving existing cities.

The symposium is being organized by the ECE's Committee on Housing, Building and Planning and will follow the tenth session of the Committee's Working Party on Urban and Regional Planning and Development that will be held here May 22-26. A study program on the Canton of Geneva is being arranged for participants on May 27. The Symposium itself will be held May 29-31.

A theme paper has been prepared by three experts from Denmark, working on consultation with other authorities from Czechoslovakia, Sweden, and the United States.

The Working Party organized its first symposium on urban renewal in Geneva in 1961. A second was held in Budapest in 1970. A further symposium is already scheduled to take place after the Working Party's eleventh session in 1979.

UK to Build First Combined Heat and Power Station

Britain's first combined heat and power (CHP) program, costing \$6.825 million over the next two years, is to be built by an area electricity authority—the Midlands Electricity Board—in the county town of Hereford.

By constructing a 30 megawatt diesel power station next to the town's largest factories, the energy normally wasted in the electricity generating process will be recycled for use in the factories. This will increase the power station's thermal efficiency from the usual 30 per cent up to about 76 per cent.

The recycled heat will be piped into the factories in the form of steam, raised from the heat of the exhaust gases and the cooling systems of the two 10,000 hp diesels running the station. This should amount to 13 million watts of heat, which would otherwise take about \$1.5 million worth of fuel oil to produce.

Italy To Aid Philippines With Geothermal Energy

An agreement was recently signed for Italy to provide the Philippines with technical assistance in geothermal-energy development. Under the agreement, Electroconsult of Italy will undertake a detailed inventory of Philippine geothermal areas and advise the Philippine government on which areas deserve priority for development. Electroconsult will also assist in geological, geochemical, and geophysical investigations of these sites.

The Philippines at present has already started operating a three-megawatt pilot geothermal power plant in Ormoc, Leyte. Several larger-scale 55-megawatt plants are scheduled to be operational by June at the earliest in Tiwi, Albay and Makiling, Laguan.

Environmental Collaboration Planned by U.S. and India

American and Indian ecology experts are attempting to identify projects in environmental sciences in which the two countries can collaborate.

An American team led by Dr. Alice Popkin, Associate Administrator of the Office of International Activities in the U.S. Environmental Protection Agency (EPA), came to New Delhi recently to meet environmental officials about the exchange of ideas that might be beneficial to both countries. They discussed air and water pollution, training of personnel, technology, and legislation.

Nuclear Energy Policy Debated in Ireland

Ireland's need for a national energy policy is being debated amid controversy over the proposal of the national Electricity Supply Board (ESB), a State body, to build a nuclear power station at Carnsore Point in County Wexford on the eastern Irish coast.

Full planning permission for the project has been sought by the ESB from the local government authority for the area, Wexford County Council, and a final national government commitment to the project is awaited.

The ESB maintains the nuclear development is needed to provide for future electricity demands and to safeguard supplies against the shortage of fossil fuels, particularly oil, in the years ahead.

Three options for the type of reactor are being considered: a German boiling water reactor; an American pressurized water reactor; and a Canadian heavy water CANDU-type.

A lobby against the project is building up, particularly among local farmers and residents in the remote

Carnsore Point area. A Wexford Nuclear Safety association has been established and has filed 10 specific objections to the nuclear plan. Other environmentalists have called for a national inquiry.

Austria Establishes Its First Center of Wildlife Research

Austria's first Center of Wildlife Research will be established this year as a university institute in Vienna's Lainz Zoological Gardens. The purpose of the institute will be to close a gap in wildlife research in Austria. The Vienna College of Veterinary Medicine, the Vienna College of Agriculture, and the Federal provinces' Hunters' and Gamekeepers' Associations will participate in the Lainz Wildlife Research Center's activities.

Using the latest methods of research and technology, the Center will study by remote detection and measurements the biological conditions, activities, and functions relating to the behavior of wildlife game which, as a result of stress, frequently exhibit significant changes in environmental response.

Danger of Mineral Depletion Forecast for Philippines

The Philippine government plans to limit the production of certain minerals in the country in view of the "rapid depletion of these non-renewable resources." According to the National Environmental Protection Council (NEPC), the country's copper resources will be exhausted in 17 years, gold in 43 years, iron in 38 years, and nickel in 37 years. That means that by 2000, some of the country's mineral resources will be depleted. NEPC has therefore suggested that production ceilings be established.

S. Korea Gears Up Its Protection of Wildlife.

South Korea's "Nature Protection Campaign" is expected to enter into high gear this year with the aim of restoring the nation's ecosystem. Originally, South Korea was an open habitat for wildlife. But because of "reckless exploitation" and rapid industrialization, many of the wildlife disappeared from the natural scene. Because of this, a civil Natural Environment Preservation Council and an inter-ministry government organization, the Nature Preservation Committee, were set up in 1977.

Urge Remnants of War Be Registered with UNEP

Only a few of the world's governments have expressed firm opinions on the feasibility or desirability of holding an intergovernmental meeting to deal with the environmental problems caused by the remnants of wars, such as unexploded land mines. And those who have expressed views are almost equally divided for and against.

The Executive Director of the UN Environment Programme (UNEP), Dr. Mostafa K. Tolba, intends to report this in a document to be submitted to the Sixth Governing Council of UNEP, which will meet in Nairobi from May 9 to 25. Although 15 governments favored a meeting, 16 were opposed, and eight said they had no viewpoint.

Reporting on his consultations since the last Governing Council (*WER*, June 6, 1977, p. 4), Dr. Tolba said that some governments see the problem as affecting only a limited number of states, while others think UNEP should not get involved in a problem which raises complex legal and political issues. Still other governments, he said, thought the question had enough environmental significance for UNEP to pursue it.



World Environment Report

Library
29 MAR 1978

VOL. 4, NO. 6

Copyright © 1978. Center for International Environment Information.

MARCH 13, 1978

U.S. Agencies Disagree Over Use of EIS Overseas

WASHINGTON—A bitter fight is raging within the Carter Administration over whether all agencies of the government should be bound by the 1970 National Environment Policy Act (NEPA) and prepare environmental impact statements (EIS) and environmental assessments (EA) on their overseas activities.

On the one side is the White House Council on Environmental Quality (CEQ) backed by the Environmental Protection Agency (EPA). The CEQ insists on strict interpretation of a provision in the act that states "all agencies of the federal government" must file impact statements in advance of "actions significantly affecting the quality of the human environment." Opposing it are the Departments of State, Treasury, Defense, and Commerce, as well as the Nuclear Regulatory Commission, and the Export-Import Bank. Their contention is that the rule represents a severe handicap in the conduct of foreign affairs and an obstacle to U.S. exports.

Word of the CEQ's proposed regulations first leaked out last month and matters have been at a boil ever since. CEQ Chairman Charles Warren says that federal agencies have ignored NEPA in the conduct of their international operations from the start. He is convinced not only that NEPA must be obeyed across the board but that the U.S.'s experience with environmental assessments has demonstrated their positive effects. As a case in point, he cites the court-approved 1975 agreement between the Agency for International Development (AID) and several environmental groups under which AID prepared a full assessment of its pesticide programs. As a result of that assessment, AID no longer exports pesticides that are illegal in the U.S., Warren points out.

Opponents of the proposed regulation argue that the CEQ's proposal would not improve the earth's atmosphere since no other nation would be bound by the U.S. rule. Business and industry are particularly distressed at the prospect of losing trade to countries with far less stringent environmental standards. In addition, companies argue that environmental impact statements would impose added expense on export licenses, and tie them up in red tape.

One agency that is really under the gun is the Export-Import Bank, which would not only be subject to the CEQ's rule but is the target of a suit by the Natural Resources Defense Council to require it to prepare

impact statements on many of its loans. An example used by the CEQ in explaining the regulations is that if the bank finances part of a coal-fired electric power plant in West Germany it might have to explain how the plant's sulfur dioxide exhausts would aggravate the "acid rainfall" in Scandinavia.

Although the foreign environmental impact statement proposal puts the CEQ in direct confrontation with almost the entire rest of the government, Warren is confident that somehow a program can be worked out that will not interfere with other nations' rights. Rather, he says, it "will help us consider the consequences of our actions on the countries we deal with and on the oceans, the air, and the earth's climate—which belong to all of us."

PETER PHILIPPS

Sweden's Environment Budget Puts More Emphasis on Rubbish Removal

STOCKHOLM—The Swedish government has earmarked slightly more than \$72,000,000 in its budget for the coming year for use in protecting the country's environment. This is a modest increase of \$2,795,000 above last year and probably reflects the very difficult economic times in Sweden.

More emphasis and money is being placed this year on the handling and disposal of household refuse, waste recycling stations, and experiments with new technical methods of dealing with rubbish which has become a growing environmental problem.

Expansion of sewage disposal plants on the other hand has been slowed. The building program was cut by \$8,600,000 on grounds that Sweden already is very far

In This Issue

UN Gas Committee	2
Nuclear Debate	3
Shared Natural Resources	4
Insulation Scandal	5
Solar Energy Congress	5
In Brief	6
Calendar	8

advanced in this field of improving the environment with roughly 70 per cent of the population already covered. Since 1968, the National Environment Protection Board has distributed \$322,600,000 in state support to the building of communal sewage purification plants.

An innovation this year was the allotment of \$860,000 for keeping a watch on the quality of Sweden's environment by a system of continuous checks, samplings, and analyses throughout the country. This program was recently approved by Parliament.

The government also decided there was a need to increase spending in the field of information about protection of the environment. Under this heading there is a rise of \$43,000 to \$731,000.

Sweden's contribution to the United Nations Environment fund also will increase by \$860,000 to \$1,935,484 this coming budget year. SPECIAL DISPATCH TO WER

Argentine Engineers Cope With Tannery Pollution of River Plate

BUENOS AIRES—The tanning industry has long been the worst enemy of Argentina's River Plate (Rio de la Plata) but a group of engineers is finally getting around to doing something about it.

There are some 300 tanneries in the whole of Argentina and 222 of them are located in the Buenos Aires metropolitan area along the banks of the River Plate. The Plate has not only become the major supplier of water for the tanning industry in Argentina, but has, unfortunately, also become the major dumping grounds for the highly toxic chemical waste that the tanning process breeds.

The Argentine Chapter of the Association of Sanitary Engineers recently organized a competition designed to promote a search for a solution to this problem and the prize-winners were a team of chemical engineers and technicians from the country's Institute of Technology for the Use of Water. Although the researchers involved have not released complete details of how their anti-pollution system operates, the new system is reported to allow tanning plants to use 27 per cent less chemical compound than they would normally require. At the same time, tanneries would reportedly create 75 per cent less waste water than they currently produce.

In addition, a plant's waste water, which originally carried 3.5 grams of chrome (per liter of chrome used in the tanning process) would, with the new system, carry only 1.3 grams.

In the dehairing process, the projected system would permit tanners to use 54 per cent less chemical compound and 70 per cent less water than is currently being used, and water pollution caused by the outflow of sodium sulphide would be reduced by 90 per cent.

DAN NEWLAND

UN Gas Committee to Survey Pipeline and Impurity Problems

GENEVA—The Gas Committee of the United Nations Economic Commission for Europe (ECE) has just completed arrangements for an international symposium on the gas situation to be held at Evian, Oct. 2-5, 1978. The invitation was extended by the French Government.

The Committee also accepted an invitation from Great Britain to hold a meeting of the Directors of Research Institutes or Centers of the Gas Industry. The meeting will be held at the engineering research station, Killingworth, Newcastle-on-the-Tyne, Nov. 6-10, 1978. Main subjects will be the methods and means of increasing the reliability and efficiency of long-distance pipelines, and of ensuring the economic consumption of gaseous fuels with a minimum content of harmful impurities in their combustion products, and the economic and technical aspects of the use of non-metallic pipes in the transport and distribution of gas.

As an outcome of the ECE Symposium on the Gas Industry and the Environment, held in Minsk, Byelorussia in 1977, the Committee decided to call a meeting Nov. 16-17, 1978, to consider further work on environmental questions.

Reviewing work on energy efficiency and conservation, the Committee noted that its Group of Experts on Natural Gas Resources was engaged in the studies of the development of gas fields in carbonate rocks, the stimulation of reserves and enhanced recovery techniques; and of the relationship between production technology and the recovery factor in gas reservoirs. WILLIAM G. MAHONEY

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$150 per year, \$20 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Gayle Wood
Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in WER, which in no way represents the official view of UNEP.

Environmentalists and Nuclear Energy Proponents Debate in Brussels

BRUSSELS—Anyone keeping score after the second round of nuclear debates organized by the Commission of the European Communities in Brussels would have to call it a tie between the environmentalists and the nuclear energy proponents.

Despite news of a radiation leak at a Belgian nuclear power plant and the Soviet spy satellite's radioactive debris tumbling out of the sky, the environmentalists had difficulty debating the safety facts and figures marshalled by the nuclear scientists.

Tom Burke, a spokesman for the European Environment Bureau (EEB) which represents 40 environmental groups, said, "There was an opportunity for the environmentalists to get their viewpoint across in the program. Unfortunately, we didn't take it."

Burke said the environmentalists clearly came out ahead in the November round of debates by aiming their attack directly at the European Commission's over-estimated energy demand figures and lack of energy conservation measures (*WER*, Jan. 2, p. 3). During the Jan. 24-26 period of debate, however, the proponents and opponents of nuclear energy produced few papers which overlapped on debatable grounds. Burke also pointed out that because representatives came from the nine European Economic Community (EEC) countries, which all have varying levels of internal nuclear debate, what some people felt was very important to say sounded simplistic to others.

Nevertheless, the debates have already had some positive effects. Dr. Guido Brunner, Energy and Research Commissioner who chaired both sessions, announced that as a result of the first one the Commission had just appointed a Director of Energy Saving and also recommended a step-up in solar energy research.

The EEB also called for continuing dialogue while pledging to help find a non-nuclear path for Europe to follow. The EEB had previously taken exception to a remark by Brunner in the European Parliament that the first debate had resulted in the general concession that a certain need for nuclear energy exists.

While many participants felt the recent debates did not unearth a lot of new ideas, they did have their dramatic moments. The Friends of the Earth in Huy, Belgium, leaked information to the press that 80 workers were being observed for Iodine-131 contamination after a recent accident at the nuclear power plant in Tihange. When the radio report reached people enroute to the debates, Robert Van Den Damme, Director of Electobel and Intercom which operates the Belgian power station, was called to the platform early to answer questions. He said that when the reactor was shut down for fuel unloading some gas escaped in the reactor building, although none was released outside the plant. Six persons were slightly affected, the highest dose received being 100 millirems, compared with a permissible dose of 3,000 millirems over 13 weeks, he said.

Also providing grounds for debate was an Austrian, Robert Jungk, Professor of Planning Sciences at the University of West Berlin. Author of the recently published book, *The Nuclear State*, he attacked the nuclear industry from the point of view of human rights, saying that people employed by or living near nuclear installations are subject to screening and/or surveillance. Critics within the State-run industry, he charged, are switched to dead-end jobs. He was criticized from the floor for being "unscientific" because he would not name names. This exchange was symptomatic of the communications problems inherent in the debates: what language do scientists and humanists have in common?

Aside from the polemics on either side, some scientists reached the conclusion that some nuclear questions still cannot be answered.

Ghislin de Marsily, a geologist at the Ecole des Mines in Paris, said that while burying nuclear waste in the ground is the only acceptable path, geologists cannot guarantee it will forever be isolated from the environment.

F. R. Farmer, Safety Adviser to the UK Atomic Energy Authority, said some safety risks in the non-nuclear as well as the nuclear energy sector will not be known for many years and only then after a considerable amount of study. He pointed out that the long-term hazards to man from low level radiation or exposure to chemicals are not known, nor is the harm to the environment from long-term chemical contamination.

For the environmentalists' side, Alexander Rauh, a physics lecturer at the University of Regensburg in Germany, suggested that the world is in a state of war against a more and more polluted environment and should conduct the war in the same framework the Americans used to launch the Apollo space program, doing the seemingly impossible in an short time.

Klarissa Nieuhuys, a research worker at the University of Groningen, presented a chilling paper on the effects of a serious accident at a light-water reactor power plant such as one being considered near The Hague in Holland. During good weather, serious casualties, she said, would range from 140,000 to 550,000 depending on protection when the radioactive cloud passes and the possibility of immediate evacuation. Given all the assumptions, one million people would either die or suffer some effects ranging in seriousness, she said.

The pro-nuclear people, however, pointed to the low number of nuclear accidents. Dr. Adolf Birkhofer of the Technical University of Munich said that "A detailed evaluation of the numerous faults and failures recorded from a total of over 1,400 operating years with some 200 nuclear power plants throughout the world has revealed no major defects in the safety concept adopted. Even serious failures have been safety mastered through the combined functioning of the safety devices."

JOAN INFARINATO

Bavaria Allocates Large Sums To Counter Noise Pollution

MUNICH—Bavarian Environmental Protection Minister Alfred Dick declared recently before the State Parliament here that his budget for 1978 would provide a total of \$2,654 million for support of community investments in the noise protection field. He said that his Ministry spent \$1,702 million for this purpose in 1977.

A great part of this sum, he said, supported community actions to lessen road traffic noise—often by the installation of special insulation windows—in such installations as hospitals, old age homes, schools, and in private apartments especially subjected to high decibel noise.

Upon request, the State Ministry can support such community investments up to 25 per cent of the total cost and can provide favorable interest rate credits up to 41 2/3 per cent of the total cost, Dick pointed out.

The aid program began in 1974 with the city of Munich, Dick said, where some \$2.6 million of public funds were provided to encourage installation of anti-noise windows in high decibel areas. The costs were evenly divided by the state and city, he said. Funds granted to individual apartment owners usually amounted to about 50 per cent of the cost of the installations, Dick stated. The success of the Munich program has led to inquiries from other cities including Augsburg, Bayreuth, Erlangen, Nuernberg and Regensburg, and negotiations with these are now under way, he reported.

SPECIAL DISPATCH TO *WER*

Major Accord Reached at UNEP Meeting on Shared Resources

NAIROBI—After their fifth meeting in just over two years, experts from many governments have finally been able to agree on a set of environmental draft principles of conduct with regard to the conserving of shared natural resources.

Representatives from 26 countries attended the Nairobi meeting, with observers from three more states and from a range of UN organizations. The meeting was organized by the UN Environment Programme (UNEP), whose Executive Director, Dr. Mostafa K. Tolba, described its outcome as "a major breakthrough in the field of international environmental law."

Four previous meetings in Nairobi and Geneva, in 1976 and 1977, had produced only limited agreement (*WER*, Jan. 3, 1977, p. 2; Feb. 28, 1977, p. 1). Although ten guidelines had been agreed on in these sessions, the remaining five were not agreed on until the latest meeting held in Nairobi last month.

The results now go to the sixth UNEP Governing

Council, to be held in Nairobi from May 9 to 25, and are then due to be presented to the UN General Assembly.

Among the main principles now agreed on are:

- States have a responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states.
- A state sharing a natural resource with one or more other states should notify them in advance of plans to exploit or conserve a resource, where this would affect significantly the environment of another state.
- States have a duty urgently to inform other states of any emergency situation, arising from the exploitation of a shared natural resource, which might cause sudden harmful effects on the environment.
- States are responsible for fulfilling their international obligations in the environmental field when conserving or using shared natural resources; in accordance with international law they are subject to liability for environmental damage (resulting from the violation of these obligations) caused to areas beyond their jurisdiction.
- States should endeavor to provide people in other states with the same remedies which are available to their own populations who are adversely affected by environmental damage resulting from the use of shared natural resources.
- States should make environmental assessments before undertaking activity which could significantly affect the environment of other states.

Despite these agreements, the five meetings of the Inter-Governmental Working Group of Experts were unable to agree on an acceptable definition of a shared natural resource. One of the most popular definitions considered was: "The term 'shared natural resource' means an element of the natural environment used by man which constitutes a biogeophysical unity and is located in the territory of two or more States." Some of the experts in the Nairobi meeting, in fact, insisted that the definition must be identified according to the nature of the resource itself.

Experts taking part in the Nairobi meeting came from Argentina, Bangladesh, Brazil, Canada, France, West Germany, Ghana, Greece, India, Iran, Iraq, Jamaica, Kenya, Mexico, The Netherlands, Philippines, Poland, Romania, Senegal, Sweden, Switzerland, Uganda, United Kingdom, United States, USSR, and Yugoslavia. Austria, Japan, and Turkey participated as observers.

In opening the meeting, Dr. Tolba told the delegates that many of the resources on which human survival depends are shared by two or more states. "If nations are to live in peace and harmony while at the same time using these shared natural resources for the human good, it is imperative that an agreed code of conduct be established and adhered to as quickly as possible in order that the rational use of these resources may be regulated harmoniously, and their wasteful exploitation avoided."

The goal, he explained, is to have the principles and guidelines now agreed upon codified into international treaties by 1982.

CHARLES HARRISON

Poorly Insulated Buildings in UK Called a 'National Scandal'

LONDON—Extensive new energy saving measures, at a cost of \$608 million over the first four years, were announced recently by Britain's Minister of Energy, Mr. Tony Benn. A large slice of the money, \$116.6 million, will be spent on roof insulations, pipe lagging, and door and window insulation in two million houses in the public building sector.

These measures, absorbing and augmenting existing ones, are part of a proposed 10-year program. At its completion, annual savings of 10 million tons of oil equivalent, worth \$1,330 million at current prices, are anticipated.

The 11-point program also includes expenditure on heating and thermal controls in public buildings such as schools and colleges, hospitals and clinics, civil and defense establishments.

Additional money has been allocated to expand existing information, advisory and demonstration services to industry on energy conservations.

Apart from disgruntled private householders who receive nothing but a request to "alter their fuel habits," the only other note of dissatisfaction comes from environmentalists. They are concerned that the Government has "opened discussions" with the motor industry on ways of increasing mileage per gallon of fuel in an effort to counteract the continued growth in demand for oil in transport. In spite of Government assurances they will be watching to see this does not lead to gasoline with more polluting properties.

Following shortly on the heels of Benn's energy announcement, the Government's Advisory Council on Energy Conservation (ACEC) published a report in mid-February calling the country's poorly insulated buildings a "national scandal." The report estimates that at least 6.5 million of the country's 20 million dwellings have no insulation at all, and only about 1.5 million have really good insulation.

The ACEC calculates that the equivalent of 7.8 million tons of coal a year could be saved on domestic heating by wall and roof insulation. This, it suggests, could be achieved by forcing property owners to prevent heat loss under the requirements of an Insulation Act.

Such an Act could operate like Britain's Clean Air Act which places legal controls on the use of fuel and its emissions. Other measures suggested are the extension of building regulation to prevent the sale of buildings without proper insulation, and the increase of grants and interest-free loans to encourage owners to take some action. Local authorities are urged to refuse mortgages on poorly insulated buildings.

Prof. Patrick O'Sullivan, the Chairman of the ACEC's working group on buildings, which produced the report, looks ahead to many more conservation measures. He would like to see, for example, garbage incineration and

conversion devices part of normal housebuilding. But for the moment insulation is seen as the most feasible conservation step.

The report is expected to cause some controversy amongst builders and architects over such points as the 35 per cent maximum glazing in a building. Some modern office designs contain up to 80 per cent glazing.

BARBARA and ALAN MASSAM

New Delhi Hosts International Congress of Solar Energy Experts

NEW DELHI—One thousand solar energy experts from 52 countries recently put their heads together here for five days and discussed 400 papers on how best to exploit the sun for mankind's benefit.

The week-long solar energy congress unanimously agreed on one point: harnessing solar energy has assumed importance not only because it can provide an inexhaustible and cheap source of energy but also because none can monopolize it.

Dr. W. H. Klien, the outgoing President of the International Solar Energy Society, Dr. George Lof (U.S.A.), Dr. Helmet Klein (West Germany), Dr. Vittorio Storelli (Italy), and Drs. R. Ramachandran and J. Gururaja (India) described what their respective countries were doing to tap solar energy. They reported that in the U.S. there were 5,000 solar heated houses, hot water supply systems in West Germany, 1 Kw to 100 Kw power generating units in France, solar collectors for low-temperature heating in Italy, and solar water heating distillation, and stills in India.

Technical proposals at the Conference ranged from suggestions that solar-heated hot water could be stored in underground aquifers to the use of solar energy to power cold storage facilities to preserve perishable agricultural produce.

Dr. A. A. Swamy of the UNIDO (United Nations Industrial Development Organization) promised UNIDO will be willing to initiate and develop an integrated program of action—research and development, technology transfer, extension and manufacturing activities. Some delegates urged that a fund be set up for solar energy development under the aegis of an international commission which would provide design and direction.

Certainly the host country, India, got immense satisfaction when the Australian delegation chief, Prof. T. M. Sabine, told the delegates: "I think that both India and Australia are slightly ahead of even Japan in solar energy research."

Although all delegates agreed that the cost of solar energy would come down with the advance of technology, they warned that wide-spread use of solar energy would lead to some legal and environmental problems like the shadows of the high-rise buildings on neighboring solar collectors.

R. MURALI MANOHAR

In Brief . . .

Non-Flammable Chemical Neutralizes Oil Spills

An Australian company is offering licenses to manufacture a liquid chemical compound which renders petroleum spills non-flammable, eliminates damage to bitumen and asphalt, removes slip hazards, and disperses oil on land, roads, or runways.

The product, known as "Slixit," is made by Redic Australia Pty Ltd., which produces a wide range of specialty chemicals to reduce or overcome longstanding industrial safety problems. It is non-flammable, non-toxic, non-corrosive to metals, and does not contain solvents.

The most important feature of the chemical is its ability to render petroleum and similar compounds non-flammable. It does this by a chemical action which breaks up the molecules of the flammable compound into microscopic particles and separates them with a zone of oriented molecules which prevent the droplets from coalescing or re-depositing on any surface.

When Slixit is applied, spills are not merely moved from one place to another, simply changing the location of the hazard. Instead, the hazard is neutralized and the resultant combination may be flushed quickly away with water.

Austria to Unify Environment Protection Activities

The Austrian Government will shortly enforce a resolution unifying and concentrating in the ministry of Public Health and Environment Protection all legal activities and responsibilities regarding environmental protection. At present, these responsibilities are shared by several federal ministries and provincial governments, a fact which has caused unnecessary delay in carrying out

some preventive measures, especially in checking the fouling of river waters by factory effluents, which are particularly difficult to control in the nation's extensive paper-making industry.

Effluent from paper mills in Carinthia in southern Austria have led to complaints from the Styrian provincial government farther down stream and from Yugoslav officials farther to the southeast. Since these Yugoslav complaints involve the Foreign Ministry, pressure within the Austrian cabinet to coordinate environmental control has been building up for some time.

Belgian Inventors Design Pollution-Free Spray Can

Two Belgian inventors, Therese and Henry Schumacker, have designed a second generation spray container which they claim is totally harmless to the environment, unlike traditional aerosol spray cans which are thought to be destroying the ozone layer of the atmosphere.

Called PEPO, the Swahili word for "air," the new can consists of three chambers. The bottom one is filled with compressed air which can exert a pressure of about 7.5 kilos. A plastic piston takes up the second chamber and the active product to be sprayed fills the chamber above the piston. The obvious advantage of the three-cylinder design is that the propellant and the product remain separated throughout the spraying operation. When the user pushes on the valve, the compressed air exerts force on the piston which in turn forces the active product out of the spray nozzle. When the container is empty of the product, the dispersion valve pierces the piston and the trapped air is released.

A working model of the container has been constructed, but whether the spray can will prove viable on a commercial scale remains to be seen. The inventors, however, are optimistic and believe it can be manufactured at a price competitive with aerosol spray cans.

Desert Shrub in India Found Substitute for Synthetic Wax

In the arid regions of Western Rajasthan, India, a desert shrub of Mexican origin has been found which can be a good source of candle wax with considerable industrial potential. It can also save energy by replacing synthetic wax made from petroleum.

The shrub, called "*Euphorbia Antisyphilitica*," can be easily propagated by cuttings and is resistant to diseases and pests. It is not even grazed by animals.

At the Central Arid Zone Research Institute at Jodhpur in India's north-west state of Rajasthan, the plant gave 4.5 tons of dry matter per hectare in the initial tests of acclimatization.

The wax is also useful for polishes, varnishes, paper sizing for dental moulds, and in making electrical insulating materials.

Swiss Tighten Permissible Levels of Vehicle Exhaust

Switzerland has taken a new step in its series of regulations aimed at dropping permissible levels for noxious elements emitted by automobile exhaust.

The Federal Council, the executive arm of the government, has approved modification of European Community Regulation No. 15—which sets Europe-wide levels—to become effective Oct. 1, 1979. Switzerland has been applying the ECE Regulation 15 levels since 1974, which called for progressively tighter controls each year. The new modification consists basically of a new drop in levels for such noxious substances as carbon monoxide, the hydro-carbons, and nitrogen oxide. Other changes involve measuring methods.

The Federal Council has a stated objective of reducing noxious elements from automobile exhaust by 90 per cent by the year 1982, as compared with 1970.

Chinese Use Gamma Rays To Locate Ground Water

Chinese scientists have succeeded in locating ground water in hilly areas with gamma rays. The New China News Agency reported recently that the experiments open a "new way to choose well sites accurately in hilly areas and make full use of ground water to facilitate farm irrigation." Scientists and technicians at Szechuan Province's new technology experimental station have been studying and investigating water finding techniques since 1974 and they have found that the gamma ray method is the most effective.

Tibet Goes on Stream With First Geothermal Plant

The first geothermal plant in the Tibet Autonomous Region of China is now on stream. Construction of the plant, situated in Yangpaching, 56 miles northwest of the capital, Lhasa, began in 1974 after studies showed its feasibility. Yangpaching abounds with geysers and hot water lakes. The water temperature there is about 122 degrees F. (50 degrees C.) and the underground temperature reaches 570 degrees F. (300 degrees C.).

Hans River in Seoul Found Highly Contaminated

The Han River in Seoul, South Korea, is still highly contaminated despite government efforts to eliminate pollution. According to a recent survey, the Biological Oxygen Demand (BOD) of river water in Yongdungpo-gu reached 8.5 ppm compared to the 5 ppm recommended by the World Health Organization as the maximum permissible level for potable water supply. The survey also pointed out that wastes of heavy metals such as lead, zinc and mercury were detected in the upper stream of Han River.

UNEP Issues New Booklets On Industrial Seminars

Two new booklets dealing with the environmental aspects of the motor vehicle and its use have been published by the UN Environment Programme's Industry and Environment Office (IEO) headquartered in Paris.

Based on previously held industrial seminars chaired by Leon de Rosen, Director of the Industry Programme, the latest booklets are a continuation in the series that dealt with pulp and paper, aluminum, and agro-industry (*WER*, Aug. 28, 1977, p. 7).

In addition, the IEO has recently published two-volume sets of the proceedings of the 1977 Seminars on Utilization of Agricultural and Agro-Industrial Residues, as well as Environmental Conservation in the Petroleum Industry. Copies of these and the seminar booklet series may be secured from Industry and Environment Office, UNEP, 17 rue Marguerite, 75017 Paris, France.

Hungarian Hospital Fined For Polluting Nearby Lake

Radio Budapest reported recently that the State Hospital for heart diseases, located in Balatonfured, has been fined 900,000 forints (no dollar equivalent) for polluting Lake Balaton.

The broadcast said that some more than 10,000 gallons of heating oil leaked into the lake through carelessness by hospital personnel.

Excessive Waste Discharges Threaten Thailand's Rivers

Thailand's National Environment Board recently discovered that there were excessive discharges of wastes into the Chao Phya River at the section near the Klong Toey Port. According to the Board, the river water in the polluted section has zero content of dissolved oxygen. The

water was also noticeably black. The Board is now undertaking a probe to locate the organization responsible for the contamination. At present, 1,808 factories along the Chao Phya River discharge about 3.5 million cubic feet of used water daily.

In the meantime, Vira Susangkarakarn, Deputy Director General of the Industrial Works Department, said the Mae Klong and the Tha Chin Rivers are more susceptible to pollution this summer than in any of the recent years. He says the volume of river flow in the Mae Klong has been decreasing and is now running at the rate of 1,062 cubic feet a second. However, it is still threatened by pollution because of a lack of dissolved oxygen.

U.S. Navy Ships Abroad Must Conform Environmentally

The United States Navy has initiated a program in which U.S. Navy ships in foreign harbors must conform to international environmental quality standards and cooperate with governments in implementing environmental protection measures.

The program, at a cost of \$1.7 billion, includes water, air, and noise pollution, plus solid waste control and abatement.

To combat water pollution, the U.S. program is divided into two segments: shipboard program and shore facilities.

The shipboard program involves the retrofitting of collection, holding and transfer systems to eliminate overboard discharge of sewage in restricted waters and to effect its transfer to shoreside pier sewer lines or special barges when the ships are at port. In fiscal 1977/78, about 68 per cent or 227 of the Navy's total surface ships have been retrofitted. Another 150 smaller ships, service craft, and submarines will be equipped with systems that will direct sewage to a treatment plant for processing and treatment before disposal through ocean outfalls.

The shore facilities program in-

cludes pier sewer lines to receive sewage directly from ships or sewage collection barges; solid waste (trash and refuse); compaction or incineration systems; smoke abatement controls and power plants, harbor oil spill control and clean-up equipment; oil-water separation capability; contaminated oil reclamation facilities and construction of sewage and industrial waste treatment facilities.

It is hoped that with the effort of the United Nations and the U.S. Pacific Fleet, such source pollution in Asian waters can be checked if not totally controlled.

Tanker Regulation in Malacca Strait Draws Criticism

Bernama, the Malaysian news agency, recently commented that the traffic separation regulation for the Malacca Strait proposed by Indonesia, Malaysia, and Singapore might minimize collision hazards but would not assure plain sailing for oil tankers.

According to the agency, tankers would have to exercise "flawless

precision" in plotting their way through the 500-mile waterway after the regulation goes into force. Under the proposal, which has now been submitted to the International Maritime Consultative Organization in London for validation, under keel clearance—the distance between the keel and sea bed—is set at 11.5 feet. This will affect tankers above 280,000 dwt.

Indian Scientists Use Rice Husk for Silicon Solar Cells

Indian solar scientists have found a new use for the rice husk in making high purity silicon for solar cells.

Drs. Raghvir Singh and B. K. Dhindaw of the Indian Institute of Technology at Kharagpur (West Bengal) have suggested that the white or pyrolysed rice husk can be used as the raw material because it contains 20 per cent silicon in finely dispersed form.

The scientists point out that the silicon solar cell is one of the most efficient converters of solar energy into electricity.

Japanese Devise Their First Solvent Refined Coal Plant

Japan's first industrial coal liquefaction pilot plant is now undergoing a trial run by Mitsui Mining Company and its group of subsidiaries at Omuta, Fukuoka Prefecture. The SRC (solvent refined coal) plant, after seven years of experimentation, is capable of processing five tons of coal a day. Although the amount is insignificant when compared with that processed in the United States, the Omuta plant is said to be technologically one of the world's most advanced.

The process consists of finely pulverizing coal lumps of 0.2 inch or less in diameter and blending hydrogen into the powdered coal. It has six working stages: pre-processing of coal, solution reaction and gas-liquid separation, filtration, distillation, solidification, and gas refining and compressing. The final product may be derived either as a solid or as a liquid. According to Mitsui, by November 1979, a mixture of 50 different kinds of coal will be used for full operation.

Calendar...

March 14-16—Advisory Selection Committee on the International Pahlavi Environment Prize. Paris. United Nations Environment Programme (UNEP).

March 15-21—Working Committee on International Oceanographic Exchange. Paris. Auspices of Intergovernmental Oceanographic Commission (IOC).

March 18-28—Regional Conference of plenipotentiaries on the Protection and Development of the Marine Environment and Coastal Areas. Kuwait. UNEP.

March 28-30—Donors Meeting for Desert Encroachment Programme. Khartoum. UNEP.

March 28-May 12 (or 19)—Third United Nations Conference on the Law of the Sea. Geneva.

April 3-12—Meeting of Experts on Environmental Law. Geneva. UNEP.

April 9-15—Workshop on Environmental Impact Assessment. Banff, Alberta. Auspices of School of the Environment, Banff Centre.

April 17-21—UN Scientific Committee on the Effects of Atomic Radiation. Vienna. UNEP.

April 20-26—Twelfth International Symposium on Remote Sensing of Environment. Manila. Auspices of Research Institute of Michigan.

May 9-11—Twenty-first Annual Conference of the International Association for Great Lakes Research. University of Windsor, Ontario.

May 16-18—Expert Group on Water Quality and Quantity. Geneva. UN Economic Commission for Europe (ECE).

May 29-31—Symposium on Urban Renewal and Quality of Life. Geneva. ECE.

June 12-17—Seminar on Land-Use Planning. Sweden. ECE.

June 12-17—Fifth Inter-Secretariat meeting on Environmental Problems in the European Region. Geneva. UNEP/ECE.

June 12-17—Symposium on Fish Nutrition and Feed Technology. Hamburg. Auspices of the International Council for the Exploration of the Sea (ICES).

June 26-July 1—Regional Meeting for the UN Conference on Science and Technology for Development. Bucharest. ECE.

July 10-15—First International Conference on Energy and Community Development. Athens. Jointly sponsored by the National Energy Council of Greece and the U.S. Department of Energy.



World Environment Report

VOL. 4, NO. 5

Copyright © 1978. Center for International Environment Information.

FEBRUARY 27, 1978

- 7 MAR 1978

Japanese Scientist Cites Danger Of Agricultural Insecticides

TOKYO—A Japanese scientist warns that pollution from agricultural chemicals is spreading throughout the South China Sea, the Indian Ocean, and the Arabian Sea as a result of the extensive use of these farming insecticides. Prof. Ryo Tachikawa of the Agriculture Department of Ehime University said in Tokyo recently that pollution stemming from the growing use of dichlorodiphenyl-trichloro-ethane (DDT), polychlorinated biphenyl (PCB), and benzene hexachloride (BHC) by the developing countries of southern Asia is a dangerous threat to the environment in the region.

He explained that these compounds, whose use has been banned by most industrialized nations because of their strong residual qualities, have been discovered in very significant quantities in Southeast Asian air and waters and within the bodies of fish. Professor Tachikawa said he found that BHC measured 2.6 nanograms (one nanogram equals one-billionth of a gram) per liter in the South China Sea, 1.3 nanograms in the East China Sea, 1.2 nanograms in the Bay of Bengal, and 0.79 nanograms in the Arabian Sea.

The highest rates of BHC and DDT found in air samples were discovered off the western coast of India, with 8.56 nanograms of BHC and 1.85 nanograms of DDT for every square meter of air. Professor Tachikawa said that tests involving various types of fish, squid, and clams revealed that DDT quantities ranged from 2.3 to 8.3 parts per billion (ppb). BHC, he said, measured from 0.28 to 0.7 ppb and PCB was tested at a rate of from 0.1 to 0.23 ppb.

It is imperative, he believes, that these developing nations promptly switch from DDT, BHC, and PCB compounds to agricultural chemicals with no residual effects. Professor Tachikawa urged the major industrialized nations to increase promptly their technical assistance to the countries involved to help them change over to the less dangerous chemicals. This is an urgent matter, he warned, because not only are the countries of Southeast Asia becoming dangerously polluted by these insecticides but such contamination can spread much further as well.

As for Japan itself, although it has stopped using the three most deadly insecticides—except in limited cases—there are other chemical substances still causing contamination. Environmental pollution by polychlorinated

naphthalene (PCN) and butylated hydroxytoluene (BHT) is now found to have spread extensively throughout the country. A survey conducted by the Environmental Agency, for example, disclosed that there are 78 different foreign chemical substances in water, river bottom mud, and within the flesh of fish as well as in the atmosphere in 22 prefectures around the nation and in four cities.

A.E. CULLISON

UNEP Hails Rehabilitation Of Limestone Quarry in Kenya

NAIROBI—The work of Kenya's biggest cement plant in rehabilitating hundreds of acres of land from which coral limestone has been extracted has been hailed by the Kenya-based UN Environment Programme (UNEP) as an example of successful "development without destruction."

The plant at Bamburi, on Kenya's Indian Ocean coast, has extracted millions of tons of coral limestone from quarry areas there over the past 20 years. But what were at one time areas of barren waste have now been transformed into a forest of 30,000 trees which provides a home for several species of antelope and for thousands of birds.

Trees from several parts of Africa—and notably from nearby Somalia—and from as far away as Brazil have been found to thrive in the brackish water that lies just below the floor of the exhausted quarry areas.

The rehabilitated area is now one of the must sights for visitors to the Kenya coast. A farm and fish ponds have also been established, providing large quantities of food from what was, until a few years ago, a "burnt out" landscape.

CHARLES HARRISON

In This Issue

Mediterranean Convention	2
Special Report: Venezuela	3
Sea Pollution Ships	4
Monitoring Fluorocarbons	4
Fusion Research	5
Carbon-Based Energy	5
In Brief	6

Mediterranean Convention Bars Oil Discharge Within 50 Miles of Land

VALLETA, Malta—The Mediterranean henceforth will be freed of one of its many sources of pollution. Washing of ships' tanks in two official dumping areas in the Eastern Mediterranean no longer will be permitted, according to provisions of a new International Convention (*WER*, Feb. 13, p. 3).

Sixteen of the 18 Mediterranean nations (Albania and Cyprus are the exceptions) are bound by international convention provisions not only to see that the new measures are enforced but also to bring offenders to book. Malta enacted stiff legislation some months ago, with penalties that include fines, imprisonment, and confiscation.

In recent years, discharge of oil was regulated in any Mediterranean area within 50 miles of land. In the future, it will be prohibited altogether and, according to the stages set in the 1973 International Convention, the same prohibition will be extended to all harmful substances.

Meanwhile, the rate of discharge has also been limited to a maximum of 60 litres per mile with a maximum of a total of 1/15,000 of the total cargo capacity of the tanker outside the 50-mile limit.

The removal of the two dumping zones in the Mediterranean comes almost a year after the inauguration in Malta of the Regional Oil Combatting Centre, which is financed by the UN Environment Programme (UNEP), and operated on its behalf by the Intergovernmental Maritime Consultative Organization. Dr. Philippe Le Lourd, Director of the Centre, said that the end of the dumping zones in the Mediterranean was an encouraging step forward in the long and complex task to safeguard the environmental future of the sea.

"It was increasingly apparent," Dr. Lourd said, "that only joint planning and joint action would get the desired results. This was what the Malta Centre's task was all about and fortunately, after only one year of its existence, this is being well recognized." **FREDERICK BARRY**

Ecologists Charge Farmers With Abuse of British National Park

LONDON—A clash between conservationist and farming interests has led to a controversial report on the future of Exmoor — the "Lorna Doone country" and a British National Park of some 47,000 acres.

Over the past three decades, the National Park has been reduced by 12,000 acres, mostly to agricultural conversion, for which British farmers can claim a Government grant. This conversion has even taken place in parts of the "critical amenity area" designated by the Exmoor National Park Committee in 1968. Conserva-

tionists regard Government intervention as vital to prevent further reductions.

In response to this pressure, the Department of the Environment commissioned Lord Porchester, a former official of the Exmoor National Park Committee, to study the situation. Now, his recently released report acknowledges that former voluntary arrangements to control reclamation to agricultural land have failed and asserts that stronger measures are needed. It advocates the construction of two maps, the first showing all existing moorland, the second showing the land areas most crucial for conservation.

Farmers, the Porchester report suggests, should be legally obliged to give notification of any plans to convert areas on the first map, so that the National Park authority has time to consider and intervene if necessary. Reclamation of land on the second map "should not be countenanced;" rather, farmers should be granted a "once-and-for-all" compensation for this loss. Lord Porchester rejected the suggestion of the Countryside Commission, an independent Government advisory body, to compulsorily purchase the land.

The National Farmers' Union has already criticized the report, saying it would benefit neither farmers nor conservationists and would be "negative in operation." The Union also maintains that the compensation arrangements would not meet the farmers' loss.

Conservationists are expected to challenge the suggested powers for the Exmoor National Park authority to designate and control the crucial conservation areas. The authority includes farmers and landowners amongst its members and it was criticized last year for not opposing the ploughing up of 200 acres in the heart of the "Lorna Doone" country.

BARBARA MASSAM

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$150 per year. \$20 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Wendy Kaufman
Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

SPECIAL REPORT: Enforcing Environmental Law In Venezuela

CARACAS—"Close working cooperation with the National Guard is a key to the success of our program," reports Arnaldo Jose Gabaldon, chief of Venezuela's Environment Ministry which in April will be one year old (*WER*, Feb. 14, 1977, p. 3). Aiding the Ministry's work force of some 4,300 staffers and 3,500 workers are units of National Guardsmen, who are trained in interpretation and enforcement of the Forestry Law, Environment Law, Wildlife Protection, and Presidential decrees concerning Natural sanctuaries, and who are stationed in each of Venezuela's 20 states and report directly to regional Environment Ministry offices.

As the fourth branch of the Armed Forces, Venezuela's National Guard (FAC) is a non-combat corps composed of volunteer, full-time career guards, the "Armed Forces of Cooperation," whose duties include working with several government agencies such as the Department of Treasury, the Ministries of Justice, Mines, Environment, Transport and Communications in the patrolling of sea and air ports, highways, prisons (external security), and customs warehouses.

"The National Guard is a military institution carrying out very important peace-time services," says Brig. Gen. Eneio Gonzalez Mediocci, whose jurisdiction over metropolitan Caracas, including part of Miranda and Aragua States, covers the country's most populous region (nearly 3 million). He emphasizes that the corps is constantly upgrading members' training in fields such as environmental vigilance. Since 1952 the corps has been responsible for control of all unauthorized activities: tree felling, burning, digging, misuse of official permits, road building. Guardsmen fight fires, plant trees, inspect construction sites, protect parks, arrest and fine law-breakers.

Vital to the public's awareness of Venezuela's environmental problems, in Gabaldon's view, is the so-called "civic arm" of the Environment Ministry. In the first eight months of the Ministry's existence, 82 volunteer committees of *Juntas Civiles* were formed throughout the country. Empowered to inspect and denounce cases of contamination, these citizens' groups are not only watchdogs of environmental degradation, but forgers of public conscience: they study regional litter problems, carry out clean-up campaigns, request official help in tree planting programs, in protecting green zones and proposing the creation of new parks.

Despite this assistance lent by military and civic groups, Gabaldon's Ministry faces a dearth of qualified professionals. He is stopping the gap by retraining personnel from other fields, sending university students on scholarships to the United States and Europe, sponsoring seminars and special courses in institutes such as CIDIAT, the Inter American Center for Water and Land Development whose headquarters are in Merida (Western Venezuela).

After nearly a year as leader of the Environmental

Ministry of which he was chief architect, 40-year-old Gabaldon maintains his original optimism in tackling Latin America's most ambitious environmental program. "Venezuela is determined to be pioneer among Third World countries," he says, "since we know of the existence of no similar institutes." He feels his major achievement to date lies in the organization of the Ministry.

"Our basic strategy for preventing massive environmental degradation lies in land use planning covering the whole country," says Gabaldon. Venezuela, almost equal in size to the combined areas of France, Italy, Holland, and Belgium, has only 2,500,000 hectares (6,17,500 acres) of first and second class agricultural land. Venezuela's violent economic expansion and consequent urban growth are swallowing large chunks of prime arable land: the present figure is 500,000 hectares (1,235,500 acres) and the forecast for the year 200 is 1,500,000 hectares (3,706,500 acres).

Pollution is another consequence of oil prosperity in Venezuela. Venezuelans literally roll on wheels. Significantly, according to the Ministry's recent report on air pollution in Caracas, 90 per cent of air contaminants are produced by vehicles. More than 400,000 vehicles operate days in the metropolitan area, producing at peak traffic hours a carbon monoxide index of 40 to 45 parts per million with an average of 25-30 ppm.

"Although Caracas' annual growth in vehicles is roughly 10 per cent, in 1974-75 there was an explosion of 20 per cent," reports Rafael Caceres of Disca (Environment Research Agency). "If we continue at this rate, by 1988 we'll have 1,100,000 cars in Caracas," Caceres projects. "Already parking space is limited to 30,000 vehicles in downtown Caracas, and cars which cannot park must cruise in circles, aggravating air pollution." The boom in multi-family dwellings, built short-sightedly with only one parking space per family, also contributes to Caracas' problems.

A long-term control program contemplated by the Ministry of Environment aims at reducing the carbon monoxide index in Caracas to 10 parts per million by the year 1990. To do this, the Ministry counts on the completion of the long-awaited subway system (whose first line is scheduled to open in 1980) to provide efficient public transportation.

Despite these achievements, the Environment Ministry was under heavy pressure from environmental cynics who demanded tangible results, and last month, rumors were spread that Gabaldon would be leaving office soon. He emphatically denied it. "Some won't think these are tangible results," he told *WER* reporters last week, "but we have created an environmental conscience among the people; we have a clearly-formulated plan; and the Juntas (civil boards) and National Guard brigades are doing their job."

ELAINE DE STEINHEIL
HILARY BRANCH

U.S. Contributes \$10 Million To UNEP for Fiscal Year 1978

NEW YORK—The voluntary contribution for Fiscal Year 1978 by the United States Government to the Fund of the United Nations Environment Programme (UNEP), based in Nairobi, enjoyed smoother legislative sailing than it had the year before when the Executive branch and the Congress were initially at odds over the amount of the annual appropriation.

This time around, the Executive request began at \$10 million (rather than at \$5 million), and easily passed both the House and the Senate. In the final analysis, however, this sum merely matched last year's contribution, and the prospects for Fiscal Year 1979 look much the same because the Executive has requested only \$10 million.

It is possible, of course, that the Congress may again authorize and approve a greater annual sum because of the growing awareness of its members of the vital role that UNEP plays on the international environmental scene.

Over the past five years, the U.S. has contributed \$30 million to UNEP's Environment Fund, making it by far the world's largest contributor, but the U.S. fell short of the \$40 million pledge made by President Nixon in 1972. As of November 30, 1977, UNEP had received commitments from all countries of \$28.5 million for 1978.

A.W.

Danes Build Two Special Ships To Investigate Sea Pollution

COPENHAGEN—The Danish Agency for Protection of the Environment has taken delivery of two specially-built ships of 18.25 gross tons to combat pollution of the sea by harmful substances other than oil.

The ships have been put into service under terms of the Convention on Protection of the Marine Environment of the Baltic Sea area.

Since this includes the approaches to the Baltic, one vessel will operate in the Great Belt between the Danish islands and the Jutland peninsula and the other in the Oeresund between the island of Zealand and Sweden. The vessels are manned by a Royal Danish Navy crew of three.

The role of the special vessels is investigation. They do not patrol regularly, in view of the vast sea area to be covered.

Because of the possible dangers from floating pollutants, the ships can be made airtight with sealing doors and ventilators that can be closed. The engine room is airtight but the exhaust from the 464 HP diesel engine has protective spark catchers. The vessels have a top speed of 16 knots.

The crew and others who may take part in an operation are provided with 29 protective suits against chlorine and 74 multi-purpose suits. There are two types of breathing apparatus.

Mr. F. Otzen, an official of the Environmental Agency, says that \$11 million has been appropriated through 1980 to acquire more equipment, personnel, and ships for combatting both oil and chemical pollution at sea.

CONSTANCE CORK

Chemists Association Establishes Fluorocarbon Monitoring Stations

WASHINGTON—A global network of monitoring stations are being established in an attempt to determine lifetimes of chlorofluorocarbons in the atmosphere, and to secure a better picture of the role fluorocarbons play in the ozone depletion controversy.

The project, funded by fluorocarbon producers, is part of a broad fluorocarbon research program being administered by the Manufacturing Chemists Association based in this city. More than \$5 million has been committed to date in an effort to clarify what happens to the compounds after their use and release.

A minimum of four stations will be required, two in each hemisphere. They will measure daily concentrations of fluorocarbons over a span of several years at a cost of \$400,000 the first year and \$250,000 thereafter.

Drs. J. E. Lovelock and P. G. Simmonds of Great Britain will manage two stations in the Northern Hemisphere, located at Adrigole, Ireland, and on the Caribbean island of Barbados. Dr. R. A. Rasmussen of the Oregon Graduate Center will manage the other two sites at American Samoa, and at Cape Grim, Tasmania.

Monitoring is already underway at the Adrigole station and will start within the next few months at the other locations.

Data from the study should help determine whether there are significant natural mechanisms (sinks) in the atmosphere for removing fluorocarbons before they reach the stratosphere. Calculations of ozone depletion have been based on the assumption that there is no significant sink. If such sinks exist, the impact fluorocarbons are thought to have on the earth's protective ozone layer would be materially reduced.

Many scientists believe that existing atmospheric measurements of fluorocarbons are inadequate to determine whether there is a significant removal mechanism. The National Academy of Sciences and the United Nations Environment Programme (UNEP) have recommended studies along this line to fill a critical gap in present knowledge (*WER*, Jan. 3, 1977, p. 4; March 28, 1977, p. 2).

The monitoring project was conceived by Drs. D. M. Cunnold, F. N. Alyea, and R. G. Prinn of the Massa-

achusetts Institute of Technology's Department of Meteorology. They concluded—from an analysis of likely uncertainties in instrument precision and calibration, errors inherent in release data estimates, and knowledge of normal atmospheric variability—that fluorocarbon lifetimes can best be determined by establishing long-term trends of concentrations in the atmosphere.

The MIT scientists will coordinate data collection from the four stations and supervise calculation of lifetimes. They will be assisted by Dr. R. D. Rosen of Environmental Research and Technology, Inc., Concord, Mass.

Although the main objective of the program is to collect information on two species of fluorocarbons, FC-11 and FC-12, data also will be recorded for several other compounds. They include FC-113, methyl chloroform, carbon tetrachloride, and nitrous oxide.

Scientists involved with the monitoring project say that extensive calibration and intercalibration of recording instruments will be made to make sure that the data from all locations will be consistent.

Details of the intercalibration will be offered to other groups measuring fluorocarbons and compared with an absolute standard when one becomes available.

European Nuclear Fusion Project Sited in British Laboratory

LONDON—Joint European Torus (JET), the European nuclear fusion research project, which almost foundered over protracted arguments between Britain, France, and West Germany over which country should provide the site, has finally found a home.

Its initial five-year research program, costing \$210 million, will take place at the Atomic Energy Laboratories at Culham, near Oxford, England. The decision is just in time to prevent the disbanding of the international team of scientists who have been waiting at Culham.

The team will now be increased to include up to 320 scientists in four years' time. About half will be British, and the UK will contribute 25 per cent of the overall cost of JET. A council will be set up, consisting of two representatives from each of the nine EEC countries, and the French scientist, Dr. P. Rebut, the present leader of the Culham design team, is a strong contender for the post of project leader.

The word "torus" in the project's title refers to the shape of the container, rather like a hollow doughnut, in which the fusion process is planned to take place. Within a magnetic field created inside the torus, the nuclei of an element called deuterium should fuse instead of breaking up (fission) if heated to sufficiently high temperatures. Scientists will be trying to demonstrate that they can create the necessary conditions for this to happen.

The project will be a long-term one, with no chances of

affecting the nuclear energy production scene until the next century. The fuel, deuterium, is contained in water and so is cheap and plentiful. In comparison with nuclear fission, fusion produces relatively little dangerous waste. Against this, even if the fusion process can be safely handled, it is extremely costly, involving a great deal of energy input relative to output.

ALAN MASSAM

Indian Scientist Lauds Trees As Source of Carbon-Based Energy

NEW DELHI—The world's deepening oil crisis has spurred efforts to discover alternative sources of energy. Nuclear fusion, solar and geo-thermal energy, tidal and wind power are still not either commercially or technically viable.

But Dr. Iqbal Krishna Bharati, inventor of the steel process named after him, has an answer to the present energy crisis.

"What the world needs," he claims "is a cure and not stop-gap measures—and *trees* can be mankind's permanent source of carbon-based energy."

With the age of coal returning, Bharati suggests: "First we must initiate a mass tree planting program. For every tree cut down and used to produce charcoal, ten more must be planted. This program has to be intensified so that we get more trees and the benefits that go with afforestation, but we also get simultaneously a cheap source of fuel—which is renewable."

The process is simple: cut timber is first converted into charcoal by incomplete combustion in a steel vessel and then inserted into a gasification unit. The charcoal undergoes a partial oxidation chemical reaction with oxygen which is injected from the side-blowers. Steam is simultaneously passed over the white hot charcoal. At the high temperatures generated in the plant, steam is broken up into its constituents—hydrogen and oxygen. The oxygen is recycled while the hydrogen can be used directly as a fuel or combined with carbon to give a wide range of hydro-carbons—petrol, phenol, etc.

As a technology, the scientist claims, carbon gasification is not new and in India the raw material that has been used for it has been coal rather than charcoal.

He suggests that charcoal is an efficient substitute because it does not contain phosphorous or sulphur which emit noxious gases.

Last year, the agro-horticulture society of Pune in Maharashtra State announced it had evolved a new, radically cheaper, method of tree plantations. It claims trees can be made to grow to heights of three meters within 18 months.

Dr. Bharati feels certain that if the energy plantation project is launched on a mass scale it will provide mankind with a permanent source of carbon-based energy.

R. MURALI MANOHAR

In Brief...

Pollution Training Course Given Employees in Greece

More than 100 employees of Greek industries recently attended a training course in Athens on industrial pollution control.

The 10-day course examined the types, the extent, and the effects of environmental pollution caused by trade effluents, air emissions, and solid wastes emanating from various kinds of industrial plants.

It was organized by the governmental Athens Environmental Pollution Control Project, in cooperation with the Greek Ministries of Industry and Social Services.

At a five-day seminar held in Athens last July on means of controlling Mediterranean coastal pollution, Greece had offered to arrange similar practical training for personnel from other Mediterranean countries at its environmental pollution abatement center in Athens.

Chinese Generate Power From Low-Grade Fuels

Power plants in China have succeeded in generating electricity from low-grade fuel. Low-grade fuels, which include sapropelic coal, coal pebble, oil shale, peat and lignite, can produce great amounts of heat.

In the Iwu power station in Chekiang Province more than 100,000 tons of sapropelic coal have been used since 1971 to generate 17 million kilowatt hours of electricity. Power stations in Tangshan, Fushun, Fouhsin, and Nanpiao have all been using coal pebble as a supplementary fuel since the 1950s.

China possesses large reserves of low-grade fuel sources. Provinces like Hunan, Hupeh, Chekiang,

Kiangsu, and Fukien are all rich in sapropelic coal reserves. With the recent success in using low-grade fuels, further utilization of these fuels is being encouraged. Chinese engineers and technicians have discovered that it is possible for power stations to mix 5-10 per cent of the low-grade fuels with regular high-grade fuels for generating power. Some difficulties—such as uneven burning in boilers, a high attrition rate for power-generating equipment, and excessive ash and residue will be forthcoming—but Chinese energy experts say they can be overcome.

Peruvians Must Reforest Equivalent of Wood Cut

In an effort to protect the future of Peruvian forests, the government now refuses permission to "extract wood" unless the forester agrees to "reforest" an area of land equivalent to the volume of wood cut. This translates at approximately two trees for every cubic meter affected. It is hoped that on a national level, some 20,000 hectares will be reforested this year.

The Ministry of Agriculture has formed committees to advise and coordinate reforestry programs, with special emphasis on the re-planting of walnut, Peruvian pine, and cedar.

Abolition of Paperworks Aids Recovery of Czech River

Abolition of the paperworks in Jindrichov, Czechoslovakia, has resulted in purer waters in the upper and middle reaches of the Morava River. Fishing, half of it trout, has been restored in forty kilometers of formerly entirely dead waters. It is hoped the entire Morava, a tributary of the Danube, will be suitable for fishing by 1980.

India Bans Export of Rhesus Monkey for Medical Research

India has recently announced an export ban on rhesus monkeys to be effective on April 1. Since India is the world's largest supplier of the monkeys, hundreds of biomedical research projects in the United States using rhesus monkeys as stand-ins for human beings will probably have to be stopped or cut back drastically.

The Indian ban is believed to have been a result of pressure from a United States-based animal welfare group and Indian Prime Minister Morarji Desai. There are reports that the monkeys are being used in the United States for military weapons testing purposes. Such testing is interpreted as being in violation of a 22-year-old agreement between India and the United States that monkeys would not be used in military research.

According to Dr. Joseph Held of the U.S. National Institutes of Health, "If the Indians leave the ban in place, it will definitely pose a crisis. There's just no doubt a lot of research is going to be set back." Held also pointed out that until 1973 India shipped some 30,000 monkeys a year to the United States. The quota was then cut to 20,000, and was further reduced to 12,000 in 1975 and 1976.

In response to the shortage of monkeys, Held said breeding stations in the United States will have to be established or expanded. Currently, the half-dozen or so stations produce only about 1,200 monkeys a year, or 10 per cent of the 12,000 monkeys used by American scientists in 1977. Held also estimated that it will take about 20 years before there are enough monkeys needed for the research.

American ecologists point out that one effect of the Indian ban is to shift the demand of rhesus monkeys to Bangladesh. The rhesus monkey is favored by researchers because as a primate it has more biological resemblances to human beings than other animals.

Hong Kong and Industry Fight Over Waste Control Measures

The Hong Kong government and the colony's industrial groups are at odds over official plans to slap tough controls on industrial wastes. The government wants to introduce strict measures to guard against industrial wastes. However, industrialists are worried that severe measures will seriously affect their operations. According to Tony Bennett, Principal Assistant Secretary of the Environment branch, government officials soon will be holding top-level meetings with industrial groups including the Federation of Hong Kong Industries and the Chinese Manufacturers' Association to resolve this dispute.

Hunting of Pakistani Ibex Once Again Permitted

The Wildlife Management Board of Sind Province of Pakistan has decided to allow hunting of 10 male ibex this winter.

A lottery for permits to "true sportsmen" will be drawn.

According to officials, a separate quota has been kept for foreign nationals and will be announced later.

To ensure that only "true sportsmen" apply for permits the Board has laid down the condition that the hunting will be done by stalking the animals; "the animals will not be driven and no beat shall be arranged."

Hunting the world-famous ibex has been banned for several years.

ECE To Sponsor Seminar On Recycling of Polymer Wastes

The United Nations Economic Commission for Europe (ECE) will sponsor a seminar in Dresden, East

Germany, Sept. 18-23 to examine results of research on the recycling of high polymer wastes and practical experience in applying modern waste-processing and disposal technology.

Topics proposed for discussion on modern processes include: primary methods of waste preparation; recycling of various forms of waste; use of unsorted wastes in buildings; equipment for recycling; decomposition methods; pyrolysis; use of thermoplastic wastes in the production of proteins; and the generation of energy by the combustion of thermoplastic and elastomer wastes.

The ECE spokesman said that participants will consider papers on the economic aspects of recycling in the second section of the discussions. Subjects are likely to include: methods of evaluation of the economic efficiency of available processes; the economic assessment of the use of waste as a source of secondary raw materials and energy; and experience with certain processes in the form of case studies.

Delegates will debate the effects of the recycling of polymer wastes on the environment in the third section of the seminar.

Rare Argentine Pampas Deer Found Near Extinction

Argentine environmental agencies and international conservation organizations, such as the World Wildlife Fund, are studying ways of saving the rare pampas deer (*Ozotoceros bezoarticus celer*) from extinction. The deer is slightly taller than a sheep and normally has three-pronged horns.

At the turn of the century, the deer was found in abundance in the Argentine pampas, central plains region, and also roamed freely in the northern provinces of Formosa, Chaco, Misiones, and Corrientes. Currently, only about several thousand remain.

Filipino Co. Must Reimburse Malaysia for Oil Spill

The Malaysian New Straits Times recently reported that Malaysia will receive about \$1 million for the oil spill caused by the Philippines National Oil Company's 100,000 ton tanker Diego Silang in the Malacca Strait in July, 1976. According to the report, the Malaysian government and the company have agreed to this negotiated settlement and the money will be paid as soon as Malaysia signs the letter of release submitted by the company. The sum includes about \$800,000 for operational costs to mop up the oil, \$128,000 for claims made by fishermen, and the rest as compensation for ecological damage.

WWF Urges Marine Sanctuary For Turtles in Sulu Sea

The World Wildlife Fund (WWF), based at Morges, Switzerland, has asked President Ferdinand Marcos of the Philippines to join Sabah in supporting a proposed international marine sanctuary for sea turtles on a group of small islands between the two countries in the Sulu Sea.

In a recent letter to the President, Sir Peter Scott, Chairman of the WWF, explained that Sabah had declared its islands in the group as a National Park and established measures to protect the Green and Hawksbill turtles (*Chelonia mydas* and *Eretmochelys imbricata*), which nest there in large numbers.

Sir Peter suggested that President Marcos issue a Decree for protection of the turtle nesting beaches on the islands under Philippine sovereignty, and said that he was sure that Sabah would cooperate in the joint effort.

The Green and Hawksbill turtles are among the seven species of marine turtles found in tropical waters, all of which are threatened with extinction unless protective measures are taken.

Indians Devise Solar Energy Heater for Drying Milk

A solar energy pre-heater for drying milk has been developed in India by the Amul Research and Development Association of the Kaira District Cooperative Milk Producers' Union Ltd. in Gujerat State.

Air is sucked in and heated through a roof top collector which consists of corrugated asbestos sheets covered with glass plates fixed in wooden frames. Iron shavings are placed between the glass plates and asbestos sheets, which are painted black. Then the heated air goes to the spray drying unit in which a further rise in temperature is obtained by conventional steam heat.

On a sunny day the heated air rises by about 120 degrees F. over the air outside and on a cloudy day it gains about 90 degrees F.

Bavaria Builds More Tunnels Of Love for Amorous Toads

Bavaria, which two years ago first built "tunnels of love for amorous toads" (Dec. 20, 1976, p. 8), now plans to increase construction of such "detours" to protect its amphibian populations and decrease auto accidents.

Bavarian State Minister for Protection of the Environment, Alfred Dick, declared here recently that such effective measures would be needed to keep frogs, toads, and salamanders from extinction.

Every Spring, he noted, thousands of amphibians cross highways on their way to or from spawning ponds and are slaughtered. In addition, auto accidents have proliferated.

For example, he said, out of the 6,000 to 8,000 amphibians which in the spring of 1975 crossed the autobahn near Murnau, some 3,000 were killed.

Not only would new under-road passages be constructed, he said, but

"fences" or barriers would have to be built to guide the amphibians into the passages.

During the last two years the Environmental Ministry had tested such procedures at four crossing points, he said, at a cost of \$143,000. The tests have shown that the new tunnels—usually pipes—have been "accepted" by the mating amphibians.

"Greater efforts must be made to plan for and to build more such passages," Dick declared, adding that his Ministry stood ready to provide advice for such planning.

New Zealand Bird Lovers Occupy Trees; Defy Cutters

Bird lovers took to the trees and roosted there till sawmillers were withdrawn from a section of New Zealand native forest inhabited by a rare native crow, the kokako. Only 50 hectares were booked for felling by contractors to the Government Forest Service, and the birds were not confined to the particular area of Taupo Pureora forest, but conservationists believed the totara timber threatened was significant for survival prospects of the birds.

Under the banner of the Native Forests Action Council, the protestors hid away in the trees, code-whistling to each other so eerily that the millers stood off helplessly from their task. The protestors drove a wedge between the stance of different Government agencies—the forestry service which had let milling contracts and the wildlife service which acknowledged the possible effect on a rare crow.

The wildlife service pressed its case right up to a meeting of the Cabinet, which had little to say afterwards but pointedly did not order the millers back. By the time the roosters had come down and withdrawn it was pretty well understood that the particular stand of forest was no longer threatened.

'Child's Right to Play' And Human Settlements

In the whole discussion of human settlements, seldom is much consideration given to recreation facilities—particularly for children. Now, in preparation for the International Year of the Child—1979, the International Playground Association (IPA), meeting in Malta recently, has declared that "The Child's Right to Play" is essential.

In its declaration, the IPA urged planning authorities to give priority to the child by banning the building of high-rise housing, with its high-traffic density. It urged that play be included in the school curriculum and that play and adequate space and equipment be regarded as an integral part of social care both for general health and for those who are handicapped or being treated in hospital settings.

Sweden's Parliament Bars Hunting of Eider Ducks

Sweden's Parliament recently voted down a government proposal to license limited hunting of eider ducks each spring along the Baltic sea coast. Duck hunting, which has been a controversial subject for many years, was banned in the 1950s.

In backing the proposal, Agriculture Minister Anders Dahlgren emphasized that scientists claimed the duck population—estimated at 300,000 mating pairs and a total of 800,000—was too large and that permission to hunt would have only a marginal effect.

But his predecessor in office, Svante Lundkvist, and other opponents charged the proposal was a step backwards in the international environment movement and that approval would damage Sweden's reputation as a protector of nature. Others pointed out it would be a rejection of several international conventions on protecting bird life.



World Environment Report

- 6 MAR 1978

VOL. 4, NO. 4

Copyright © 1978. Center for International Environment Information.

FEBRUARY 13, 1978

EEC Environment Ministers Agree On Titanium Dioxide Reduction

BRUSSELS—The Environment Ministers of the nine EEC countries agreed in Brussels recently to reduce "red sludge" pollution caused by the titanium dioxide industry. The issue has been a hot one for two-and-a-half years but it took a compromise with the British to get the proposal passed. Most of the member states wanted to use effluent standards to control the pollution but the British held out for quality objectives, arguing that discharges into the tidal waters of the Atlantic are not as harmful as discharges into the land-locked Mediterranean.

The agreement requires that each EEC country draw up national plans by July 1, 1980 for reducing titanium dioxide waste by July 1, 1987. The British, who held out because of pressure from their strong chemical lobby, will not have to draw up such a program if they can prove that their effluents are not causing pollution.

The agreement means that permission to build new factories in the Member countries will be subject to environmental impact statements and new plants will have to install modern non-polluting technology. Plants already operating are obliged to introduce pollution controls.

Although France and Germany have already passed titanium dioxide controls, the EEC agreement was the first joint action by the ministers against a specific industrial pollutant. The titanium dioxide industry, which mostly supplies paint producers, is expected to double its capacity in 10 years. The EEC countries produce 840,000 tons of titanium dioxide a year and for each ton produced by the most common and most polluting method, between 15 and 20 tons of waste are produced. The side effects of the waste have included loss of some species of fish, damage to other animal life, accumulation of oxides on the sea bottom and the "red" tinge to the water.

The ministers also adopted a directive to control toxic waste disposal to ensure it does not endanger human health or the environment. This time, bowing to British pressure over what substances would be considered toxic, the ministers accepted Britain's amendment that the committee charged with adopting the list of substances would be guided by the views of the national governments if banning a specific substance might have a severe impact on the national economy. **JOAN INFARINATO**

Venezuelan Environment Ministry Moves to Control Chemical Waste

CARACAS—The Venezuelan Environment Ministry is undertaking special measures in the developing heavy industry zone of the Guayana, a region representing one-third of Venezuela's land area, to control the discharge of chemical wastes into the Orinoco River.

Ciudad Guayana, founded in 1961 as the center for the development of the Iron Zone (estimated reserves: 1,833 million metric tons) incorporates Puerto Ordaz and Santo Tome, at the confluence of the Orinoco and Caroni Rivers. The city, planned by the government development agency, Corporacion Venezolana de Guayana, contains many large industrial plants, both public and private. These include: Guri Hydroelectric plant (capacity 2 million KW); SIDOR, the national steel mill which employs more than 12,000 workers in the production of 16 million tons of steel and iron products; ALCASA aluminum plant, producing 124,000 MT a year; and Ferrominera Orinoco, which mines some 26 million MT of iron ore annually, a large part of which goes to American buyers.

Finding in the Orinoco "a high degree of contamination" from chemical wastes, the Environment Ministry now has made anti-pollution measures obligatory for the industries which hitherto have operated without restraint.

SIDOR, which is investing \$190 million to install anti-pollution devices in its new plants, has been requested to submit its plans to the Environment Ministry for analysis. All other plants will be asked to present pollution control plans.

Because of its enormous volume of water (estimated at an average 18,500 m³ per second in the dry season), the Orinoco River had until now been officially viewed as capable of absorbing unrestricted wastes. The sewer system of Ciudad Guayana (pop. 300,000), which has no water treatment facilities, discharges directly in the Caroni and Orinoco Rivers.

ELAINE de STEINHEIL,
HILARY BRANCH

In This Issue

Titanium Dioxide	2
UNEP Activity Center	2
Mediterranean Convention	3
Garbage as Landfill	4
Tropical Rain Forest	4
Lead Pollution	5
In Brief	6

Panama Canal Treaty To Contain Specific Environmental Safeguards

WASHINGTON—The Panama Canal Treaty, which still faces an uphill struggle for Senate ratification, is probably the first diplomatic document of its kind to contain specific environmental safeguards. From the outset of the negotiations, the U.S. was concerned that the transfer of large tracts of unspoiled land to Panama at a time when that nation is in the midst of an aggressive economic development program could have a serious and irreparable impact on the area's ecology. Accordingly, negotiators for the two countries included a commitment (Article VI) to implement the treaty "in a manner consistent with the protection of the natural environment through consultation and cooperation."

To avoid or mitigate any adverse environmental actions under the treaty, Article VI calls for creation of a Joint Environmental Commission that will monitor, study, and make recommendations to the two governments on all environmental issues that fall within the treaty's purview. The U.S. State Department's final environmental impact statement (EIS) calls for a membership comprising environmental, government, and public interests supported by a professional staff.

Separate bilateral agreements with Panama that will assure the continued preservation of the Canal Zone's tropical forests and their wildlife in several ecologically important areas have already been signed. These include Barro Colorado Island in Gatun Lake, site of the Smithsonian Tropical Research Institute. Under the agreement, the island and four nearby peninsulas have been designated as a Nature Monument under terms of the 1940 Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere. The agreement enters into force with the Canal treaty and remains in force as long as both countries are parties to the 1940 convention. A separate exchange of diplomatic notes designated the institute as custodian of the monument. Other bilaterals provide for a continued U.S. presence on and preservation of other environmentally important tracts.

But as the environmental impact statement notes, protection of about two-thirds of the Panama Canal Zone area will depend on Panama, which along with many other developing nations is caught between demands for economic development and preservation of natural resources. Accordingly, the EIS suggests that economic assistance loans accompanying the treaty should serve to "strengthen Panamanian institutions engaged in promoting conservation, sanitation, and... rational exploitation..."

The two Panamanian agencies responsible for forests and water management (RENARE and IDAAN) requested \$10 million from AID (to be matched equally by Panama) for a watershed management program, and their request won quick approval. The project responds

to AID's new Congressional mandate to support environmental protection in developing countries.

In announcing what it termed "an environmentally sound course of action," the State Department also committed itself to provide the Joint Environmental Commission with the kind of expert staff and financial support it needs to be effective, as well as all the relevant information and data that will help it to focus its energies on matters requiring priority attention.

PETER PHILIPPS

UNEP Sets Up Activity Center For Regional Seas Program

NAIROBI—A Program Activity Center (PAC) on Regional Seas has been set up at the Nairobi headquarters of the UN Environment Programme (UNEP) to coordinate implementation of UNEP's Regional Seas Program. The Center will develop, adapt, and implement action plans for the Mediterranean, the Persian Gulf, the Caribbean, the Gulf of Guinea, the East Asian Seas, the Red Sea, and the Pacific. Mr. S. Keckes, a Yugoslav marine scientist, heads the Center.

UNEP's 1976 Governing Council decided to set up the PAC, stressing the importance of global and regional activities and conventions on sea pollution, which could aid governments in managing and protecting their marine environment. In 1977, the Governing Council approved detailed plans for the PAC.

Coordination is the PAC's basic task, and it is designed to collect, standardize, process, and disseminate data on the different regional seas, to ensure that their problems, and the means of tackling them, can be accurately compared.

CHARLES HARRISON

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$150 per year. \$20 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Wendy Kaufman
Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

SPECIAL REPORT: New Mediterranean Convention Takes Effect

MONTE CARLO, Monaco—Seventeen nations attending a United Nations conference here on pollution of the Mediterranean continued some of the progress they had made at two earlier conferences and also agreed on the broad lines of their future work.

The meeting, sponsored by the United Nations Environment Programme (UNEP), brought together all of the Mediterranean countries except Albania. There was general agreement on the need to curb pollution in this region, but less so on how to tackle the job and, even, how much urgency there is.

The presence here of 17 out of the 18 nations of the region is seen, nevertheless, as proof that the peril to the region's environment has perhaps achieved something that centuries of combat, and religious and diplomatic negotiations had so far failed to do: solder the mosaic of the multi-ethnic Mediterranean peoples.

"This is a political achievement that is quite considerable, albeit still little-recognized," commented one participant.

At Barcelona in February 1975, Mediterranean nations had worked out a general "action plan" for early attention, concentrating initially on marine pollution, on dumping from ships and aircraft, and on combatting oil spills and other emergencies. Countries as different and "opposed" as Egypt and Israel, Greece and Turkey had together worked on the three-point ecological program.

This "action plan" was confirmed a year later, in 1976, by the signing of a convention which included two treaties: one prohibiting polluting discharges from ships and the other laying down the framework of a common anti-hydrocarbon-pollution plan for use in the event of an accident.

This convention needed six ratifications to take effect and these have now been given by France, Lebanon, Malta, Monaco, Spain, Tunisia, and Yugoslavia. It goes into effect February 13, 1978.

The broad outlines of future work decided here at the January 1978 meeting brings the program to a much more delicate phase, but without this phase, all work to save the Mediterranean will be useless. The UN-backed conference decided to begin work on a treaty to control pollution of the Mediterranean from land-based sources.

Experts at the meeting estimated that 85 per cent of the marine pollution originates on land. They warned that any serious effort to clean up the Mediterranean *must* include curbing pollutants from factories, tourism, and municipal waste on shore.

They also warned this work will be very expensive: its cost is set at more than \$5 billion, spread over a period that might reach 20 years.

There were, in fact, two meetings at the governmental level held during 1977 (in Athens and in Venice), when a draft protocol was drawn up, but this draft was not accepted over-all at the recent meeting here.

Perhaps this new development is due to the fact that it is no longer a question of tackling merely local discharges—mostly fairly easy to spot and check—but of undertaking a series of measures affecting all the regional territories and, particularly, their activities. There was nearly unanimous agreement that the failure to reach an accord would mean that the already-sick Mediterranean waters would continue to deteriorate.

"We've moved beyond the earlier 'brotherhood' and 'motherhood' agreements," said UNEP Deputy Executive Director Peter Thacher.

"It is estimated that about 120,000 tons of mineral oils, 60,000 tons of detergents, 100 tons of mercury, 3,800 tons of lead, 2,400 tons of chromium, 21,000 tons of zinc, 90 tons of organo-chlorine pesticides, 1,120,000 tons of nitrogen and phosphorus, and 2,500 curies of radio-nuclides enter the Mediterranean annually," said Dr. Mostafa K. Tolba, Executive Director of UNEP and conference chairman.

The conference decided to set priorities linked to the proportional noxiousness of the wastes: a "black list" of non-degraded heavy metals (such as mercury and cadmium), and a "grey list" of toxic degradables (such as cyanide and chromium) and other pathogenic elements.

All the countries represented at the meeting have economic interests to protect, however, and this factor produced a foreseeable reticence on the part of some to undertake action which they feared or claimed might have harmful effects on their economies.

Mr. Thacher characterized this division as largely a "North-South split"—between the more-industrialized and more-prosperous countries on the northern shore of the Mediterranean and the developing countries on the southern shore.

The less-developed countries believe that curbing pollution will slow their development. They react coolly to arguments that it is cheaper to prevent pollution than to clean up the damage after it occurs. These "southern" countries appeared, at the conference, to be unwilling to assume additional clean-up costs, when much of the Mediterranean pollution is caused by the industries, the heavily-populated cities, and the tourist areas of the "northern" countries.

A United Nations study released at the conference pinpointed the waters off northern Spain, southern France, and Northern Italy as the most polluted. And French sources pointed out that the Mediterranean cities of Marseilles (France's third-largest city, population, nearly 1 million), Montpellier, Nice, Perpignan and Toulon carry out little or no sewage cleansing before discharging into the waters of the Mediterranean.

Conference sources said they hope that work on this land-originating pollution problem will advance fast enough for a convention to be ready for signature by the end of 1978.

PETER DEWHIRST

British Researchers Find Food Most Pressing Energy Problem

LONDON—Food supply rather than other forms of energy is the most vulnerable of the world's present problems. For if the world's population continues to grow at its present rate, in 50 years' time it will be almost impossible to feed nearly everyone even semi-adequately.

This conclusion comes from use of Britain's first Global Modelling Project, the work of the Department of the Environment's Systems Analysis Research Unit (SARU). The model, known as SARUM 76, was presented recently at the Royal Society, Britain's leading scientific academic institution, by Peter Roberts, head of SARU.

SARU was set up as a result of the UN Conference on the Human Environment held in Stockholm in 1972, and since the publication of "Limits to Growth" it has, along with its counterparts in other countries, been working on methods of constructing a more sensitive global model to demonstrate long-term environmental trends and to calculate their interaction as a basis for policy decision.

Roberts points out that there is general consensus amongst the compilers of such models on finite resources such as coal and oil or on the amount of food that can be grown worldwide. The British model seeks to measure different levels of adaptability in the interaction of world needs—for example, in energy the use of renewable energy sources and of recycling. **BARBARA MASSAM**

Use of Garbage as Landfill To Create Parks in Buenos Aires

BUENOS AIRES—The municipality of the city of Buenos Aires and the government of the province of Buenos Aires have inaugurated a joint sanitary landfill project designed to dispose of six million tons of garbage created there each year, and which is no longer burnable under new legislation banning incinerators in the city.

Under the landfill plan, 16,000 hectares of lowlands, which currently form part of the seasonal flood zones along the River Plate and its tributaries, will be filled with the mountains of waste created by Buenos Aires' population of close to 10 million. Of these 16,000 hectares, 10,000 will become parks while the remainder are slated to be urbanized.

One of the areas affected by the landfill program will be a seemingly endless expanse of dump land along the Riachuelo River which runs between the city of Buenos Aires and the Buenos Aires provincial capital of La Plata. This zone has long been an eyesore that has bred rats, snakes, and other pests. Its 94 massive ovens have also created a grave air pollution problem in the region

surrounding the dump. Flooding of this area has also had much to do with the pollution of the Riachuelo, which in some places has a higher harmful bacteria and virus count than most sewers.

The five million trees which the municipal and provincial governments plan to plant will provide a veritable oxygen factory for greater Buenos Aires. The trees will produce 25,000 tons of oxygen per day and will absorb 37,000 tons of carbon dioxide.

The first step in the program has already been taken with landfill work having begun in the riverside zone of San Isidro.

DAN NEULAND

Sri Lanka Wins Battle to Save Its Major Tropical Rain Forest

COLOMBO, Sri Lanka—A five-year-long battle to save the Sinharaja (King Lion), Sri Lanka's last remaining major tropical rain forest—which ecologists believe has taken at least a hundred million years to evolve—has been won. The country's new government, elected last July, has ordered an immediate halt to the selective logging, begun in late 1972, of this magnificent primeval forest. Conservationists, while welcoming the government's decision, point out that a great deal of irretrievable damage has already been done.

The 22,000-acre Sinharaja straddles Sri Lanka's Sabaragamuwa and Southern provinces, a dense, dark, and lush forest, some of whose trees soar to heights of up to 130 feet in search of the sun. Here, there is no tangle of scrubby undergrowth as in the more arid jungles. The trees rise straight and tall to form a dense green canopy about 80 feet above the shallow forest soil.

More than 100 different types of trees had been recorded in the Sinharaja to which the people of Sri Lanka have an old and deep attachment. This was clearly apparent in the vociferous protests made to former Prime Minister Bandaranaike when the plans to exploit the forest were first made public.

In their appeal, a number of conservationist organizations and prominent citizens told the then Prime Minister: "Sinharaja has never yet been studied systematically. Therefore, nobody knows what it really contains, and nobody can know what will eventually happen when it is exploited. However, we are aware that it is the richest ecosystem, with a large number of indigenous species. It has a great untapped potential for study, research and new products, from which prosperity may spring. Logging in whatever form will, we believe, destroy it, and nobody will be able to recreate it without at least a 100 million years to spare."

The enormous public opinion building up against the decision to log the forest to feed a woodworking complex sixty-two miles away compelled the government to appoint a committee at the ministerial level to examine

the program. The conservationists lost when the Committee initially recommended selective logging.

But a new and more sympathetic government has reversed the original decision and halted the logging. In economic terms the price of this decision is high for a poor Third World country. Despite the damage that has already been done by both the mechanical loggers of the foreign contractors and the depredations of indigenous slash and burn *chena* cultivators, Sri Lanka has demonstrated that actively concerned people can still win environmental battles even in the developing countries.

MANIK W. de SILVA

Environment Law 'Flexible' Mexican Official Admits

MEXICO CITY—A Mexican government environmental official has acknowledged that there is a "certain flexibility" in enforcement of the nation's environmental protection laws. Alexander Becker, chief of the fixed sources division—which monitors heavy industry—said the cost of equipment to clean the air and water and the national economy are factors used to determine whether laws should be strictly enforced against particular businesses.

Becker said the cost of buying and installing anti-pollution equipment equals the total value of some industrial plants, and that the closing of some factories because of environmental pollution would hurt the national economy at a time when the nation can ill afford it.

On a positive note, he pointed out that of the 28 major cement factories in Mexico, 24 have installed anti-pollution equipment. This is the only industry that approaches full compliance with the laws, he said. In the Valley of Mexico, which encompasses Mexico City, 2,500 industries have been categorized as highly-contaminating with 55 of these contributing a majority of the atmospheric pollutants.

KATHERINE HATCH

Lead Content in Car Exhaust Blamed For Nerve Damage to Young Swedes

STOCKHOLM—Sweden's atmosphere is becoming so polluted by lead that Swedish children now run the risk of damage to their nerve systems, an official investigation by the National Board for Protection of the Environment recently disclosed. The high lead content in automobile exhaust was named as the major culprit.

In its report to the government, The Board demanded that the lead content in gasoline be reduced from the present 0.4 gram per liter to 0.15.

Against that background, Minister of Agriculture

Anders Dahlgren, who holds cabinet responsibility for care of the environment, urged a reduction in the use of private cars in cities and towns.

"There are two ways of proceeding to reduce the release of lead into the air through car exhaust," he said. "One can enforce by law a limitation of the lead content in gasoline. But the quickest way would be to cut back automobile traffic in built up areas and then carry on with a reduction of lead in gasoline," a step, he added, that would take a long time.

While declaring he couldn't predict what measures the government would take until after it had studied the report further, Dahlgren stated:

"I think that we must direct attention to the fact that the constantly increasing private use of cars has become an environmental problem. Above all, I think this is a question for the local health authorities. They can forbid certain traffic in the inner cities. It shouldn't be necessary to have so many private cars in the center of towns where there is public transport."

Valeri Surell, managing director of one of the three automobile associations in Sweden, commented that a ban on private cars in built up areas "appears to be unrealistic." Robert Nilsson, a professor of biochemistry and one of the scientists backing up the report on the effects of car exhaust, agreed with Surell.

SPECIAL DISPATCH TO WER

UN Experts to Study Reforestation Techniques in Mountainous Bulgaria

GENEVA—United Nations experts will study the techniques and mechanization of reforestation in mountainous regions in a meeting and symposium in Bulgaria next June.

The occasion will be the twelfth session of the Joint Food and Agricultural Organization, Economic Commission for Europe, International Labor Organization Committee on Forest Working Techniques.

The Joint Committee will hold a symposium in Sofia June 8-10 at the invitation of the Bulgarian Government. The meeting will be preceded by a study tour. On June 5, delegates will visit a reforestation site near Drumsha for a demonstration of soil preparation equipment and to see the planting of cuttings and the maintenance of plantations and will also inspect thinning operations. June 6 and 7 the delegates will see nursery operations in Stanke Dimitrov district, will visit the Rilski monastery forestry district and the protective reforestation sites in the Iskar dam catchment basin, and will see felling and skidding work in the Borovetz district.

Following the Joint Committee's study tour and symposium, the twelfth regular session will take place in Sofia from June 12 to 14.

WILLIAM G. MAHONEY

In Brief...

Indian State Warns Tanners To Clean Up or Close Up

The government of the Indian state, Tamil Nadu, has warned tanners that their licenses would be cancelled if they do not take steps to prevent water pollution.

The effluents from tanneries are threatening to cause "irreparable damage" to the water supply and to the lands, says a recent report.

The government has promised to provide the necessary assistance to the tanners to deal with the problem.

The tanners say that they are always ready to cooperate with the government, but they feel that it is the government's obligation to treat effluents. They claim that their income is so meagre that if they are forced to pay for treatment facilities, they would have to close down with consequent loss of jobs.

Malaysia Tightens Emission Limits for Diesel Vehicles

Malaysian Minister of Science, Technology and Environment Tan Sri Ong Kee Hui, and Works and Utilities Minister Datuk Haji Abdul Ghani Gilong, recently announced that owners of diesel-driven vehicles in Malaysia have up to March 15, 1978, to service and maintain their vehicles' engines to comply with new regulations against excessive exhaust fumes. The new regulations, worked out jointly by the two Ministries, are expected to help alleviate pollution in the country.

Smoke meters will be used to measure the density of exhaust gases emitted by diesel engine vehicles. The smoke limit is set at 50 H.S.U. (Hartridge Smoke Units). Surprise checks will also be conducted

throughout the country by enforcement officers from the Environment Division, the Road Transport Department, and the police with the cooperation of local authorities. Owners of vehicles that exceed the specified limit in smoke meter tests will be fined \$200 or sentenced to a week's jail for the subsequent offense.

Indonesia Closes Polluting Machine, Metals Industries

A recent symposium on "Environment Pollution by Machinery and Metal Industries" in Indonesia revealed that industrial pollution in the country has reached such a high level that the government has deemed it necessary to close down a number of industries temporarily.

According to Dr. Suhartoyo, Director General of Machinery and Metal Industries Development, the concentration of machinery and metal industries in densely populated urban areas should "cause us to be the more on guard" against its possible dangers—environmental pollution caused by waste water disposal, dust and gas emission, garbage dumping, excessive noise, and vibrations. He urged the government to enact laws and regulations and to provide industrialists with all the relevant preventative information.

Ammonia Pollution Causes Fish Kill in Hungary

Radio Budapest has reported that ammonia pollution of the North Hungarian river Hernand has caused "small-scale" killing of fish. The report added that adequate protective measures have now been adopted.

The Radio said that investigations are under way to discover the source of the river pollution.

Solar Energy Prospect in Philippines Not Bright

Solar heat as an unconventional source of energy is still not widely accepted by the populace in the Philippines. The country has the technical know-how and the hardware for solar energy applications but there seems to be very few takers. According to Dr. Rogelio A. Panlasigui, a professor at the University of the Philippines, it is mainly a question of economics and, perhaps, culture. Leopoldo V. Abis, Associate Dean of the University of the Philippines College of Engineering, said using solar heat as a source of energy has a lot of drawbacks because solar energy is diffusible and inconstant.

Currently, prospects for nationwide use of solar energy are not bright. Solar rooftop water heaters are an example. At present, only hospitals, hotels, and tourist resorts find operating them economical.

Argentine Forestry Plan Bugged Down in Red Tape

Private forestry companies in Argentina are complaining that government failure to apply the already drafted state forestation plan may mean the loss of new plantings for this year.

The plan promotes investment by small- and medium-sized companies in re-forestation programs. But the government is dragging its feet on translating the plan into law, said the Argentine Forestry Association, a group of private firms engaged in the production of food and wood by-products.

The plan currently is bogged down in the military government's legislative advisory committee in charge of studying all proposed laws drafted by government ministries.

Brazil Halts All Industrial Growth in Polluted Sao Paulo

Sao Paulo, the largest industrial center in Latin America and also one of the most polluted cities in the world, will halt its rapid industrial growth. A recent decree by the Brazilian Government forbids the installation of new factories and plants or any other type of industrial enterprise.

With noise and atmospheric pollution nearing unbearable levels, there has been an attempt for several years to stop the dehumanization of this metropolitan area of 12 million.

Initially, an attempt was made to clean up pollution but it is proving to be a costly and long undertaking. Next came a move to halt the spread of new polluting industries. It took three years but now the new government decree is nearly all encompassing: henceforth, no industry at all can be established within the limits of Sao Paulo and its suburbs. However, there are provisions for considering very special cases of new firms or expansion of old ones but the decree promises to be exceedingly strict.

Japanese Devise New System To Remove Metal From Waste

Mitsubishi Petrochemical Engineering Co., Ltd., (MPEC) has put on stream its first electrolytic ferrite formation system for removal of heavy metal ions from waste water.

As a result of this first successful operation in Japan at the Marusan Metal Plating Co., Ltd., Mitsubishi Petrochemical Engineering will market the system overseas.

MPEC's electrolytic ferrite formation system is said to be a revolutionary new device capable of reducing the hexavalent chromium ion content of 12 tons of waste water per day from 200 parts per million to less than .05 ppm. Waste water treated by

the new MPEC system never contains more than .1 ppm of hexavalent chromium ion after being run through the system.

Because the compact system forms a stable crystalline ferrite sludge from heavy metal ions, these ions do not redissolve and cause secondary pollution as with conventional systems. In addition, the operating cost of the new MPEC system is considerably lower than those of conventional systems.

Malaysian State of Sabah Guards its Orang-Utans

A major effort is underway in the Malaysian state of Sabah to save the orang-utan (Red Ape) from extinction. Today there are only about 1,000 orang-utans left here, and unless current efforts prove successful, the orang-utans are on the verge of extinction.

One of the reasons for their decreasing number is that some of the natives in Sabah still believe that the gall-bladders and flesh of the apes can cure diseases. Timber exploitation and the opening up of jungle land for productive cropping and human settlement also account for some of the decrease.

Because of this threatened extinction of the orang-utans, a 10,000-acre rehabilitation center was set up in Sepilok, 14 miles from Sandakan in Sabah, in 1968, to protect the animals.

HEW Warns Increased Coal Burning May Affect Climate

President Carter's plan to increase coal burning by 100 per cent in the next eight years "could induce climatic changes with potential for generating global socio-political disruption within 50 years." So warns the Department of Health,

Education and Welfare (HEW) in what amounts to the Administration's first acknowledgement that the climatic effects of CO₂ might jeopardize a key part of its energy program.

The HEW report calls for a research program "to provide a sound basis for action no later than 1985." In addition, it calls on this country to "immediately initiate a continuing international dialogue on the problem."

Failure to act now, the report warns, could have dire consequences, since increases in atmospheric concentrations of CO₂ "will be difficult or impossible to reverse." Although HEW concedes that the contribution to atmospheric CO₂ by the U.S. itself would not be all that severe, it cautions that "the global implications of such a policy can be profound."

Long Dispute Over Asbestos Waste Resolved in Ireland

The long environmental dispute over the dumping of asbestos waste from the American Raybestos Manhattan company in Cork (*WER*, Dec. 19, 1977, p. 6) has finally been settled amicably.

Local residents at Ringaksiddy village, on the edge of Cork Harbour 25 miles from the site of the factory at Ovens, have agreed to allow dumping for a temporary period of two months. This is to allow for another permanent dump site to be found and the agreement specifies that the dump will be restored to its former state and all the waste thereafter removed.

Shortly after the company and the Irish Industrial Development Authority agreed to these proposals, picketing forces which had blocked company access to the site for several months were removed. Now the company has finally begun manufacturing operations using asbestos in the manufacture of disc brakes at Ovens about eight miles from Cork City.

Vienna To Test Model Of Large-Scale Windmill

The prototype model of a large-scale windmill station intended to produce electric power is about to be tested in Vienna. The model has been erected on a low hill to the south of the town at a cost of \$390,000 and is regarded as an important technological project. The wind-driven turbine, mounted on a tower structure some 110 feet high, is expected to achieve an effective capacity surpassing that of conventional windmill units by a factor of ten.

The venture is a joint project of the Austrian Ministry of Science and Research and the Vienna Bruckentbau AG which contributed technical initiatives for the plant's erection.

Philippines to Become Nuclear Power by 1983

The Philippines is expected to achieve entry into the power era by 1983 when a nuclear plant in Bataan starts operation. According to the Philippine Atomic Energy Commission (PAEC), atomic energy "has assumed added significance in the light of dwindling oil reserves and a third world urgency for rapid development and industrial growth."

PAEC Commissioner Librado Ibe pointed out that the Philippine venture into nuclear energy started in 1955 when an agreement between the governments of the Philippines and the United States was signed for the peaceful uses of atomic energy. In 1958, PAEC was set up. In the following year, the Philippines became a member of the International Atomic Energy Agency (IAEA), a special United Nations body on atomic energy matters.

In 1963, the first Philippine nuclear research reactor acquired from the United States became operational. However, it was not until 1975 that expansion and

reorganization were effected to meet the increasing responsibilities brought about by the growing utilization of atomic energy and nuclear power development program. Currently, PAEC has the dual responsibility of promoting the use of atomic energy and ensuring public safety from nuclear radiation and radioactive waste products.

Vietnam's Housing Shortage May Force Building at Sea

General Vo Nuygen Giap, Vietnam's Defense Minister, recently said the nation, in an attempt to cope with the increasing population, has either to construct buildings that total 2,000 stories or to build floating steel islands in the seas and to develop sandy coastal waters into fertile farmlands. Giap, a member of Vietnam's Economic Planning Council, believed that "before we construct buildings with thousands of stories, we should study ways of building houses on the sea, how to reclaim land from the sea and how to live on the sea." He pointed out that the Noe area of the central Vietnamese coast has pioneered in making coastal waters fruitful. In order to increase food production, he also called for planned use of rich alluvial soil deposited by Vietnam's numerous waterways.

Polluting Plants in Korea Fined for Marine Damages

Five Korean pollutant-emitting factories in Suyong, Pusan district, were recently fined \$74,380 for damaging the livelihood of 52 fishermen. Two-and-a-half years ago, these factories emitted industrial wastes into the sea off Suyong, thus destroying the marine resources there.

Asian Development Bank Aids Pakistani Sanitation Project

Improved public health and sanitation for a city of one million will be provided under a \$39.5 million loan to Pakistan recently approved by the Asian Development Bank.

The loan will finance the foreign exchange cost—\$35.5 million—and part of the local currency costs—\$4 million—of the Faisalabad Water Supply, Sewerage and Drainage Project, the estimated total cost of which is \$93.5 million.

Located in Faisalabad City in Punjab Province, the Manchester of Pakistan, the project will rehabilitate and expand existing water supply and sewerage systems, continue the present expansion of the drainage system, and develop an efficient administrative and financial organization.

The additional water supply facilities will provide continuous safe water at a rate of 33.4 million gallons per day to meet the projected demand until 1984. The program includes the installation of about 800 public water outlets to serve lower-income groups.

Peru to Monitor All Nuclear Ships Within 200 Mile Zone

The Peruvian government has passed legislation concerning visiting ships which are either nuclear-powered or carrying radioactive equipment, arms or material and which enter within 200 miles of the Peruvian coast.

The law contains a series of measures to ensure that all sea transport of nuclear material will be monitored. Any ship, for instance, which comes into the "nuclear category" has to seek permission to enter Peruvian waters besides having to give a detailed report on any loading or unloading to be carried out in Peru.



World Environment Report

VOL. 4, NO. 3

Copyright © 1978. Center for International Environment Information.

JANUARY 30, 1978

Legal Aid Asked for Private British Environmental Groups

LONDON—Voluntary environmental organizations involved in litigation and planning inquiries should have access to legal aid, and British law should be amended to provide this. This was the main suggestion of the Committee for Environmental Conservation (CoEnCo)—a coordinating body for all the major conservation groups in Britain—in its testimony to the Royal Commission on Legal Services.

For the sake of future generations, CoEnCo envisions protection of the environment as a community duty. "Environmental Legal Aid is desirable on two counts," it says, "(a) in terms of natural justice, and (b) in terms of environmental protection." This, it believes, should cover both legal and technical advice.

The Committee, which has been pressing for these changes for some years, quotes examples of when legal aid would have been proper in the past—the most notable and recent being the Windscale Inquiry which ended last November (*WER*, Dec. 5, p. 1).

Environmental Protection Law is not a compulsory part of the student syllabus for either solicitors or barristers. But the environment has become too important a subject for it to be only the voluntary study of "aware" students, the Committee maintains, and it recommends that such study be given greater prominence and possibly made a required course.

BARBARA MASSAM

World Environment Report: A Look Back, A Look Ahead

Three years ago this month, the Center for International Environment Information (CIEI) published the first issue of *World Environment Report*. Those of us who were associated with that effort had no assurance that the publication—the first of its kind—would succeed. But here we are with Volume Four. Circulation is growing. *WER* now goes to more than 80 countries around the world, and is nearing self-supporting status.

During those years, *WER* reported many exclusive

developments that were later covered by the general and specialized press, including the first accounts of the ecological disaster in Haiti, the first in-depth coverage of the efforts to save the Mediterranean under the leadership of the UN Environment Programme (UNEP), and interviews with top environmental policy makers in Venezuela, Mexico, Great Britain, Denmark, Sweden, the Netherlands, and the United States.

WER's coverage of UNEP and the UN system has been the most extensive of any publication, largely based on the exclusive reports of its correspondents in Nairobi, Geneva, and New York.

WER's correspondents now report from more than 50 countries, many of them in the developing world where there is a rapidly growing concern with environmental protection.

We expect that readership in Latin America will increase considerably in the very near future as the result of an agreement between the Government of Venezuela and the CIEI to publish a Spanish edition of *World Environment Report*. This arrangement was made with Mr. Arnoldo Jose Gabaldon, Venezuela's Minister of the Environment and Renewable Natural Resources, during his recent visit to New York. To our knowledge, this is the first time that a government agency has agreed to cooperate in such a publishing venture with a private, non-profit organization.

World Environment Report, its Editor-in-Chief, and its staff look forward to serving you over the next three years and longer. If you have any comments on *WER*'s contents, or suggestions as to what we can do to best meet your information needs, please write and let us know. Be assured, however, that you will continue to see the same kind of comprehensive, objective reporting and analysis in the future as you have in the past.

Dr. Whitman Bassow
Executive Director
CIEI

In This Issue

Habitat Headquarters	2
Solar Energy	2
Special Report on Japan	3
Waste Disposal	4
Car Ban in Chile	4
Environment Liaison Centre	5
In Brief	6

UN Habitat Headquarters To Be Built in Nairobi near UNEP

NAIROBI—With the decision of the UN General Assembly last December to site the Habitat headquarters in Nairobi, the hopes raised by the 1975 Habitat Conference in Vancouver, for a determined effort to improve the living standards of millions of people around the world, can begin to materialize.

Until the General Assembly vote, there had been no opportunity for the UN Habitat and Human Settlements Centre to become fully functional—although the Habitat Foundation had become operational in late 1975, with its first administrator, Cesar Quintana, taking up his post here in 1976 (*WER*, April 25, 1975, p. 3; Aug. 1, 1977, p. 5).

Kenya had offered to house the Habitat headquarters, which it said should be situated in Nairobi because Habitat is so closely linked with the UN Environment Programme (UNEP), already based here. There were proposals, however, to separate the two institutions by basing Habitat in a different location. This matter has now been settled by the General Assembly vote.

The decision to establish Habitat in Nairobi has been welcomed in Kenya. In an editorial comment, the *Daily Nation* said it was a recognition that it was no longer necessary to base world organizations in Europe or North America.

Initially, the Habitat headquarters will be housed in the Kenyatta Conference Centre here, but it is later planned to provide permanent accommodation for Habitat at Gigiri, on Nairobi's outskirts, where UNEP headquarters is situated. CHARLES HARRISON

Design for the \$140 million power plant calls for a concentrating tower and 650,000 square meters of heliostats (flat mirrors with steel supports for reflecting the sun's rays to a focal point on the tower). But for an impoverished Chile, the cost of the power plant is excessively high.

Because even a test power plant costs \$7 million, CORFO has shelved the power plant project awaiting the results of testing on a similar McDonnell-Douglas plant in the U.S. The more economically feasible solar furnace would cost only \$1 million and CORFO will soon begin to try to interest state-owned mining companies, as well as domestic and international private firms, in its construction. Battelle rates the productive capacity of the furnace at 450,000 kilos of mineral products per year, which would allow the initial investment to be earned back within four years.

The feasibility studies show the furnace would be particularly good for the high temperature treatment of many minerals found in important natural reserves near the northern port of Mejillones.

Mejillones lies about two hundred miles east of the projected site of the furnace, the desert town of Calama, 930 miles north of Santiago. Calama, in the center of Chile's richest mineral reserves, lies next to the world's largest open pit copper mine, Chuquicamata.

Fifty per cent of the construction work on the furnace could be done in Chile in a year and a half.

Chile has already taken some small advantage of the Atacama's intense rays in a solar water-heating unit installed earlier this year in a state-owned tourist hotel in the oasis town, Copiapo. The solar unit is reportedly working well and has aroused much interest in Chile in the use of more solar hot water heaters.

NINA SERAFINO

Chile Experiments With Solar Energy for Mineral Treatment

SANTIAGO—One of the world's best places to attain a fast suntan is Chile's northern Atacama desert, where the sun shines with an intensity of one kilowatt per square meter rainless day after rainless day. The exceptional intensity of the sun's rays in the area also make the desert a likely spot to harness solar energy for power generation and mineral treatment. Although less than two per cent of Chile's eleven million inhabitants lives in the Atacama desert, most of the country's intensive mining activities are located there.

Battelle Research of Geneva has conducted two feasibility studies for Chile's state development enterprise, CORFO: one is for a 100 megawatt solar power plant and the other for a 400-500 kilowatt solar furnace for treating the desert's ample mineral reserves. Construction and operation of both were found eminently feasible.

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$150 per year. \$20 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
 Editor-in-Chief Albert Wall
 Circulation Manager Wendy Kaufman
 Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

SPECIAL REPORT: Japan's Environment Agency Prepares for Year 2000

TOKYO—A new long-term plan for preservation of the Japanese environment is gradually being implemented by the country's Environment Agency in preparation for the turn of the century when the nation's population most likely will exceed 130 million. The two-pronged program deals with prevention of pollution and with measures to preserve Japan's natural endowment.

The ambitious undertaking was launched only recently in the belief that if nothing special was done to make such efforts more efficient—even if the economy of Japan expands by no more than six per cent annually over the period up until 1985, for example—pollution alone probably will increase by 150 to 200 per cent.

New Program

The Environment Agency therefore argued that an entirely new program was needed to re-emphasize the absolute importance of expanding efforts to clean up pollutants on a nation-wide basis while, at the same time, moving to preserve the nation's natural parks and outdoor recreational sites.

The basic aim, according to Environment Agency spokesmen, is to make certain that the already established environmental standards are achieved and possibly advanced in quality as well through the years. In addition, they stated, development of new anti-pollution techniques will be speeded up.

In explaining the details of the Agency's plan, an official noted that a series of sulphur oxide controls were first enforced in 1962 to regulate the concentration and total amount of sulphur oxide in the air. Since then, techniques have been developed and adopted to desulphurize smoke and fuel oil.

Sulphur Oxides

"As a result, the amount of sulphur oxides discharged in the air in this country has been steadily declining despite our growing energy consumption," he said. "Our surveys show that more than 83 per cent of the monitoring stations are located in areas where results are directly in line with present environmental standards for sulphur dioxide."

He emphasized that the next survey may well show that all monitored areas are now up to the standards applied by the Agency. Next year, the official added, "our problem will be how to maintain these standards."

"For this purpose, in fact, the ratio of the amount of sulphur oxides eliminated to the amount generated—what we call the 'removal ratio'—will have to be improved," the environmental official said. "This 'removal ratio' was just about 40 per cent in 1974 and we have set ourselves the goal of moving it up to 55 per cent by 1979 and as high as 72 per cent in 1985, largely due to the

probability that the amount actually generated will continue to expand."

Nitrogen Oxides

The Agency also will be concentrating on nitrogen oxides. Levels of these oxides have gradually decreased in Japan in recent years. But only about 10 or possibly 12 per cent of the monitoring stations are reporting results which really meet environmental standards with regard to this pollutant.

Tolerance limits for industrial plants and other fixed sources are to be steadily lowered, even in those areas where the degree of pollution by nitrogen oxides is already relatively low. However, in Japan's most highly polluted regions, such as the major cities, the Agency intends to set up a tougher system for controlling and enforcing the total permissible amount of nitrogen oxides in the air.

Monitoring Stations

Other surveys of monitoring stations in Japan have disclosed that close to 70 per cent of all regions being monitored are now meeting environmental standards set for organic water pollution. Beyond doubt, the potential chemical oxygen demand (COD) amount in both industrial and household waste water is rising. The Agency believes that the country most likely will approach the environmental standard—discharged amount: 6,000 tons per day—by 1979 and exceed it by 1980 or 1981.

"So far, so good, but if our rivers, lakes, and ponds in urban areas are to be cleaned up as they should by, say, 1985 or 1990 at the latest, to the degree that ordinary fish can live in them and breed naturally," the Agency authority said, "then the removal ratio will have to be raised by 90 per cent."

In order to achieve the new goals, it is apparent that the Japanese will have to develop new techniques for prevention and elimination of pollution. They already, of course, have such techniques for sulphur oxides, COD, and for automobile exhaust fumes, but even these techniques need to be further improved in the years ahead.

Traffic Noise

Of a more doubtful nature, it would seem, are the expectations by the Agency that significant improvements can be achieved between now and the year 2000 in reducing traffic noise and vibration. Much will depend on whether practical achievements can be made in developing electrically-powered automobiles and trucks. Up until now, no one has been willing to go out on a limb to describe the latest experimental electric-powered

vehicles as likely to be in widespread use by the 1990s.

In order to reach the medium- and long-term targets, according to the best information currently available, Japan's "stock" of anti-pollution equipment—measuring instruments, monitoring systems, and similar hard and soft ware—is going to have to rise in total value from the \$32.6 billion of 1975 to approximately \$73.5 billion by 1980. These figures include some Japanese Government investments as well as private corporate expenditures.

"From our projections," commented one Agency source, "this total investment should climb to a value of slightly more than \$102 billion by 1985 and where it will go thereafter is anyone's guess." He agreed that the ratio of anti-pollution "stock" to total private capital equipment (just about 3.8 per cent in 1975) will reach 6.5 per cent by 1980.

Anti-Pollution Equipment

Evidently the ratio of Japanese anti-pollution equipment to total private capital equipment in each industry will climb in the future, probably reaching approximately 74 per cent by 1985 for the petroleum and coal industries (11.8 per cent in 1972), 32 per cent for the pulp and paper industry (7.5 per cent), and 22 per cent for the ceramic, earthenware, and stoneware industries (4.7 per cent).

Finally, according to tentative Agency estimates, the cost of anti-pollution "stock" investments of all types in the next five to ten years should cause prices of manufactured goods in Japan to increase. Just how much it is probably too early to say. But, reassuringly, the Agency feels confident that such price expansion will have only a small impact upon the nation's economic growth, general price trends, or exports.

A. E. CULLISON

Bavaria Will Construct Its First Pyrolysis Waste Disposal System

MUNICH—The Bavarian Government recently revealed that it is planning to construct this state's first pyrolysis waste disposal system as part of an overall program to improve environmental standards.

Bavarian Environmental Protection Minister Alfred Dick informed nearby Erding County that his Ministry was prepared to pay the estimated \$10.7 million construction cost—an amount that would be reduced by a contribution of \$2.4 million from the West German Federal Ministry for Research and Technology.

The Minister's statement said that Bavaria was prepared to push ahead with the project on two conditions: that Erding County would agree to use the new disposal system for its garbage and waste; and that the wastes from the planned new Munich international airport that may be built in the Erding area "would not be excluded" from the new plant.

The Environmental Protection Ministry explained that the new system would function as follows:

- First, the waste is dried at 100 degrees C.
- Second, it is charred at 200 to 500 degrees C., thereby reducing such organic substances as cellulose, protein, fats and synthetics into gases, liquid compounds (many oils and tars), water and coke-like residues.
- In the next gas formation phases, these products are chemically changed at temperatures between 500 and 1,200 C. into such gases as hydrogen, carbon monoxide.
- Finally, at pyrolysis temperatures of more than 1,200 C., mineral compounds begin to melt. These silicate meltings, when cooled, turn into a brittle, glass-hard insoluble mass that can be stored without environmental danger to soil and water. SPECIAL DISPATCH TO *WER*

Chile Recommends Ban of All Cars Failing EPA Emission Standards

SANTIAGO—A ban on the importation of motor vehicles that do not meet United States Environmental Protection Agency (EPA) standards is one of the recommendations of a Chilean governmental air pollution study now undergoing final drafting. The recommendation is the result of a joint study by the Chilean State Development Corporation (CORFO) and the National Health Service of the Air Quality in the greater Santiago metropolitan area.

Funded by the United States Agency for International Development (AID), the study found Santiago residents to be breathing air which surpassed internationally accepted limits of carbon monoxide and suspended particles most of the year. During the nine-month-study period, from November 1976 to October 1977, the level of suspended particles was consistently above acceptable levels. In Santiago, carbon monoxide, accounting for 80 per cent of motor vehicle exhaust, exceeded acceptable limits 400 separate times during the test period. International standards allow pollution by these elements to break maximum levels at most once a year.

Santiago is situated in a bowl formed by the 18,000-foot-high Andes mountain range on one side and the 6,000-foot-high coastal range on the other. This geographic formation, coupled with the area's weak winds, especially in the winter, and the upwind site of the city's southern industrial belt, traps the contaminants over the country's four million inhabitant capitol city.

Among other measures to relieve the pollution-bound city, the study recommends: implementing less contaminating alternative systems of urban transport such as trolleys and electric vehicles; expanding parking areas at the suburban terminals of the city's subway system; raising parking rates in the downtown areas and raising taxes on parking lots and buildings to discourage their construction.

NINA SERAFINO

ELC in Nairobi Coordinates NGOs and Liaises With UNEP

NAIROBI—The Environment Liaison Centre (ELC) has been in existence since 1975, when it began operations with headquarters in Nairobi as a result of a decision taken at the 1972 Stockholm Conference which brought about the formation of the UN Environment Programme (UNEP). It exists to coordinate, unite, and encourage the activities of hundreds of non-governmental organizations (NGOs)—among them bodies such as the Friends of the Earth, the World Wildlife Fund, and The Sierra Club.

With one formative stage behind it, the ELC is now having a major impact. At the recent Tbilisi conference on environmental education (*WER*, Nov. 21, p. 5), the ELC sponsored (with the help of a grant from UNEP) the attendance of 25 delegates from a cross-section of non-governmental organizations in the Third World—ranging from the Indian Environment Society to the National Christian Council of Kenya.

Gary Gallon, 31, who was named in 1976 as Canada's Environmentalist of the Year, has recently been appointed manager of the ELC (*WER*, Oct. 10, p. 7). His seven years' work, part of it as executive director, with the Canadian Scientific Pollution and Environmental Control Society (SPEC) in his native British Columbia won him the award.

Gallon, who is enthusiastic about his new job, says he is confident that he will be succeeded by an environmentalist from the developing world in 1979 or 1980.

The ELC, he points out, has identified some 3,000 NGOs around the world, all of which are concerned about the environment. It provides for them a focal point and a direct channel into UNEP, which has its headquarters in Nairobi.

Henceforth, the ELC will be participating directly in the organization of World Environment Day, sending out material focusing on the problems of the developing world (desertification, diminishing firewood stocks), and organizing a media campaign plus a world-wide poster contest.

The ELC is also providing a background document for the next UNEP Governing Council on NGO participation in UNEP-related activities. This will be the first time that the NGOs have had such a direct presence in the Governing Council.

Commenting on his new assignment after his first few months in office, Gallon said: "There is today an increasing awareness among major policymakers on the international scene of the need to take account of the views of the people—which are best expressed through the NGOs. The NGO representatives at the Tbilisi conference interacted with great effect on the government delegates, and played a highly effective role.

"The ELC is the environmental watchdog to ensure that UNEP and the governments implement environ-

mental measures on every front—education, law, pollution control, and so on."

Currently, the ELC has 81 subscribing NGOs in 21 countries, and the international organizations linked to the ELC operate in 140 countries. Although the ELC does not have subscribing members in the Communist countries, the Center has begun discussions with the World Federation of Democratic Youth, which operates in those countries, with the aim of inviting it to join the ELC Board—creating an important East-West link.

As Gallon sums it up, the ELC exists to liaise with UNEP, to develop and assist Third World participation in environmental matters, and to help create an awareness of the need to protect the world's life support systems. It does this with a small office in Nairobi and a staff of eight—half from the developing world.

CHARLES HARRISON

Bonfires to Celebrate Christmas Pollute Air Over Mexico City

MEXICO CITY—An ancient custom here of celebrating Christmas with bonfires created a massive pall of smog over this Mexican capital last December. Besides using logs and trash for the occasion, an estimated 6,000 families burned old automobile tires that had been saved especially for the event.

Atmospheric pollution doubled from the norm of 150 points to a dangerous 300 points overnight on Christmas Eve, despite the absence of more than a million residents who left for the holidays.

Low temperatures and an absence of wind in this 9,000-foot, mountain-ringed city kept the smoke suspended overhead. Because of these climatic conditions, it was five times denser than normal.

The president of the Mexican Academy of Ecology Law, Ramon Ojeda Mestre, pointed out that the tire smog was especially dangerous to some five million inhabitants who suffer from bronchial ailments, and he noted that there is no law against burning tires in this metropolitan area of some 12 million persons.

Ojeda Mestre sees a bleak future for Mexico City, chiefly because of the character of its inhabitants. As social critics, Mexicans are quick to blame the government or other citizens for their environmental contamination, he said, but as individuals, they continue to contaminate their environment.

Unless this attitude changes, Mexico City is "condemned to death" before the year 2000—when its population is projected to exceed 30 million. By that year, he warned, the soil will be sterile, the water gone, and the city overrun with automobiles and human beings. It will "disappear as a functional metropolis," he predicted.

KATHERINE HATCH

In Brief...

Foundry Experts in Geneva Discuss Pollution Reduction

Foundry experts from 24 countries agreed at a recent seminar in Geneva, sponsored by the Economic Commission for Europe (ECE), that new techniques to conserve energy and reduce pollution should be encouraged.

They recommended the development of cold core making and moulding processes. These, the experts told the seminar, would help to conserve energy and reduce pollution and would lend themselves well to the needs of developing countries because of their technical suitability and reasonable capital costs.

The experts also suggested that the ECE should encourage work on the harmonization of standards governing the emission by the foundry industry of all types of noxious substances—gaseous, liquid, and solid.

Council of Europe Advises Criminal Law vs. Polluters

Concerned at the degree of pollution caused by industrial development and health hazards it entails, the Council of Europe in Strasbourg recently recommended that its 20 member countries have recourse to the criminal law against polluters, when other measures (civil or administrative) have proved ineffective.

The Council's Committee of Ministers recommended a number of measures pertaining to criminal procedure, in particular: the creation of specialist branches of courts and offices of public prosecution to deal with environmental cases; the right for groups to be associated with criminal proceedings; creation of a special criminal register; and exclu-

sion from amnesty of the most serious offenders.

Another set of measures concerns criminal penalties, including fines, whose proceeds could be used for the environment's protection, and special penalties such as disqualifications and publication of convictions.

The Committee of Ministers drew attention to the advantages of harmonizing legislation in this field and to giving wide circulation to the work of the European Committee on Crime Problems.

Argentine Forest Reserves Down 50% Since 1900

Indiscriminate lumbering and burning of forests have greatly reduced forestry reserves in northern Argentina near that country's Brazilian and Paraguayan borders.

At the turn of the century, the region had 7.4 million acres of forests, compared to roughly three million acres today. Most of the wood has been cut either for industrial use or to clear the land for farming. Little replanting has been done.

Conservationists are hoping to get local and national officials to enforce regulations preventing future depletion, which they say is causing massive soil erosion and a lowering of soil fertility.

Peru Tightens its Rules On Radiology Practice

Peru is tightening its rules on radiology before moving into the nuclear age. A recently-published set of rules on nuclear safety and radiological protection will apply to everyone in the country who is in any way involved in X-ray production or in "the installing, construction or operation of any kind of nuclear reactor." The first zero-type reactor is expected to be installed this March.

Sri Lankan Environmentalists And UN Team Debate Issues

Environment projects are mostly unheard of in Sri Lanka because the government has never laid down any clear-cut policy and there has never been any central environmental authority. In this framework, environmentalists in the country have recently been sparring with each other and a three-man team of the United Nations Task Force on Human Environment.

In a recent seminar "Towards a National Environmental Policy" organized by the Marga Institute, a private Sri Lankan research organization, they voiced their opinions. According to Jett Shane of the UN Task Force, the establishment of a government body or a central authority on environment may impede essential action. He said the government body may turn out to be a passive body in keeping with the government's policy of giving low priority to questions of environment.

However, Vere de Mel, a supporter of the Citizens Task Force on Environment, was all for a central environmental authority. As he put it, "Grassroots level participation is no use. What is needed is directives from the highest level, from the prime minister or the president, to prevent, for instance, deforestation."

L. Stubbs, another member of the Task Force, said different types of organizations should tackle the environmental problems of a country, with agencies concentrating purely on policy and other groups dealing with specific issues as they arise. He also stressed the urgency of an environmental impact study before launching any project.

Chandra Sousa, a Director of the Marga Institute, pointed out that the government's attitude was the major obstacle. He said that the typical response of a government member of the National State Assembly is that such concerns as environment are a middle class luxury and that solving unemployment in the country is far more urgent.

House in Philippines Cooled By Solar Air-Conditioning

The Philippine Department of Energy plans to construct a solar house for its Non-Conventional Resources Department at Fort Bonifacio early this year. The solar house, equipped with a solar air-conditioner, will be the first of its kind in the country.

According to department officials, it will be cooled by an absorption-type air-conditioner powered by hot water from a solar collector loop with energy provided by a line of flat-plate collectors and a kerosene-fired backup boiler. The system will cost about \$20,000.

Ban on Wildlife Hunting Overturned in Colombia

Colombia's cabinet-level Council of State has overturned an earlier decree by the country's wildlife service INDERENA permanently outlawing the hunting of wildlife on the country's endangered species list.

A type of supreme court that rules on the constitutionality of government decrees, the Council announced that INDERENA was not legally empowered to establish such a ban or fine offenders. The law can only be re-established if decreed by Colombia's president, Alfonso Lopez Michelsen. Thus the Council's ruling is a severe blow to attempts to establish environmental controls to stem the wholesale destruction of flora and fauna.

Saudi Arabia Mounts Massive Sanitation Project in Riyadh

The \$180 million operational phase of the most extensive sanitation contract ever awarded began this month in the Saudi Arabia

capital city of Riyadh, according to an announcement by Waste Management, Inc., of Oak Brook, Illinois. The project is part of the government's \$140 billion commitment to environmental and social development.

A fleet of more than 200 trucks and street cleaning vehicles and a large work force will collect and dispose of household and commercial wastes in the Middle Eastern city of 700,000 for the next five years.

Waste Management Chairman and Chief Executive Officer Dean L. Buntrock described the 11-month international mobilization effort that preceded the service start-up as "one of the most complex logistical undertakings in the history of any service industry."

Since the award of the overall \$243 million contract to the Waste Management-Saudi Pritchard joint venture, he said, the company has directed the procurement of approximately \$25 million worth of equipment and the construction of \$38 million worth of facilities, including a self-contained community outside Riyadh to accommodate the project work force, and has recruited and trained drivers, mechanics, support personnel, and supervisory staff in Bombay, India, and London.

New Austrian Furnace Burns Any Fuel, Suppresses Smoke

The Leoben College of Mining and Metallurgy in Styria recently proved in technological tests that the Austrian-developed and patented special furnace model, the Hahn combustor, ensures a hitherto unknown degree of smoke and smell suppression even on the basis of an almost indiscriminate use of different fuels, such as coal, wood, oil, and even waste material such as shredded tires.

The circulation arrangement in the combustion chamber provides for a feedback of all incompletely burned waste gases which, instead of es-

caping into open air, as in conventional stove systems, are recycled for a second-phase combustion, so that finally the gaseous residue consists only of carbon dioxide and water vapor. The model will be commercially available this winter.

Friends of Earth Meeting Endorses Soft Energies

Friends of the Earth (FOE) International's seventh annual meeting, at Brussels University, endorsed soft energies as the best coming alternative for the world. The delegates concurred with the views of soft-energy expert Amory B. Lovins, an American physicist based in London, who has also voiced them to President Carter.

Nuclear issues took up much of the discussions. An especially heated one brought on FOE condemnation of the European Economic Community (EEC) for trying to discredit the adversaries of nuclear energy. An Italian anti-nuclear delegation cited a European Atomic Energy Society study which advocated the use of marketing, communications, and advertising experts to promote public awareness and support for nuclear power. When the chairman of the nuclear debates called the document a forgery, FOE quickly released a statement saying the author of the document had confirmed its existence in an Italian publication. FOE demanded to know whether the EEC was financing such a study.

Later in the FOE sessions, Jim Falk, an environmental studies lecturer from Melbourne, asked for support for a coalition of Australian workers and environmentalists who are trying to prevent uranium exports (now government approved) because of the dangers of radioactivity and the proliferation of nuclear arms.

FOE also voted to admit new members in Germany, Greece, Italy, Mexico, Spain, and Switzerland.

British Firm Settles Lawsuit Over Radiation-Caused Ca.

British Nuclear Fuels Limited (BNFL) recently agreed to a High Court judgment settling a lawsuit brought by the widow of a plutonium process worker at Windscale, who had died of cancer in 1975. It was the first time that BNFL—or any group in Britain's nuclear power industry—had ever admitted that “on the balance of probabilities” an employee had developed cancer as a result of radiation at work.

The employee had been removed from plutonium work in 1963, when it was discovered that plutonium levels in his body exceeded international standards. However, his total exposure was considerably less than that permitted under those standards. BNFL and the General and Municipal Workers' Union now are starting negotiations on a procedure for automatic compensation for families of nuclear power workers suffering injury or death from radiation exposure.

Indian Tiger Termed Apex Of Forests' Ecosystem

“The tiger is at the apex of the ecosystem of India's forests. If steps are taken to protect only this animal, the entire forest ecology with all its inter-dependent flora and fauna will be automatically saved.” So claims Dr. Kailash Sankhala, Director of “Project Tiger,” as he explained why, from among a large number of animals threatened with extinction, only the tiger merits preferential treatment.

The reason, according to Sankhala, is that “The Indian tiger controls the food chain in the wild. It is not only dependent on other animals, mostly herbivores, but also helps in maintaining the population of other animals within proper limits. The herbivorous animals on which the tiger feeds, in turn, need suitable

vegetation for their existence. To the extent the green forest meets human needs in a variety of ways and helps in the maintenance of a healthy environment, man also becomes part of this symbiotic system. By saving the tiger from doom, man is surely helping his own survival.”

Out of 500 species of mammals and 2,041 species of birds in India, 38 mammals and 14 birds plus two species of reptiles are on the verge of extinction today. But since efforts to save the tiger were launched in 1973, the tiger population has increased threefold, and now totals 2,000.

British Engineers Recycle Animal Effluent at Low Cost

A method of low-cost recycling of the concentrated effluent from animal rearing pens—always a problem in countries where intensive agricultural methods must be used—has been devised by chemical engineers of the Compost Studies Group in the English University of Birmingham.

The effluent is sprinkled at a controlled rate onto a tank filled with straw while air is simultaneously blown up through it.

Solids in the effluent are filtered out by the straw as the air provides oxygen to micro-organisms at work on the breaking down of noxious compounds. Liquid emerging from the bottom is pumped back through the straw about four times a day. The heat level generated by the process is sufficient to kill most of the harmful bacteria.

After a week's treatment at this rate during a British summer, most of the liquid has evaporated, leaving a rich, odorless compost for the farmer's use. In winter, the remaining effluent is said to be innocuous enough to be spread on fields.

The Arcub process, as it is known, has been tested over a period of seven years by Dr. K. R. Gray and Dr. A.J. Biddlestone of the Group, for the optimum balance of straw, effluent, and air current.

Colombia's Wildlife Service On Verge of Bankruptcy

The Colombian wildlife service INDERENA is on the verge of bankruptcy, according to its director Julio Carrizosa, who maintains that INDERENA does not have the funds to carry out its ambitious tree planting program this year (two million trees) or undertake programs to stop the erosion of some 500,000 sq. kms. Carrizosa said that to date only 516,000 trees have been planted, and this mostly in volunteer programs, because of lack of government funding.

Despite an unprecedented windfall from the international coffee bonanza, the Colombian government is strapped for funds, partly because of the huge number of public works undertaken by the Lopez Michelsen administration and partly because of a 40 per cent inflation rate this year.

Argentine Chemical Engineers Study Renewable Resources

The Argentine provincial capital of Santa Fe will play host next October to a national congress on “Chemical Engineering and Renewable Resources.”

At a press conference prelude to the congress, the president of the Argentine Association of Chemical Engineers, Luis Montemurri, said that the capital of Santa Fe province had been picked as the site for the meeting since this was where Argentina's first school of chemical engineering was founded.

“Renewable resources,” Montemurri said, “imply a production of \$1 billion a year, participation in 20 per cent of the country's manufacturing production, and give jobs to 350,000 persons.”

Further information on the congress can be secured from the Asociacion Argentina de Ingenieros Quimicos, Parana 224, cuarto piso, Buenos Aires, Argentina.



World Environment Report

23 JAN 1978

VOL. 4, NO. 2

Copyright © 1978. Center for International Environment Information.

JANUARY 16, 1978

New Greek Law Imposes Stiff Fines And Prison Terms for Sea Pollution

ATHENS—In an effort to cope with the increased rate of sea pollution, Greece's parliament has passed legislation calling for stiff fines and prison terms against the culprits. The law goes into effect this month. It replaces one in effect since 1966, considered insufficient to meet present demands.

The new law, in its own words, "is directed against anyone dumping waste into Greek territorial waters on purpose or by negligence," and imposes prison terms and fines.

Local port authorities can set fines up to \$25,000, but the law gives the Minister of Merchant Marine the power to increase it to as much as \$1.6 million. Violators can also get prison terms of at least three months.

The law will be applied not only against Greek and foreign flag ships but also against land-based sources. It also forces local beach installations to provide special equipment to forestall coastal pollution.

According to Ministry of Merchant Marine sources, the new legislation is one of the strongest steps taken yet in this field by the federal government, and will decisively contribute to the protection of Greek seas, endless coastlines, and the thousands of islands dotting the Aegean.

KYRIACOS CONDOULIS

UK Admits Some Responsibility For Acid Rain Now Damaging Scandinavia

LONDON—Britain is responsible for some of the "acid rain" damaging Scandinavian lakes, forests, and vegetation, admits the Department of the Environment (DOE), but its share of the responsibility is not yet properly established.

A group of young Scandinavian ecologists, representing the youth section of the International Union for Conservation of Nature and Natural Resources, met recently here with DOE officials to petition them about the situation. Subsequently, the Scandinavian representatives held a press conference at which they issued a survey compiled by Sven Larsson, of the Swedish Youth Federation of Field Biologists, on the "Effects of Acid Precipitation."

Sulphur dioxide (SO₂) is formed by the combustion of coal and oil and reacts in the atmosphere with oxygen and water to form sulphuric acid. This may be conveyed over large distances, finally falling with rain or snow. Thus regions of Scandinavia are receiving sulphuric acid from the industrial emissions of other European countries, including Britain. According to the survey, the Scandinavian soil is particularly vulnerable to this type of acid rain because it is lacking in sufficient lime to help neutralize the acid.

The survey calls upon the British and other European governments to limit their total energy consumption, particularly of oil, and to limit damage by changing to oil with a low sulphur content and by cleaning up flue gases before emission. It also urged a concentration of alternative energy sources.

The Scandinavian group reminded the British Government that it is a signatory to Principle 21 of the Declaration made at the 1972 Stockholm Conference on the Human Environment, which requires states not to allow their activities to damage the environment of others.

A spokesman for the DOE told the group that they would welcome a "European-wide study" to better determine the facts. The DOE challenges the OECD estimate of last July that Britain is responsible for 40 per cent of Scandinavia's acid pollution. It is carrying out some research of its own on the effects of acid rain and points out that UK sulphur emissions have decreased by 16 per cent during the past three years due to the use of sulphur-free North Sea oil.

Mr. Peter Shore, Secretary of State for the Environment, recently stated in the House of Commons that Britain was not willing to pay the high costs of large-scale sulphur reduction until its share of the responsibility for fallout was firmly established.

BARBARA MASSAM

In This Issue

Amazon Pact	2
Israel's Only Lake	2
EPA's Administrator	3
Lead Plant Closed	4
Nuclear Power and Snow	4
Proteins from Mico-Organisms	5
In Brief	6

Venezuela Joins Seven Nations In Promoting an Amazon Pact

CARACAS—Setting aside Venezuela's long-standing suspicion of the giant south of her borders, President Carlos Andres Perez agreed during his recent state visit to Brazil to discuss the proposed Amazon Pact. If successful, the negotiations among eight South American countries will lead in March to the signing of the pact designed to promote regional cooperation for the exploration, development, and protection of the Amazon Territories, at the same time repudiating any influence of industrialized nations over the future of the Amazon region.

On the one hand, members of the pact would recognize endangered species of flora and fauna, exchange information, and share in inspection and control of conservation measures. On the other hand, the signatories would agree to cooperate closely in scientific research and technology in order "to create better conditions for accelerating economic and social development of the region," and to join forces in the "rational utilization of hydraulic resources."

The Amazon talks have also revived Venezuela's ambition to open river navigation between the Orinoco and Amazon basins. The Orinoco Waterway, proposed and studied under the administration of President Rafael Caldera (1968-1973) would bypass the 56 km. rapids of Atures and Maipures at Puerto Ayacucho, whose 31-meter drop blocks navigation on the 2,000 kilometer long river. Preliminary studies for a canal or a series of locks damming the Orinoco at Puerto Ayacucho go back as far as the U.S. Army Corps of Engineers "Report on the Orinoco-Casiquiare-Rio Negro," made in 1943.

Planners envision a waterway accommodating craft of two to three meter draft going from the Orinoco Delta to Manaus, a distance of 3,800 km., by way of the famous Casiquiare Canal, a natural river link between the Orinoco and the Rio Negro, a tributary of the Amazon.

ELAINE DE STEINHEIL,
HILARY BRANCH

New Environmental Plan Approved For Kinneret—Israel's Only Lake

JERUSALEM—The biblical Sea of Galilee, known today as Lake Kinneret, is to become a major resort area under a new environmental plan approved recently by Israel's National Planning Authority.

Fears of pollution to the lake, Israel's major water reservoir, prompted the government in 1973 to set up planning teams to recommend ways of improving the Kinneret's water quality while at the same time permitting recreational utilization of what is Israel's only lake.

A master plan for the lake's drainage basin, which includes most of Galilee and parts of southern Lebanon, was approved by a government committee a year ago. It recommended the development of sewage networks in the section controlled by Israel as well as curbs on the amount of cattle to be pastured in the lake's vicinity and more rationalized use of fertilizer by the neighboring farming communities.

The new plan, which is a legally binding document, will aim at increasing the recreational use of the lake within the anti-pollution guidelines originally laid down by the master plan for the drainage basin.

The plan calls for rezoning 1,000 acres of farmland along the lake's 30-mile shoreline for recreational purposes, thus simultaneously reducing pollution from fertilizers. The present capacity of 25,000 visitors on peak days is to be almost quadrupled within 15 years. About two-thirds of the recreational areas will be dedicated to "extensive" rather than "intensive" use—nature preserves, picnic areas, and camping grounds.

A proposal by the Tourism Ministry to build high-rise hotels and sports facilities on the northeast shore of the lake, which had lain in no-man's-land until 1967, was rejected by the National Planning Authority. Instead, hotel development will be largely restricted to the area of Tiberias on the southwest shore, the only urban settlement on the lake. Although a marina will be allowed north of the town, a ceiling of 600 boats has been fixed to limit its polluting effect.

ABRAHAM RABINOVICH

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$150 per year. \$20 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Wendy Kaufman
Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

SPECIAL REPORT: An Interview with Administrator Douglas Costle Of the U.S. Environmental Protection Agency

WASHINGTON—Even on a blustery winter day you can see forever from the huge picture windows in Douglas Costle's top-floor office overlooking the Potomac River. That may be symbolic, for the Administrator of the U. S. Environmental Protection Agency (EPA) surveys an area that is not bound by politics, geography, or any other narrow self-interest.

President Carter probably best summed up Costle's job when he told the fall plenary of NATO's Committee on the Challenges of Modern Society (CCMS)—in a message Costle read to the delegates—that “the major threats to our physical and social environment transcend national frontiers.” And Costle, in a recent interview with *World Environment Report*, emphasized that the President's message was not the usual diplomatic rhetoric reserved for such occasions, but a commitment to international cooperation on environmental problems. “It's for real,” he said, adding that the CCMS meeting gave worldwide environmental concern “fresh impetus.”

To date, the most far-reaching result of environmental teamwork has been this country's close working relationship with the Soviet Union. Now in its sixth year, the bilateral agreement between the two super powers is moving steadily from a stage of visits and information exchanges to one of mutually beneficial work. Last November Costle chaired the U. S. side of the Committee on Cooperation in the Field of Environmental Protection for the first time, and from the opening statements to the final champagne toast, it was a function he clearly relished (*WER*, Dec. 19, p. 1).

U.S. - U.S.S.R. Cooperation

For several years, American and Russian scientists have conducted joint field studies on earthquake prediction, ocean pollution, and marine life. Under the new five-year agreement, specialists will visit water treatment plants in each other's countries, and Soviet scientists will conduct studies on the Connecticut River basin while their American counterparts will do similar work in Russia. Plans also have been made for joint experiments on natural aerosols and on the distribution of air pollutants. “We've started the snowball rolling,” Costle says.

Believing strongly that one-on-one contacts help to cement formal agreements, Costle made it his business to meet as many foreign environmental officials as he could during the CCMS meeting in Brussels. He also underscored his determination to give global environmental issues “a high-level policy input” by visiting his counterparts in eight West European capitols on a recent tour with his deputy, Barbara Blum. In fact, Costle insists that Blum be involved in the international sphere lest issues he considers of paramount importance are allowed to sink

into the bowels of the bureaucracy.

High-Level Exchanges

At the technical level, Costle notes, the number of contracts has been steadily increasing, too, especially as more and more countries turn to the EPA for guidance in setting up their own environmental programs. “We are in the forefront,” Costle says with some pride. Most recently, for example, Nigeria's newly appointed Director of Environmental Planning and Protection, Raimi Ojikutu, came to Washington to meet with Costle, Blum, and other EPA officials to gain first-hand knowledge.

Although EPA is only seven years old, the basic environmental laws are already on the books. So it is not surprising that many nations are turning to the U.S. for guidance. But attainment of our domestic goals is not enough, Costle says, and there is a growing awareness that all nations have a stake in air and water pollution, radiation, and the accelerating introduction of toxic substances—problems, he says, that “require worldwide action.”

Two-Way Street

But while other nations study the Clean Air Act, say, or the Toxic Substances Control Act as models to copy, technical help is very much a two-way street. Ticking off several examples, Costle says Japan improved American technology for flue gas desulphurization, and that the U.S. is now studying a Japanese dredging technique that could prove helpful in cleaning Virginia's James River, which has been closed to commercial fishing following the discovery that it was contaminated with the pesticide Kepone.

This “cross-breeding of knowledge,” as Costle calls it, has two additional benefits. Obviously, as nations pool more of their research and knowhow there is less duplication and unnecessary expense. With trade in chemicals reaching staggering proportions, there is great impetus to pool research, Costle notes. And in the wake of the Kepone incident and the tragic events at Seveso and Minimata, he is convinced that the biggest environmental challenge to the international community is finding ways to reduce or eliminate the risks of “our chemical revolution, whose implications we still don't fully understand.” As he told the CCMS meeting, “The global nature of the consequences resulting from the production and use of certain chemicals—PCBs, haloethers, Kepone, vinylchloride, and chlorofluocarbons, to name a few—obviously calls for international action.”

The second positive result to flow from the growing trend among nations to cooperate on environmental issues is that it has led to the creation of an international

registry of experts. Thus, Costle explains, a solid waste expert in one country knows who his counterparts are elsewhere, and he can call upon them for guidance and professional help.

Paper Problems

Costle puts a premium on such person-to-person contacts. Indeed, that seems to be the one aspect he misses from his former job as Commissioner of the Connecticut Department of Environment Protection. Nowadays, he says, "ninety per cent of the problems come in on pieces of paper." In Connecticut he was never more than an hour-and-a-half car trip away from the site of a problem, so he could meet with the aggrieved mayor of a city or the owner of a factory "and you knew immediately if what you did [to solve the problem] made any sense."

Costle speaks of none of this wistfully, however, because he considers the Connecticut experience "good preparation." But unlike many other high officials here, Costle is not an outsider, having had his first taste of Washington as a summer intern in the Interstate Commerce Commission following his graduation from Harvard in 1961.

After earning his law degree from the University of Chicago, Costle returned as a trial attorney in the Civil Rights Division of the Justice Department and later moved to the Commerce Department.

Environmental Beginnings

Costle first became involved with the environment in 1969, when he directed a study of the federal government's environment program for the President's Advisory Council on Executive Reorganization. The evaluation eventually led to the establishment of the EPA in 1970. Costle also spent some time as a consultant to evaluate the EPA's land use policies, and as assistant director of the Congressional Budget Office, where he worked on energy, natural resources, and environmental issues.

In 1971, while a fellow at Woodrow Wilson International Center for Scholars, Costle spent a year studying how various countries deal with environmental problems. This independent course of research took him to several West European nations where he met with government officials and private environmental groups. When President Carter chose Costle to head the EPA he became the third Administrator of the world's largest environmental agency at only 36.

Costle's next big goal is an international convention to control the movement of toxic substances in world commerce. By building on the efforts of individual countries and such international bodies as the UN Environment Programme, the Organization for Economic Cooperation and Development, and the World Health Organization, Costle is hopeful such a convention will be in place within five years. PETER PHILIPPS

Budapest Authorities Shut Down Polluting Lead Processing Plant

BUDAPEST—The Metallochemia plant in this Hungarian capital has been forced to stop the processing of lead because of the serious pollution it has spread over a wide area of the city.

The case first became public late last year when Radio Budapest reported initial complaints about dying animals and a greyish dust covering plants in the gardens and window sills in the neighborhood of the factory. In later reports, combining an interview with Sandor Lintner, chief of the city's Health Department, the radio station said that an investigation showed that the Metallochemia works had polluted an area encompassing 62 streets with housing for some 6,000 adults and 1,089 children.

In the broadcast, Lintner charged that the amount of lead exceeded permissible limitations by fifty times. He said that several children were admitted to hospitals with symptoms of lead absorption. Surveys further showed that the air, ground, and plant life within a one-kilometer (.62 of a mile) radius were polluted, he said. A total of 3,000 people were given medical tests and of these lead intake was detected in 50.

Ground pollution was the most serious problem and this, Lintner said, was not expected to disappear quickly. He cautioned that vegetables grown in that polluted soil next year will have to be checked and if necessary—as was done last year—banned from consumption.

SPECIAL DISPATCH TO WER

Pakistani Says Nuclear Power Can Melt Snow, Increase Water Flow

ISLAMABAD, Pakistan—An eminent planning engineer here has suggested utilization of nuclear technology for heating up the enormous mass of perpetual snows and glaciers of the Karakoram Range to increase the river flows during the winter months.

Engineer Fateh Ullah Khan says this would also help in the eradication of waterlogging and salinity. He suggests that an on-going study of glaciology could best be undertaken through the United Nations.

There are nearly 80 million acres of good cultivable land in Pakistan. Moreover, vast new areas can be forested and pastured if modern techniques are employed in tapping water resources. At present, the total average annual surface-water potential is about 142 million acre feet (MAF) apart from ground-water potential. But only about 50 per cent of the surface-water potential is being traditionally utilized for crops on approximately 32 million acres. There are great losses of water due to evaporation and seepage in river beds—39 MAF of the

surface-water go down to sea during the floods. About another 32 MAF is lost to seepage in a network of 38,000 miles of earthen canals and thousands of miles of kutch water courses. Thus, there is a total waste of 71 MAF annually.

Another problem facing irrigated agriculture in the country, Khan says, is that rivers in Pakistan are not regulated. Consequently, all irrigation systems, especially during the winter months, become ineffective. In the circumstances, he insists, no amount of research on improving seed, fertilizers, and insecticides can raise the per-acre yield without first regulating the basic input of water, along with provision for proper drainage to safeguard against salinity and waterlogging. He also points out that adequate reservoirs are essential for river regulation and for power generation. Unfortunately, natural dam sites which are ideal for creation of storage capacities with a long life span, are limited on account of geophysical factors.

Saudi Arabia's plan to undertake feasibility studies for towing 100 million tons of icebergs from Antarctica across 6,000 miles of ocean to the Arabian peninsula, Khan thinks, should inspire Pakistan also to undertake unorthodox ventures. Pakistan, he says, can follow suit by initiating similar studies and plan for heating up its enormous mass of frozen water. An international conference on the utilization of snows and glaciers for increasing river flows during winter, Khan concludes, should be promptly convened.

MOHAMMAD AFTAB

Use of Micro-Organisms for Protein Production Discussed in Kuwait

NAIROBI—As an alternative to the use of increasing land acreages for agriculture, micro-organisms (such as some yeasts and algae) could produce and store large quantities of proteins from agricultural or industrial wastes, or petroleum hydrocarbons. This was one of the propositions recently discussed in Kuwait by scientists from the Middle East, Europe, Asia, and The United States.

The six-day seminar on the application of micro-organisms to food and feed production and waste management was organized by the Kuwait Institute for Scientific Research and Kuwait University, with financial and technical support from the UN Environment Programme (UNEP), the UN Educational, Scientific and Cultural Organization (UNESCO), and the International Cell Research Organization (ICRO) panel on microbiology.

Mr. El-Tayeb, a UNEP microbiologist who attended the seminar, said UNEP fully supported further development in this field because micro-organisms dispose of wastes efficiently while producing proteins which are at present used on a limited scale for supplementing animal

feeds. It is possible, he said, that suitable varieties of protein could be produced in this way for human use.

Emphasis at the Kuwait seminar was on microbial conversion in relation to petroleum production—understandably since Kuwait is an area rich in petroleum production and short on agricultural production. The seminar also agreed on the need to pass on to scientists from developing countries the knowledge now available on the use of microbiology in food production and waste management.

CHARLES HARRISON

Colombia's Wildlife Service Denounced Over Skin Exports

BOGOTA—Colombia's Center for the Defense of the Public's Interest (Pro-Publicos) has denounced the nation's wildlife service INDERENA for authorizing the export of 1.1 million alligator skins during 1975-6, including 513,624 skins below the legal limit of 150 cms. in length. Pro-Publicos also scored INDERENA for allowing the export of 397,797 skins of other animals on the country's endangered species list, such as iguanas and ocelots, during the same period.

A two-year-old organization supported by the country's university students and the largest circulation newspaper in Colombia, "El Espectador," Pro-Publicos has made a sizeable impact on public opinion in its short lifetime, forcing INDERENA and other government agencies concerned with the environment to tighten up on ecological legislation.

According to the privately supported ecological organization, Colombia's major animal export houses have managed to circumvent legal prohibitions through several maneuvers, such as claiming that the skins were imported from neighboring countries for re-export from Colombia or buying the animal skins back from the customs agency, which had confiscated them, in order to re-export them.

A test case is now before the country's cabinet-level Council of State which, if successful, would prevent the export of any animal skins, no matter their origin. The Council earlier closed another loophole in the country's ecological legislation by ordering INDERENA to suspend the export of animal skin stocks which the companies claimed they had purchased prior to the enactment of export prohibitions.

Meanwhile, Pro-Publicos also has started a campaign to save the shade-giving American linden tree, which is in danger of extinction in Colombia, while urging INDERENA to reconsider reforestation priorities. According to Pro-Publicos ecologists, reforestation programs should emphasize native trees or imported saplings that adopt well to the country's semi-tropical climate and terrain, such as mangroves and coffee bushes.

PENNY LERNOUX

In Brief...

Dow's Reverse Osmosis Permeator Treats Waste

Mitsubishi Heavy Industries, Ltd., headquartered in Tokyo, announced recently that it had signed a contract with Dow Chemical Pacific Co. of Hong Kong to purchase the DOWEX Reverse Osmosis Permeator, developed by Dow Chemical Co. of the United States.

The unit will be used in the new waste water treatment facility which is currently being built at the company's new foundry in the Futami Coastal Industrial Complex, about a hundred miles west of Osaka in Hyogo Prefecture.

The new permeator is a water purification module that employs the principle of reverse osmosis to remove dissolved solids from water. Containing thousands of hollow fiber membranes made of cellulose triacetate that are permeable to water but not to solids, the permeator has many outstanding features, including a high resistance to oxidation, a large amount of water permeation per unit area of membrane, compactness of size, and low-operating cost.

Argentina Fights Fruit Plague By Use of Sterile Male Flies

After a successful three-year experimental program, Argentina now hopes to control citrus fruit plagues by introducing sterile male fruit flies into orchards.

The experimental program, carried out on 173 acres, reduced the amount of infected fruits from 8.5 per cent at the beginning of the tests to .29 per cent at the conclusion, according to the National Institute for Agrarian Technology which conducted the program.

The test orchards were flooded with 20 million sterile Mediterranean

fruit flies (*Ceratitis Capitana Wiedman*) and South American fruit flies (*Anastrepha Fraterculus Wiedman*). The males were sterilized by radiation and also chemically treated to increase their sexual attraction.

To be successful, however, the sterilization program must be integrated with other pest-control methods, said Jose Maria Benavent, agrarian specialist in charge of the program. Sterilization was combined with introduction of parasites which prey on fruit fly larva.

Mysterious Poisoning of Fish Upsets Ancient Inca Capital

A mysterious case of poisoning in the Valley of the Incas has outraged the inhabitants of the ancient Inca capital of Cuzco in southern Peru.

Apparently, a large "black stain" appeared in the Vilcanota River between Huambutio and San Salvador, some 30 kilometers from Cuzco. The "stain" then ran the course of the river throughout the province of Urubamba. Alarm turned to panic when thousands of dead fish, mainly trout, floated to the surface.

Fortunately, the authorities immediately undertook a campaign to warn local inhabitants of the danger and no cases of human poisoning have been reported. But the cause of the "stain" remains unknown.

India: Six Nuclear Plants Within Six Years

By 1983-84, India will have six operating nuclear power stations with a capacity of 1.69 million Kw, according to a recent government report. The target for 1990-91 is six million Kw.

The stations, some of which are already operational, are located in the states of Tamil Nadu, Uttar Pradesh and Rajasthan.

New Plastic Products to Save Energy Developed in Taiwan

After a decade of research, Taiwanese scientists say they have developed three new plastic products which have widespread industrial and agricultural uses and which will result in considerable savings of raw materials and hence of energy.

Dr. Paul L. C. Hao, director of the Industrial Technology Research Institute (ITRI) in Hsinchu in northern Taiwan, said that the new products—red mud PVC, polyethylene terephthalate (PET), and a new wood plastic composite—"have wide applications and can help bring down production costs due to the comparatively cheap materials used in production."

For example, the red mud fortified PVC can be used to make methane-powered generators, "soiless" plantations, rice bins, fishponds, bluegreen algae cultivation pools, lick-proof salt beds, boats, and buoys. The red mud composite is made from aluminum waste usually thrown into the sea. "We get the waste without paying a cent," Dr. Hao said.

The unbreakable composite can withstand ultraviolet light, acid and alkali attack, and any weather conditions. Products made from it will last at least eight years compared with only about three years for standard PVC, Dr. Hao said.

The ITRI has applied for patent rights in the U.S., West Germany, France, Japan, Australia, Canada, and Indonesia, and has already received generator orders from local industrial and agricultural concerns and from more than 10 countries.

Polyethylene terephthalate (PET) can be used to replace PVC, PE, and PC in the production of a wide range of industrial products including electronics and telecommunications components. Made from nylon waste, PET is cheap to produce, durable, and can stand a wide temperature range, Dr. Hao said.

The third new product, wood plastic composite, has the same uses as wood, but is more durable and three times stronger.

China Campaigns Against Wastage in Raw Materials

China has called for a campaign against wastage in raw materials and electricity. A People's Daily article said recently that all industries have been instructed to achieve within this year "the lowest records of material consumption in history."

It also reported that some leaders of industrial units have used large pieces of materials for small products and good materials on bad production. Consequently, the Chinese have been urged to follow the late Chairman Mao Tse-tung's instruction to stress both production and austerity so as to produce more with as little materials as possible.

EEC Funds Project to Reduce Pollution in Steel Industry

To reduce pollution within the steel industry, the European Commission has allocated nearly \$3 million to a total of 12 research projects. Particular attention has been given to the problems of noise, especially in electric arc furnaces, and four research projects will be devoted to examining the serious problems of steel-related dust.

These 12 projects are in addition to 43 existing projects to which the European Commission has already contributed more than \$6 million within the framework of the third Community program against pollution in the steel industry.

Singapore Tries to Save Its Last Undamaged Coral Reefs

Like most of its Asian neighbors, Singapore is beginning to make greater efforts to protect its natural environment from further damage. One area that Singapore environmental authorities are paying partic-

ular attention to is the country's underwater world.

At present, Singapore's underwater world is undergoing a life-or-death crisis because of the continuous reckless destruction of coral reefs and the unregulated dredging of the seabed. The marine ecosystem around the reefs has been destroyed to almost a point of no return.

Coral reefs are of prime importance. One small lump of coral serves as the home for thousands of coral organisms and algae, which, in turn, produce oxygen to support the marine life around it. Coral reefs also provide shelter and food for fishes, crustaceans, and shellfish.

For the past 15 years, coral reefs around Palau Sebarok, Palau Hantu, Palau Jong, and the Sisters Islands have suffered severe damage. Today, Palau Biola is the only place in the country that is still rich in coral reefs, and it has been suggested that this area be isolated as a marine preserve to serve as a model of the country's marine environment.

A concomitant problem involves the wanton clearing of mangrove swamps, which has diminished the spawning grounds and breeding areas for marine life, birds, and animals.

According to Dr. Ivan Polunin, a lecturer at the University of Singapore's Department of Social Medicine and Public Health, "by destroying mangrove swamps, we have destroyed a rich source of food and threatened our fishermen's livelihood."

Christmas Tree Felling in Greece Decried by Ecologists

Greek environmentalists have protested vigorously against the government's decision to permit the chopping down of 68,000 fir trees last Christmas. In 1976, Greek fir trees were saved from the axe when the government banned their cutting, necessitating the importation of all Christmas trees.

In a combined announcement,

twelve private environmental groups termed the decision "catastrophic" and accused the government of "destroying the country's already damaged greenery."

The announcement said the government should have encouraged the planting of more trees instead of permitting their reduction, especially since several hundred thousand acres of forest land were destroyed by fires in 1977. Today only 19 per cent of the country is forested compared to 30 per cent at the beginning of the century.

Monitoring System in UK Cuts Fuel Bills Sharply

An energy monitoring system, introduced by Britain's Department of Energy early last year, is now reducing fuel bills in industrial and municipal buildings by thousands of dollars.

At the end of each month, the Department publishes a record of degree-days, the number of days and the length of time that the external temperature has fallen below a base figure of 60 deg. F. (15.5 deg. C.).

These figures can then be checked against the amount of fuel used in space heating. Any discrepancies, i.e. more fuel used per number of degree-days in one month over another, can be investigated by searching for functioning faults in the heating system.

Since it began, the number of organizations using the system, which include industries, hospitals, schools, universities, and local authorities, has grown five-fold to 1,800.

Replies to a questionnaire showed that over half of the organizations had already made significant energy savings. More than 75 per cent of those making savings had reduced fuel consumption by up to 15 per cent. Nearly 10 per cent had made savings of between 16 and 30 per cent. Area health authorities, who are responsible for some very old and rambling hospital buildings, and

who are short of funds, are making particularly good use of the system and reducing consumption by a general 5 to 10 per cent.

The Department issues a free explanatory booklet, "Degree-Days," the seventh in their Fuel Efficiency series.

Family Solar Energy Kit Developed by Austrians

Austrian specialists have succeeded, with the aid of the Ministry of Science and Research, in developing a prototype of a solar energy heating plant for weekend and family houses on a genuine "do-it-yourself" basis.

The plant is capable of providing a small-sized house with a constant supply of warm water at about 55° C. (131° F.) from May to October. A 250-liter (about 55 gallons) tank provides a volume of between 50 and 60 liters of warm water per person a day, a supply sufficient for a four-member household.

The low cost will make utilization of solar energy possible even for people in a modest income bracket since cost of delivery of parts from the factory will not exceed \$1,798.

World's Largest Solar House Being Built in Japan

Japan will soon have the "world's largest solar house" when a \$440,000 solar energy system begins operations in a gymnasium now under construction in Omiya. The new system will employ 704 roof reflectors facing south at an angle of 30 degrees. These reflectors, with a total area of 14,310 square feet, will heat water for the system. Experts believe that 78 per cent of the energy used in the summer and 60 per cent in the winter will be solar derived. In times of bad weather, gas will be used as a backup.

Find Indonesia Has Great Geothermal Energy Potential

Indonesia will be using geothermal energy for generating electricity by the end of 1981. Recent research has ascertained that the country has great potential for geothermal energy, with a maximum production capacity of 6,000 megawatts. Under the exploration program at Sikidang, Central Java, 10 to 20 geothermal wells will be drilled. When completed, they will generate 100 megawatts of electricity.

Still another project underway within the country is the Kemojang Crater Geothermal Project in West Java. Drilling there began late in 1976 as a follow-up to an evaluation of five earlier exploration wells.

Colombia To Build New Dams In Most Undeveloped Area

The Inter-American Development Bank has loaned Colombia \$1.1 million for feasibility studies of flood control projects in the Sinu River basin in northwestern Colombia, one of the country's most underdeveloped areas. The 12,000-sq.-km. basin has a population of 700,000, two-fifths of whom are landless, illiterate peasants.

The aim of the project is to recover 875,000 acres for farming by 1985 through the construction of Soviet-financed dams on the upper Sinu which will collect 45,000 cubic meters of water.

40 Nations Feed Environment Data to UNEP Referral System

Forty countries have now submitted some 6,000 sources of environmental information for the International Referral System (IRS) operated by the UN Environment Programme (*WER*, June 20, p. 6),

UNEP's Executive Director, Dr. Mostafa K. Tolba told representatives of 25 countries who attended a workshop recently held in Nairobi.

Registration of information sources are now coming in at the rate of 400 to 500 a month. In May, 1976 the IRS had less than 100 sources on record.

Filipinos Claim Recovery of Epsom Salt From Bittern

Filipino researchers have converted a waste product of saltmaking into a chemical widely used in the processing industries. Experiments by researchers at the National Institute of Science and Technology (NIST) showed that epsom salt (magnesium sulfate) can be recovered from bittern, the solution that remains after sea water is crystallized into salt. Epsom salt is used in preparing certain drugs, tanning of leather, manufacturing of frosted paper, dyeing, producing explosives and matches, and in some operations involving bleaching.

The NIST researchers have calculated that the chemical can be produced locally for only \$1.35 for 2.2 pounds.

New British System Blots Out 'Bad' Noise With 'Good' Noise

An "active noise reduction" system, which blots out noise with noise, has been developed by two industrial consultancy groups in the Department of Electronic and Institute of Sound Vibration Research at the University of Southampton, Hampshire, England, under the leadership of Dr. A. P. Dorey and Mr. P. D. Wheeler.

The device was developed to reduce the noise heard by aircrew in high performance aircraft, but is expected to have much wider application.



World Environment Report

17 JAN 1978

VOL. 4, NO. 1

Copyright © 1978. Center for International Environment Information.

JANUARY 2, 1978

EEC Will Urge Greater Asbestos Control in Nine Member Nations

DUBLIN—The phasing out of blue asbestos, which can cause a form of cancer called mesothelioma, is to be recommended to the nine member countries of the Common Market.

An expert with the European Economic Community's (EEC) Health and Safety Directorate said in Dublin recently that an action program on the control of asbestos would be submitted to the controlling Council of Ministers of the EEC in the New Year. It will ask the Ministers to set levels of permissible exposure to asbestos fibers for workers on the factory floor.

As a result, the EEC will, it is hoped, produce a basic information document spelling out for the public the advantages and disadvantages of asbestos.

The announcement of the asbestos review was made in Dublin by Dr. W.J. Hunter, of the Health and Safety Directorate, at a seminar on chemical hazards. He said that it seemed impossible to set a level of asbestos usage which would guarantee absolute safety.

"The lower the level we can get the better," he said. "The dumping of asbestos waste will be included in the program of action in order to protect people from what could be called 'non-occupational exposure' to asbestos."

Dr. Hunter estimated that in Europe the mortality figures resulting from exposure to asbestos are currently running at 500 a year, but he expected that this official statistic would be trebled when a full-scale survey is carried out in the near future.

In America, he said, 200,000 workers in asbestos factories will die from lung cancer out of one million people who were regularly exposed to the substance, and between 50,000 and 80,000 will die from mesothelioma.

The Netherlands, he told the seminar, was opposed to any standards being set for exposure because "they say that all levels are dangerous." The aim in the EEC would be to set the lowest standard that was practicable.

He did not indicate how the proposed regulations would compare with the standards set at the American Raybestos Manhattan factory in Cork which has been the source of a long controversy over asbestos usage in Ireland. Nor did he indicate how the standards laid down would compare with those set for the very controversial waste dumping site (25 miles from the factory) at Ringaskiddy in Cork Harbor (*WER*, Oct. 10, p. 2).

TOM MacSWEENEY

Bavarians Develop New Earth-Filter System That Eliminates Stable Odors

MUNICH—A new efficient, simple, and cheap Bavarian air purification system may soon permit horsemen to keep stables in their backyards—or even pig sties if they wish—without offending the neighbors' noses.

Bavarian Minister for the Protection of the Environment Alfred Dick announced recently that the State Institute for Agricultural Techniques at nearby Weihestephan has developed an earth-filter system that left pig sties free of odor.

This mechanism, the Minister noted, would permit the operation of pig farms in more densely inhabited areas where, up to now, they would have been prohibited.

Furthermore, he added, the new system is simple enough to be installed on a do-it-yourself basis.

It consists of a pressure chamber, an air distribution system bedded into a gravel layer, a mixture of damp fibrous peat and pine brush, as well as a pump well and a regulation system needed for longer dry spells. The stable or sty air is compressed into a chamber which serves for pre-elimination of dust particles and pre-distribution of the air to be scrubbed. The air then moves from the pressure chamber through the pipe system into the layer of rough gravel which eliminates the remaining dust and equally distributes the air under the earth filter. In the latter process odors carried by the air in gaseous form are first absorbed by the filter bed and finally broken down biologically by micro-organisms. Hence sufficient moisture in the filter bed is mandatory.

The efficiency is so great, Dick said, that no odors could be detected even in the immediate vicinity of the test sty. The projected deodorizing cost: about \$1.33 per pig raised, fattened, and sold.

SPECIAL DISPATCH TO *WER*

In This Issue

Fine Particulates	2
EEC Energy Hearings	3
Lead Levels in UK	4
Contaminated Coastal Waters	5
Toxic Chemicals	6
In Brief	7
Calendar	8

Czechs Implement Country-Wide Stern New Forestry Regulations

PRAGUE—A new forestry law to become effective in January 1978 is primarily designed to protect Czech forests although it may also mean the termination of the last enclaves of cooperative or private forest ownership in those cases where owners are incapable of implementing the general forestry protection policy.

Nearly all forests, with the major exception of military forests, will be placed under State forestry administration. Other exceptions, such as forests under the purview of various non-military organizations, must obtain specific ministry exemption.

The new law spells out criteria for reforestation and recultivation of former mines, quarries, areas used for construction of reservoirs, and geological probes. The use of forestry land for such purposes is to be avoided whenever possible.

The building of weekend cottages and country houses, the bane of Czechoslovakia's countryside in recent years, is to be limited to building on free tracts of land within the already established cottage colonies.

Woodcutting is to be kept strictly within the approved plan, and clearcuttings must be within 3 hectares (about 7.4 acres) in size, with exception permitted only for cases provided for by the law.

Forestation of arable land, however, is frowned upon and is to be kept to a minimum. Such land must be first released from what is known as the farmland fund.

The new law also demands the elimination of the use of forestry roads by motorized tourists. These roads are to be used only by forestry vehicles and must be kept free at all times for the use of fire brigades.

The law provides for the setting up of a forestry guards corps, with the power to impose fines and to ensure that tourists do not cause damage in Czech forests, which generally are unfenced and freely open to visitors. The guards corps will also try to minimize the damage caused by mushroom and berry pickers not willing to respect even the few fences erected to protect young seedlings or other special areas against foraging wildlife.

IVA DRAPALOVA

ECE Seminar Studies Vexing Problem of Fine Particulates

GENEVA—An international seminar held recently in Villach, Austria, studied the problem of fine particulates—solid and liquid aerosols too fine to be visible to the naked eye—under the aegis of the United Nations Economic Commission for Europe (ECE). The preliminary report is the work of a task force created by the ECE Working Party on Air Pollution Problems (*WER*, Sept. 26, p. 5).

The five topics discussed at the seminar were: an air pollution definition of fine particulate pollutants; emission sources and control of fine particulate air pollution; chemical and physical reactions; transport and fate of fine particulate pollutants; and sampling, monitoring, and measurement of fine particulate air pollutants.

The seminar also made recommendations to the Working Party on Air Pollution Problems for the future evaluation of fine particulates. It proposed that where the full distribution of particle sizes was not measured, "fine" particles should be defined as having an upper diameter limit of 2.0 micrometers, and that if more information were needed, a definition of "superfine" particles, with an upper limit of 0.8 micrometers, should be adopted. The upper limit proposed for respirable dust particles was 10.0 micrometers. Seminar participants agreed that a generally accepted model was needed to measure the effects in specific areas of the transport of fine particulates over medium to long distances (i.e., 1,000 kilometers or 625 miles).

A project to assess the technology of pollution control equipment, dealing with fine particulates, also was suggested.

The seminar urged that the Working Party establish a method for collecting comparable information on air pollution control investments, and the costs of their operation and maintenance, and propose ways of storing this information.

It agreed that a seminar might be organized in cooperation with the UN Environment Programme Global Environmental Monitoring System (GEMS) on strategies for the monitoring of air pollution and on the instrumentation and measurement methods employed in this work.

WILLIAM G. MAHONEY

World Environment Report is published every other Monday by the Center for International Environmental Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$150 per year. \$20 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Wendy Kaufman
Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

SPECIAL REPORT: EEC Holds Nuclear Energy Hearings in Brussels

BRUSSELS—The 450 participants in the European Commission's three days of nuclear energy hearings held here a month ago walked daily in the shadow of the Atomium, a 1958 World's Fair building modelled after the structure of the atom, which now appropriately houses exhibitions on the peaceful uses of nuclear energy.

Inside the convention hall the conflicting views on energy needs and supplies expressed by the scientists, trade unionists, and representatives of private and nationalized industries were delivered in relatively calm tones.

Impartial Chairman

Although many environmentalists had feared that the hearings would attempt to garner support for the Commission's decision to continue developing all types of nuclear power, almost everyone who attended agreed that the chairman, Dr. Guido Brunner, the Energy and Research Commissioner known to support rapid development of nuclear power, acted impartially.

"Brunner's given everyone a fair crack at the whip," said Stanley Johnson, Environmental Advisor at the European Economic Community (EEC). He felt the hearings were more than a cosmetic affair and may have changed some minds. An observer from the International Energy Agency of the Organization for Economic Cooperation and Development (OECD), however, thought that overall the debates were "co-opting the anti-nukes."

Observers included members of the European Parliament and of the Economic and Social Committee, members of various industrial, ecological, and consumer groups as well as private citizens who asked to be present. Brunner permitted written questions and debate from the floor.

Nuclear Debate

The purpose of the hearings was not to provide input on any specific decision but to provide a public forum for the nuclear debate. The audience and some of the speakers, in fact, continually voiced concern about nuclear energy being a democratic choice.

The European economy, which still has not recovered from the 1973 oil crisis, was another recurrent theme. While no one doubted the price of fossil fuels would continue to rise, there were serious doubts about the accuracy of the Commission's forecast for rising energy demand.

Alternative Energy

Dr. P. F. Chapman of the Open University, like many of the U.K. participants, charged that the level of analysis in the Commission's energy documents was of a very low standard and that alternative energy sources were not

adequately considered. He also estimated that the fast-breeder reactor (FBR) would only be competitive with burner reactors if the price of uranium exceeds \$100 a pound and even then the FBR would have to be operated at a load factor of 75 percent to be competitive, qualifying it only for industrial use.

Fast-Breeder

John Chesshire of Sussex University said that an even greater economic worry was the capital cost of the fast-breeder reactor. He made a case for the possibility of that cost being so high that the fast-breeder would be uneconomic compared with the thermal reactor at any conceivable uranium price.

Dr. Walter C. Patterson of Friends of the Earth pointed out that the Commission proposed to trade dependence on oil imports for dependence on uranium imports.

Conservation Methods

A French trade unionist, B. Laponche, said that nuclear energy should not be the only response to energy problems and priority should be given to conservation measures and optimal uses of energy. He urged that nuclear energy for industrial purposes be implemented one step at a time, the safety of each step being proven before the next one taken. He said that his union felt these conditions were not being met in France and has urged a three-year suspension for new installations.

Rudolf Guck, of Badenwerk AG, said that the electricity-generation costs of the nuclear power stations currently operating in Germany are below those of fossil-fuel-powered stations and he expected nuclear generation to be even cheaper in the future.

Electricite de France's M. A. Dejou said that the industrialized countries had a duty to develop nuclear energy, otherwise fossil fuel price increases would seriously burden developing countries that cannot afford nuclear technology.

Prize Energy Source

J. Moore of the U. K. Atomic Energy Authority agreed and argued, "We are... particularly in Europe, at an advanced stage after 25 years' work into the most thoroughly researched technology of all time. The prize now within sight is an energy source from which one ton of uranium can produce as much energy as two millions tons of coal."

The Commission will hold further hearings on January 24-26. The provisional subjects are safety, health, and environmental aspects of nuclear and other energy supplies.

JOAN INFARINATO

Kenya Follows its Game Hunting Ban With New Ban on Trade in Trophies

NAIROBI—Kenya has followed up its ban on big-game hunting (*WER*, June 6, p. 6) with a new ban on all trade in game trophies and skins. Announced by President Kenyatta in an independence anniversary address on December 12, the ban is designed to end completely the illegal hunting of game animals which has continued despite the hunting ban imposed last May.

There will be a three months' grace period to allow licensed dealers to dispose of existing stocks of game trophies and skins. But President Kenyatta said the ban would then be "fully enforced."

Conservationists in Kenya and elsewhere have been pressing for a ban on trade in game trophies and skins because large quantities of these items have remained on sale despite the ban on legal hunting. It was obvious, the conservation lobby said, that animals killed illegally were providing the main source of supply for some 200 curio shops in Nairobi that cater to an average of 7,000 tourists a week. It also thought that the ban will extend to exporters who ship skins, ivory, and rhinoceros horns to buyers throughout the world.

The news of the new ban has been welcomed widely in Kenya, where great concern has been expressed at the continued depletion of game stocks by poachers, and at the apparent inability of the Kenya authorities to stop their activities.

CHARLES HARRISON

Sweden Inaugurates Lengthy Task Of Cataloguing Chemical Products

STOCKHOLM—Beginning this month, Sweden will initiate the enormous task of cataloguing all chemical products in the country.

The project is being directed by the Products Control Board and its secretariat division which determine and supervise all legal matters dealing with products hazardous to health and to the environment.

The work will be undertaken in two stages. Approximately \$125,000 is being spent on the first stage—an information campaign through the media and among companies, and the printing and distribution of questionnaires.

Companies will be obliged to report their product's trade name, whether it is produced in Sweden or imported, and whether it is known under various names. It is hoped that this preliminary stage will be completed by March 1. Medicine and food, however, are excepted because they already are controlled under another law. Collection of information on cosmetics is being postponed until a later date.

During the second, more complicated, stage, compa-

nies will be required to supply complete and detailed information on the compounds and composition of each of their chemical products. This second stage will be handled in three steps through 1978. Thereafter the register will be updated on a continuing basis. During the initial phase, some 2,000 products are expected to be classified.

The decision to compile a register for better control of chemical products was first taken in 1974 when the National Environment Protection Board, under which the Products Control Board operates administratively, budgeted funds for the project. But the actual startup was delayed because the original timetable proved unrealistic.

The ten members of the Products Control Board have long promoted the chemical register and regarded it as one of their most pressing tasks if they were to make significant environmental headway. For example, board member Prof. Arne Engstroem commented recently that "the most important task today is to build a sufficiently broad basis of facts about chemical products and to catalogue them in a constantly updated products register where the latest research results also are included."

SPECIAL DISPATCH TO *WER*

Lead Levels in UK Water Found Higher than World Norms

LONDON—Lead levels in drinking water above those recommended by the World Health Organization (WHO) are more widespread than expected in Britain.

A survey, "Lead in Drinking Water," carried out for the Department of the Environment (DOE) in 1975-76 by an Interdepartmental Working Group, and published recently, investigated a sample survey of households. Tests of the drinking water were taken at "first draw" in the mornings and at a subsequent "daytime" period.

The WHO limit of 0.1 milligrams of lead per liter (mg/l) is for water supplies which have not stood in contact with lead pipes. A proposed EEC directive, on which member states, including Britain, have not yet reached agreement, suggests lowering the limit to 0.05 mg/l.

From its survey the report calculated that nine per cent, amounting to 1,689,000 households in Great Britain had lead levels exceeding the WHO limit in the "first draw" sample. Exceeding this limit in the "daytime" sample were 797,000 households or 4.3 per cent.

The proposed EEC limit would be exceeded by 20.4 per cent of households at "first draw," and 10.3 per cent in the "daytime" sample.

Of greatest concern were the 1.6 per cent, or 302,000 households at "first draw" and the 0.9 per cent, or 163,000 households in the "daytime" sample whose lead levels exceeded 0.3 mg/l—the WHO/FAO recommended maximum intake of lead from all sources, including food and air.

The survey showed that lead levels increased with the

age of the dwelling and the amount of lead piping used in the water supply system. As a prelude to mounting a full scale epidemiological survey, a pilot study of lead in blood was carried out on a sub-sample of households in this water survey. The response rate to the request for blood samples was too low to draw any valid conclusions.

Assessing the results, the report stressed that the "snapshot" nature of the survey meant that no valid national average figures could be drawn, since lead levels fluctuate so much over short periods of time. Also, lead absorption from water is needed to be seen in relation to total absorption of lead from other sources, particularly food.

Concluding from this that "there would therefore appear to be no immediate need for a stricter universal standard in relation to water," the report nevertheless conceded that the results did "make it clear that further exploratory work is an urgent priority." Current and future research work is listed in an appendix to the report.

ALAN MASSAM

New Research Finds That Indian Mosquito Can Transmit Leprosy

NEW DELHI—In addition to spreading malaria and filariasis, it has been found that the Indian mosquito can also transmit leprosy, according to a two-year study by the Jawaharlal Nehru University for Post Graduate Education and Research at Pondicherry, a coastal town in South India. The study was conducted under a grant from the U.S. Public Health Service.

The Institute has obtained evidence that bed bugs and head lice also act as agents of leprosy transmission. Until a few years ago, leprosy was thought to be spread only by intimate human contact, but recent work done at the Institute demonstrates that the disease can be spread by the coughing and sneezing of a leper.

But potential victims of leprosy may have good news soon, even if the Indian mosquito cannot be conquered, either by DDT or other chemical means. A significant advance towards a preventive vaccine was recently reported here at a four-day seminar on "Immunology of Leprosy" attended by 80 medical experts, including 25 leprosy specialists.

Dr. J.L. Stanford from the U.K. said that the BCG vaccination would eventually prove effective against leprosy. Dr. G.P. Talwar of the All India Institute of Medical Sciences here has isolated a new strain of mycobacterium after screening 71 strains from known and unknown sources. Sensitization studies on some leprosy patients are under way with extracts from this mycobacterium. Since this bacterium is non-pathogenic in nature, it may also be used in living form for immunizing against leprosy.

Dr. C.V. Bapat from the Cancer Research Institute, Bombay, has isolated another potentially useful strain of

bacteria, called ICRC bacilli, which can be cultured on a mass scale in the laboratory. Skin tests with ICRC bacilli induces in leprosy patients reactions that are very similar to those caused by leprosy bacilli.

R. MURALI MANOHAR

California's Industrial Wastes Foul Mexico's Coastal Waters

ENSENADA, Mexico—Total contamination of Mexico's seas is imminent, a Mexican oceanographer has warned in disclosing the presence of California industrial wastes in the waters off the fishing villages along the Mexican peninsula of Baja California. "The sea is not a recipient that can absorb every kind of discharge," declared Prof. Francisco Aguilar, director of the 16-year-old Institute for Oceanographic Studies in this Pacific port city 60 miles south of the U.S. border.

Chlorides, heavy metals, and DDT, carried by sea currents from the industrial zones of San Francisco, Los Angeles, and San Diego, Cal., have been found in local waters, he said. Offshore oil drilling has further provoked alterations in marine life all along Mexican coasts, he added.

Professor Aguilar said species such as cockles and mussels retain the contaminants in their tissues and are forever damaged. The sea's ecological system is so fragile, he maintained, that all land-based drainage must be avoided.

Environmental protection cannot be legislated on a national scale, Aguilar pointed out. "Every region within every country is different and has its own problems of contamination. Thus these must be treated on a regional basis to insure the protection of local species."

KATHERINE HATCH

Correction

Owing to an erroneous translation by *WER* of a report by Denmark's National Institute of Food on its investigation into the use of bran, we inaccurately stated that ingestion of bran could lead to cancer and arteriosclerosis (*WER*, April 25, p. 8). "On the contrary," writes Dr. Willy Hjarde, "our Institute report noted some references which maintained that ingestion protects against these diseases."

The rest of *WER's* account—that bran can be harmful under certain circumstances—correctly reports the Institute's main findings.

Peruvian Scientists Evaluate Evolution of Anchovy, Other Fish

LIMA—The Peruvian Sea Institute (IMARPE) has undertaken intensive research into the distribution and concentration of anchovy and other fish off the Peruvian coast.

The three fundamental objectives of the study are to determine changes in the level of population of anchovy, sardine, saurel, and mackerel; to investigate the evolution cycle of eggs and larvae of anchovy and sardine, identifying the bio-ecological characteristics which determine behavior and survival besides determining the magnitude, distribution, and density of the fish with especial reference to mackerel; and to determine ocean conditions with special reference to currents.

Seventeen fishing boats are already out at sea conducting a part of the study known as Operation Eureka, which is concerned with the evolutionary process of the fish.

Another aspect of the study—Cooperative Research into the Anchovy and its Ecosystem (ICANE)—is being carried out in a joint Peruvian-Canadian venture. The Canadian ship, R/V Baffin, and IMARPE's SNP-1 have both been equipped with special electroacoustic apparatus and dragnets for sample-taking. Both ships are operating off the coast at Chimbote, north of Lima.

Physiological studies plus research into energy transference, growth, and mortality are being carried out in temporary laboratories at the Samanco fishing complex.

IMARPE expects to complete the research program by the end of the year. **LORETTA McLAUGHLAN**

Colombian Scientists Charge Gov't Fails to Control Toxic Chemicals

BOGOTA—Colombians are gradually poisoning themselves through the intensive use of toxic pesticides, according to a recent survey by a group of university scientists, who scored the government for failing to control or reduce the use of chemicals, such as DDT, banned in other countries.

The scientists cited statistics from the government's Institute of Agriculture and Livestock (ICA) to show that Colombia is the largest user of pesticides in the five-nation Andean Group regional market (other members are Venezuela, Ecuador, Peru, and Bolivia), with 55 per cent of the area's total consumption, or 32,360 tons per year. Many of these chemicals are used indiscriminately, the scientists said, particularly in aerial spraying.

Prof. Luis Alberto Lopez, of the University of Cordoba in the city of Monteria, cited the case of an eight-year-old boy who died from intoxication following aerial spraying of cotton crops with parathion. Lopez also charged that indiscriminate aerial spraying in the vicinity of the

university's agricultural experimental station caused the deaths of 10,000 fish.

He went on to blame the country's Civil Aeronautics Administration for failing to control aerial fumigation and cited the government's decision to overturn an earlier prohibition on the location of landing strips for such planes as an example of national irresponsibility. Previously, landing and storage installations for aerial spraying could not be located nearer than three kms. to urban centers, but since this prohibition was cancelled last year fumigation facilities have been constructed as close as 140 meters to towns, including Natagaima in central Colombia, where the inhabitants have attributed several deaths to pesticides.

Scientists from Cali, southwestern Colombia's industrial hub, also revealed that many of the country's fruits and vegetables contain chemical residues higher than the limits set by international health organizations for human tolerance.

Prof. Esteban Gomez, also of the University of Cordoba, said that it is impossible to persuade government agencies to take responsibility for the control of pesticides. "The Ministry of Health passes the buck to ICA, which in turn blames state health services or regional development corporations or both," he said.

PENNY LERNOUX

ECE Seminar in Warsaw Will Discuss Pollution Control By Aerial Means

GENEVA—A seminar now being organized by the United Nations Economic Commission for Europe (ECE) will discuss the use of aircraft and airborne equipment for combatting various forms of pollution, and for agricultural and other purposes, such as forestry operations, surveying, construction, fire-fighting, feeding fish in inland waters.

The ECE spokesman said that participants will discuss environmental considerations, including safety and standards for the equipment used in aerial work, and the use of such equipment for monitoring and combatting atmospheric, ground, and water pollution.

The seminar will be held in Warsaw, at the invitation of the Polish Government, from 18 to 22 September 1978. It will cater to the interests of both manufacturers and users of aircraft and airborne equipment, and will coincide with the 50th anniversary of the Polish aircraft industry.

In a general introductory session, the general status of development trends, including the importance of aerial work in increasing world food production, will be discussed. A comparative analysis of the effectiveness of airborne equipment will be made, the ECE said.

Technical questions to be discussed in later sessions will include progress in the design of special purpose aircraft, equipment for spreading chemicals, ground installations, and operational devices.

WILLIAM G. MAHONEY

In Brief...

Colombian Textile Workers Suffer Incurable Deafness

Studies by the Social Security Institute of the city of Medellin, Colombia's textile capital, show that "at least 30 per cent of the city's industrial workers are suffering from incurable deafness due to factory noise." The study also claims that "a high percentage of workers are affected by silicosis." Simultaneous investigations undertaken by two local universities indicate that noise and air pollution in Medellin are higher than acceptable levels established by international health organizations, in addition to a series of other environmental problems, including erosion.

Located in a mountain bowl in Colombia's central Andes, Medellin is also suffering from a population explosion and, according to spokesmen for the municipal garbage collectors, "By 1982 Medellin will no longer have any place to dump its garbage." Moreover, winter landslides which yearly bury several dozen homes are expected to worsen due to the continuing destruction of hillside forests by impoverished peasants who cut down the trees to build slum shacks.

UK To Recover Waste Energy With New Turbine Technique

A project which links the most advanced turbine generator technology with the recovery of industrial waste energy has been launched in Britain by the government-funded Science Research Council.

The project will aim during the next three years to produce a 100 kilowatt turbine-driven induction generator in a sealed unit which will convert heat energy into electricity and feed it into any industrial electri-

cal system. The small sealed unit, using heavy vapor as the driving fluid, will have an almost friction-free turbine system enabling it to work efficiently and for long periods without attention.

Known as TIGER (turbine induction-generator energy recovery), the project brings together the research and expertise of four university departments as well as industry, and will cost about \$150,000.

It has been estimated that up to 20 per cent of all industrial energy is dumped at the end of various industrial processes because the temperature of the waste heat is too low to make recovery practicable. Once perfected, this turbine system could be used to pick up much of this wasted heat and convert it to electricity. It may also have solar energy application.

Brazilian to Stand Trial For Trying to Export Wild Game

Although Brazil passed legislation 10 years ago outlawing exports of wild game, the first such case came to court only recently. Charged with the crime is Jurandir Tavares Marinho, who was arrested at the Rio International Airport last year while allegedly receiving a shipment of 357 animals from the Amazon.

The animals were mostly birds and small monkeys, and many of them are on the endangered list and all are on the list of forbidden trade. Most of them were apparently destined for trans-shipment to Europe and the United States. The recovered animals were placed in the charge of conservation authorities.

It is not known how long the trial will take because it has no precedent in Brazilian legal history. Meanwhile, environmental and conservation groups from the U.S., France, England, Spain, and Argentina have written Brazilian authorities stressing the importance of this trial and urging a stiff sentence.

Low Cost Water Filter For Home Devised in Calcutta

The Central Glass and Ceramic Research Institute of Calcutta has developed a low cost water filter for home use which would guarantee bacteria-free drinking water. It uses indigenously manufactured filters made of ceramic that sells for less than a dollar; cost of the completely assembled system is about four dollars.

Taiwan To Help Haiti Upgrade Its Agricultural Production

Both Haiti and the Republic of China (ROC) on Taiwan are mountainous island republics, densely populated, have essentially the same climate, and a limited amount of available land for raising agricultural products.

But there the similarity ends, for while Haiti is ever increasingly dependent on foreign relief to feed its people and has gone from a net exporter of agricultural products to an importer, especially of sugar and rice, Taiwan not only feeds its people, but raises considerable balance of payment funds by exporting its surplus crops.

For the past four years, the ROC, which has an embassy in Haiti, has had agricultural missions working at a grass roots level in an attempt to upgrade Haiti's agricultural output which suffers from primitive methods, lack of access roads to get products to market, a prolonged drought, and horrendous environmental damage.

Now Joseph Bernard, Haiti's Undersecretary of Agriculture, has just returned from Taiwan with the promise of increased aid. While there, Bernard met with senior officials from the Ministry of Economic Affairs and the Ministry of Foreign Affairs of Sino-Haitian Economic Cooperation.

Chinese Study Bavaria's Anti-Pollution Procedures

An eight-man delegation of environmental experts from the People's Republic of China recently visited Bavaria to study protection and anti-pollution procedures in this German Alpine state. They were greeted by Bavarian State Secretary for the Environment Dr. Max Fischer, who stressed the impact of growing industrialization upon nature and the need for international cooperation.

The Chinese group expressed greatest interest in Bavaria's electronic data processing system that monitors the quality of the air automatically throughout the state by use of automated stations feeding into a central computer.

There are more than 40 such stations throughout Bavaria continuously measuring the air pollution and providing to the computerized central terminal in Munich a flow of information upon such noxious substances as sulphur dioxide, carbon monoxide, hydrocarbons, dust, hydrogen sulphide, nitrogen oxides, ozone, and radioactivity.

This flow of information from the automated network permits authori-

ties to give early warnings of smog formations and take prompt countermeasures. It also provides the basic data for anti-pollution programs and for future planning. Thus far Bavaria has spent about \$49 million on the system.

The state also operates a fleet of monitoring trucks that spot-check some 240 sites in key industrial areas, and uses planes to carry out certain other air control checks.

Natural Reserves Slated For Australia's Lord Howe Is.

Natural reserves will be established soon in Lord Howe Island, 420 miles northeast of Sydney, Australia. Centuries ago, Lord Howe Island was abundant with turtles and at least 129 species of birds. But the rapid depletion of the ecological system on the island in recent years has caused the extinction of almost all the indigenous species of birds. Now the State Planning Authority of New South Wales has suggested the establishment of national parks and marine reserves on the island.

Indian Claims Cheap Fuel From Water-Kerosene Mixture

A.R. Gopala Rao, a top railway official from Hyderabad, India, who has no scientific background, claims that 40 per cent water plus 60 per cent kerosene will bring down the cost of fuel.

He made his discovery one day when putting out a stove fire by sprinkling water on it. The flame first rose high before it went out.

"This gave me the idea that water does mix with kerosene and improve its heating property provided we can sustain the mixing process," he said.

Rao recently demonstrated his new technique with a stove in which the burning fuel mixture consisted of 40 per cent water and 60 per cent kerosene along with 0.4 per cent of a patented chemical.

He used ferro-aluminum as a catalyst plus certain organic binders and called it "Xotherm" which broke the surface tension and coalesced water and kerosene.

"Xotherm" can also be used to mix water with other petroleum products, for example, to run a gas turbine driven power plant to achieve a 50 per cent saving in fuel costs, Rao said.

Calendar...

- January 9-14**—Inter-governmental Meeting of the Mediterranean Coastal States to Review Implementation of Action Plan. Monaco. Under the auspices of the United Nations Environment Programme (UNEP).
- January 9-14**—Meeting on Environmental Statistics. Geneva. Auspices of UN Economic Commission for Europe (ECE).
- January 10-13**—Eighth Meeting of the Working Party on Air Pollution Problems. Geneva. ECE.
- January 16-18**—Ad Hoc Meeting on Problems in the Field of Coal Gasification/Liquefaction. Geneva. ECE.
- January 23-February 8**—Inter-governmental Working Group of Experts on Shared Natural Resources. Nairobi. UNEP.
- February 14-16**—Water Management Group. Paris. Auspices of Organization for Economic Cooperation and Development (OECD).
- February 27-March 3**—Sixth Session of the Senior Advisers on Environmental Problems. ECE.
- March 13-14**—Preparatory Meetings of the Subsidiary Bodies of the Working Committee on International Oceanographic Data Exchange. Paris. Intergovernmental Oceanographic Commission (IOC).
- March 14-16**—Advisory Selection Committee on the International Pahlavi Environment Prize. Paris. UNEP.
- March 15-21**—Working Committee on International Oceanographic Exchange. Paris. IOC.
- May 9-11**—Twenty-first Annual Conference of the International Association for Great Lakes Research. University of Windsor, Ontario.
- May 16-18**—Expert Group on Water Quality and Quantity. Geneva. ECE.
- May 29-31**—Symposium on Urban Renewal and Quality of Life. Geneva. ECE.
- June 12-17**—Seminar on Land-Use planning. Sweden. ECE.



World Environment Report

INDEX

VOLUME 3, 1977

JULY-DECEMBER

A

Acid Precipitation

Sulphuric fallout into Swedish lakes, Aug. 1, p. 1

Aerosol Propellants

Danish ban, Nov. 7, p. 7
Swedish ban, Dec. 19, p. 7
U.S. - USSR joint group seeks substitutes, Dec. 19, p. 1

Agriculture

Argentine crops attacked by blue alfalfa aphid, Aug. 15, p. 7
Colombian soil erosion problem, Sept. 26, p. 2
FAO/UNEP pest management program, July 18, p. 3
Genetic resource conservation urged, Oct. 24, p. 2
Greek development plans get World Bank loan, Aug. 1, p. 7
Haitian corn crop threatened by army worm, Aug. 29, p. 2
Solar grain dryer in use in India, Aug. 1, p. 8
Sri Lankan coconut farming, July 18, p. 2

Air Pollution (see also Smoking)

Ankara rise in disease caused, Dec. 19, p. 5
Bangkok, Thailand, Sept. 12, p. 6
Bulgarian expenditures for control, Dec. 5, p. 4
Carbon monoxide, Sept. 26, p. 8; Dec. 5, p. 7; Dec. 19, p. 7
Cause of weather change in Mexico City, July 14, p. 5
Colombia closes sulphuric acid plant in Cali, Aug. 29, p. 6; Oct. 10, p. 6
Dust collector for Chinese steel mill, Oct. 10, p. 7
Fecralloy device removes noxious gases, Sept. 12, p. 8
Fine-particle hazards discussed by ECE, Sept. 26, p. 5
German industrial abatement efforts, Dec. 19, p. 3
Hong Kong, July 4, p. 6; Oct. 24, p. 8
Hong Kong ordinance, Nov. 21, p. 4
Hydrocarbons, Oct. 10, p. 8; Nov. 21, p. 6; Dec. 19, p. 7
ILO draft convention sets criteria, Sept. 12, p. 1
Japanese auto emission control measures, Aug. 15, p. 4
Lead, Nov. 21, p. 6;
Lead, Nov. 21, p. 6; Dec. 19, pp. 3, 7
Long-range transmission of pollutants as ECE concern, Nov. 7, p. 5
Malaysian sources, July 18, p. 5
Manila health hazard, Dec. 19, p. 7
Mexico City, increased by traffic-circle pattern, Dec. 19, p. 2
Monitoring in Bogota, Dec. 5, p. 7
New Delhi, ash emissions, Oct. 10, p. 2
Nitrogen oxides, Oct. 24, pp. 3, 4; Dec. 19, p. 7
Philippine auto emission standards, Aug. 15, p. 7; Oct. 24, p. 7
Philippine industrial sources, Sept. 26, p. 8; Dec. 19, p. 7
Reduction in Japan, Oct. 24, p. 3
Reduction in Singapore, Oct. 24, p. 8
Sulphur oxides, Aug. 1, p. 1; Sept. 26, p. 8; Oct. 24, pp. 3, 4, 8; Nov. 7, p. 7; Dec. 5, p. 7; Dec. 19, pp. 3, 5, 7
Swedish standards for fuel sulphur content, Aug. 1, p. 1

Airports, Airplanes

German-French Airbus A 300 called very quiet, Dec. 19, p. 3
Noise standards adopted in Mexico, Sept. 26, p. 5
Noise victims get tax abatement in Bavaria, Sept. 12, p. 4

Alonso, Marcelo

At ICNE meeting, Aug. 29, p. 5

Alozie, O.

On mycotoxin contamination of food, Nov. 7, p. 1

Amazon River and Basin

Colombian "Amazonas 77" expedition, Aug. 1, p. 5
Ecology and development debated, Oct. 24, p. 1
Upset of ecological balance spawns piranha threat, Nov. 21, p. 5

Animal Fodder

Citrus fruit wastes used in Argentina, Dec. 19, p. 7
Oil palm sludge used in Malaysia, July 4, p. 7
Protein extraction from leaves by fractionation, Nov. 21, p. 7
Slaughterhouse wastes used in Argentina, Sept. 26, p. 7
Tea leaf wastes used in Sri Lanka, Aug. 15, p. 3

Antarctic

Aquarium planned by Argentina, July 4, p. 7
1975 Treaty signed by Argentina, Aug. 1, p. 6

Arctic

Oil spill threats, July 4, p. 8

Argentina

Animal feed from citrus fruit wastes, Dec. 19, p. 7
Animal feed from slaughterhouse wastes, Sept. 26, p. 7
Antarctic aquarium planned, July 4, p. 7
Antarctic Treaty of 1975 signed, Aug. 1, p. 6
Crops attacked by blue alfalfa aphid, Aug. 15, p. 7
Ecology belt around Buenos Aires, Oct. 10, p. 6
Grain storage in wood silos, July 18, p. 6
Lack of environment ministry criticized, Sept. 26, p. 4
Nuclear program hampered by IAEA, Dec. 5, p. 7
Otter killing restrictions, Aug. 29, p. 7
Park lands sought for metropolitan areas, Nov. 21, p. 8
Urban water-use meters, Oct. 24, p. 7
Water pollution by industry, Nov. 7, p. 6
Wetlands reclamation study, Oct. 10, p. 4

Asbestos

Raybestos controversy in Ireland continues, Oct. 10, p. 2;
Dec. 19, p. 6

Asia

Noise pollution problems, Aug. 15, p. 5
Water pollution, East Asia survey, Oct. 10, p. 7

Associated Country Women of the World (ACWW)

Environmental concerns voiced to UN, Dec. 19, p. 2

Australia

Charcoal fuel mix developed, Oct. 10, p. 6
Uranium mining and exports authorized, Oct. 24, p. 8
Waste water sulphates from textile mills reduced, Sept. 26, p. 6
Whaling protested by Friends of the Earth, Aug. 1, p. 2

Austria

Alpine pure water reserves, Aug. 29, p. 8
Energy R&D, July 4, p. 8
Lake Neusiedl designated as biosphere reserve, July 18, p. 8
Protein self-sufficiency program, Aug. 1, p. 7
Radiation monitor developed, Dec. 5, p. 8

B

Badal, Prakash Singh

On Indian arid area problems, Aug. 29, p. 1

Bahrain

Desalination-and-power plant, Nov. 21, p. 3

Baltic Sea

Soviet-Swedish environmental cooperation, Dec. 5, p. 8

Bangladesh

Nuclear power plant with French aid discussed, Dec. 5, p. 8
Pact on Ganges waters with India, Dec. 5, p. 5
Water pollution control law, Oct. 24, p. 4

Bassow, Whitman

At second IEF meeting, July 4, p. 2

Bauza, Cesar Luna

UN law on "atmospheric patrimony" urged, Aug. 15, p. 1

Bonn, Tony

Energy "Save It" campaign discussed, Nov. 7, p. 4

Bio-Gas

Cooking fuel plants in Philippines, Dec. 19, p. 8
Rural SWB programs, July 4, p. 3

Birds

Bavarian reserve disturbed by helicopters, Aug. 29, p. 6
Endangered species in Bavaria, Oct. 10, p. 5
Mindanao, ecological damage a threat, Oct. 24, p. 6
Swedish protection efforts, Sept. 26, p. 3; Oct. 10, p. 8

Blatz, Leo J.

IPIECA chairman, July 4, p. 1
At second IEF meeting, July 4, p. 2

Boateng, E. A.

On environmental impact statements, Ghana, Dec. 5, p. 8

Bottles

Recycling in West Germany, Aug. 29, p. 8; Dec. 19, p. 3

Brader, Lukas

IPC Global Coordinator, July 18, p. 3

Brazil

Amazon ecology and development debated, Oct. 24, p. 1
Off-shore oil exploitation, Aug. 1, p. 2
Oil pollution of beaches combated, Oct. 24, p. 7
Piranha threat due to ecological disturbances, Nov. 21, p. 5
Shipboard sewage and incinerator system, Dec. 5, p. 8
Solar energy power plant, Aug. 1, p. 8
Tax incentive proposed for solar water heaters, Nov. 21, p. 8
Whale hunting quota increase protested, July 18, p. 7

Bulgaria

Human settlement improvements asked, Aug. 29, p. 8
Waste water treatment and air pollution control expenditures, Dec. 5, p. 4

C

Cano, Guillermo

Urges environment ministry for Argentina, Sept. 26, p. 4

Carcinogens

Asbestos, Oct. 10, p. 2; Dec. 19, p. 6
Discussed in Eckholm, *The Picture of Health*, Dec. 19, p. 5
Hydrocarbons, Nov. 21, p. 6
Nitrates in water suspected, Nov. 21, p. 6
Tire burning as source of, Nov. 7, p. 8

Caribbean

Intergovernmental cooperation for environment initiated, Aug. 15, p. 8
Solar Development Fund proposed, Sept. 12, p. 8

Carpentier, Michel

EEC Environment Chief interviewed, Aug. 29, p. 3

Center for International Environment Information (CIEI)

Lutjen elected as Chariman, July 18, p. 1
Second IEF meeting held, July 4, p. 2

Central Treaty Organization (CENTO)

Discussions on soil erosion and watershed problems, Dec. 5, p. 3

Chemical Pollution (see also Fertilizers; Pesticides; Toxic Chemicals)

Low-dose long-period effects discussed by Britain's Peter Shore, Aug. 1, p. 3

Chile

Fisheries aided by UNDP, Sept. 12, p. 5
Game-preserve location kept secret, Dec. 5, p. 7
Restaurant foods found contaminated, July 4, p. 7
Sawdust as heating fuel, Nov. 21, p. 3
Whaling permits opposed by environmentalists, Oct. 24, p. 8

China

Anti-desert measures in Gobi Desert, Oct. 10, p. 4
Dust collector ordered for steel works, Oct. 10, p. 7
Rare tree species discovered, July 18, p. 7

Christensen, Herbert E.

IRPTC Bulletin, Nov. 21, p. 1

Coal

Belvoir pits in Britain opposed, Sept. 26, p. 4
Czech reliance on, and nuclear alternative, Oct. 10, p. 1
Hambach, Germany, open pit mine, July 4, p. 5

Coastal Water Pollution

- British coastlines, oil, July 18, p. 2
- Cartagena Bay, Colombia, July 18, p. 7
- Dispersants discussed at UNEP seminar, July 4, p. 1
- East Asia, sewage as cause, Oct. 10, p. 7
- Mediterranean, landbased sources inventoried, Nov. 7, p. 2; Dec. 5, p. 2
- Mediterranean workshops sponsored by UNEP/WHO, Aug. 15, p. 1; Dec. 5, p. 2
- Persian Gulf protection planned, Aug. 1, p. 1

Colombia

- Air pollution monitoring in Bogota, Dec. 5, p. 7
- "Amazonas 77" expedition, Aug. 1, p. 5
- Bogota River pollution, Aug. 1, p. 8
- DDT controls imposed, Aug. 1, p. 7
- Dust filter system for textile plant, Sept. 26, p. 7
- Hydroelectric power project blunders, Dec. 5, p. 3
- Insecticide Phosvel banned, Sept. 12, p. 7
- Lumber export restrictions to save forests, Oct. 24, p. 7
- National parks designated, July 18, p. 8
- Pollution-control equipment exhibit of U.S. firms, Sept. 26, p. 7
- River pollution by rice field fumigants, Nov. 7, p. 7
- Soil erosion problem, Sept. 26, p. 2
- Sulphuric acid plant in Cali closed for air pollution, Aug. 29, p. 6; Oct. 10, p. 6
- Water pollution in Bay of Cartagena, July 18, p. 7

Colwell, Miles D.

- At second IEF meeting, July 4, p. 2
- Obituary, Aug. 15, p. 2

Conservation [see also Parks; Wildlife]

- Austrian Lake Neusiedl designated as biosphere reserve, July 18, p. 8
- Mexican fines for tree cutting, July 4, p. 8
- Sweden opens 1 M acre nature reserve, Aug. 15, p. 7
- Swedish efforts, Sept. 26, p. 3; Oct. 10, p. 8
- Wildlife reserves in Nepal, Aug. 15, p. 8

Coral Reefs

- Crown-of-thorns starfish a danger to, Aug. 1, p. 8
- Sabah reefs endangered, Sept. 12, p. 5

Costle, Douglas M.

- International convention on toxic substances asked, Nov. 7, p. 5
- On work of U.S.-USSR Joint Environmental Committee, Dec. 19, p. 1

Czechoslovakia

- Coal and nuclear energy, Oct. 10, p. 1
- Strip mine reclamation with red oak, Aug. 15, p. 8

D**Dahlgrén, Anders**

- Aerial spraying of forests in Sweden defended, Oct. 10, p. 1
- Aerosol ban announced for Sweden, Dec. 19, p. 7

Deforestation

- Amazon expedition studies effect on weather, Aug. 1, p. 5
- Colombia restricts lumber industry, Oct. 24, p. 7
- Mindanao wildlife endangered by, Oct. 24, p. 6
- Sri Lankan rubber tree cutting, Dec. 19, p. 6

Denmark

- Aerosol propellant legislation, Nov. 7, p. 7
- Lead, mercury, cadmium pollution tests, Nov. 21, p. 6
- Low-energy home prototypes, July 4, p. 6
- Mercury control measures, Nov. 7, p. 1
- PVC plant disapproved by Environmental Agency, Aug. 15, p. 3
- Water consumption found wasteful, Dec. 19, p. 2
- Water eutrophication counteracted by algae pond method, July 18, p. 5

De Rosen, Leon

- UNEP industrial seminars booklets, Aug. 29, p. 7

Desalination

- Mexican program expanded, Sept. 12, p. 1
- Persian Gulf states, Nov. 21, p. 3
- Water shortage at Jidda to be offset, Aug. 1, p. 7

Desertification [see also UN Desertification Conference]

- Estimate of role of human activities in, Oct. 10, p. 3
- Indian problems in Rajasthan, Aug. 29, p. 1
- Mexico, causes identified, Aug. 29, p. 4

Detergents

- Non-biodegradable products opposed in Mexico, Sept. 12, p. 8

Dick, Alfred

- Report on pollution fines in Bavaria, Nov. 7, p. 8
- On tax abatement for airport noise victims, Sept. 12, p. 4

Disease [see also Carcinogens]

- Environmental causes discussed in Eckholm book, Dec. 19, p. 5
- Filarial disease in Pondicherry, India, Aug. 15, p. 6

- Fine-particle air pollution as cause, Sept. 26, p. 5
- Hong Kong air pollution as cause, Oct. 24, p. 8
- Methaemoglobinemia ("blue baby" effect) caused by nitrates in British waters, July 4, p. 7; Nov. 21, p. 6
- Rise in Ankara due to air pollution, Dec. 19, p. 5

Drugs

- "Dumping" of untested drugs in LDC's, Oct. 24, p. 4

E**Earthquakes**

- Simulation will aid tectonic-resistant construction, Sept. 12, p. 8

Economic Commission for Europe (ECE)

- Declaration of principles on human habitats, Sept. 26, p. 8
- Fine-particle air pollution discussions, Sept. 26, p. 5
- Follow-up on UN Water Conference, Dec. 5, p. 2
- Forestry organizations list, Sept. 12, p. 7
- Helsinki conferees' follow-up meeting in Belgrade, Nov. 7, p. 5
- Natural gas called cleanest fuel, Oct. 24, p. 4
- Program overhaul debated at annual session, July 4, p. 2
- Water quality seminar at Malta, Oct. 10, p. 8

Economic Commission for Latin America (ECLA)

- Caribbean environmental program initiated, Aug. 15, p. 8

Electric Power [see also Hydroelectric Power]

- Aircraft engines proposed as source in India, Nov. 7, p. 6
- Bangladesh plans nuclear plant, Dec. 5, p. 8
- Biomass studied as fuel source in Ireland, Sept. 26, p. 1
- Coal as source, in West Germany, July 4, p. 5
- Dual desalination-power plants at Persian Gulf, Nov. 21, p. 3
- Generation from wave energy by Japanese ship, Dec. 19, p. 4
- Geothermal project for Leyte, July 4, p. 8
- Haiti shortage eased, July 4, p. 7
- Philippines plan nuclear plant on Bataan, Dec. 5, p. 7
- Rural SWB energy mix programs, July 4, p. 3
- Solar plant in Brazil, Aug. 1, p. 8
- Venezuelan plants surveyed for impact, Aug. 1, p. 6
- Wind power generator in Sweden, Sept. 12, p. 6

Energy [see also Fuel; Geothermal Energy; Nuclear Energy; Solar Energy; Wave Energy; Wind Power]

- Austrian R&D, July 4, p. 8
- Caribbean nations discuss alternatives, Sept. 12, p. 8
- Renewable sources programs, July 4, p. 3
- Rural SWB programs, July 4, p. 3
- UN Natural Resources Committee meeting, July 18, p. 1

Energy Conservation

- British measures, July 18, p. 8; Aug. 1, p. 4; Nov. 7, p. 4
- Low-energy home design in Denmark, July 4, p. 6

Environment Liaison Centre (ELC)

- Sudan canal project questioned by, Sept. 26, p. 1

Environmental Impact Statements

- Ghanian requirements, Dec. 5, p. 8
- On Panama Canal Zone, by Audubon Society, Nov. 21, p. 7

European Economic Community (EEC) [Common Market]

- Biomass experiments in Ireland backed, Sept. 26, p. 1
- Disturbed by U.S. stand against fast-breeder reactor, Aug. 15, p. 2
- Environment Chief Carpentier interviewed, Aug. 29, p. 3
- Solar power pilot project stated for Italy, Dec. 19, p. 7

F**Fertilizer**

- Nitrate pollution of British waters, July 4, p. 7; Nov. 21, p. 6
- Pollution of Himalayan lakes, Nov. 21, p. 7

Fisheries

- Anchovy endangered by overfishing off Peru, Sept. 12, p. 3
- Ban in Colombia's Bay of Cartagena, July 18, p. 7
- Chilean promotion with UNDP aid, Sept. 12, p. 5
- Danger to coral reefs, Sept. 12, p. 5
- East Asian marine pollution a threat, Oct. 10, p. 7
- Irish Sea, Cesium 137 pollution from Windscale, Dec. 5, p. 1
- Taiwan finds fish spurred by "junk" reefs, Dec. 5, p. 6

Flood Control

- Mexico City drainage system unfinished, Oct. 10, p. 5
- Monitoring system in Pakistan uses radar, Oct. 10, p. 8

Food [see also Fisheries]

- Apricot preservation method in Kashmir, Nov. 7, p. 7
- Austria nearly self-sufficient in proteins, Aug. 1, p. 7
- Chilean restaurant inspections, July 4, p. 7
- Krill promoted in Chile, Sept. 12, p. 5
- Mycotoxin contamination, Nov. 7, p. 1
- Sea weed as source, Sept. 12, p. 7
- Sri Lankan coconut crop reduced, July 18, p. 2

Food and Agriculture Organization (FAO)

- Anchovy fishing ban off Peru suggested, Sept. 12, p. 3
- At conference on mycotoxins, Nov. 7, p. 1
- Cooperation in Gobi Desert protection, Sept. 12, p. 2
- East Asian marine pollution warnings, Oct. 10, p. 7
- Pest management program, July 18, p. 3

Forestry [see also Deforestation; Reforestation]

- Aerial spraying in Sweden defended by experts, Oct. 10, p. 1
- International list of organizations issued by ECE, Sept. 12, p. 7
- Thai program, July 18, p. 8

France

- Aid to Bangladesh nuclear project seen, Dec. 5, p. 8
- Anti-smoking law, Nov. 21, p. 4
- Fast-breeder cooperation agreement with West Germany, Aug. 15, p. 2
- Plutonium-processing agreement with Japan, Oct. 24, p. 5
- Solar power technological aid to Peru, Sept. 26, p. 2
- Super-Phoenix fast breeder protested, Aug. 15, p. 2

Friends of the Earth (FOE)

- Whaling protested in Australia, Aug. 1, p. 2

Fuel

- Bio-gas in rural programs, July 4, p. 3
- Bio-gas plants built in Philippines, Dec. 19, p. 8
- Biomass experiments in Ireland, Sept. 26, p. 1
- Charcoal fuel mix developed in Australia, Oct. 10, p. 6
- Coconut oil as alternative to diesel fuel, Aug. 1, p. 6
- Hydrogen as substitute for gasoline, Sept. 12, p. 3
- LPG (liquefied petroleum gas), Sept. 12, p. 7
- Natural gas called cleanest by ECE experts, Oct. 24, p. 4
- Natural gas in autos, Sept. 12, p. 6; Dec. 19, p. 8
- Sawdust as heating fuel in Chile, Nov. 21, p. 3

G**Gallon, Gary**

- Manager of Environment Liaison Centre, Oct. 10, p. 7

Garbage

- Collection to be replaced by incineration in Kuwait, Aug. 1, p. 8
- Incineration criticized in Colombia, Dec. 5, p. 7

Geothermal Energy

- Philippine program, July 4, p. 8; Sept. 26, p. 7

Germany (West)

- Anti-pollution efforts and expenses of industry, Aug. 1, p. 4; Dec. 19, p. 3
- Auto junk yard regulations in Bavaria, Nov. 21, p. 2
- Bavarian bird reserve disturbed by helicopters, Aug. 29, p. 6
- Bavarian cost of environmental controls to consumer called small, Aug. 1, p. 6
- BDI brochure on environmental efforts, Dec. 19, p. 3
- Dispute with East Germany over river pollution, Oct. 24, p. 2
- Endangered species list in Bavaria at 25%, Oct. 10, p. 5
- Fast-breeder cooperation agreement with France, Aug. 15, p. 2
- Glass recycling program, Aug. 29, p. 8; Dec. 19, p. 3
- Hambach open pit coal mine, July 4, p. 5
- Lead limit for gasoline, Nov. 21, p. 6; Dec. 19, p. 3
- Pollution fines in Bavaria, Nov. 7, p. 8
- Rhine and Bodensee clean-up, Aug. 1, p. 4; Dec. 19, p. 3
- Tax abatement given for airport noise victims, Sept. 12, p. 4
- X-ray regulations tightened in Bavaria, Aug. 15, p. 6

Ghana

- Environmental impact statements required, Dec. 5, p. 8

Gilad, Alexander

- At UNEP/WHO Mediterranean Workshop, Aug. 15, p. 1

Glass Recycling

- West German program, Aug. 29, p. 8; Dec. 19, p. 3

Gobi Desert

- Chinese anti-desert measures, Oct. 10, p. 4
- Mongolian National Park, Sept. 12, p. 3

Great Britain

- Advanced Wastewater Treatment (AWT) plant, Dec. 19, p. 4
- Belvoir coal pits opposed by environmentalists, Sept. 26, p. 4
- "Best practicable means" approach to pollution control, Aug. 1, p. 3
- Car makers to publish fuel consumption rates, Nov. 21, p. 8
- Cigarette advertising curtailed, Aug. 1, p. 6
- Coal mine reclamation, Nov. 7, p. 6
- Coastal oil pollution, July 18, p. 2
- Drought management, Aug. 29, p. 7
- Energy-saving incentives to industry, Nov. 7, p. 4
- Environment Chief Shore interviewed, Aug. 1, p. 3
- Fecralloy device will cut air pollution, Sept. 12, p. 8
- Fish polluted with Cesium 137 from Windscale, Dec. 5, p. 1

Helicopter noise discussed, Dec. 5, p. 7
 National Nature Reserves extended, Sept. 12, p. 7
 Nuclear power projects subject to public hearings, July 4, p. 1
 Otter protection asked, Aug. 29, p. 6
 Paper recycling studied, Sept. 12, p. 6
 Protein fodder extracted from leaves, Nov. 21, p. 7
 Pyrolysis reactor uses "cross-flow," Nov. 7, p. 8
 "Save it" campaign to continue, July 18, p. 8; Nov. 7, p. 4
 Solar energy programs, Aug. 1, p. 4; Aug. 15, p. 5; Oct. 24, p. 5
 Solar home heating system sales on rise, Aug. 15, p. 5
 SSRC study of environmental inquiry process, Dec. 5, p. 1
 Water pollution with nitrates, July 4, p. 7; Nov. 21, p. 6
 Windscale inquiry, Aug. 1, p. 3; Dec. 5, p. 1

Greece

Athens pipes cause drinking water contamination, Nov. 7, p. 2
 ERYEA urges central environment agency, Dec. 5, p. 6
 Farm development to be aided by World Bank, Aug. 1, p. 7
 Nuclear power opposed, alternative discussed, July 18, p. 4
 Polluting drivers draw prison, Nov. 7, p. 7

Greenland

Offshore drilling hazards reviewed, July 4, p. 8

Gulf of Mexico

Protection agreement suggested, Aug. 1, p. 7

Gutierrez, Eduardo

On UNDP aid to Chilean fisheries, Sept. 12, p. 5

H**Haiti**

Corn crop threatened by army worm, Aug. 29, p. 2
 Defoliation, population, food problems, July 4, p. 7
 Environmental Council (CONATEL) formed, Sept. 12, p. 8
 Power shortage eased, July 4, p. 7

Hamzah Majid, Enick

Malaysia's DOE Director, July 18, p. 5
 On oil spill surveillance in Malacca St., Aug. 29, p. 6

Harrison, Gordon

At second IEF meeting, July 4, p. 2

Haun, J. William

Chairman of ICIE, July 18, p. 7

Hawkes, J. G.

Genetic plant resource conservation urged, Oct. 24, p. 2

Health (see also Carcinogens; Disease)

British Health Service costs increased by smoking, Aug. 1, p. 6
 Eckholm, *The Picture of Health*, review, Dec. 19, p. 5
 Fine-particle air pollution as threat, Sept. 26, p. 5
 Hydrocarbon solvents a danger to, Oct. 10, p. 8
 ILO standards on air pollution, noise, vibration drafted, Sept. 12, p. 1
 Low-dose long-period pollution discussed by Britain's Shore, Aug. 1, p. 3
 Untested-drug "dumping" in LDC's protested, Oct. 24, p. 4

Heating Systems

Energy-efficient nonpolluting, hot air, Korea, Sept. 26, p. 6
 Sawdust as fuel in Chile, Nov. 21, p. 3
 Solar, July 4, pp. 6, 8; July 18, p. 6; Aug. 15, p. 5; Oct. 24, p. 5

Helmer, Richard

On land-based Mediterranean pollution sources, Nov. 7, p. 2

Herbicides

Parthenium weed control developed in India, Dec. 19, p. 8

Hong Kong

Air pollution, July 4, p. 6; Oct. 24, p. 8
 Noise pollution, Aug. 15, p. 5; Nov. 21, p. 7
 Pollution control laws proposed by ERL report, Nov. 21, p. 4
 Solid waste disposal plant, Sept. 26, p. 7
 Wildlife law strengthened, Aug. 1, p. 8

Housing

Fiberglass construction in Pakistan, Aug. 15, p. 7
 Low-energy design in Denmark, July 4, p. 6
 Low-energy prototypes in Austria, July 4, p. 8
 Polyester-jute resin construction in India, Aug. 29, p. 8

Hulsmans, Jan W.

Chief of IRPTC Activity Center, Nov. 21, p. 1

Human Settlements

ECE declaration of principles, Sept. 26, p. 8
 Improvements asked in Bulgaria, Aug. 29, p. 8
 UN Administrator Quintana takes up post, Aug. 1, p. 5

Hungary

Environmental cooperation treaty with Sweden, Nov. 7, p. 7
 Water supply expansion programs, Aug. 29, p. 5

Hydroelectric Power

Colombian El Penol and San Carlos project blunders, Dec. 5, p. 3
 Peruvian project at Sheque, Oct. 10, p. 6
 Rural programs, July 4, p. 3

I**Incineration**

Criticized in Colombia, Dec. 5, p. 7
 Replaces garbage collection in Kuwait, Aug. 1, p. 8

India

Aircraft engines proposed as power source, Nov. 7, p. 6
 Auto fuel research and conservation, Sept. 12, p. 3
 Canal weeds controlled by "grass carp," Nov. 21, p. 8
 Crocodile Breeding and Management project, Sept. 26, p. 2
 Glaciers reported receding at slower rate, Sept. 26, p. 8
 Herbicide for parthenium weed developed, Dec. 19, p. 6
 Housing fabrication of polyester-jute resin, Aug. 29, p. 8
 Hydrology institute planned, Sept. 12, p. 7
 Mosquito bites and filarial disease, Aug. 15, p. 6
 New Delhi ash emissions, Oct. 10, p. 2
 Pact on Ganges waters with Bangladesh, Dec. 5, p. 5
 Project Tiger, Oct. 10, p. 6
 Rajasthan desert problems, Aug. 29, p. 1
 Solar grain dryer, Aug. 1, p. 8
 Solar water heater, Dec. 5, p. 5
 Taj Mahal not endangered by refinery emissions, Nov. 7, p. 7
 Windmill technology provided by Pakistan, Oct. 24, p. 6

Indonesia

Agrees on oil tanker traffic in Malacca St., Dec. 19, p. 7
 Javan tiger endangered, July 18, p. 7
 Sewage-caused water pollution, Oct. 10, p. 7
 Water polluting factories closed, Oct. 24, p. 7
 Water purification plants, July 18, p. 6; Oct. 24, p. 7

Industrial Wastes

Advanced Wastewater Treatment (AWT) in Britain, Dec. 19, p. 4
 Argentine rivers polluted, Nov. 7, p. 6
 Colombia's Bay of Cartagena, mercury, July 18, p. 7
 Dehydrator for sludge treatment, Aug. 29, p. 7
 Management in Germany, Aug. 1, p. 4; Dec. 19, p. 3
 Peruvian copper mines, July 4, p. 6; Dec. 5, p. 6
 Sulphates from textile mills reduced, Sept. 26, p. 6
 Vietnamese recycling efforts, Aug. 29, p. 6

Industry

Air polluters in Philippines, Sept. 26, p. 8; Dec. 19, p. 7
 Anti-pollution efforts and expenses in Germany, Aug. 1, p. 4; Dec. 19, p. 3
 Anti-pollution investment in Japan, Oct. 24, p. 3
 Colombia closes sulphuric acid plant for air pollution, Aug. 29, p. 6; Oct. 10, p. 6
 Cooperation with governments for environmental protection, July 18, p. 7
 Environmental impact statements in Ghana, Dec. 5, p. 8
 Factory closings for pollution in Indonesia, Oct. 24, p. 7
 Fine-particle air pollution sources, Europe, Sept. 26, p. 5
 Petroleum industry conservation seminar of UNEP, July 4, p. 1
 Pollution and pollution control in Philippines, July 18, p. 8; Sept. 26, p. 8

Insect Control (see also Pesticides)

Haitian army worm menace, Aug. 29, p. 2
 Integrated Pest Control program of FAO/UNEP, July 18, p. 3
 Radioactive isotope sterilization, Aug. 29, p. 5

Interamerican Commission for Nuclear Energy (ICNE)

Report on Tenth Meeting, Aug. 29, p. 5

Intergovernmental Maritime Consultative Organization (IMCO)

Malta offices, Dec. 5, p. 5
 Radioactive wastes dumping at sea monitored, Sept. 12, p. 2

International Atomic Energy Agency (IAEA)

Argentine criticism of policies of, Dec. 5, p. 7
 Radioactive wastes classified for sea dumping, Sept. 12, p. 2

International Center for Industry and the Environment (ICIE)

Meeting held, Haun elected Chairman, July 18, p. 7

International Environment Forum (IEF)

Second meeting held, July 4, p. 2

International Federation of Landscape Architects (IFLA)

"Filipsky Warning Prize" created, Aug. 29, p. 7

International Labor Organization (ILO)

Convention against Occupational Hazards due to Air Pollution, Noise, and Vibration, Sept. 12, p. 1

International Petroleum Industry Environmental Conservation Association (IPIECA)

UNEP seminar aided by, July 4, p. 1

International Program for Environmental Education

UNEP/UNESCO conference in Tbilisi, USSR, Nov. 21, p. 5

International Union for the Conservation of Nature (IUCN)

Aldabra Island conservation urged, July 4, p. 4
 Coral reef endangerment studied, Sept. 12, p. 5
 Trade in Endangered Species convention fostered, Nov. 21, p. 5

Ireland

Asbestos plant opens as controversy continues, Oct. 10, p. 2; Dec. 19, p. 6
 Biomass studied as fuel source, Sept. 26, p. 1
 Called center for "dirty industries," Dec. 19, p. 6
 Creeping thistle weed control sought, Sept. 26, p. 7
 Subway with pollution and noise control planned, Aug. 1, p. 7

Irrigation

Negev desert, Oct. 10, p. 4
 Solar power tested as energy source in Peru, Sept. 26, p. 1

Israel

Anti-desert measures in Negev, Oct. 10, p. 4
 Likud party platform on environment, July 18, p. 6
 Rubber tire recycling speeded up, Aug. 15, p. 7

Italy

Solar energy project to be placed in, by EEC, Dec. 19, p. 7

J**Japan**

Anti-pollution investment, Oct. 24, p. 3
 Auto emission standards, Aug. 15, p. 4
 Five-Year Sewage Plan, Oct. 10, p. 7
 Floating high-speed surface transport, Sept. 12, p. 6
 Noise pollution problems, Aug. 15, p. 5
 Oil-spill recovery ship introduced, Sept. 26, p. 8
 Plutonium-processing agreement with France, Oct. 24, p. 5
 "Right to sunshine" law slows construction, July 18, p. 4
 Sludge treatment dehydrator developed, Aug. 29, p. 7
 Streetcar revival debated, Aug. 29, p. 4
 Waste water treatment system at Yokohama Rubber Co., Aug. 15, p. 8
 Water pollution, Oct. 10, p. 7; Oct. 24, p. 3
 Wave energy used for power generation, Dec. 19, p. 4
 Windmill power recharges storage batteries, Oct. 10, p. 8

K**Kashmir**

Apricot preservation method, Nov. 7, p. 7
 Pesticide pollution of lakes, Nov. 21, p. 7

Kuwait

Ammonia restoration process engineered, Dec. 5, p. 7
 Incinerators mandated to replace garbage collection, Aug. 1, p. 8
 Water supply and desalination, Nov. 21, p. 3

L**Land Reclamation**

Argentinian plan for wetlands, Oct. 10, p. 4

Land Use Planning

Called inadequate at ECE meeting in Belgrade, Nov. 7, p. 5
 Called public responsibility in ECE declaration, Sept. 26, p. 8

Langley, John F.

At Fourth ICIE meeting, July 18, p. 7

Latin America

Caribbean and other environmental programs, Aug. 15, p. 8
 First solar energy plant, Aug. 1, p. 8

Law of the Sea Conference. See UN Law of the Sea Conference**Lead**

Levels in gasoline, Germany, Nov. 21, p. 6; Dec. 19, p. 3
 Pollution inquiry in Denmark, Nov. 21, p. 6
 Serious pollution problems in Philippines, Oct. 10, p. 7

Legislation

Aerosol propellants banned, Nov. 7, p. 7; Dec. 19, p. 7
 Anti-smoking, France, Nov. 21, p. 4
 Anti-smoking, Singapore, Aug. 15, p. 6
 Auto emission standards, Japan, Aug. 15, p. 4
 Bangladesh water pollution controls, Oct. 24, p. 4
 Fine-particle air pollution standards, Europe, Sept. 26, p. 5
 Greek code gives prison to polluting drivers, Nov. 7, p. 7
 Hong Kong, ERL proposals for air, water, noise, Nov. 21, p. 4

- Hong Kong strengthens wildlife ordinance, Aug. 1, p. 8
 Philippine tree planting statute, Nov. 7, p. 8
 "Right to sunshine" law in Japan, July 18, p. 4
 Swedish standards for sulphur content of fuels, Aug. 1, p. 1
- Louden, John H.
 Presents WWF Gold Medal for 1977, Dec. 19, p. 8
- Lumber and Lumber Industry
 Colombian exports restricted, Oct. 24, p. 7
 Rare tree species discovered in China, July 18, p. 7
 Sawdust residues as heating fuel, Nov. 21, p. 3
- Luns, Joseph M. A. H.
 NATO environmental fellowships announced, Aug. 1, p. 7
- Lutjen, George P.
 CIEI Chairman, July 18, p. 1

M

- Malaysia
 Environmental problems and programs, July 18, p. 5
 Noise pollution, Aug. 15, p. 5
 Oil palm sludge management, July 4, p. 7
 Oil spill safety steps in Malacca St., Aug. 29, p. 6; Dec. 19, p. 7
 Signature campaign for environment, Aug. 15, p. 7; Oct. 24, p. 8
 Water fluoridation planned, July 18, p. 8
- Malik, W. K.
 On mycotoxin contamination of foods, Nov. 7, p. 1
- Malta
 Oil Spill Combating Center, Dec. 5, p. 5
- Mann, Oscar
 Sudan canal project questioned by, Sept. 26, p. 1
- Marine Pollution (see also Coastal Water Pollution; Oil Spills)
 East Asia, sewage as cause, Oct. 10, p. 7
 Persian Gulf protection planned, Aug. 1, p. 1
- Mathiasen, Niels
 On aerosol legislation in Denmark, Nov. 7, p. 7
 Lead pollution inquiry ordered by, Nov. 21, p. 6
- Matthews, William H.
 Appointed director of East-West Center at University of Hawaii, Aug. 15, p. 8
- Mead, Margaret
 On board of Environment Liaison Centre, Oct. 10, p. 7
- Mediterranean
 Coastal pollution workshops of UNEP/WHO, Aug. 15, p. 1; Dec. 5, p. 2
 Land-based pollution sources inventoried, Nov. 7, p. 2
 Oil Spill Combating Center in Malta, Dec. 5, p. 5
 UNEP Action Plan, Nov. 7, p. 2; Dec. 5, p. 2
- Mercury
 Colombia's Bay of Cartagena polluted, July 18, p. 7
 Danish control measures, Nov. 7, p. 1; Nov. 21, p. 6
 Dental amalgam a pollution source in Sweden, Sept. 26, p. 6
- Mexico
 Cuernavaca trash disposal problem, Nov. 21, p. 2
 Desalination expanded, Sept. 12, p. 1
 Drainage system of Mexico City unfinished, Oct. 10, p. 5
 Gulf protection agreement suggested, Aug. 1, p. 7
 Mexico City noise and fumes increased by traffic circles, Dec. 19, p. 2
 Noise standards set for airports, Sept. 26, p. 5
 Non-biodegradable detergent ban urged, Sept. 12, p. 8
 Ridley turtle sanctuary urged at Rancho Nuevo, Oct. 10, p. 7
 Rural SWB energy program, July 4, p. 3
 Solar Energy in Architecture symposium, Nov. 7, p. 5
 Tree conservation, July 4, p. 8
 Weather changes due to pollution, July 4, p. 5
 Xochimilco suburb undergoes regeneration, Sept. 26, p. 8
- Mining
 Coal pits opposed at Belvoir, Britain, Sept. 26, p. 4
 Deep sea, issue unresolved in UNCLDS, Aug. 15, p. 3
 Hambach, Germany, open pit project, July 4, p. 5
 Radioactive minerals, in Philippines, July 4, p. 6
 Uranium, in Australia, Oct. 24, p. 8
 Waste recycling sought in Philippines, Oct. 24, p. 5
 Wastes pollute German river, Oct. 24, p. 2
- Mink, Patsy T.
 Interview of Asst. Secretary of State, Nov. 7, p. 3
- Mongolia People's Republic
 Gobi National Park management, Sept. 12, p. 3
- Monitoring
 Air pollution in Bogota, Dec. 5, p. 7
 Hong Kong car exhaust emissions, July 4, p. 6

- Noise pollution, Dublin, Sept. 12, p. 7
 Oil spills in Mediterranean, Malta Center, Dec. 5, p. 5
 Radiation, TV system developed in Vienna, Dec. 5, p. 8
 Radioactive waste dumping at sea, Sept. 12, p. 2
- Motor Vehicles
 Air pollution in Manila, Dec. 19, p. 7
 Auto junk yard regulations in Bavaria, Nov. 21, p. 2
 Britain demands publication of fuel use rates, Nov. 21, p. 8
 Coconut oil as alternative to diesel fuel, Aug. 1, p. 6
 Fecralloy device removes air pollutants, Sept. 12, p. 8
 German exhaust reductions, Nov. 21, p. 6; Dec. 19, p. 3
 Hong Kong emission tests failures, July 4, p. 6
 Hydrogen fuel engine developed in India, Sept. 12, p. 3
 Japanese emission standards, Aug. 15, p. 4
 Main source of Bangkok air pollution, Sept. 12, p. 6
 Natural gas as fuel, Sept. 12, p. 6; Dec. 19, p. 8
 Philippine emission standards, Aug. 15, p. 7; Oct. 24, p. 7
 Sunday driving ban referendum in Switzerland, Oct. 24, p. 6

N

- Natural Gas
 Cleanest fuel, ECE experts say, Oct. 24, p. 4
 Vs. gasoline, in autos, Sept. 12, p. 6; Dec. 19, p. 8
- Nepal
 Wildlife reserves designated, Aug. 15, p. 8
- Netherlands
 Water purification plant supplied to Indonesia, July 18, p. 6
- Nigeria, Paulo
 Tax incentive for solar water heaters urged, Nov. 21, p. 8
- Noise Pollution
 Airport neighbors get tax abatement, Sept. 12, p. 4
 Asian countries, Aug. 15, p. 5
 German industrial abatement measures, Dec. 19, p. 3
 Helicopter noise in Britain, Dec. 5, p. 7
 Hong Kong abatement ordinance, Nov. 21, p. 4
 Hong Kong, compared with other cities, Nov. 21, p. 7
 ILO draft convention sets criteria, Sept. 12, p. 1
 Mexico City, increased by traffic-circle pattern, Dec. 19, p. 2
 Mexico sets airport standards, Sept. 26, p. 5
 Monitoring program in Dublin, Sept. 12, p. 7
 Zurich installs noise-insulation windows, Dec. 19, p. 1
- North Atlantic Treaty Organization (NATO)
 CCMS environmental fellowships, Aug. 1, p. 7
 Study of Advanced Wastewater Treatment, Dec. 19, p. 4
- North Sea
 Oil drilling, Aug. 1, p. 3
- Nuclear Energy (see also Radioactive Wastes)
 Argentine program hampered by IAEA policy, Dec. 5, p. 7
 Australian Uranium mining and exports, Oct. 24, p. 8
 Bangladesh-French discussions on aid, Dec. 5, p. 8
 British public inquiry system, July 4, p. 1; Dec. 5, p. 1
 French/German agreement on fast-breeder development, Aug. 15, p. 2
 Greek plant opposed, July 18, p. 4
 Interamerican Commission meeting, Aug. 29, p. 5
 Philippine's first plant in Bataan, Dec. 5, p. 7
 Radiation monitor developed in Vienna, Dec. 5, p. 8
 Radioactive minerals search in Philippines, July 4, p. 6
 Super Phoenix fast-breeder protested, Aug. 15, p. 2
 Windscale hearings in Britain, Aug. 1, p. 3; Dec. 5, p. 1
- Nuclear Energy Agency (NEA) of OECD
 Radioactive waste dumping at sea monitored, Sept. 12, p. 2

O

- Ocean Dumping
 Radioactive wastes monitored by OECD, Sept. 12, p. 2
- Offshore Oil
 Brazilian exploration, Aug. 1, p. 2
 Greenland reviews drilling hazards, July 4, p. 8
- Oil
 Brazilian equipment for tanker cleaning, Oct. 24, p. 7
 North Sea drilling, Aug. 1, p. 3
 UNEP seminar on petroleum industry conservation, July 4, p. 1
- Oil Spills
 British coastlines, July 18, p. 2
 Dispersants discussed at UNEP seminar, July 4, p. 1
 Malacca Str. safety steps initiated, Aug. 29, p. 6; Dec. 19, p. 7
 Malta Oil Combating Center, Dec. 5, p. 5
 Recovery ship introduced in Japan, Sept. 26, p. 8
- Organization for Economic Cooperation and Development (OECD)
 Sea Dumping of radioactive waste monitored, Sept. 12, p. 2

- Organization of American States (OAS)
 Marine mammal protection urged, Dec. 5, p. 4
- Ozone Layer
 Bans on aerosols, Nov. 7, p. 7; Dec. 19, p. 7

P

- Pakistan
 Fiberglass housing to be built, Aug. 15, p. 7
 Karachi water shortage, and reclamation project, Nov. 7, p. 2
 Mosquito infestation survey in Karachi, Aug. 1, p. 8
 Sea weed resources, Sept. 12, p. 7
 Soil erosion and watershed management, Dec. 5, p. 3
 Weather monitoring system to aid flood measures, Oct. 10, p. 8
 Windmill technology, Oct. 24, p. 6
- Panama
 Canal Zone ecological concerns aired by Audubon Society, Nov. 21, p. 7
- Paper and Pulp
 Recycling study in Britain, Sept. 12, p. 6
 Recycling in Germany, Dec. 19, p. 3
- Parks
 Argentine River Plate shore sought, Nov. 21, p. 8
 Britain creates new NNRs, Sept. 12, p. 7
 Buenos Aires ecology belt, Oct. 10, p. 8
 Colombian program, July 18, p. 8
 Gobi National Park, Mongolia, Sept. 12, p. 2
 Nepalese program, Aug. 15, p. 8
 Sabah National Parks include coral reefs, Sept. 12, p. 5
- Persian Gulf
 Desalination-and-power plants, Nov. 21, p. 3
 International protection plan, Aug. 1, p. 1
- Peru
 Anchovy overfishing, Sept. 12, p. 3
 Copper mines cause river pollution, July 4, p. 6; Dec. 5, p. 6
 Ecology map, Nov. 21, p. 8
 Lima water supply endangered, Oct. 10, p. 6
 List of endangered flora and fauna issued, Dec. 19, p. 8
 Mantaro water clean-up project, July 4, p. 6
 Radioactive isotopes used in insect control, Aug. 29, p. 5
 Solar power experiments for farming and irrigation, Sept. 26, p. 2
 Zinc refinery opposed by environmentalists, July 18, p. 5
- Pesticides
 ACWW criticizes lack of international labelling, Dec. 19, p. 2
 Aerial spraying opposed in Sweden, Oct. 10, p. 1
 Alternatives, in IPC programs, July 18, p. 3
 Carbaryl used in Haiti against army worm, Aug. 29, p. 2
 Careless use in LDC's, July 18, p. 3; Dec. 19, p. 5
 Colombia controls DDT use, Aug. 1, p. 7
 Phosvel banned in Colombia, Sept. 12, p. 7
 Pollution of Himalayan lakes, Nov. 21, p. 7
- Philippines
 Auto anti-pollution standards, Aug. 15, p. 7; Oct. 24, p. 7
 Bio-gas fuel plants, Dec. 19, p. 8
 Coconut oil as alternative to diesel fuel, Aug. 1, p. 6
 Coral reefs endangered by Crown-of-Thorns starfish, Aug. 1, p. 8
 Ecological damage in Mindanao threatens wildlife, Oct. 24, p. 6
 First nuclear power plant in Bataan, Dec. 5, p. 7
 Geothermal energy program, July 4, p. 8; Sept. 26, p. 7
 Industrial air polluters, Sept. 26, p. 8
 Lead pollution a serious problem, Oct. 10, p. 7
 Leasing ban sought for mangrove swamplands, Nov. 7, p. 6
 Mining waste recycling sought, Oct. 24, p. 5
 Natural Resources Center created, Aug. 29, p. 7
 Pollution control equipment imports, July 18, p. 8
 Radioactive minerals exploration, July 4, p. 6
 Sewage-caused marine pollution, Oct. 10, p. 7
 Tax incentives for pollution control devices, Sept. 12, p. 6
 Tree planting statute, Nov. 7, p. 8
- Plant Breeding
 Genetic resource conservation urged, Oct. 24, p. 2
- Plastics
 PVC plant disapproved in Denmark, Aug. 15, p. 3
 Recycling in West Germany, Dec. 19, p. 3
- Poland
 Water pollution, July 4, p. 8; Sept. 26, p. 8
- Publications
 Eckholm, *The Picture of Health*, review, Dec. 19, p. 5
 Forestry organizations list published by ECE, Sept. 12, p. 7
 German BDI (Federation of Industry) environmental brochure, Dec. 19, p. 3
 IPPTC, toxic chemicals register, Nov. 21, p. 1
The Urban Edge, newsletter, Oct. 24, p. 7
 UNEP industrial seminars booklets, Aug. 29, p. 7

Q

Qatar

Desalination-and-power complex, Nov. 21, p. 3

Quintana, Cesar

Interviewed on early efforts of UNHHSF, Aug. 1, p. 5

R

Radiation

Soviet nuclear ships found safe, Sept. 26, p. 6
TV system monitor devised in Vienna, Dec. 5, p. 8
X-ray regulations tightened in Bavaria, Aug. 15, p. 6

Radioactive Wastes

British approach to management, July 4, p. 2
Franco-Japanese plutonium processing contract, Oct. 24, p. 5
Ocean dumping monitored by OECD, Sept. 12, p. 2
Windscale reprocessing plant, Aug. 1, p. 3
Windscale waste pollutes Irish Sea fish, Dec. 5, p. 1

Recycling

Citrus fruit wastes made into animal feed, Dec. 19, p. 7
Glass, West Germany, Aug. 29, p. 8; Dec. 19, p. 3
Mining wastes, in Philippines, Oct. 24, p. 5
Oil palm sludge made into animal feed, July 4, p. 7
Paper and plastics, West Germany, Dec. 19, p. 3
Paper, British study, Sept. 12, p. 6
Rubber tires, in Israel, Aug. 15, p. 7
Slaughterhouse wastes made into fodder, Sept. 26, p. 7
Tea leaves, for protein-rich cattle fodder, Aug. 15, p. 3
Vietnam, industrial wastes, Aug. 29, p. 6

Reforestation

Philippine tree planting statute, Nov. 7, p. 8
Red oak reclamation of Czech strip mine, Aug. 15, p. 8
Thailand, July 18, p. 8

Rhine River

German clean-up efforts, Aug. 1, p. 4; Dec. 19, p. 3

Richardson, Elliot L.

Rejects UNCLOS "Informal Composite Negotiating Text," Aug. 15, p. 3

Rockefeller Foundation

Environmental Affairs fellowships, Aug. 29, p. 8

Romania

Water protection program, July 18, p. 6

Rural Electrification

Philippine geothermal project, July 4, p. 8
SWB energy mix programs, July 4, p. 3

S

Sanchez, Vincante

On Caribbean environmental cooperation, Aug. 15, p. 8

Saudi Arabia

Desalination-and-power plants, Nov. 21, p. 3
Drinking water shortage at Jidda, Aug. 1, p. 7

Schenkel, Rudolf, and Lotte Schenkel-Hufliger

WWF Gold Medal for 1977, Dec. 19, p. 8

Scott, Sir Peter

Aldabra Island conservation urged, July 4, p. 4
Efforts for Ridley turtle protection, Oct. 10, p. 7

Senegal

Rural SWB energy program, July 4, p. 3

Sewage Disposal

Advanced Wastewater Treatment (AWT) in Britain, Dec. 19, p. 4
Dehydrator for sludge treatment, Aug. 29, p. 7
East Asian water pollution, Oct. 10, p. 7
Germany, Rhine and Bodensee, Aug. 1, p. 4
Human urine usable for medical and industrial purposes, Aug. 15, p. 6
Swedish expenditures for communal plants, Nov. 21, p. 8

Seychelles

Aldabra Island conservation, July 4, p. 4

Shared Natural Resources

Ganges water pact, India-Bangladesh, Dec. 5, p. 5
EEC approach and experience, Aug. 29, p. 3

Shora, Peter

Interview, Aug. 1, p. 3
Quoted, on nuclear energy, July 4, p. 2

Singapore

Agrees on oil tanker traffic in Malacca St., Dec. 19, p. 7
Air pollution drops in wake of controls, Oct. 24, p. 8

Anti-smoking laws, Aug. 15, p. 6
Hydrocarbon compounds studied for health effects, Oct. 10, p. 8
Solar heating system for hospital, July 18, p. 6

Smoking

Banned in public closed places in France, Nov. 21, p. 4
Banned in public places in Singapore, Aug. 15, p. 6
Cigarette advertising curtailed in Britain, Aug. 1, p. 6

Soil Erosion

CENTO conference discussions, Dec. 5, p. 3
Colombia, Sept. 26, p. 2
Philippines, Nov. 7, p. 8

Solar Energy

In Architecture, symposium held in Mexico, Nov. 7, p. 5
British programs and promotion, Aug. 1, p. 4; Aug. 15, p. 5; Oct. 24, p. 5
Caribbean Development Fund proposed, Sept. 12, p. 8
Grain dryer in use in India, Aug. 1, p. 8
Heating system in Singapore hospital, July 18, p. 6
Home design in Austria, July 4, p. 8
Home design in Denmark, July 4, p. 6
Home heating system sales on rise in Britain, Aug. 15, p. 5
Photovoltaic cells, July 4, p. 3
Pilot project slated for Italy by EEC, Dec. 19, p. 7
Power plant in Brazil, Aug. 1, p. 8
Rural SWB programs, July 4, p. 3
Solar cell energy storage piloted in Mexico, Nov. 7, p. 5
Sun oven used in Upper Volta, Aug. 29, p. 2
Tax incentive urged for water heaters in Brazil, Nov. 21, p. 8
Use for farming and irrigation tested in Peru, Sept. 26, p. 1
Water heater for Indian homes, Dec. 5, p. 5

Solid Waste Disposal

"Cross-flow" pyrolysis in Britain, Nov. 7, p. 8
Cuernavaca's problem, Nov. 21, p. 2
Hong Kong to construct plant, Sept. 26, p. 7
Incineration criticized in Colombia, Dec. 5, p. 7
Incineration to replace collection in Kuwait, Aug. 1, p. 8

South Korea

Environmental Affairs Forum (KEAF), July 4, p. 6
Government aid to small plants urged for pollution control, Dec. 5, p. 8
Liquefied petroleum gas (LPG) used, Sept. 12, p. 7
Noise pollution, Aug. 15, p. 5
Non-polluting hot-air heating system developed, Sept. 26, p. 6
Pollution control funding, Aug. 15, p. 7

Sri Lanka

Coconut crop losses, July 18, p. 2
Ecosystem endangered by rubber tree cutting, Dec. 19, p. 6
Elephant-crossing signs on rail tracks, Oct. 24, p. 8
Rural SWB energy program, July 4, p. 3
Tea leaf recycling for cattle fodder, Aug. 15, p. 3

Stanovik, Janez

At Helsinki review conference in Belgrade, Nov. 7, p. 5

Steel Industry

Air pollution reductions in West Germany, Dec. 19, p. 3
Dust collector to be used in Chinese plant, Oct. 10, p. 7

Strip Mining

Czech reclamation success with red oak, Aug. 15, p. 8
Hambach, Germany, lignite project, July 4, p. 5

Sudan

Jonglei Canal project, Sept. 26, p. 1

Supersonic Transport (SST)

Concorde noise heard in Sweden, Aug. 29, p. 8
German ban on Concorde, Sept. 12, p. 4

Sweden

Aerial chemical spraying opposed, Oct. 10, p. 1
Aerosol propellants banned, Dec. 19, p. 7
Agreement with USSR on Baltic pollution defense Dec. 5, p. 8
Boat speed limited to protect marine environment, Oct. 10, p. 6
Environmental cooperation treaty with Hungary, Nov. 7, p. 7
Industry-government cooperation for environmental improvement, July 18, p. 7
Mercury pollution traced to dental amalgam, Sept. 26, p. 6
Nature reserve of 1 M acres opened, Aug. 15, p. 7
Sulphur acid precipitation into lakes combated, Aug. 1, p. 1
Water purification plants financing, Nov. 21, p. 8
Wetlands protection, Oct. 10, p. 8
Wildlife protection efforts, Sept. 26, p. 3; Oct. 10, p. 8
Wind power generator developed, Sept. 12, p. 6

Switzerland

Noise-insulation windows installed in Zurich, Dec. 19, p. 1
Sunday driving ban referendum, Oct. 24, p. 6

T

Taiwan

Fish attracted by artificial reefs, Dec. 5, p. 6
Marine pollution decimates oyster and clam, Oct. 10, p. 7

Textile Industry

Dust filter system, Sept. 26, p. 7
Sulphate reduction in waste water, Sept. 26, p. 6

Thacher, Peter S.

On mycotoxin contamination of food, Nov. 7, p. 1

Thailand

Air pollution sources in Bangkok, Sept. 12, p. 6
Marine pollution cuts sea mussel harvest, Oct. 10, p. 7
Noise pollution, Aug. 15, p. 5
Reforestation programs, July 18, p. 8
River pollution hurts farmers, July 4, p. 8

Tolba, Mostafa K.

At IEF's second meeting, July 4, p. 2
At International Environmental Education conference, Nov. 21, p. 5
At petroleum industry seminar of UNEP, July 4, p. 1
UNCOD Secretary-General, Oct. 10, p. 3

Toxic Chemicals (see also Carcinogens; Pesticides)

Acrylonitrile and methyl acrylate, Irish plant, Dec. 19, p. 6
Hydrocarbons, Oct. 10, p. 8; Nov. 21, p. 6; Dec. 19, p. 7
International convention urged by Costle of EPA, Nov. 7, p. 5
International Register (IRPTC) of UNEP, Nov. 21, p. 1
Lead, Oct. 10, p. 7; Nov. 21, p. 6; Dec. 19, pp. 3, 7
Mercury, July 18, p. 7; Sept. 26, p. 6; Nov. 7, p. 1; Nov. 21, p. 6
Mycotoxin contamination of food, Nov. 7, p. 1
Rice field fumigants, in Colombian river, Nov. 7, p. 7
Tire burning as source of, Nov. 7, p. 8
Vietnam defoliant damage assessed, Aug. 16, p. 6

Transportation (see also Motor Vehicles)

Concorde noise, Aug. 29, p. 8; Sept. 12, p. 4
Floating high-speed surface transport, Japan, Sept. 12, p. 6
Helicopter, Britain, Dec. 5, p. 7
Ireland plans first subway, Aug. 1, p. 7
Streetcar revival debated in Japan, Aug. 29, p. 4

Treaties and Conventions

Antarctic Treaty of 1975 signed by Argentina, Aug. 1, p. 6
Environmental Modification Techniques ban signed, Aug. 15, p. 4
French-German agreement on fast-breeder development Aug. 15, p. 2
Helsinki Accords lead to ECE program overhaul, July 4, p. 2
ILO draft, on air pollution, noise, and vibration hazards, Sept. 12, p. 1
Indo-Bangladesh pact on Ganges waters, Dec. 5, p. 5
Mediterranean, re. land-based pollution sources, Dec. 5, p. 2
Persian Gulf regional talks proceed, Aug. 1, p. 1
On Prevention of Marine Pollution by Dumping Wastes (London, 1972), Sept. 12, p. 2
Swedish-Hungarian environmental know-how exchange, Nov. 7, p. 7
Swedish-Soviet agreement on protection of Baltic, Dec. 5, p. 8
Trade in Endangered Species, Nov. 21, p. 5

Turkey

Ankara air pollution causes diseases, Dec. 19, p. 5

U

Udall, Morris K.

Copper import duty proposal, Nov. 21, p. 1

United Arab Emirates

Desalination-and-power plants, Nov. 21, p. 3

United Nations

Convention on Environmental Modification Techniques, Aug. 15, p. 4
Natural Resources Committee meeting on energy, July 18, p. 1

UN Desertification Conference (UNCOD)

Indian desert problems to be presented, Aug. 29, p. 1
Plan of Action summarized, Oct. 10, p. 3

UN Development Program (UNDP)

Aid to Chilean fisheries, Sept. 12, p. 5
Aid to Indian Hydrology Institute, Sept. 12, p. 7
Crocodile breeding project in Indian aided, Sept. 26, p. 2

UN Economic and Social Council (ECOSOC)

Water Conference directives made regional responsibility, Dec. 5, p. 1

UN Educational Scientific & Cultural Organization (UNESCO)

- Anti-desert efforts in India, Aug. 29, p. 1
- Austrian Lake Neusiedl designated as biosphere reserve, July 18, p. 8
- Cooperation in Gobi Desert protection, Sept. 12, p. 2
- Environmental education conference in USSR, Aug. 29, p. 1; Nov. 21, p. 5

UN Environment Programme (UNEP)

- Anti-desert efforts in India, Aug. 29, p. 1
- Caribbean environmental program initiated, Aug. 15, p. 8
- At conference on mycotoxins, Nov. 7, p. 1
- Cooperation in Gobi Desert protection, Sept. 12, p. 2
- Designated agency for UNCED Action Plan, Oct. 10, p. 3
- Environmental education conference in USSR, Aug. 29, p. 1; Nov. 21, p. 5
- Industrial seminars booklets published, Aug. 29, p. 7
- IRPTC (toxic chemicals register), Nov. 21, p. 1
- Mediterranean Action Plan, Nov. 7, p. 2; Dec. 5, p. 2
- Mediterranean Oil Spill Combating Center, Dec. 5, p. 5
- Mediterranean Workshops sponsored, Aug. 15, p. 1; Dec. 5, p. 2
- Persian Gulf protection plans, Aug. 1, p. 1
- Pest management program, July 18, p. 3
- Petroleum industry conservation seminar, July 4, p. 1
- Rural energy programs sponsored, July 4, p. 3

UN Habitat and Human Settlements Foundation (UNHHSF)

- Quintana describes early efforts, Aug. 1, p. 5

UN Law of the Sea Conference (UNCLOS)

- Deep sea mining issue unresolved, Aug. 15, p. 3

UN Water Conference

- ECE follow-up on directives, Dec. 5, p. 1

United States

- Aid to study of monsoon patterns, Sept. 12, p. 4
- Copper import duty proposed, Nov. 21, p. 1
- ERA's Costle asks international convention on toxic substances, Nov. 7, p. 5
- Mink as Asst. Secretary of State for Environment, Nov. 7, p. 3
- U.S.-USSR Joint Environmental Committee work, Dec. 19, p. 1

Upper Volta

- Sun oven introduced, Aug. 29, p. 2

Uranium

- Australian mining and exports, Oct. 24, p. 8

Urban Planning

- The Urban Edge*, newsletter, Oct. 24, p. 7

Uemami, Ishrat H.

- Interview on UNEP rural energy program, July 4, p. 3

USSR

- Agreement with Sweden on fighting Baltic pollution, Dec. 5, p. 8
- Aid to Gobi Park management, Sept. 12, p. 3
- Aid to study of monsoon patterns, Sept. 12, p. 4
- Natural gas used as taxi fuel, Dec. 19, p. 8
- Nuclear ships and radiation security, Sept. 26, p. 6
- U.S.-USSR Joint Environmental Committee work, Dec. 19, p. 1

V**Venezuela**

- Environment impact study of new power plants, Aug. 1, p. 6
- Housing programs, Aug. 1, p. 5

Vibration

- ILO draft convention sets criteria, Sept. 12, p. 1

Vietnam

- Defoliant damage assessed, Aug. 15, p. 6
- Industrial wastes recycled, Aug. 29, p. 6

W**Waddington, Ian**

- At WHO/UNEP Mediterranean workshop, Aug. 15, p. 1

Ward, Barbara

- On board of Environment Liaison Centre, Oct. 10, p. 7

Waste Heat

- British incentives for waste heat recovery, Nov. 7, p. 4

Waste Matter [see also Garbage; Industrial Wastes; Radioactive Wastes; Recycling; Solid Waste Disposal]

- Philippine Research for mining waste utilization, Oct. 24, p. 5
- Uses for animal fodder, July 4, p. 7; Aug. 15, p. 3; Sept. 26, p. 7; Dec. 19, p. 7

Waste Water Purification

- Australian textile mill sulphate discharge, Sept. 26, p. 6
- British AWT plants, Dec. 19, p. 4
- Bulgarian expenditures and closed-cycle projects, Dec. 5, p. 4
- Closed system for Yokohama Rubber Co., Aug. 15, p. 8
- German industrial expenditures, Dec. 19, p. 3
- Karachi reclamation project, Nov. 7, p. 2

Water Conferences. See UN Water Conference**Water Pollution [see also Coastal Water Pollution; Oil Spills]**

- Agricultural chemicals in Himalayan lakes, Nov. 21, p. 7
- Algae pond method counteracts eutrophication, July 18, p. 5
- Athens pipes cause drinking water contamination, Nov. 7, p. 2
- Bangladesh laws, Oct. 24, p. 4
- Bogota River, Aug. 1, p. 8
- Colombian rice field fumigants as source, Nov. 7, p. 7
- Copper mine tailings, Peruvian rivers, July 4, p. 6; Dec. 5, p. 6
- East Asia, sewage as cause, Oct. 10, p. 7
- ECE follow-up to Helsinki accords, Nov. 7, p. 5
- German control measures and expenditures, Aug. 1, p. 4
- Hong Kong control legislation, Nov. 21, p. 3
- Indonesia, Oct. 10, p. 7; Oct. 24, p. 7
- Industry main culprit in Argentina, Nov. 7, p. 6
- Japan, Oct. 10, p. 7; Oct. 24, p. 3
- Liming combats sulphuric acid in Swedish lakes, Aug. 1, p. 1
- Malaysian sources, July 18, p. 5
- Nitrates in Britain, July 4, p. 7; Nov. 21, p. 6
- Oil palm sludge, Malaysia, July 4, p. 7
- Peruvian Mantaro clean-up project, July 4, p. 6
- Poland, July 4, p. 8; Sept. 26, p. 8
- Thai farmers suffer damages, July 4, p. 8
- Werra River, East-West dispute in Germany, Oct. 24, p. 2
- Xochimilco suburb of Mexico City, Sept. 26, p. 8

Water Resources and Supply

- Argentina plans urban meters for saving, Oct. 24, p. 7
- Austrian Alps reserve, Aug. 29, p. 8
- Danish overuse creates water table deficiency, Dec. 19, p. 2
- Desalination expanded in Mexico, Sept. 12, p. 1
- Drought management measures in Britain, Aug. 29, p. 7
- ECE seminar at Malta, Oct. 10, p. 8
- Fluoridation planned in Malaysia, July 18, p. 8
- German industry cuts consumption and pollutants, Dec. 19, p. 3
- Hungarian expansion programs, Aug. 29, p. 5
- Indonesian purification plant, July 18, p. 6
- Karachi water shortage, and reclamation project, Nov. 7, p. 2
- Lima flow system called faulty, Oct. 10, p. 6
- Mexican exploitation of subterranean water urged, Aug. 29, p. 4
- Persian Gulf states, Nov. 21, p. 3
- Romanian protection program, July 18, p. 6
- Rural areas benefit from SWB programs, July 4, p. 4
- Shortage at Jidda, Saudi Arabia, Aug. 1, p. 7
- Watershed management discussed at CENCO conference, Dec. 5, p. 3
- West German reservoir part of open pit mine project, July 4, p. 5

Wave Energy

- Use by Japanese ship *Kaimai*, Dec. 19, p. 4

Weather

- Changes due to pollution in Mexico City, July 4, p. 5
- Deforestation effects studied by Amazon expedition, Aug. 1, p. 5
- Glaciers reported receding at slower rate, Sept. 26, p. 6
- Monitoring system to aid Pakistan flood measures, Oct. 10, p. 8
- Monsoon pattern studied, Sept. 12, p. 4
- UN law on "atmospheric patrimony" urged, Aug. 15, p. 1

Wetlands

- Argentinian plan for reclamation, Oct. 10, p. 4
- Protection in Sweden, Oct. 10, p. 8

Wildlife [see also Birds]

- Aldabra Island, Seychelles, July 4, p. 4
- Chilean game-preserve site kept secret, Dec. 5, p. 7
- Crocodile Breeding and Management in India, Sept. 26, p. 2
- Elephants killed by Sri Lankan trains, Oct. 24, p. 8
- Endangered species list at 25% in Bavaria, Oct. 10, p. 5
- Giant Tortoise, July 4, p. 4
- Gobi Desert, protection program, Sept. 12, p. 3
- Himalayan pheasant makes comeback, Sept. 26, p. 7
- Hong Kong protection law strengthened, Aug. 1, p. 8
- Javan and Caspian tiger endangered, Bali tiger called extinct, July 18, p. 7
- Marine mammal protection urged at OAS meeting, Dec. 5, p. 4
- Mindanao, ecological damage a threat, Oct. 24, p. 6
- Nepal creates reserves for panda, buffalo, black buck, Aug. 15, p. 8
- Oryx threatened with extinction, Nov. 7, p. 8
- Otter decline in Britain, Aug. 29, p. 6
- Otter killing restrictions in Argentina, Aug. 29, p. 7
- Panama Canal Zone, Nov. 21, p. 7
- Peruvian list of protected species issued, Dec. 19, p. 8
- Project Tiger in India, Oct. 10, p. 6
- Ridley turtle protection urged, Oct. 10, p. 7
- Swedish protection efforts, Sept. 26, p. 3; Oct. 10, p. 8
- Trade in Endangered Species Convention, Nov. 21, p. 5
- Whale hunting quota increased in Brazil, July 18, p. 7
- Whaling permits opposed in Chile, Oct. 24, p. 8
- Whaling protested in Australia, Aug. 1, p. 2

Wind Power

- Pakistani technology, Oct. 24, p. 6
- Rural SWB programs, July 4, p. 3
- Storage battery recharge at Japanese telecommunications stations, Oct. 10, p. 8
- Swedish generator installed, Sept. 12, p. 6

Wood Residues

- Sawdust as heating fuel in Chile, Nov. 21, p. 3

World Bank

- Loan to Greek Development Program, Aug. 1, p. 7
- Urban Edge* newsletter financed, Oct. 24, p. 7
- Warns Colombia on hydroelectric project blunders, Dec. 5, p. 3

World Health Organization (WHO)

- At conference on mycotoxins, Nov. 7, p. 1
- Lead absorption limit, Nov. 21, p. 6
- Mediterranean landbased pollution sources inventoried, Nov. 7, p. 2
- Sponsor of Mediterranean Workshops, Aug. 15, p. 1; Dec. 5, p. 2

World Meteorological Organization (WMO)

- Monsoon study (Monex-79), Sept. 12, p. 4

World Wildlife Fund (WWF)

- Aldabra Island conservation urged, July 4, p. 4
- Coral reef endangerment studied, Sept. 12, p. 5
- Efforts for Ridley turtle protection, Oct. 10, p. 7
- Gold Medal award and Roll of Honour, Dec. 19, p. 8
- Oryx extinction feared, Nov. 7, p. 8
- Sperm whale study off Peru funded, Nov. 7, p. 6
- Warnings on tiger extinction, July 18, p. 7

World Environment Report . . .

Is the first and only publication of its kind: an eight-page, biweekly newsletter that keeps you informed of significant happenings on today's world environment scene. WER's staff of 50 correspondents posted around the world monitors the environmental activities of governments, corporations, international organizations, scientists, universities, and citizens groups. It is published by the Center for International Environment Information, a private, non-profit organization established by the UN Association of the USA with the support of the UN Environment Programme. The Center alone is responsible for all material presented in WER.



World Environment Report

10 JAN 1978

VOL. 3, NO. 26

Copyright ©1977. Center for International Environment Information.

DECEMBER 19, 1977

U.S.-USSR Environment Committee Holds Successful First Meeting

WASHINGTON—Champagne corks popped as delegates here to the sixth meeting of the U.S.-USSR Joint Committee on Cooperation in the Field of Environmental Protection concluded a recent five-day meeting, the first since the two countries agreed to a second five-year agreement last July. The meeting also marked a transition from essentially consultative exchanges to "real joint work that produces economies of effort and resources," according to Pierre Shostal, Executive Secretary for the U.S. team. The Joint Committee, Shostal added, "is a going concern."

Douglas M. Costle, Administrator of the U.S. Environmental Protection Agency (EPA) and Chairman of the American segment of the Joint Committee, said the meeting "laid a firm foundation for joint efforts in the year to come and beyond." These include joint experiments on the formation and transformation of natural aerosols, air-borne pollutants, urban environmental problems, wildlife preservation, the effects of pollution on health, and earthquake prediction. In addition, the Joint Committee agreed to cooperative efforts in wolf tracking and raising Siberian cranes, an endangered species. Among projects already underway that will be continued is the study of biological agents for controlling weeds.

Last month a U.S. delegation went to the Soviet Union to study the feasibility of joint work in the field of combatting municipal source water pollution. As a result of the trip, the Joint Committee agreed to an exchange of water pollution specialists under which a Soviet team will visit Chicago's water treatment facilities and a panel of U.S. experts will be dispatched to study a comparable facility in Russia. Similarly, the USSR will send a team of earthquake specialists to study the San Andreas Fault, following several years during which American experts studied earthquake prediction in central Asia.

At this year's meeting, Costle ticked off some of the highlights of cooperation of the past year that he termed "grounds for encouragement." They included studies of a high-temperature electrostatic precipitator in the U.S. and a high-energy wet-scrubbing system in the Soviet Union; reports on gaseous emission abatement, oil demetalization, and coal desulphurization; and studies of the water quality, phytoplankton, and dissolved organics of the Bering Sea, conducted during a joint study aboard

a Soviet vessel last summer.

Costle also said he hopes to develop a dialogue on the subject of toxic substances. He reminded his Soviet colleagues that the new Toxic Substances Control Act gives the U.S. Government wide powers to gather data on potentially harmful chemical substances and to control them, where necessary, to protect the public.

PETER PHILIPPS

Zurich Copes With Traffic Noise By Installing Insulation Windows

ZURICH—Municipal authorities here have launched a new drive to install noise-insulation windows at public expense in high traffic density areas. Slogan of the new drive: "Insulation windows against the noise."

Zurich first instituted the system of replacing standard windows with the special anti-noise windows back in 1973. To date, they have installed 3,950 and hope to add another 1,226 during this new campaign.

At a recent press conference, city government spokesmen observed that the city legislature had approved expenditures of nearly \$1 million in 1974 for such windows. Furthermore, they noted that the State Council had approved the setting up in 1976 of a credit in excess of \$3 million to carry out a window-replacement campaign.

The areas chiefly concerned, the spokesmen said, are those abutting on the city expressways connecting the superhighway Bern-Zurich coming up from the south with the superhighway Zurich-Winterthur leaving the city limits at the north. The noise quotient along this route, caused by the passage of some 60,000 vehicles daily, has already been reduced by half through the installation of the insulation windows.

SPECIAL DISPATCH TO WER

In This Issue

Traffic Circles	2
German Heavy Industry	3
Wave Power	4
Environmental Disease	5
Sulphur Dioxide	5
Dirty Dublin	6
In Brief	7

ACWW in Nairobi Voices Concern Over Raw Materials and Pesticides

NAIROBI—The Associated Country Women of the World (ACWW)—its affiliated organizations in 74 countries represent a membership of eight million women—has asked the United Nations General Assembly to consider declaring an international year in connection with the world's diminishing stocks of raw materials. The Assembly should, the ACWW suggests, draw attention to the urgent need to conserve these stocks.

The resolution was passed at the ACWW triennial conference, held in Nairobi recently, with 1,500 delegates present. It was the first ACWW conference to be held in Africa.

Another resolution urges the UN to promote international uniformity in the labelling of pesticides and other potentially harmful products, and notes that international trade in these products is steadily increasing despite the fact that some toxic pesticides are sold in overseas markets after being banned in their countries of origin.

The conference heard many expressions of concern and calls for action on environmental issues. Mrs. Raigh Roe, an Australian farmer's wife who was elected President of the ACWW for the next three years, said: "We are now voicing our concern about the environment more than ever before. We are a rural organization, and we are very wary about our environment." CHARLES HARRISON

Overuse of Water in Denmark Creates Need for Conservation

COPENHAGEN—The Council for the Environment has warned Danes that they are using too much water. In fact, the Council said, the consumption of water is so high that the water table is being forced too low, with the result that streams and lakes are deprived of sufficient water. To cope with the situation, the Council has issued a booklet on how to conserve water at waterworks, in the delivery system, in industry, and at home.

The Danes use 1,210 million cubic meters of water annually and consumption is increasing, particularly for agricultural and domestic use. One-third of the country's annual consumption will run through the faucets of private houses, for an individual average of 200 liters of water daily.

The Council estimates that by avoiding waste the domestic use of water could be reduced by 60 liters daily per person. It advises the replacement of old-style toilets which use eight liters when flushed for modern types which use less than six liters. By taking a shower instead of a bath, between 50 and 100 liters can be saved daily.

Because leaky plumbing is the cause of much waste, the

Council cautioned that old faucets and pipes must be renewed or replaced. Inspection of a number of buildings in Copenhagen, for example, showed that every fifth toilet was leaking. The waste from a single leaky toilet could rise as high as 1,400 liters daily.

CONSTANCE CORK

Mexico City's Mayor Decrees Demise Of Noisy, Sooty Traffic Circles

MEXICO CITY—Declaring that the time of the ornamental, French-designed traffic circle is over, Mexico City Mayor Carlos Hank Gonzalez has announced a drastic and sweeping plan to speed movement along this city's streets and clear them of noise and fume pollution and congestion. Although many environmentalists agreed with him that the many traffic circles create bottlenecks and hazards, there was criticism that with the removal of the grassy and statue-dominated islands, the capital will lose much of its aesthetic appeal.

The first modern mayor to criticize Mexico City's transit system as being inefficient and poorly-organized, Hank Gonzalez unveiled a master plan which, he says, will be completed within 30 months.

Twenty north-south and east-west streets will be widened up to six lanes and turned into freeways with electronically-coordinated traffic signals. More than 250 "circulation stoppers," including traffic circles, will be eliminated. Freeways now in use but never completed will be extended, he said, and the subway line will be doubled from its current 40 kilometers to 80 kilometers.

KATHERINE HATCH

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$125 per year. \$15 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Wendy Kaufman
Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

SPECIAL REPORT: How German Industry Protects the Environment

BONN—There has been no dearth of warnings over recent years of the dangers the environment faces from industrial growth, nor of reports of damage already caused. However, these warnings and reports, it has been charged, often pay little attention to industry's progress in controlling pollution and, in some cases, of actually improving the environment.

In an attempt to redress the balance, the Federation of German Industry (BDI) has now issued a comprehensive summary of important German developments in the field of environmental protection, under the title "Antworten auf eine Herausforderung" (Answers to a Challenge). It is a well researched and attractive booklet, profusely illustrated with photos and drawings. The text (in German) is simple enough to be understood by the layman, without skimping on essential information.

The "Answers" referred to in the title are statements of solutions found to 54 specific environmental problems that are common throughout the industrial world. They are grouped under the generic headings: air, water, land, noise, and recycling. For each individual case, the problem is briefly stated. This is followed by a succinct description of the method used to solve it, with an evaluation of its effectiveness. There is also a summary statement of the capital and operating costs involved, followed by extensive references to technical literature dealing with the subject and the industries that have had experience with it.

The BDI method of presentation should be of great benefit, particularly to small industries, in suggesting solutions to their environmental problems while sparing them the time and expense of doing their own research.

The benefits realized from improved processes and innovations described in the brochure are significant. The steel industry, for example, is widely rated as one of the worst of all polluters. This may once have been the case, but its progress toward cleanliness since the 1950s is one of the best on record. In 1955, when the German steel industry produced 25 million tons of raw steel, its stacks and blast furnaces discharged 200,000 tons of emissions a year into the atmosphere. But by 1974, with production more than doubled to 53 million tons, the discharges had been reduced to 40,000 tons.

Another notorious air polluter is the cement industry. As recently as 1950, 3.5 per cent of its total useful product was wasted in the form of dust. This has now been brought down to 0.1 per cent.

Improvements now taking place in engine design and fuel composition will reduce the atmospheric concentration of lead compounds due to motor vehicle exhausts by 65 per cent by 1979; and by the same date, atmospheric sulphur from heating oil and diesel engines will be reduced by 30 per cent—all from current levels.

With the storm still raging in New York City over noise from the Concorde, the spectacular quietness of the German-French built Airbus A 300 has gone almost

unnoticed. Yet its noise level is only 5.5 per cent of that of the widely used Boeing 707, which carries only half as many passengers as the Airbus.

A second winner in the field of noise abatement is Wolf Geraete GmbH, manufacturers of garden machinery and implements. Their powered lawn mowers are the most widely distributed machines of their type in Germany. Heretofore they suffered the same drawback as all powered lawn mowers: a noise level of 80 db, roughly that generated by an auto assembly line. By encasing the motor and exhaust system in a sound absorbing canopy, ingeniously designed so as not to inhibit cooling, the noise level of Wolf's newest machines has been reduced to 63 db, the noise level of a quiet office.

A number of industries using large volumes of fresh water have reduced consumption sharply. The oil refining industry, for example, cut its consumption of water per ton of refined oil from 20 cubic meters in 1955 to three cubic meters in 1975.

Matching this lower use of water, there has been a marked decrease in the quantity of pollutants in Germany's rivers. In the Rhine, for example, there has been a 60 per cent reduction in the quantity of mercury since 1973; and in 1976, despite that being a year of record-low rainfall, the quantity of organic pollutants in the river was down by one-third from the year before.

Recycling of manufactured products is making steady progress, with matching savings in the demand for raw materials, fuel, and electric power. The glass industry now recycles about 10 per cent of its total production, or 260,000 tons of old glass a year. By the strategic spotting of special containers for the collection of old bottles in residential areas in most German cities, under industry and municipal sponsorship, the salvage rate is expected to rise substantially in the years ahead.

Paper manufacturers rely on old paper for roughly 45 per cent of their raw pulp; and in the plastics industry, depending on the particular product, 25 to 80 per cent of all production is recycled. The metal processors' re-use quota runs from 30 per cent in the case of zinc to 52 per cent for that of lead.

Realistically, as the BDI points out, these benefits do not come cheap. German industry will have invested around \$7.6 billion in environmental protection equipment between 1975 and 1979 and an additional \$20.6 billion on its operation. The country's two biggest chemical producers, BASF and Bayer, have investments in water purification equipment worth \$270 million, whose operating costs come to \$59 million a year. These investments and expenses are added production costs for which the consumer must pay as the price of the kind of life he insists on living.

Copies of "Antworten auf eine Herausforderung" may be obtained on request from: Der Bundesverband der Deutschen Industrie, Abt. "Umweltfragen," Oberlaender Ufer 84-88, 5000 Koln, W. Germany. J.M. BRADLEY

Japan Builds World's First Ship Using Waves to Generate Power

TOKYO—Kaimei, the world's first full-scale, wave-power-generating ship, is now being fitted out by the Japan Marine Science and Technology Center of the Science and Technology Agency. When completed, it will have the capacity to generate 2,000 kilowatts of electricity without creating any pollution whatsoever. The vessel goes operational in 1980 or 1981.

According to officials of the Center, the 500-dead-weight-ton vessel is 80 meters in length with a beam of 13 meters. Its shallow draft of only five meters is dictated by the fact that the ship will be spending much of its useful life anchored close to shore. The bottom of the hull, constructed by Ishikawajima-Harima Heavy Industries (IHI), is completely flat.

It is now being equipped with 11 air turbine generators, each with a capacity of 200 kilowatts, by the Fuji Electric Company. The system is divided into sections, each composed of one turbine, a single generator, and two air rooms. Installation is not expected to be completed until sometime in 1978.

Under present plans, Kaimei is to be anchored about four kilometers off the west coast of Northern Honshu in the Sea of Japan next August for a series of tests. It is expected that at that time the ship will be generating 600 kilowatts of electricity, which will be gradually increased until full capacity is reached.

Scientists at the Center who have studied the sea bed topography and strata, plus wave conditions, said the area off Northern Honshu, one of Japan's main islands, was found to be ideal for using the "wave-breaking" method employed by Kaimei.

The ship will be positioned not far off-shore where both wave height and length as well as water depth meet certain requirements. However, the area must be free of heavy sea traffic.

Center scientists reported that the 40-meter-deep anchorage picked for the trial operation boasts waves that run at least three meters high about a third of each year. Their lengths average around 80 meters throughout most of the year.

The area selected for testing the concept is well known for its strong winds and high, powerful waves. Officials of the Japan Electric Machine Industry Association believe that, with suitable equipment and enough vessels similar to Kaimei, it may be possible to generate annually up to almost 1.4 billion kilowatts of electricity along the Japan Sea coast.

There is a catch, however. Hours during which wave power can be utilized depend greatly on coastal and seasonal conditions. Those currently preparing to test Kaimei nonetheless claim that up to 80 per cent of the force of the waves in the area selected can be converted into air pressure and that 45 per cent of this can be turned into electric power. The air in each room, which will serve as a cylinder, will be compressed by the waves and the

resulting pressure utilized to rotate turbines.

It has been estimated that the vessel will be capable of generating electric power at the test location for up to 3,000 hours annually, producing roughly six million kilowatts—and at a cost no more expensive than thermal generation.

If all goes well with the tests, it may be that wave-power-generating ships will become the ideal way of producing electricity without the usual accompanying pollution.

A.E. CULLISON

New British Water Treatment Plant Claimed Most Flexible in World

LONDON—The most flexible wastewater treatment pilot plant anywhere in the world is the claim by Britain's Department of the Environment (DOE) for its new \$3.5 million Advanced Wastewater Treatment (AWT) plant at Coleshill, near the midlands industrial city of Birmingham.

The plant is expected to "cope with every type of waste that highly industrialized cities like Birmingham or Philadelphia, Marseilles or Lagos, for that matter, can throw at a sewage works."

It is described as a giant test bed for experimenting and costing the physico-chemical treatment (PCT) of sewage. Like most industrialized countries Britain faces the problem of overloading its traditional biological sewage plants, which are also labor intensive and wasteful of land.

There are two separate pipelines at the plant's inlet, which can carry two streams of sewage through a treatment gallery. All the treatment units are mobile and can be literally wheeled around and connected in any variation which researchers require. For example, one side can be set up for an experiment, the other acting as control. As the plant is built to field scale, operational problems can be investigated at the same time.

Coleshill is one of three plants involved in AWT research—the others are at Stevenage, Hertfordshire and Davyhulme, Manchester. Together with research being undertaken at sewage plants under the control of regional water authorities, they form what DOE scientists regard as a unique coordinated national test bed facility.

Britain's AWT plan, masterminded by the DOE with the advice of the water industry, consulting engineers, chemists and accountants, is the U.K.'s principal contribution to a Study on Advanced Wastewater Treatment. The Study is being carried out under the auspices of the Committee on the Challenges of Modern Society of the North Atlantic Treaty Organization. France, West Germany and the United States are also involved, with the U.K., as the pilot country, coordinating the work.

BARBARA MASSAM

Book Review: Environmental Sources of Disease

Better health cannot be purchased simply by spending more and more money on doctors and drugs, concludes a recently released United Nations-sponsored study of world health trends and their causes. Rather, the tolls of today's leading killers—infectious diseases among the poor, and heart attacks, strokes, and cancer among the affluent—can be effected mainly by eliminating the environmental factors that promote them.

"Significant improvements in health require massive attacks on the major sources of disease: unjust social systems, reckless personal habits, and carelessly used technologies," writes Erik Eckholm, author of *The Picture of Health: Environmental Sources of Disease*. The 245-page book (published by W.W. Norton in New York) was sponsored jointly by the United Nations Environment Programme (UNEP) and Worldwatch Institute, a non-profit research organization.

"An estimated 35,000 infants and children under the age of five die every day—so many that the power of the living to comprehend the deep daily tragedy has grown dull," says Eckholm. "Nearly all these deaths occur in less-developed countries, and nearly all result from the combined impacts of undernutrition and infectious diseases."

In developed countries, heart attacks and other cardiovascular diseases are the leading health threats, accounting for half of all deaths there and taking an

especially high toll among middle-aged men. Obesity, lack of exercise, high-fat diets, and cigarette smoking are singled out by the author as important contributors to preventable heart attacks.

Cancer now accounts for about one-fifth of all deaths in developed countries and is a spreading world scourge. "Since most cancer has environmental rather than genetic origins, most cancer could, theoretically, be avoided," Eckholm notes. "Tobacco smoke, various dietary factors, radiation, and assorted industrial chemicals and pollutants are prominent among the known or suspected cancer causes."

On industrial pollution, the study states that only Governments can effectively regulate hazardous pollution and halt the proliferation of toxic substances in consumer products and the general environment. National governments have been especially delinquent in the protection of workers, who, the book stated, have often served as "society's guinea pigs."

Eckholm observes that almost one and a half billion people lack safe water and waste-disposal facilities—a situation he called a "global scandal." The projected expenditures between 1976 and 1980 on new sanitary facilities in developing countries will amount to only about one-twelfth of the money that consumers worldwide will have spent on cigarettes during that period. Moreover, the rising and sometimes careless use of dangerous pesticides in poor countries imperils both farmworkers and consumers, the book concludes.

Sulphur Dioxide in Ankara's Air Found Twice That of WHO Standard

ISTANBUL—The Turkish Health Ministry has announced that air pollution in the capital city of Ankara has reached dangerous proportions. Sinasi Ozdenoglu, a pollution expert in the Ministry, said that Ankara's air now contains sulphur dioxide 2.5 times higher than the maximum set by the World Health Organization. The degree of smoke is four times higher than the established maximum, he reported.

Ozdenoglu said that because air pollution has been measured at 350 micrograms of sulphur dioxide and 325 micrograms of smoke, Ankara's citizens are facing the danger of disease and even sudden death. Cases of bronchitis, asthma, pneumonia, heart attacks, nervous breakdown, miscarriages, and other diseases caused by the air pollution have sharply increased. Ankara's air, he added, has become particularly dangerous for the old and the newly born.

Dr. Ziya Durmus, a member of the High Health Council composed of top health officials and experts, said that while one cubic meter of air contains 1.4 grams of selenium in Boston, Mass., the figure in Ankara is as high as 116 grams—one of the world's highest.

Health Ministry officials have suggested a series of measures, which are reported to be "under consideration." These include the banning of the use of coal containing a high quantity of sulphur (4%), the introduction of a special filter system for chimneys, and the limitation of car traffic in congested areas.

Such environmental measures have been advocated by experts for many years, but every year the situation has worsened for lack of action. Government officials, however, say that most of the necessary effective measures require huge sums, which Turkey cannot presently afford.

SAM COHEN

Environmentalists Charge Ireland Now Center for 'Dirty Industries'

DUBLIN—The work of two major Irish Government agencies has been called into question by environmentalists protesting that Ireland is being used as a center for "dirty industries" which will not be accepted anywhere else in Europe.

Two big projects, worth millions of dollars to the Irish economy, are causing particular concern at present. One is the American company, Raybestos Manhattan, which has begun production using asbestos in the manufacture of disc brakes at Ovens, a small village a few miles west of Cork City (*WER*, Oct. 10, p. 2).

The project has been strenuously opposed by local residential and environmental groups, but got the final go-ahead from the National Planning Board, An Bord Pleanála, roughly a month ago, when it was given permission to use a dumping site on the edge of Cork Harbor, 25 miles from the factory site.

The company took on 30 workers to begin production and have turned away several attempts to gain access. They have also defied court orders obtained by the State and have turned away several attempts to gain access. They have also defied court orders obtained by the State Industrial Development Authority (IDA) against them.

While this situation festers, concern has grown about the Japanese firm, Asahi, which is setting up in Mayo. Chemicals used by Asahi include acrylonitrile and methyl acrylate, which are regarded as very dangerous substances. They must be transported from their arrival point in Dublin to Killala in County Mayo. The national State transport company, C.I.E., has advised its workers in a special booklet to withdraw from the Asahi compound during the time that tankers in a special train are loaded by Asahi personnel.

Asahi maintains that it can control the substance quite safely in its modern plant. It also points to the 1,200 jobs the project will provide in the West of Ireland by 1982—an area where new jobs are badly needed.

The IDA, defending itself against mounting criticism about the procedures used to assess new industries, says that all new industrial projects are rigorously checked for possible risk to the environment.

But criticism has not abated and there has been complaint also about the other State agency involved in examination of new industrial projects—the Institute for Industrial Research & Standards. Environmentalists claim that it is not truly independent and that it has a bias in favor of new industries coming into the country.

Where the system appears to break down is that highly technological industrial projects are initially assessed by local engineers who may not have the knowledge or ability to fully understand the designs.

As pressure mounts for an even more stringent examination of the industrial development strategy for the nation, Phil Mulally, chairman of An Taisce, the Irish National Environment Group, wrote recently: "It is a

cause of considerable concern that after a mere decade or two of industrial and agricultural development, we should be within striking distance of the pollution load of a densely populated country which has experienced 150 years of industrial development."

TOM MacSWEENEY

Sri Lanka's Ecosystem Endangered By Lack of Rubber Tree Re-Planting

COLOMBO, Sri Lanka—The slowing down of Sri Lanka's rubber re-planting program has endangered the country's ecosystem, according to a recent report of a United Nations Consultant on Energy Policy Planning to the country's Ministry of Planning and Economic Affairs.

In his analysis, the Consultant, T.L. Sankar, drew attention to the fact that a major portion of the country's firewood requirements has been met in the past by wood which became available due to the planting of old seedling rubber with new high yielding clones under a Government financed subsidy.

But during the last 15 years, diminished rates of planting and re-planting on estates has meant a reduction in the quantity of available firewood. This in turn has led to greater, and dangerous, exploitation of the country's natural forests.

The Sankar report reveals that the area of rubber replanted annually during the last 15 years is as follows: 1960—16,190 acres; 1965—12,501 acres; 1970—10,210 acres; and 1975—7,980 acres. Each acre of re-planted rubber yields between 250-350 cubic yards of firewood. The Government subsidized re-planting program began in 1952-53 and was feasible mainly because of the premium price paid for top quality sheet rubber by the People's Republic of China with which Sri Lanka has maintained a rice-for-rubber pact.

Says Sankar: "It is seen that over the years while the consumption of firewood has increased, the availability from legitimate sources has steadily decreased. It is likely that the irregular and irrational exploitation of the forest is increasing at a rate that may endanger the environment."

He has advocated the more efficient utilization of waste from the ubiquitous coconut tree as a source of firewood. Usable fuel material from coconut plantations is conservatively estimated at 1.2 million tons annually. But due to the uneven geographic distribution of coconut plantations, only a third of the created coconut waste is used as a domestic fuel, Sankar estimates.

The Government has taken note of the situation. In the budget for 1978 recently presented to Parliament, Finance Minister Ronnie de Mel commented on production losses caused by the re-planting program falling "well below target." He said that as an incentive, the Government has decided to increase its subsidy by nearly 35 per cent.

MANIK DE SILVA

In Brief...

Sweden Announces Ban On Aerosol Spray Propellants

Following in the footsteps of the United States, the Swedish Government recently announced that the use of aerosol spray cans will be prohibited beginning in 1979.

The ban on the use of freon and other polluting gases as propellants in cans containing hair and other cosmetic sprays, paints, and household cleaning agents affects not only domestic production but also imports. Half of the spray gases used in Sweden are imported. Medicines using freon or similar gas propellants—about three per cent—are excepted.

The government decision is based on studies showing that the gases could destroy the ozone layer in the atmosphere which protects the earth against excess ultraviolet radiation, known to increase the risk of skin cancer.

"Care for our environment and our responsibility to coming generations demand that we be prepared to make decisions which restrict the choice of wares and consumer standards," commented Minister of Agriculture Anders Dahlgren.

First European Solar Plant For Electricity Approved

The European Economic Community (EEC) has given its approval for Europe's first electricity-generating solar power plant to be built in an as yet unchosen site in Southern Italy.

The experimental installation, which will use 7,000 square meters of mirrors, is intended as a pilot project to determine the practical problems arising from solar power. While it is not expected to produce electricity at a competitive price, the electricity it

does generate will be delivered to the local utility grid.

Slated for operation in early 1981, the installation will have a generating power of 1 megawatt, enough to supply a community of about 500 people.

The mirrors will reflect ground-level sunlight to an absorber mounted on a 50-meter tower. Water passing through the absorber will be turned into steam and used to activate a turbine linked to a generator.

La Societe National Italienne d'Electricite (ENEL) will maintain the facility and be joint owner with the EEC. The EEC energy research budget will pay half of the \$2 million price with a consortium of European companies, including ENEL, paying the other half.

Safety Rules for Oil Tankers Devised for Malacca Strait

Singapore, Malaysia and Indonesia have devised a one-way system to keep giant oil tankers apart in the 500-mile long waterway of the Malacca Strait. The proposed separation scheme is expected to become effective in one year.

In addition, the three countries have also agreed to install navigational aids in the Strait. These precautions by the three countries are being taken to prevent accidents such as occurred when the Japanese supertanker Showa Maru went aground near Singapore in 1975, spilling thousands of tons of crude oil in the Strait.

The marking off of deep water routes and compulsory pilotage through certain areas are also proposed. With the new scheme, tankers of more than 280,000 deadweight tons will have to reduce their loads or detour through Indonesia's Lombok Straits. This will cause inconvenience and raise costs especially for shippers, especially in Japan.

Manila Residents Endangered By Serious Air Pollution

Atmospheric pollution in Manila, the capital of the Philippines, is so serious that it threatens the health of about four million people living in the region. The atmospheric pollution in Manila is caused by motor vehicles and factories that emit more than 4,000 tons of toxic or poisonous substances into the air daily.

In a recent study on pollution density in Metro Manila by the National Pollution Control Commission (NPCC), it was discovered that about half a million motor vehicles are operating on the streets daily and emitting toxic and obnoxious substances such as carbon monoxide, lead, hydrocarbons, nitrogen oxides and sulfur oxides into the air.

At the present moment, there are no specific records of pollution-connected diseases. However, the toxic substances can be a hazard to people's health. According to NPCC, high concentrations of lead in the body can cause lead poisoning. In serious cases, especially in children, encephalopathy (brain involvement with a fatality if 25 per cent) may occur.

A campaign against smoke-belching vehicles and factories discharging polluting substances was launched in September. Since then, 10 firms identified to have emitted polluting substances have been closed pending the installation of anti-pollution devices.

Argentine Scientists Develop Animal Feed From Fruit Waste

Argentine researchers have developed an animal feed composed of the wastes of processed citrus fruits. The leftover skins, seeds, and pulp are crushed, treated with calcium carbonate, dried, and then formed into pellets.

Moscow Tests Taxis Run On Non-Polluting Natural Gas

A Moscow newspaper has reported that the Soviet capital is testing taxis and buses powered by natural gas in order to reduce noise and air pollution.

"Leninskoye Znamya" said that the gas-powered vehicles were running more smoothly and quietly than those operating on gasoline and that the cleaner exhaust fumes reduced air pollution. The article said that the taxis, constructed to run either on natural gas or normal gasoline, were able to be driven up to 500 kms. (312 miles)—the equivalent of an average single day's distance—on a full 100-liter tank (25 gallons).

The natural gas was not specifically identified but it is believed to be liquid butane.

WWF Awards Gold Medal; Honors 10 Conservationists

The World Wildlife Fund (WWF) Gold Medal for 1977 was presented recently to Prof. Rudolf Schenkel of Basel University "in recognition of his lifework for the study and preservation of rhinoceroses in Africa and Asia, and in particular for his outstanding contribution, together with his wife, Dr. Lotte Schenkel-Hulliger, to the successful conservation of the world's only known surviving population of the Javan rhinoceros at Ujung Kulon Nature Reserve in Indonesia.

The presentation of the medal was made by Mr. John H. Loudon, President of WWF, at a meeting of the International Board of Trustees in Lausanne.

At the same meeting, the board honored ten distinguished conservationists posthumously by including them in the WWF Roll of Honour:

India—Patrick D. Stracey, geologist and zoologist. Entered the Indian Forestry Service and spent most

of his service in Assam.

The Netherlands—Andries Hoogerwerf, eminent naturalist and conservationist and an ornithologist of repute.

Switzerland—Dr. Samuel Schweizer, member of the Board of Trustees of WWF since 1964 and Honorary Treasurer from 1965 to 1971.

United States—Dr. Ira N. Gabrielson, pioneer conservationist, a founder and first president of WWF (US); member of WWF International Board of Trustees from 1961 to 1973.

United Kingdom—Ernest Kleinwort, eminent banker and benefactor of conservation; Prof. W.H. Pearsall, conservation pioneer and distinguished ecologist; Captain Charles Pitman, leading conservationist who was appointed one of the first three game wardens in East Africa in 1925, with station in Uganda; David Sheldrick, warden of Tsavo National Park in Kenya and a dedicated conservationist; Sir Landsborough Thomson, distinguished naturalist and an outstanding ornithologist known especially for his studies of bird migration.

Soviet Union—Prof. B.N. Bogdanov, leading conservationist in the USSR.

12 Filipino Regions To Get New Biogas Fuel Plants

Salvador Escudero III, Director of the Philippine Bureau of Animal Industry (BAI), has announced that the government has established biogas fuel plants in 12 regions within the country. Biogas fuel, jointly developed by the BAI, the National Science Development Board and the Energy Development Board, is the cheapest source of cooking fuel. According to BAI, another 76 biogas stations will be in full operation in the country by the end of this year. And by 1979, all towns and municipalities within the country will have biogas plants.

Cheap Weed Killing Herbicide Developed by Indian Chemists

After four years of experiments, India's National Chemical Laboratory has developed a cheap herbicide to control the obnoxious weed parthenium hysterophorous which causes skin allergy and is harmful to animals and crops.

The herbicide can be sprinkled on farmland after the first rains. As it is slowly absorbed into the soil, it prevents germination of the parthenium weeds.

The primitive way of destroying such weeds was to uproot them by hand and bury or burn the plants. This method proved ineffective and costly. The traditional herbicide was not desirable because its residue proved environmentally hazardous.

Peru Publishes Complete List of Endangered Fauna & Flora

The Peruvian Government has published a comprehensive list of 144 protected jungle flora and fauna as a measure "to assure the conservation of these species." The list consists of four categories: flora and fauna threatened with extinction; flora and fauna considered vulnerable; rare wildlife; and jungle wildlife of undefined status—including the ash colored deer (*Mazama gouazoubira*) and the short eared fox (*Atelocynus microtis*).

Heading the list of animals threatened with extinction is the yellow tail monkey (*Lagothrix flavicauda*). Until 1974, when one was found and brought to Lima, it was thought extinct.

The one specimen is now housed in Lima's Natural History Museum, where the curator, Dr. Hernando de Macedo Ruiz, hopes to set up a breeding colony. Another expedition to find a suitable mate will be financed by the New York Zoological Society.



World Environment Report

10 JAN 1978

VOL. 3, NO. 25

Copyright ©1977, Center for International Environment Information.

DECEMBER 5, 1977

Fish Eaters in Britain Imbibing Worrisome Doses of Cesium 137

LONDON—Worries over the continuing contamination of fish by radioactivity intensified recently when a leading scientist disclosed that some British families are already getting doses equal to one-third of internationally permitted limits.

Prof. William Potts, of the Department of Biological Science, University of Lancaster, gave this evidence before the public inquiry into plans to expand the Windscale nuclear processing plant on the coast of Cumbria (see story in adjoining column).

He said that Cesium 137, a radioactive element released as low level waste from Windscale into the Irish Sea, was the most important source of artificial radiation to the British population. Such waste levels, he said, had greatly increased in recent years and might be causing genetic damage in an undetermined number of families.

Professor Potts said: "A small number of fishermen who are heavy fish eaters (up to one-half pound of fish per day) now receive up to 35 per cent of the maximum International Commission on Radiological Protection recommended dose and a large part of the British population now receives a dose which, while very small individually, may cause significant genetic damage if continued."

Addressing the inquiry as a member of the Lancashire and Western Seas Fisheries Committee, he said he was concerned lest the proposed Windscale expansion cause additional discharges which would damage the commercial interests of the fishing industry and also harm some fishermen's families who were exceeding the maximum recommended dose of radioactivity.

"In such circumstances it might well be considered more cost effective to restrict fishing in limited areas than build very expensive treatment plants," he said. "However, any such restrictions would have serious effects on the value of all fish catches from the Irish Sea. These hypothetical restrictions are not a remote possibility when some individuals are already receiving 35 per cent of the maximum recommended dosage and when the output of radio Cesium has risen four-fold in two years (1973-75)."

Later Professor Potts stressed that the inshore fishing off the west coast of Britain had become much more important since British fishermen were denied their fishing in Icelandic waters.

ALAN MASSAM

UK's Windscale Inquiry Into Nuclear Reprocessing Ends

LONDON—After 100 days and at a cost of \$3.5 million, the Windscale inquiry into the application by British Nuclear Fuels to expand its nuclear reprocessing plant (*WER*, June 6, p. 1) has ended. The inquiry inspector, Mr. Justice Parker, and his two scientific assessors are now at work on their report for the government in a London office provided by the Department of the Environment. Sifting the mass of evidence to prepare the report and its recommendations is expected to take until the New Year.

There were moments of both humor and drama—when Parker punctured a demonstration staged in the hearing hall by offering the dissidents time to officially address the inquiry, which they subsequently did; or when the inquiry closed to the unbroken sound of a drum beaten by a Japanese monk for the victims of Hiroshima.

As the inquiry ended, the energy panel of the Government's Social Science Research Council (SSRC) announced that it had commissioned a study, at a cost of \$14,000, into the inquiry's papers and proceedings.

With the government committed to public debate on major policy decisions affecting the environment, such inquiries will be more frequent in the future. Windscale successfully gave voice to discussion on everything from technological detail to political philosophy. It was, however, both lengthy and expensive.

The SSRC study will concern itself with methods of making such inquiries more efficient without loss of democratic participation. The study is planned for completion next March, and will be timely because an announcement about an inquiry into fast-breeder reactors is expected next summer.

ALAN MASSAM

In This Issue

New Mediterranean Treaty	2
Hydroelectric Projects	3
OAS and Marine Mammals	4
Malta's Oil Center	5
Artificial Reefs	6
Chemical Congress	6
In Brief	7

ECE in Geneva Follows Up On UN Water Conference in Argentina

GENEVA—International experts on the problems of water—including pollution control—met here recently to seek ways of intensifying worldwide cooperation.

The United Nations Water Conference held at Mar del Plata, Argentina, in March 1977 directed the UN Economic Commission for Europe, among other groups, to take steps to promote international cooperative action (*WER*, April 25, p. 4).

Last August the UN Economic and Social Council (ECOSOC) confirmed the role of regional commissions in carrying out the Water Conference directives and asked these groups to convene meetings to study ways of increasing cooperation. Proposed topics included: strengthening of regional commissions to enable them to discharge wider responsibilities in the water sector; promotion of cooperation in questions of shared water resources; carrying out community water supply proposals that were tabled at the Argentina meeting; preparations for the launching of the International Drinking Water Supply and Sanitation Decade (1980-90); an action program covering use of water in agriculture; and technical cooperation among developing countries and financing arrangements in the field of water resources.

The recent ECE meeting discussed two of these proposals.

The first called for promotion of active cooperation among riparian countries over trans-boundary river basins and other shared waters, particularly in the control of water pollution. The ECE Secretariat noted that such cooperation, in the spirit of the Final Act of the Helsinki Conference on Security and Cooperation in Europe, could be established through regional conventions and the harmonization of long-term national water plans, with a joint plan for an entire basin as a second step.

The second called for guidelines for regional and international cooperation in Europe and North America and recommended an exchange of scientific and technical information and documentation, and a review and analysis of the existing and prospective use of water resources.

WILLIAM G. MAHONEY

New Mediterranean Treaty Will Police Land-Based Pollution

NAIROBI—Thirteen Mediterranean countries and the European Economic Community (EEC) have agreed on the principles of a treaty to control land-based pollution of their coastal waters. The meeting, recently held in Venice, was sponsored by the UN Environment Programme (UNEP) and jointly organized by the Italian

Ministries of Scientific Research and Foreign Affairs.

Prior to the Venice meeting, the results of an 18-month investigation of land-based pollution in the Mediterranean had been studied by scientists, engineers, and administrators meeting under the aegis of the World Health Organization (WHO) in Geneva. This documented study was then passed along to the Venice conferees.

It is estimated that the new treaty will cost \$5 billion to put into practice, according to Stjepan Keckes, who is in charge of UNEP's Mediterranean Action Program. He described the Venice agreement as significant, but warned that the anti-pollution measures would require very substantial effort from the 18 countries of the region.

The draft treaty, which will be submitted to a meeting of Mediterranean governments at Monaco next January, says that the affected states shall take all appropriate measures to prevent and combat pollution of the Mediterranean from land-based sources in their territories, and contains a "black list" of substances which must not be discharged into the sea—including mercury, DDT, polychlorinated biphenyls (PCBs), plastics, used lubricating oils, and radioactive wastes.

There is also a long "grey list" of substances that may be discharged in limited quantities under Government license—such as zinc, copper, lead, arsenic, cobalt, silver, cyanides, fluorides, and disease-causing microorganisms.

Representatives of Algeria, Cyprus, France, Greece, Israel, Italy, Lebanon, Malta, Monaco, Morocco, Spain, Tunisia, Yugoslavia, and the EEC attended the Venice meeting. Observers were present from Portugal and several international organizations.

They were told that the Mediterranean is dangerously polluted by industrial waste, municipal sewage, and agricultural run-off from coastal sources, and from river sources hundreds of miles inland. CHARLES HARRISON

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$125 per year. \$15 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Ann C. Werner
Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

Ecological Disaster Threatens Colombia's Hydroelectric Projects

BOGOTA—Ecological disaster is threatening two of Colombia's largest hydroelectrical projects and the economic future of the western department of Antioquia, headquarters of the country's textile and coffee-growing industries.

Due to the absence of environmental safeguards, the giant El Penol and San Carlos complexes may face the same fate as the hydroelectrical white elephant at Anchicaya south of Antioquia in the Cauca River Valley. A classic example of environmental non-planning, Anchicaya has lost four-fifths of its original five-million-cubic-meter capacity in the past 15 years due to sedimentation—mortal enemy of all dams.

Although nearly \$200 million have been invested in the 560,000 Kw El Penol project to date, government authorities have failed to take even minimum precautions to protect the Nare River basin which is to supply both El Penol and the \$815 million, 620 Mw San Carlos project. And the Nare is the key to future energy resources for the department of Antioquia and its industrial capital, Medellin.

World Bank Warning—According to recently released studies by the World Bank, the basin faces "catastrophic consequences" unless sweeping environment protection measures are immediately established. (The World Bank approved a \$45 million loan for El Penol in 1964 but began to have serious doubts about the project at the beginning of this decade.) Impresit, an Italian firm specializing in hydroelectrical projects, was contracted for civil engineering work, the first phase of which was completed in 1972; the second phase is scheduled to be finished next year, with the inundation of 62 sq. kms., including one-quarter of the river's length and a large part of the municipality of Guatapé.

El Penol's achilles heel, according to the World Bank report, is sedimentation. Although original studies calculated a two per cent annual loss in Penol's 1.2 billion-cubic-meter capacity, the World Bank believes these estimates are too optimistic, and in any event an annual loss of over .002 per cent is considered significant during a decade. More exact calculations of the dam's loss in capacity have been undertaken by the Medellin Public Works, which is in charge of the project, but these studies will not be available until 1979. In the meantime, photo surveys of the area by the municipality's engineers made after the area's inundation show that islands have already formed in the lake as a result of sedimentation.

Deforestation—Most of the natural forests surrounding the lake have been destroyed by local cattle ranches, and a large amount of vegetation never cleaned up during the first phase of inundation is choking sections of the lake and destroying fish life. Moreover, several varieties of plants have invaded the lake, and the indigenous fish

ecology has been unbalanced by the introduction of voracious carp.

Though aware of these problems, the Medellin Public Works has been unable to cope with the situation because it has no biological program for El Penol.

In addition to these problems, the Nare River is suffering from contamination from four municipalities where several textile factories are dumping untreated waste into the river, which is used for bathing and drinking by the local populace. Along with dead fish, rotting vegetation, and increasing sedimentation, these polluted waters are swept into the Penol Dam and, ecologists warn, could result in the accumulation of noxious sulphuric gases.

The 61-million-cubic-meter San Carlos Dam east of El Penol, to be completed in three stages by 1982, may face the same ecological problems as El Penol since it, too, depends on the rapidly eroding Nare River basin. Although a descriptive environmental study was undertaken by the various electrical companies involved in its construction, no specific countermeasures have been evolved.

Civic Protest—The World Bank study has already proved correct in its forecast of civic protests against the Penol Dam's inundation of local municipalities. Led by the local Catholic bishop, Ignacio Gomez, the Penol-Guatapé populace has strongly objected to substandard housing in the new municipality constructed after inundations.

According to Colombian ecologists, all these factors should give the nation's planners cause to reflect, particularly since Colombia is now seeking \$2.3 billion in foreign loans to finance its hydroelectrical expansion. "El Penol's ecological problems show that the public works authorities operate solely with an engineering criteria," said Alberto Donadio, one of Colombia's leading environmental spokesmen. "The biologists and the naturalists had no say in the program and therefore the dam was constructed without consideration for elemental ecological principles."

PENNY LERNOUX

CENTO Nations Plagued by Soil Erosion and Watershed Depletion

ISLAMABAD, Pakistan—Depletion of watersheds and erosion of soil are indeed the most serious environmental problems currently facing Pakistan and other regional member countries of the Central Treaty Organization (CENTO), according to delegates at a recent "CENTO Watershed Management Seminar" at Pakistan Forest Institute in Peshawar.

The five-day seminar was attended by more than 25 delegates from Iran, Turkey, United Kingdom, and United States.

Speaking at the seminar, Nazmi Tehkhavat, the delegate from Turkey, stressed the efforts to increase and accelerate the afforestation campaign so as to lay a thicker vegetal cover by manipulating different types of land usage.

Peter Henry, the U.K. delegate, said a vital factor determining human survival was the capacity of the earth to sustain its increasing population. And that depended, he said, to a great measure on the productivity of soil and availability of usable water.

James White, representing the U.S., exhorted the CENTO countries to consolidate further efforts to manage watersheds so that soil erosion could be monitored effectively.

The inaugural address was presented by Dr. Mohammad Yaqoob Bhatti, Additional Secretary, Ministry of Agriculture, Cooperative and Land Reforms, of Pakistan. Highlighting the attempts of Pakistan to protect the soil, Bhatti said that for the past 20 years the country had been trying to improve the management of its watershed through the pilot project approach, in which correct management practices had been demonstrated so that the mountain farmer would be motivated to apply similar practices on his own lands.

Pakistan's Inspector-General of Forests, A.M. Khatkhat, described soil erosion in Pakistan. He estimated that 36 per cent of the total land mass of the country was affected by water erosion and another 40 per cent by wind erosion. He said that water erosion was the major problem in the northern uplands, affecting about 35 million acres, while the southern part of the country faced wind erosion mainly through shifting sand dunes.

MOHAMMAD AFTAB

Bulgaria Intensifies Waste Water Treatment and Air Purification

SOFIA, Bulgaria—Radio Sofia has recently reported that during the current five-year economic plan extending to 1980 the country will spend 840 million leva (a non-negotiable currency with no U.S. true dollar value) on protection of the environment.

The radio report said that 750 waste water treatment plants in industry and 29 town water treatment installations will be constructed. More than 100 million leva of these funds will be devoted to construction of air purification facilities, it said. Other measures will be taken to combat forestry erosion and to recultivate the soil.

This year alone, the report said, 162 million leva have been invested in environmental protection.

The figures emerged from a plenary session of the

National Committee for Environmental Protection that met here to study the guidelines of the Bulgarian State Council for protecting the environment.

Plans are underway to develop production technologies that discharge no waste, and closed cycles for use of natural resources and energy, the report said. A guideline has been prepared for coordinating development of integrated systems for water and waste treatment in which the wastes from some plants can be used as raw materials by others.

SPECIAL DISPATCH TO WER

Scientists Urge OAS to Protect And Control Marine Mammals

BUENOS AIRES—A group of 19 scientists from Western Hemisphere nations has recommended that the Organization of American States (OAS) undertake programs for the protection and investigation of hemispheric marine mammals. The scientists recently met under OAS sponsorship in Puerto Madryn about 700 miles south of here along the Atlantic coast close to the natural habitats of many marine mammals.

Special attention, the participants said, should be given to protecting and controlling sea mammal life off the coasts of southern Argentina and Chile. These regions are rich in dolphin, whale, seal, otter, and penguin. The scientists also recommended studies of specific mammals in danger of extinction in other hemispheric zones.

"There is no immediate danger of marine mammal extinction in Argentina because the hunting of them has been illegal since 1974," said Jose Gallardo, director of Argentina's Natural Science Museum and a participant at the OAS meeting.

"Dolphin populations are in danger in other countries lacking bans. In Chile, dolphins are killed and their meat used as bait to catch giant king crabs. Elsewhere dolphins get caught in tuna fishing nets. There is a need for new types of nets to let the dolphins escape," Gallardo told *World Environment Report*.

Other endangered mammals include seals off the coasts of Chile, Peru, Uruguay, and Argentina and in the Mexican Gulf of Lower California. Seals often get caught in fishing nets causing their deaths. In some countries they are hunted for food.

Also needing study, the scientists said, are the Right Whale living off the coasts of Chile and Argentina and the Humpback Whale which reproduces off the coasts of Ecuador and Colombia.

The meeting did not make specific recommendations regarding possible protection measures, limiting itself to cataloguing the species needing investigation and those in danger of extinction. In general, participants favored international legislation and supervision of mammal life by world agencies.

AGOSTINO BONO

Malta and UNEP Refurbish Oil Combatting Maritime Center

MALTA—The Maltese House of Representatives recently adopted a resolution, proposed by Prime Minister Dom Mintoff, leasing a building on Manoel Island to the Inter-Governmental Maritime Consultative Organization (IMCO). The structure currently houses a Regional Anti-Pollution Centre, and both the Centre and IMCO will eventually be run by Malta and 18 Mediterranean states.

The Prime Minister said that the agreement with the UN Environment Programme (UNEP) calls for an initial outlay of \$657,000, of which Malta will pay \$120,000. Restoration work will be undertaken by UNEP, with the Malta Government providing the telephone and telex facilities.

At the Barcelona conference the Mediterranean states had voted to set up the Oil-Combating Centre in Malta with UNEP regional funds, and the Centre was formally opened on December 11, 1976—a milestone in the history of the UN Environment Programme (*WER*, Jan. 3, p. 7).

The Centre's primary objective is "initially to strengthen the capacities of the 18 coastal states to cope with massive oil spills and to facilitate cooperation among them, for example by speeding up the exchange of information once a spill has been sighted."

Functioning as a kind of early warning system, the Malta Centre would alert states likely to be affected by a massive spill such as one caused by a collision of tankers. The Centre would also help coordinate cleanup operations against an oil spill if the countries involved so desired. But it will not itself be equipped with the means of combating spills. However, the possibility of expanding the Centre's functions to include its own operational capacity to combat massive oil spills is not excluded if agreement is reached by the participating Mediterranean governments at a later stage. FREDERICK BARRY

Bangladesh, India Sign Historic Pact on Sharing of Ganges Waters

DACCA—Bangladesh and India finally resolved their quarter-century-old dispute over Farakka Barrage when they recently signed an agreement—hailed as "historic"—on sharing of the Ganges waters.

The dispute centered on India's continued withdrawal of large amounts of water from the Ganges to flush Calcutta port, causing massive adverse effects on agriculture, irrigation, fisheries, forestry, navigation, industry, and the health and ecology of Bangladesh.

India had commissioned the \$180 million Farakka Barrage in 1974 following a one-year agreement with

Bangladesh. In 1975, after the agreement expired, India unilaterally withdrew water, and finally in 1976 Bangladesh took the issue to the United Nations.

The impact of withdrawal was so great that roughly 8,420 square miles were affected by salinity at 500 micromhos, 5,760 at 2,000 micromhos, and 4,850 at 5,000 micromhos. These areas were densely populated and intensively cultivated. The index of the salinity of Bhairab River went up to 13,600 micromhos per centimeter in April 1976 compared to an historical average of 500. The penetration of saline intrusion increased from the normal 170 miles to about 270 miles from the coast.

The five-year, 15-article agreement provides that in case actual availability of Ganges water at Farakka during selected dry periods from January to May was higher or lower than the quantum worked out on the basis of 75 per cent availability from 1948 to 1973, it will be shared in the proportion applicable to that period. It also stipulates that India shall not withdraw more than 200 cusecs of water between the Barrage and the point where both banks of the river converge in Bangladesh.

The agreement also authorized the Indo-Bangladesh joint rivers commission to carry out studies relating to the augmentation of the dry season flow of the Ganges and to seek an economical and feasible solution.

TAHMINA SAEED

New Domestic Solar Water Heater Now Available to India's Poor

NEW DELHI—The solar water heater has arrived in India at last. The 140-liter-capacity device is claimed to be ideal for a family of five.

Manufactured under license from the National Research Development Corporation of India, and developed by a Bombay firm, this domestic model, consisting of two absorber panels and an insulated storage tank, is capable of heating 140 liters of water to about 55 degrees C. in winter and 65 degrees C. in summer within four to five hours of exposure to direct sunlight.

In India, where the poor man's energy sources are firewood and cowdung, the emergence of solar energy is a great boon because it is inexhaustible and non-polluting. For eight months of the year, clear skies permit an unobstructed downpour of solar radiation throughout the land. On an average, 450 calories per square CM radiation is available daily.

To keep up with the rapid technological advance that industrialized western countries are making, India is giving priority to various other solar projects like solar water pumps, solar crop driers, and solar distillation and desalination equipment for drinking water. But until they are manufactured on a large commercial scale, Indians will have to use cowdung, firewood, and, where affordable, coal. R. MURALI MANOHAR

Taiwanese Create Artificial Reefs to Spur Fish Production

TAIWAN—Agronomists and zoologists here have long been aware that any major attempt to provide more food must consider the quality of the food (i.e., protein) as well as the quantity. And that with the Taiwan land mass severely limited and highly cultivated, the sea seemed to offer the best hope.

Accordingly, three years ago, after a request by the Taiwan Joint Commission on Rural Reconstruction, the Institute of Zoology, Academia Sinica, assumed the responsibility of assessing the effectiveness of artificial reefs. Now its report shows that the dumping into the sea of junked cars, scrapped tires, ship hulks, oil drums, and specially designed concrete frameworks provides a simulated habitat for many marine animals. After submersion, especially in warm water areas, these artificial reefs become encrusted with such marine organisms as seaweed, barnacles, hydroids, sea fans, sponges, and soft corals—all of which serve as a food chain for many fish, thus forming a new biological community.

The zoologists found that a suitable site has a wide, flat substratum consisting of pebbles or white sand intermixed with shells. Ideally, the depth should be 20-30 meters, have good visibility, and an ocean current velocity of less than 1.5 m.p.h. They cautioned against choosing a site in polluted areas and estuaries, or one less than half a mile from natural reefs.

Materials should be cheap and durable. Because junked cars and used tires are scarce and must be recycled in many third world nations, concrete frameworks are most suitable, the report said.

One artificial reef off West Island near Penghu, Taiwan, has attracted more than 40 species of economically important fish. Population density was 20 per cubic meter, with most fish longer than 20 cm. Thus a region of 25,000 cubic meters would provide for a population of 500,000 fish. If the average price of a fish is \$1.00, the renewable resource produced by the artificial reef would be worth approximately \$.5 million per year.

SPECIAL DISPATCH TO *WER*

Chemical Congress in Peru Indicts Copper Mine Pollution of Rivers

LIMA—Two important environmental studies were presented here during the recent XI Peruvian Congress of Chemistry. Both of them are related to river pollution caused by tailings being dumped from a number of copper mines located in the Andes.

The first calls for a cleanup of the River Locumba, in Tacna, the southern area bordering Chile. It was re-

searched by Cliff Kirchmer and Maria Luisa Castro of the Panamerican Centre of Sanitary Engineering and Environment Sciences of the Panamerican Health Organization.

According to the study, the river has a higher level of magnesium than is permitted by international standards. Both researchers urge private and governmental authorities to examine methods of treating the water.

The second study relates to the contamination of the River Moche, in the northern area of Trujillo, which is polluted with magnesium, cadmium, iron, and zinc. The level of pollution there is higher than currently allowed under Peruvian legislation.

Pedro Angulo Herrera, of the Pharmacy and Biochemical Program of San Marcos University, Lima, who was responsible for the second study, suggests that mine tailings be treated prior to being dumped. He concludes that the best sequential method would include pre-disinfection, coagulation, sedimentation, filtering, and final disinfecting.

LORETTA McLAUGHLAN

Greece Asked to Create Central Environment Protection Agency

ATHENS—A private environmental group in Greece has called on the nation's political leaders to contribute to the creation of a "State Environmental Protection Agency to cope with the fast-growing environmental problems of the country."

In a circular to all office seekers during the recent parliamentary elections, the Greek Society for Research and Control of Water, Land, and Air Pollution (ERYEA) said that "further delay would simply aggravate the country's already bad environmental situation."

ERYEA said the new Agency should report directly either to the Prime Minister or to the cabinet, and coordinate all activities regarding environmental protection. At present, environmental matters are handled by low-level departments within the separate Ministries of Industry, Merchant Marine, Culture and Sciences, and Social Welfare, all of which function independently of each other.

ERYEA also proposed that 0.2 per cent of the country's net national income be allocated annually to the Agency, and suggested that at least 10 per cent of any new industrial investment be spent for environmental protection purposes. It said the Agency should also be responsible for devising industrial zones, and imposing sanctions on anyone infringing environmental laws.

This new call to action follows one made earlier this year by Greek industrialists who went even further and proposed the formation of a vice-ministry to deal with environmental issues. They said that they were willing to take all necessary measures to reduce industrial pollution.

KYRIACOS CONDOULIS

In Brief...

Argentina Complains IAEA Hinders Its Energy Plans

Pressures on countries, such as Argentina, which have not signed the nuclear non-proliferation treaty are hindering energy plans of these nations, Vice-Admiral Carlos Castro Madero, President of Argentina's Atomic Energy Commission, recently complained.

The International Atomic Energy Agency, world policing agency, is channelling aid and technology provided by nuclear powers exclusively to nations that have signed the non-proliferation treaty, he said.

"Argentina adheres totally to the principle of non-proliferation for warlike ends. But it will not let the imposition of restrictions on its nuclear plans be done for the sake of non-proliferation," Madero stated.

Argentina currently has one nuclear energy plant in operation and plans to have another functioning by year's end. Thus any restrictions could be a major hindrance to Argentina because it depends on foreign technology—reactors from Canada and atomic fuel from West Germany.

Philippines Waives Duties On Nuclear Plant Parts

Philippine President Ferdinand Marcos has waived various customs requirements to facilitate the construction of the country's first nuclear power plant in Bataan. In addition, the customs personnel are being directed to speed up the processing and release of imported equipment and machinery for the nuclear plant.

Civil works for the nuclear plant have already started. The nuclear reactor and other facilities will be erected once the land preparations are completed.

Kuwaiti Engineers Claim Restoration of Ammonia

Two engineers of the Petro-Chemical Industries Company (PIC) in Kuwait claim that they have succeeded in designing equipment for the restoration of ammonia sulphate gas to help fight pollution.

The new equipment, which they say can be manufactured locally, is designed to restore the suspended urea dust with a performance efficiency of 99.6 per cent. Costs of the anti-pollution project could be recovered in one year's time because it could restore up to 4,500 tons of ammonia annually.

UK Urged to Lessen Impact Of Noisy Helicopter Travel

Because travel by helicopter is still in its infancy in Great Britain, this is the propitious time to evolve measures to lessen its noise impact, according to the Department of the Environment's Noise Advisory Council.

Its recent report, "Helicopter Noise in the London Area," prepared by the Council's Working Group on Noise from Air Traffic, points out that if the noise problem is ignored now, the situation may be irreversible when helicopter traffic has escalated.

Some of the measures the report recommends seek to cut down the noise at source by research into helicopter technology, the issuing of noise certificates, and modifying flying techniques. Other measures relate to the ground environment.

Appropriate sites should be selected to deal with future passenger demand, the report suggests. Helicopter and their approach routes should be subject to noise limits and the routing of helicopters should have reference to the noise climate. There should also be controls on the operation of private helicopters.

Bogota Installs Atmospheric Monitoring Stations

Bogota's municipal health authorities have announced that the city will soon install four ecological stations to monitor atmospheric contamination. Known as the "Sodom of the Andes" because of its pollution, Colombia's capital of four million is besieged by a series of environmental problems, including the contamination of its principal waterway, the Bogota River, and increasingly high atmospheric concentrations of carbon monoxide and sulphuric and other lethal gases.

Health Secretary Jorge Colmenares has announced that all industries located in Bogota will be required to install filters. He also urged local companies to end the practice of burning garbage. But this is easier said than done, according to industry spokesmen, who complained that municipal garbage company Edis is not doing its job. This failure is tacitly recognized by Colmenares, who attributed Edis' poor performance to lack of funds to buy the necessary equipment to cope with the city's daily production of 3,200 tons of garbage.

Location of Chilean Game Preserve a Well-Kept Secret

Chile's national forestry corporation is keeping secret the exact location of a game preserve in southern Chile for disappearing deer species, especially the huemul. It is believed only 50 of these animals survive in Chile, about two per cent of the number living here half a century ago.

Chilean wildlife officials also estimated that only three per cent of the guanaco and four per cent of the chinchilla population of fifty years ago exist today.

TV System to Monitor Nuclear Radiation Devised in Vienna

A TV system designed to monitor radiation exposure in storerooms and technical installations in nuclear plants has been developed in Vienna.

The prototype system is fully automatic in operation. It uses a magnetic tape 2,362 feet long, sufficient to take more than 200,000 photographs in a single run, and permits recording of pictures over a memory period of several years. Highly sensitive infrared cameras secure satisfactory monitoring even under most unfavorable light conditions. A digital control device ensures that the system requires no maintenance even over extended periods of observation. A self-supply circuit is installed to take over in an emergency such as interruption of external power supply.

Small S. Korean Plants Lack Anti-Pollution Devices

A recent survey, conducted by the Korea Federation of Small Business, showed that more than 40 per cent of the pollution-causing small and medium industrial plants in South Korea have inadequate anti-pollution devices. Therefore, the Federation proposed that the government extend about \$41.2 million to the smaller enterprises and establish an ad hoc organization to deal with anti-pollution issues.

USSR and Sweden Agree On Environmental Cooperation

Sweden and the Soviet Union recently extended their 1976 agreement on environmental cooperation for another two years. Working delega-

tions of the two countries which met in Moscow and Tbilisi pronounced the first year of cooperation as "positive and successful."

The two nations will continue to deal with defense against pollution in the Baltic Sea. Two expeditions with Soviet research vessels will make ecological tests and measurements in the Baltic. Among other questions to be dealt with are methods of restoring and protecting polluted lakes.

Ghana Orders Environmental Impact Statements Be Filed

New industries in Ghana henceforth will be required to file acceptable environmental impact statements before they can begin operations, according to Prof. E. A. Boateng, Chairman of Ghana's Environmental Protection Council. He made this disclosure at a three-day seminar on "Environmental Aspects of Industrial Development" held recently in Accra and attended by delegates and observers from Ghana, Nigeria, and Sierra Leone under the sponsorship of the Council and the U.S. Agency for International Development (USAID).

The Ghanaian environmental specialist called for the judicious use, rather than the depletion, of natural resources, and he went on to say that "even though the extraction of our natural resources such as timber and minerals should be carried out, they must not be done so indiscriminately that they destroy the needed ecology which helps in cocoa production, for instance."

Opening the seminar, Ghana's Commissioner for Economic Planning, Dr. Robert K. Gardiner, urged environmentalists to provide the public with the necessary environmental education to enable the public to guard against environmental pollution. And he emphasized that manufacturers must be made to realize the harm they cause and whether they compensate fully for it.

Brazil-UK Firms Construct Sewage System for Ships

Brazil, in a joint venture with Great Britain, is constructing its first plant to produce sewage and incinerator systems for ships. The technology was devised by the British firm Hamworthy Engineering Ltd., and fabrication will be carried out by Brazil's Tridente Industria e Comercio de Equipamentos Navais Ltd., at the Caneco shipyard of the Rio de Janeiro shipbuilder Fermasa, with whom Tridente is associated.

The shipboard sewage system, which can also be adapted to onshore industrial applications, will be built to meet the strict demands of the U.S. Coast Guard and the International Marine Consultive Organization. The British and Brazilian partners have already met and discussed details with Brazil's environmental agencies, FEEMA and SEMA, and are now awaiting approval from the CDI (Brazil's Industrial Development Council) to start production.

With French Aid, Bangladesh Plans Nuclear Power Plant

Bangladesh is actively planning to build a 250 Mw nuclear power plant to meet its energy crisis. A presidential order to construct the plant is expected soon and a report by a high powered Committee on Natural Resources Utilization has already submitted its recommendations.

Three French nuclear experts who recently visited Bangladesh recommended construction of the facility, especially in view of discovery of uranium in Chittagong and Sylhet.

Chairman of Bangladesh Atomic Commission Dr. Anwar Hossain had also visited France to explore the possibilities of French collaboration in the project. There are indications that France might provide expertise and financial help if Bangladesh goes ahead with the project.



World Environment Report

28 DEC 1977

VOL. 3, NO. 24

Copyright © 1977, Center for International Environment Information.

NOVEMBER 21, 1977

UNEP in Geneva to Publish New Bulletin on Toxic Chemicals

ROME—The UN Environment Programme (UNEP) will establish a new source of information on potentially toxic chemicals, according to a recent announcement here by Dr. Herbert E. Christensen, a UNEP official based in Geneva. The publications, or bulletin, will be available for distribution soon, he said.

Dr. Christensen disclosed the UNEP project at a three-day meeting of the Italian Chemical Society, at which scientists, politicians, and businessmen from several European countries debated the relationship between the expanding use of chemical products and the quality of life.

The bulletin, he said, will report on the progress of the International Register as a center for information on toxic chemicals, major accidents, and new emergency services. This service was suggested to the International Register of Potentially Toxic Chemicals (IRPTC) by the Scientific Advisory Committee.

"Some of these chemicals," he warned, "eventually find their way into man through his food, drink, and air, and may pose a serious threat to his health. Hazards must be evaluated objectively, but no international list of chemicals was previously available for the purpose of beginning the hazard evaluation process."

The idea for an international registry for chemicals goes back to the UN Conference on the Human Environment held in Stockholm in 1972, after which UNEP was established. An expert workshop set the guidelines in January 1975 for the installation and operation of the IRPTC, and a task force at UNEP headquarters in Nairobi developed its organizational and operational procedures, plus an action plan.

Roughly a year ago, the Activity Center of the IRPTC moved to quarters in Geneva supplied by the World Health Organization. Momentum was provided by the appointment of Dr. Jan W. Huismans last March as Director. Dr. Christensen works with him as Chief of the IRPTC Information Processing Unit. Mr. Chelliah Satkunanathan, the Chief of the Scientific Program, completes the professional staff.

Along with identifying potential chemical hazards, the IRPTC provides information concerning standards and recommendations, and regulatory measures and legislation. Data are being collected and stored now in a computerized databank as the Register prepares to

answer queries from users anywhere in the world.

"All member governments of the United Nations have been invited to nominate national correspondents, and some of them have already complied," Dr. Christensen said. "Next year the Register expects to arrange training workshops and seminars for the appointed correspondents, and to assist them in their use of the service."

VITTORIO PESCIALLO

Duty Equal to Environmental Costs May Be Imposed on Imported Copper

WASHINGTON—Charging that many foreign copper producers are degrading the world's atmosphere through minimal investments in control facilities, U.S. Representative Morris K. Udall (D-Ariz.) has introduced a bill that would impose a duty on imported copper equal to the cost advantage such producers now enjoy.

American producers spend as much as 10 cents for each pound of copper produced to comply with environmental regulations, or about one-sixth of the price at which copper can currently be sold on the domestic market. The Udall bill, which has nine co-sponsors, would put U.S. copper producers on an equal footing with producers who are not subject to strict water and air pollution regulations, Udall said.

One aim of the bill is to reverse the high number of layoffs in the domestic copper industry, including some 10,000 workers in his own state. But Udall said also that he hopes the bill will "preserve and protect the world's environment by encouraging foreign copper producers to adopt environmental measures substantially equivalent to those employed in the U.S."

PETER PHILIPPS

In This Issue

Car Cemeteries	2
Gulf Desalinization	3
Sawdust for Petroleum	3
French Smoking Ban	4
Environmental Education	5
Nitrate Pollution	6
In Brief	7

Enormous Trash Problem Burying Ever-Popular Resort of Cuernavaca

CUERNAVACA—This ever-popular resort an hour south of Mexico City is being caught in the classic environmental crunch that occurs when Third World financial resources are incapable of coping with industrialized—and motorized—society.

The result: An enormous trash problem that threatens to bury this storied paradise of the Aztec kings in a mountain of plastic bottles, tin cans, and waste paper. Only recently, however, have firm measures been taken to reverse the ugly trend.

Calling Cuernavaca and the state of which it is the capital "a gigantic and free recreation park for the residents of Mexico City," federal tourism delegate Felipe Jardel has asked Mexican President Jose Lopez Portillo to release federal funds to aid the city. Every week, 70,000 persons visit the tiny state, he noted, and on weekends and holidays the city is swollen with Mexico City residents escaping their heavy traffic and smoggy skies.

In interviews with *World Environment Report*, Jardel and city official Ernesto Martinez Perez discussed the problem and their efforts toward solutions. Martinez, chief of the city's cleaning department, said the city's stable population is around 250,000, but it nearly doubles on long weekends and holidays.

"We are one of the most expensive departments of the city," he observed, "yet our annual budget (\$266,500 to \$311,000) is inadequate." With this limited resource, Martinez daily sends out 13 trucks with three-man crews to canvass neighbors and collect trash, plus 26 street sweepers. Trucks frequently break down, he said, and parts are expensive and often must be ordered from outside Mexico. Disposing of the hundreds of tons of trash daily is another problem, he added.

Jardel said a consultant for a Houston, Texas, waste disposal firm has talked with city officials about a waste recycling plant, but the tourism director said such systems now operating in Mexico have not yet been successful. An alternative would be converting abandoned sand mines in the city into sanitary land fills and covering them with sports fields, he suggested.

With enforcement of anti-dumping ordinances long on the books, fines of \$6.66 are being assessed against violators. But this same enforcement means the open trash trucks must travel 25 miles down the highway to a site in the country now designated as the Cuernavaca dump.

"This is getting the trash away, but it is just moving the problem," Jardel and Martinez acknowledged, because the present dump is "dangerously near" a unique archeological site. In his petition to the president, Jardel asked for federal monies to modernize parks and archeological sites with parking areas, clean-up crews, and watchmen—with the clean-up crews a priority need.

KATHERINE HATCH

Bavaria Curbs Pollution Arising From 500 Old-Car Cemeteries

MUNICH—Bavaria's Ministry for the Protection of the Environment has recently issued new directives that tighten curbs on the more than 500 old-car cemeteries in this state.

The Ministry noted that such areas are often a burden upon the environment. The high piles of wrecked chassis are unaesthetic; compressing the chassis creates noise pollution; and because one liter of old motor oil can pollute one million liters of ground water, the damage created by dripping oil is immense.

The new directives place upon the owners and operators of such "cemeteries" the responsibility of initiating improvements, and set forth criteria for the location, size, and division of such areas, equipment, and its operation.

They also call for the siting of such collection points near high-density population areas to be 10 to 15 miles from cities and large towns, with good access roads. The storage area should be large enough so that the stacked chassis never reach a height of more than three meters (nine feet). The ground should be sealed to prevent contamination from motor oil, battery acids, and radiator, brake and hydraulic fluids. There must be containers for water-endangering substances such as gas, diesel and motor oil. Fire fighting equipment is a necessity and the areas must be surrounded by fencing at least two meters (six feet) high.

The operator must draw up a standard performance procedure that conforms to these directives, submit to control checks by the Ministry, and maintain a register of water-endangering liquids taken from old cars, stored and then disposed of through already existing collection points.

SPECIAL DISPATCH TO WER

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$125 per year, \$15 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Ann C. Werner
Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

An Overview of Desalinization in the Gulf States

HAWALLI, Kuwait—Although Gulf countries are earning billions of dollars by providing the rest of the world with oil, they are still a long way from having enough fresh water for their own people. "More than oil, fresh water is cherished here," a Saudi newspaper recently observed. "The Saudis are happier when they discover a water well than when they strike yet another oil well."

For that very reason, 18 huge desalinization plants now dot the desert in Saudi Arabia, Kuwait, the United Arab Emirates, Iran, Bahrain, and Qatar. And in most cases the plants serve a dual purpose, producing electric power as well as water.

These water projects form part of a large economic diversification plan that includes large-scale industrialization to reduce reliance on oil for export revenues. In Saudi Arabia, for instance, the government has made a major commitment to water desalinization in its \$142 billion, five-year development plan. And diplomatic sources in Jidda believe spinoff projects—power plants, water pipelines, utilities, and transports—could increase allocations to more than \$35 billion over the next decade.

Currently, there are six desalinization plants in operation in Saudi Arabia—four on the Gulf—with a total capacity of 12.7 million gallons a day and 50 megawatts of electricity. The desalinization plant at the Red Sea port city of Jidda—which supplies five million gallons a day, or more than 20 per cent of the city's needs—has entered its second stage of a four-Phase expansion program. When completed, the facility will produce 35 million gallons a day and free the city from its traditional dependence on underground reservoirs.

The Saudi General Authority for Desalinization (GAD) has plans for 27 new desalting plants. Some will supply the major industrial complexes at Yanbu and Jubail, others will handle coastal towns, and two inland facilities will supply the holy city of Medina and the desert town of Al-Kharj. Target capacity for all desalting plants has been set at 369.8 million gallons a day and 3,680 megawatts of electricity, the official said.

Jubail, 54 miles north of the oil center of Dammam, is destined to become a major industrial and shipping area where the need for water and power is expected to grow considerably. "The dual-purpose, power-desalinization plants at Jubail are expected to be the world's largest sea water conversion facilities," Bruce A. Miller, Vice President of Sanderson and Porter Inc., said recently. The New York-based firm serves as consulting engineers for the plants.

"About half of the desalted water will be used for industry, and the rest for the needs of urban population up to 1990. Then we expect a shortage of water. We must expand the programs before then," said Prince Mohammad Al Faisal, the GAD Chairman.

After spending about \$330 million, Kuwait is said to be self-sufficient in fresh water for rural consumption and industry. There are three huge desalinization complexes

in operation in Kuwait, producing a total of 62 million gallons a day of fresh water. In addition, Kuwait produces a total of 50 million gallons a day of brackish water for irrigation. Because of snob appeal and tradition, Kuwait's wealthy still import bottled mineral water from Lebanon, France, and the neighboring Ajman Emirate, at a cost of \$750,000 a year.

The United Arab Emirates, in turn, have earmarked \$332 million for desalinization and power projects in the Jebel Ali area and Abu Dhabi city. Jebel Ali is being developed into an industrial center in the Emirate of Dubai, the second largest in the seven-Emirate Union. Dubai's water and electricity needs are increasing by 30 per cent every year, and the Jebel Ali plant is being built to supplement the Emirate's present overloaded system. The ultimate output of the \$220 million plant is to be nine million gallons a day and 60 megawatts of electricity.

In Qatar, the ruler, Sheikh Khalifa Bin Hamad Al-Thani, recently inaugurated a major desalinization-power complex at Ras Fontas on the Gulf coast south of Doha. This marked the completion of work on the first stage of the project, whose overall cost is estimated at roughly \$500 million. Upon completion in 1979, the complex will have a capacity of 32 million gallons a day and 612 megawatts.

West Germany's Kraftwerke Union, Italy's Sir and Fiat Termomeccanica, and Britain's Peyrolle Parson Group are major contractors for Qatar's power-desalinization projects. Japan's Mitsubishi firm is the major contractor for Dubai and Abu Dhabi as well as for Bahrain's projects. Bahrain's sole desalinization plant is attached to its new power station on an artificial island connected to Bahrain mainland by a short causeway. The complex was commissioned last May and desalinization units are steadily going into operation. Target capacity is 20 million gallons a day, with costs estimated at \$107 million, including a water distribution network.

MUSA DAJANY

Sawdust Recommended As Heat Fuel For Chile's Southern Hospitals

SANTIAGO—The use of sawdust instead of petroleum as a fuel for the heating and hot water systems of Chile's southern hospitals has been recommended in a National Health Service (SNS) study. As an alternative energy source, sawdust would save the SNS an estimated \$8,000 per month in hospital fuel bills.

The SNS recommendation to use sawdust in 11 of the Eighth Region's 38 hospitals follows a similar recommendation by the Chilean Health Ministry. The heavily forested Eighth Region is the heartland of the Chilean lumber industry, where sawdust is already used exten-

sively for home heating.

According to the study, it would take five kilos of sawdust, at 15 to 20 centavos (less than a penny) per kilo, to produce the same number of calories as a liter of petroleum, which costs four pesos eighty centavos (about five cents). The estimated cost of converting from petroleum to sawdust burners in the 11 hospitals is about \$30,000.

Sawdust furnaces are also providing fuel for hot water and heating at six times less than the cost of oil in 10 buildings owned by the state National Hotel Industry (HONSA), in southern Chile.

NINA SERAFINO

Three-Year Study Urges Stringent Pollution Ordinances for Hong Kong

HONG KONG—After a three-year study of Hong Kong's environmental problems, the Environmental Resources Ltd. (ERL), a private firm with extensive experience in environmental control, has recommended to the government new stringent ordinances on water pollution, waste disposal, noise abatement, and air pollution.

These ordinances are expected to be consolidated into a single environmental protection directive after a trial period.

The emphasis in the water pollution control provision is on the introduction of a flexible system of controls over discharges and deposits into inland and coastal waters and into sewers. According to the proposal, all discharges into inland and coastal waters will be monitored by a licensing system limiting their volume and nature. Disposal facilities for toxic and oily sludges are also provided for in the ordinance.

The noise abatement ordinance proposes to consolidate the existing legislative controls on noise, and suggests that areas of high noise incidence (HNI) and areas of low noise incidence (LNI) should be designated. This is to discourage further noise-sensitive developments such as schools and hospitals in HNI and keep away noisy developments in LNI areas. In addition, codes of practice are also drawn up for the control of noise from construction, air conditioning, vehicles and aircraft.

Finally, the proposed air pollution ordinance is expected to replace the existing Clean Air Ordinance and provide extended powers to deal with pollutants in addition to smoke. The ordinance will also provide powers to control emissions from more advanced forms of industrial processes that may bring about offensive or hazardous emissions. Smoke emissions including noxious vapors, grit and dust, and sulphur oxide emissions would be strictly controlled and limited.

ARTHUR MILLER

France Enacts Stiff New Penalties For Smoking in Public Places

PARIS—The French Government has just put into effect a new section of an anti-smoking law which carries tough penalties for violators and which should, in theory, drastically cut smoking in public places.

The July 1976 law passed by the French Parliament provided for breaking the public in gently to the full impact of its deterrents: first, radio and television advertising of tobacco products was banned, while that in the printed press was restricted in content and number (the percentage of ads must not exceed that carried in 1974-5).

The new section, which became operative in mid-October, in effect bans smoking in most enclosed public places—such as banks, elevators, government offices, post offices, schools, and other places where fresh air ventilation may be limited and therefore inadequate, or where young persons under the age of 16 years may be present. The ban applies to all forms of smoking, not merely cigarettes.

Penalties will range from fines of \$8.25 to \$16.50, depending on where the culprit is caught. These seem to put France among the toughest anti-smoking countries in Europe—where most countries bar smoking in public places such as buses, theaters, and movie houses.

But the new section of the 1976 law is widely unpopular where it is known about at all. Moreover, the general public is largely unaware of its existence despite a Ministry of Health campaign which includes a \$500,000 publicity drive, particularly in the high schools, and plans for warning labels on cigarette packs similar to those in the United States. But the law provides a two-year period before the warnings must be printed on cigarette packs, and 16 months after the 1976 law was passed by Parliament, there still seems no agreement on what the warning will say.

"Abus dangereux" (abuse is dangerous) is a possible version, according to the state tobacco monopoly SEITA, but the Ministry of Health claims the warning may be confined to a listing of each cigarette's nicotine and tar content.

Getting all the brickbats—plenty—and the roses—if any—is Madame Simone Veil, the controversial Minister of Health. She explained her approach to the problem of smoking when she said, at the start of the campaign, "We must avoid seeming to have a repressive attitude toward smokers."

However, a measure of Madame Veil's success in "informing" her listeners is that a 1976 poll found that 70 per cent of those questioned considered tobacco bad for health, compared with less than 50 per cent in 1974.

So far unresolved is the question of how to stop people from smoking in forbidden public places, once you have informed them it is against the law. "That's not the way you'll make me give up smoking," commented one postal employee. "I'll just smoke in the back." Unfortunately

for the success of the anti-smoking law, however, this recalcitrant post office employee is not alone in "smoking in the back": one of the brickbats thrown at Health Minister Veil is the fact that she is known to be a heavy smoker!

Thus it is anyone's guess whether she and the millions of other French smokers will finally toe the line all or even most of the time.

PETER DEWHIRST

UN Conference in USSR Stresses Education to Protect Environment

NAIROBI—An international conference on environmental education, organized in Tbilisi, USSR, by the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the UN Environment Programme (UNEP) has adopted a declaration stressing the role of education in the future protection of the world's environment (*WER*, Aug. 29, p. 1).

The two-week conference, attended by government officials and representatives of non-governmental organizations from all parts of the world, was the largest and most representative meeting of its kind ever held. It followed the launching in January 1975, by UNESCO and UNEP, of the International Program for Environmental Education, and marks the expansion and extension of that program's activities.

Said Mary Berry, Assistant Secretary for Education, HEW, and chairman of the U.S. delegation: "We believe the conference was a milestone in furthering the cause of environmental education."

The Tbilisi conferees agreed that education, utilizing the findings of science and technology, must play a leading role in creating an awareness and a better understanding of environmental problems. Education, they said, must also foster positive patterns of conduct towards the environment, and towards the use of existing resources by the world's nations.

Environmental education is needed for all ages, at all levels, and in both formal and non-formal systems. Delegates also agreed that the mass media could perform a highly useful mission in this sphere, particularly if media specialists were especially trained.

The conference appealed to individual states to introduce environmental activities and subjects into their educational systems, and urged states to exchange experiences, research results, documentation, and materials, and to make training facilities widely available to teachers and specialists from other countries.

In his address to the Tbilisi conference, Dr. Mostafa K. Tolba, UNEP Executive Director, warned that public awareness must be aroused on the essential links between environmental quality and the continued satisfaction of human needs. And one way of furthering this aim, obviously, is to foster governmental education.

CHARLES HARRISON

Guidelines for Endangered Species Tightened at Geneva Conference

GENEVA—Some 120 experts from 25 countries agreed here recently upon new recommendations that would tighten worldwide protection of flora and fauna.

The meeting was a special working session of parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora. In addition to the experts from participating countries, representatives from 30 international organizations attended the sessions held at the World Health Organization (WHO) here.

The delegates agreed upon tighter guidelines on the preparation and shipment of live specimens of species listed in the Convention; modalities for the exchange of museum specimens; standards for placing of confiscated live animals in rescue centers; development of an identification manual to assist customs and health officers in identifying wild fauna and flora protected under the Convention; and plans for a training program that would better enable customs officers to enforce the Convention regulations.

These recommendations will be presented for approval to the next meeting of the parties to the Convention which will be held in 1979—probably in Costa Rica.

The idea of the Convention emerged from the General Assembly of the International Union for Conservation of Nature and Natural Resources (IUCN) in Nairobi, Kenya, in 1963. The first signatures were appended to the text presently in force on March 3, 1973, after a conference held in Washington, D.C. The Convention came into force July 1, 1975.

There are now 40 countries that have ratified the Convention. Another 27 have signed the Convention, indicating they intend to accede to it.

WILLIAM G. MAHONEY

Upset of Ecological Balance in Amazon Spawns Piranha Threat

RIO DE JANEIRO—For several years now the voracious piranha has been ranging farther and farther from its natural habitat in the Amazon region. Now it has reached the extreme south of Brazil where the first recorded case of a piranha attacking humans—a fisherman and a worker in an experimental farm—was reported. After first aid treatment for their bites both were released near the town of Santa Maria in Brazil's southern state Rio Grande do Sul.

Although the huge hydropower and reservoir developments throughout Brazil have upset the ecological balance in the rivers, killing many of the freshwater fish, the piranha has proven to be a hardier species and has survived the changes and even multiplied.

Fisheries experts have theorized that the spawning of rivers and reservoirs by non-native species of fish has also worked to the benefit of piranha, which found the immigrant fish easy prey because they are not used to being attacked by carnivorous fish.

One such study is being carried out now by Prof. Horst Lippold, of the University of Santa Maria, who reported the first case of piranhas attacking humans this far south. Thus far, he has indications that the piranha are already decimating the local fish. He also has ascertained that the southern piranha is a smaller animal than its Amazon ancestor, measuring only 27 centimeters and weighing about one pound against the Amazon piranha which can reach twice that length and four times that weight.

GEORGE HAWRYLYSHYN

UK Water Council Reports Increased Nitrates in Water Supply

LONDON—The National Water Council—coordinating body for the ten water authorities of England and Wales—has expressed concern about the input of nitrate into the environment mainly from the increased use of agricultural chemicals.

It says in a submission to the Royal Commission on Environmental Pollution that nitrate input has been rising steadily since 1938 until the permissible limit recommended by the World Health authority has been reached in some water used for drinking.

Until recently concern over nitrate pollution centered on the well recognized development of methaemoglobinemia in bottle-fed infants under the age of six months. (A possibly fatal condition in which cyanosis, a blue tinge to the skin, occurs due to a restriction of the oxygen carrying capacity of the blood.)

But now, work of biochemist Dr. Michael Hill and his colleagues at the Government's Public Health Laboratory Service headquarters near London suggests that a high nitrate content in water may be linked with an increased incidence of gastric cancer in adults.

Dr. Hill suggests that nitrites derived from nitrates in food and/or water can react with amines in food to produce nitrosamines in the stomach. The significance of this is not fully understood (nitrites and amines are inevitably present in food), but Dr. Hill says the crucial question is whether nitrate in water puts people at greater risk from nitrosamines.

A study published in 1973 in the British Journal of Cancer reported that one town that had had high concentrations of nitrate in drinking water also had a high death rate from gastric cancer. This study was criticized on medical and statistical grounds, but Dr. Hill and his colleagues are pursuing the question with the help of water authorities.

He told *WER* that the incidence of stomach cancer in

the US and Britain had declined in recent years and this was thought to be possibly due to the increased use of refrigeration and therefore the consequent reduction in the use of nitrogen-based food preservatives.

"It would be a great pity if this medical gain was reversed by the increased use of nitrogenous fertilizers producing higher nitrate levels in drinking water," he said.

The National Water Council's report says that high nitrate concentrations in ground water have been found to be related broadly to types of land use. And it warns that where percolation (of nitrate into rivers) is slow, concentrations in ground water might continue to increase for many years to come even if further increases of nitrogen inputs were prevented.

It adds: "As far as we know there is no method of reducing nitrate concentration in land and run-offs apart from improvement in fertilizer practice designed to encourage its more economical use. But Imperial Chemical Industries is now said to be forecasting that the domestic demand for nitrogen fertilizers will grow by seven per cent per year.

"There are ways of removing nitrate from water intended for drinking, but they are expensive and the National Water Council suggests that the best solution would be to see the water doesn't get polluted in the first place," the report concludes.

ALAN MASSAM

Denmark's Environment Minister Orders Lead Pollution Inquiry

COPENHAGEN—The Danish Minister for the Environment, Niels Matthiasen, has ordered top priority for a nation-wide, six-month investigation into atmospheric pollution by lead. Lead poisoning is often followed by anemia, fatigue, and digestive difficulties. Some cases can lead to paralysis and convulsions.

One thousand people scattered throughout the country will provide blood samples which will be tested for their lead content, as well as for mercury and cadmium. The locations of the donors will be carefully noted as to whether they are near heavy traffic or in an area affected by emissions from factory smokestacks.

Because the World Health Organization has recommended that an adult should not absorb more than 3 milligrams of lead a week, the Environment Ministry has limited lead in gasoline to 0.4 grams per liter. But officials are now contemplating lowering the limit to that of neighboring West Germany where it is 0.14 grams per liter.

Gasoline distributors, however, have warned that any such new limit will be expensive and that price hikes for gasoline can be expected. Moreover, it has been pointed out that if the lead content of gasoline is reduced, the use of hydrocarbon, which can cause cancer, is increased.

CONSTANCE CORK

In Brief...

Hong Kong Engineer Reveals City is World's Noisiest

A survey carried out by Dr. Norman Ko, Senior Lecturer in the Mechanical Engineering Department at the University of Hong Kong, reveals that Hong Kong is the noisiest city in the world.

The survey measured traffic noise at 260 sites in the urban area and compared the results with similar surveys in seven major cities around the world. According to Dr. Ko, an average of 75 decibels was recorded in Hong Kong, compared to 57 in Tokyo, 66 in New York, 75 in Madrid (16 sites only), 62 in London, 63 in Dusseldorf, and 76 in Rome (limited survey of 30 points).

"While some other cities reach our level in isolated spots there is no escape from traffic noise anywhere in the built-up Hong Kong area," said Dr. Ko. He also pointed out that because construction, aircraft, and industrial noise are only part of the cause, more stringent and broader legislation providing stiff penalties is needed.

Plant to Extract Leaf Protein Opened in Britain

A prototype plant for extracting protein from leaves by fractionation, the first of its kind in Britain, was opened last month by Unirritation International, a subsidiary of the U.K.'s largest animal feeding company, BOCM (British Oil & Cake Mills).

The plant is the result of four years of research and development into new sources of protein for rearing livestock.

The chairman of Unirritation International, George Jones, said that the world shortage of protein, doubts

about feeding cereals to animals instead of directly to human beings, and the EEC's policy of self-sufficiency in protein production had all created a situation which helped develop the new process.

The plant, at Womersley, near Doncaster, Yorkshire, cost \$1,740,000. From an hourly throughput of nine tons of lucerne or grass it can produce 0.25 tons of protein, 2.2 tons of grass cubes and 0.3 tons of molasses.

The company is already producing nutritionally improved straw and the Womersley plant will be a dual purpose one—upgrading straw for seven months of the year and processing 1,100 acres of locally grown lucerne for the other five months.

Audubon Society Concerned Over New Panama Treaty

In a draft environmental impact statement for the new Panama Canal Treaty, recently submitted to the U.S. Department of State, the Panama Audubon Society expressed great concern that the tropical forests in the Canal Zone be preserved.

The biological value of Canal Zone lands as they now exist, the statement says, is incalculable. Seventeen species of mammals, birds, and reptiles protected by the Endangered Species Act of 1973 and an additional six species listed in the Convention on International Trade in Endangered Species of Wild Fauna and Flora, 1973, have been recorded from the Canal Zone.

Ten endangered mammals, including jaguar, manatee, and tapir exist here and one of the largest American crocodiles known to exist in the wild has lived near Miraflores Locks for more than 20 years where it has become a local attraction.

Forested areas of the Canal Zone represent the largest, readily accessible tract of tropical forest in Latin America. But portions of this area and the Madden Forest Preserve,

established by Act of Congress, May 1930, have been deforested the last two years by slash-and-burn agriculturists. Air survey of the Canal Zone land boundaries shows rural farms, corn fields, and cattle pastures encroaching on all sides. Over 80 per cent of Gatun Lake watershed and approximately 40 per cent of that of Madden Lake has been deforested since 1952, according to data available from personnel of the hydrographic division.

The Limbo hunt club in the pipeline area, no longer used for hunting, has been used by biologists for more than seven years as a base from which to study tropical ecology. Students from many North American colleges and universities and from England, Australia, and Brazil have worked out of the camp for a few days to 6 months. Many persons from Smithsonian Tropical Research Institute have complemented studies on Barro Colorado Island with parallel studies in the pipeline area.

Himalayan Lakes Threatened By Pesticide Pollution

The famed Dal and Nagin lakes in the Himalayan state of Jammu and Kashmir would dry up in eighty years if nothing is done to check the present rate of pollution, according to a recent study.

The pollution is caused by the run off of the fertilizers and pesticides which are used in the surrounding paddy fields and orchards. Even the weeds which are grown in these lakes may shorten the life of these lakes and change the ecological balance in the state, the study by Kashmir University says.

The vast build-up and expansion of tourist facilities around these lakes, the increase of house-boats to accommodate more and more tourists and the disposal of refuse in these lakes which serve as fertilizer for the weeds have contributed largely to the dangers of pollution.

Brazil Considering Tax Cut To Encourage Solar Energy

The Brazilian government is considering the possibility of providing tax incentives for producers of solar water heaters in order to make them competitive. Paulo Nogueira Neto, the head of the Brazilian Environment Agency (SEMA) said solar heaters now retail at about double the price of electric water heaters and that a tax exemption or some other form of government incentive would make the solar heaters more accessible to the general public.

Nogueira Neto praised the solar heater for being non-polluting and said they should have an ideal market in Brazil where there is enough sun the year round to use solar energy. In the Rio de Janeiro area a solar heater retails at about \$1,000.

India Breeds Weed-Eating Fish To Keep Canals Clean

India is now breeding a weed-eating fish called "grass carp" to keep tanks and canals free from weeds. Experiments show that 40 to 100 fish would be sufficient to control the weeds in a hectare of water since one grass carp can eat about five pounds of weeds a day. India has two breeding centers in Orissa and Tripura.

The experiments were successfully carried out in the Chambal in Rajasthan. The fish were introduced last year after being imported in small quantities.

The experiments were so successful that it was decided to breed the fish in nurseries.

About 46,000 grass carp were released into Chattra Bilas tank of the main canal of Chambal as an experiment although 300,000 were needed. Even this low number reduced the mass of weeds obstructing the water flow.

Argentina Seeking More Parks for Metropolitan Areas

Argentina is studying ways to increase the amount of park and outdoor recreational land along the heavily populated shores of the River Plate and its main tributary, the Parana River.

The area extends from the capital of Buenos Aires to the industrial city of Rosario and is 286 miles long and 87 miles wide. It contains about 46 per cent of Argentina's 25 million population.

According to a study by the undersecretariat for environmental planning, the area needs 129,728 acres of park and outdoor recreational land but has only 83,399 acres. The study adds that about 70 per cent of the free days families have together occur on weekends and holidays requiring facilities to be fairly close to homes. The maximum distance for recreational facilities should be three hours away by car, said the study.

The environmental planning undersecretariat adds that a key aspect of any successful plan is contamination control of the region, especially industrial wastes thrown into the rivers. For two years in a row, the Buenos Aires municipality has prohibited swimming and fishing in the River Plate because of pollution.

Sweden Beefs Up Communal Water Purification Plants

Sweden's Agency for the Protection of the Environment recently allotted another \$5.5 million from its current budget for expansion of communal water purification plants.

The agency said that in the last nine years it had distributed approximately \$326 million of state money to assist communities in expanding their sewage plants so that today practically the entire Swedish population of eight million is benefited.

Ecology Map in Peru Defines 84 Bio-Climatic Formulations

Agricultural, forestry, and farming officials are soon to be given copies of Peru's new ecology map which defines the country's "84 bioclimatic formations." According to Victor Grandes, head of the ecology and forestry department of the National Office for Evaluation of Natural Resources (ONERN), the map "will serve as a reference document while the country carries out its programs for conservation and rational exploitation of resources."

UK Ukase: Fuel Consumption Figures For all New Cars

Under a Parliamentary Order which goes into effect on April 1, 1978, fuel consumption figures for all new cars sold in Britain must be publicly published.

Manufacturers will be responsible for arranging a mandatory test which includes simulated urban driving and a constant speed test at 56 mph. There will also be an optional test at 75 mph as a further comparison figure for the consumer.

Manufacturers must carry out the tests themselves or arrange for them at official test centers such as that operated by the Motor Industry Research Association. Government officials will have the right to observe and ask for re-testing if they think it necessary.

Salesmen in car showrooms must display a gasoline consumption test label on all new cars and must make available a list of consumption figures on all makes of car so that the customer can make overall comparisons before deciding on one model.

The Order also states that all car advertising and promotional material must contain the results of the official fuel consumption tests.



World Environment Report

24 NOV 1977

VOL. 3, NO. 23

Copyright ©1977, Center for International Environment Information.

NOVEMBER 7, 1977

World Action to Control Mycotoxins Urged by United Nations Conference

NAIROBI—An international conference with 37 states represented has recommended comprehensive measures and the adoption of international standards to control mycotoxins (harmful fungi which contaminate food). The conference was jointly organized by the Food and Agriculture Organization (FAO), the World Health Organization (WHO) and the United Nations Environment Programme (UNEP).

Recommendations adopted propose practical action on field practices, the use of insecticides, harvesting and crop drying methods, storage of foods, transportation, and post-harvesting processing. Guidelines were set out to prevent mycotoxins arising in human food, animal feeds and other products.

One recommendation says mycotoxin reference standards must be prepared to facilitate prevention and control and financial aid to developing countries will be sought for this purpose. Governments are advised to set up surveillance programs to determine the incidence and sites of mycotoxin contamination at each stage—from production, through harvesting, storage and processing to consumption.

Peter S. Thacher, UNEP deputy executive director, listed groundnuts and maize as among the export products of developing countries which are liable to be affected by mycotoxins. O. Alozie, UNEP health expert, said mycotoxins were environmental biological pollutants.

Dr. W.K. Malik, FAO representative at the conference, said mycotoxins played a significant role in reducing both the quantity and quality of food produced in many parts of the world. Food contaminants tended to produce such large problems that they were met with trade barriers at international levels.

Thacher described food, drink and air as the main vehicles through which biological and chemical pollutants reach the human body. The conference, he said, aimed at adding a new element to the existing food control programs. It was important to realize the size of the problem posed by mycotoxins, in both developed and developing countries.

The problem, he said, was a global one. It arises in many different areas, and it affects major commodities that are traded internationally.

CHARLES HARRISON

Danish Environment Ministry Tackles Danger of Massive Mercury Pollution

COPENHAGEN—The Danish Environment Ministry has launched a campaign to eliminate the danger of mercury poisoning from the huge quantities loosed from careless disposal of many domestic products.

Singled out particularly was the mercury (also known as quicksilver)—which is indestructible—in the miniature batteries of hearing aides, pocket calculators, radios, and even the familiar domestic thermometer.

The ministry has distributed 100,000 booklets to manufacturers and importers and public libraries warning of the danger and how to limit it. The booklet also emphasizes that conservation of this increasingly rare natural resource is necessary.

Everybody replacing batteries is asked to take the old ones back to the shop where they were purchased. Battery importers and the state chemical waste disposal company, Kommunekemi, are distributing containers to retailers for collection of old batteries.

The ministry has warned that burning as a means of disposal is worse than useless because it pollutes the air with mercury, or if it infiltrates lakes or streams, it poisons the fish. The pamphlet cites the Minamata episode in Japan in the 1950s when many Japanese died or were invalidated after eating fish contaminated by quicksilver.

The ministry has calculated that 250 kilograms of mercury discarded in waste dumps each year have spread pollution throughout Denmark. And it estimates that broken thermometers, barometers, and other measuring instruments have been responsible for emitting two tons of quicksilver annually.

CONSTANCE CORK

In This Issue

Mediterranean Study	2
Karachi Water Shortage	2
Patsy T. Mink Interview	3
UK Energy Cuts	4
Toxic Substances	5
Helsinki and the Environment	5
In Brief	6

WHO Parley OKs Mediterranean Study On Land-Based Pollution Sources

GENEVA—A World Health Organization (WHO) meeting held here in September has endorsed the findings of an 18-month investigation of land-based sources of pollution in the Mediterranean. Some 40 scientists, engineers and administrators from most of the 18 Mediterranean countries received the study, which is part of the Mediterranean Action Plan of the United Nations Environment Programme (UNEP).

The study says the coastal waters of the Mediterranean are being polluted by industrial waste, municipal sewage and agricultural run-off both from coastal sources and from sources hundreds of miles inland, from where the pollution is carried by rivers.

Dr. Richard Helmer of WHO explained that an inventory of Mediterranean pollution sources had been prepared, and an attempt had been made to assess the basin's pollution load from land-based sources.

The report is one of the documents available for the Government experts who met in Venice from October 17 to 21 to try to agree on the text of a treaty dealing with the control of land-based sources of Mediterranean pollution.

CHARLES HARRISON

Pakistan Launches Research Project To Upgrade Karachi Water Supply

ISLAMABAD—Karachi University's Environmental Research Centre will start a three-year research project this year which may help solve the water shortage problem in Karachi, the country's biggest city (population 4.5 million).

Disclosing this, Dr. Zainul Abedin, the Principal Investigator for the project said the Federal Government has allocated \$340,000 for the study.

The project emphasizes development of waste water renovation technology and new approaches. As an example, the water reclamation process can be made economically more feasible under certain conditions by growing fish and algae as useful by-products while wash water can also be purified and reclaimed.

Karachi faces a shortage of potable water which becomes more acute during the summer. The city has an extensive sewage system which disposes of 120 million gallons per day (MGD). Of this, only 30 MGD are being treated by the two Karachi Municipal Corporation facilities while the rest is discharged virtually untreated into the sea—a daily loss of huge quantities of water.

The water reclamation project will essentially add to the water supply. The reclaimed water can be used for agricultural purposes, industrial recycling, domestic use, and swimming pools. Highly purified water can even be used for human consumption. MOHAMMAD AFTAB

Athenian Environmentalist Claims Faulty Pipes Causing Impure Water

ATHENS—Charges by a private environmental group here that Athens' drinking water is polluted have forced a public prosecutor to order an investigation.

George Plytas, a former mayor of Athens and now head of the "Athenian Movement" environment protection group, said some cases of hepatitis which have recently appeared in Athens "may well be the result of impure water." He urged tighter control over drinking water supplies to avert the possible spreading of diseases.

Plytas said that part of the water supply network in the capital was constructed without any planning, adding that in many instances pipes with unsuitable material were used. He also claimed that regulations concerning the laying of pipes were sometimes violated because they were laid at a depth of only 30 centimeters.

As a result, Plytas said, drinking water containing worms has recently appeared in an Athens suburb. He attributed this to leaking water pipes and to sewage from adjacent pipes flowing into water supply conduits.

Concurring with Plytas was a civil engineer who also charged that newly-laid water pipes are of very poor quality. Constantine Laskaris, in a newspaper report dealing with drinking water in Athens, blamed the Ministry of Industry for failing to control the quality of water pipes, "which become dangerous to public health soon after installation."

Although the Ministry of Social Welfare has repeatedly assured people that the drinking water is clean and germ-free, the Ministry of Industry has begun its own extensive inquiry into the quality of pipes available on the market.

KYRIACOS CONDOULIS

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$125 per year, \$15 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Ann C. Werner
Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

SPECIAL REPORT: An Interview With Patsy T. Mink—The State Department's International Environment Chief

WASHINGTON—It seems fitting to find a can of Macadamia nuts on the desk of the Assistant Secretary of State for Oceans, International Environmental and Scientific Affairs. It is a reminder that Patsy T. Mink, a six-term former member of the House of Representatives from Hawaii, has come a long way.

No one knows this better than Mink herself. "We cover the waterfront," she recently told *World Environment Report*. Though she quickly added that the pun was unintended, it is nonetheless true, figuratively and literally. The oceans, moreover, make up only one part of her area of responsibility. The others are atmosphere and climate, science and technology, and what Mink called "other alternatives for nuclear fuel." It adds up, she admitted, to a "huge jurisdiction," but the diminutive Mink approaches her new job with gusto and determination.

Foggy Bottom—But even after 10 months in office, Mink has not yet adjusted to Foggy Bottom. The global dimensions of the job notwithstanding, she candidly confessed, "I'd rather be a Senator." On Capitol Hill, she explained, it was easier to speak her mind, "to let the world know" about a problem or an issue. Left unsaid was that results were often quicker and more tangible.

But Mink was denied a chance at a Senate seat when she lost the Democratic primary last year. Instead, she became one of the 50 women in top policy positions in the new Administration, and the only Asian-American in a sub-Cabinet post, when President Carter appointed her to her present job.

After a career in politics that began in 1956 as a member of the Territory of Hawaii House of Representatives, the change has not always been easy. Nowadays results—insofar as they can be measured at all—are harder to nail down. But Mink left no doubt that a challenging post in an area linked to the Administration's theme of meeting human needs more than makes up for the inability to match problems with easy solutions that is inherent in the world of diplomacy.

Catalyst—In any event, Mink now feels that she has fully mastered the intricacies and nuances of the job, which she summed up in a single word: "Catalyst." Broadly speaking, that means Mink must use her self-described characteristics of "insistence and persuasiveness" in trying to direct U.S. foreign policy in the direction of a balanced concern for what happens to the global environment, physical and human.

In his environment message to Congress last May, President Carter said that in the past environmental considerations were often regarded as a luxury in international development assistance programs. But, he added, experience with such programs has demonstrated

the need to pay adequate attention to the environment in order for assistance programs to work, particularly programs dealing with agriculture, livestock, fisheries, forestry, and water development. Part of Mink's job is helping to see to it that the Agency for International Development (AID) and other concerned federal agencies give full consideration to the environmental soundness of development projects.

Lofty Ideals—Thus, lacking any power but the power to persuade, Mink uses her political skills to elevate the priority of human needs in terms of foreign policy objectives. Idealistic sounding, perhaps, but as Mink reminded an audience not long ago, "I thrive in the environs of lofty ideals."

In more down-to-earth terms, Mink's job is part watchdog, part evangelist. She must constantly monitor the actions and policies of the U.S. Environmental Protection Agency (EPA) and the White House Council on Environmental Quality (CEQ) to make sure they are not in conflict with existing bilateral or international agreements. And she must bring her powers of persuasion to bear on the EPA, the new Department of Energy, the National Oceanographic and Atmospheric Administration, and other agencies so they will undertake international environmental activities rationally and constructively and, in the case of AID, to undertake environmentally sound development programs, including the serious issue to minimize world-wide pollution caused by toxic substances like fluorocarbons and polychlorinated biphenyls, and, of course, pesticides. The goal, said Mink, is to expand the parameters of U.S. foreign policy to include the "environment where people find themselves and what we can do to improve that environment."

Imperiled Goal—That goal, however, is constantly being imperiled by a rapidly rising world population and reckless consumption that is destroying finite natural resources. "All we can do is suggest," Mink said. "We're bound to succeed in some of our efforts." And, convinced there is a "universal concern for the environment," Mink is determined, as she put it, "to seek joint collaborative efforts to arrive at what is mutually beneficial."

The cornerstone of such collaborative efforts was laid at the United Nations Stockholm Conference of 1972, and was subsequently linked to the many international organizations with environmental concerns. Each of these organizations plays a vital role, Mink said, from the Organization of Economic Cooperation and Development (OECD) and the Economic Commission for Europe (ECE) to, perhaps most significantly, the UN Environment Programme (UNEP) based in Nairobi, and the European Economic Community (EEC). Besides

dealing with all these and more, Mink keeps a watchful eye on the bilateral agreements the U.S. has with such countries as Canada, Japan, and the Soviet Union. Moreover, she is on record as stating that to be concerned with the environment is not necessarily to be opposed to profits and successful business undertakings.

Disease Pollution—Mink differs from many professional environmentalists not only because of the unique nature of her job, but because she redefines "environment" in terms of human needs. Thus, for example, she considers diseases, particularly those that afflict peoples of the developing countries, a form of pollution. So long as these nations are still a long way from the 20th Century in terms of infant mortality and the quality of their drinking water, for example, "It is necessary to focus on them even though it will be a slow process," she said.

What worries Mink is that long before the developing countries make the transition the world's environment will no longer be fit for humans. Unless there is a joint cooperative effort on a worldwide scale, Mink foresees dire consequences. What, she asked, will become of the oceans, which she called "the largest unexplored resource." Will they be spoiled and all their marine life destroyed before its relevance to human survival is even understood? What horrible and irreversible changes are we causing in our atmosphere, and with what effects on our health and survival? Are we altering the world's climate, with possible dire consequences for food production? "There's no limit in the ways the oceans become an issue," she said.

Science and Technology—The questions are many and there are no easy answers, but Mink does not despair. She thinks it was wise to include science and technology in her bureau. Although science and technology foster development and often speed the unbalancing of nature, Mink believes they also form "the vital link" that can solve many of our environmental problems.

Mink brings impressive credentials to the job. After receiving her BA at the University of Hawaii in 1948, she went on to the University of Chicago Law School, where she earned her doctor of law degree in 1951. In addition to her long career in Congress and in the Hawaiian Legislature prior to statehood, Mink has been a practicing attorney and a professor of business law. She was a delegate to the Democratic National Convention both in 1960, when she was a member of the platform committee, and again in 1972.

Mink's involvement with environmental affairs as a member of Congress began in 1967, when she was named to the House Committee on Interior and Insular Affairs, a membership she was to hold for 10 years. During that decade she served on the Subcommittee on National Parks and Recreation, the Subcommittee on Mines and Mining, which she chaired from 1973 to 1977, as well as on the Select Committee on the Outer Continental Shelf. She, in fact, drafted and was a prime mover in the legislation regulating strip mining and providing for the

reclamation of land that had been stripped for coal.

First Objective—The bureau she heads is "still so new," Mink said, that her first objective is "to advance beyond the pioneering role and make environmental and human concerns an integral part of our foreign policy." Mink is only the second person to head the bureau, having succeeded Dixie Lee Ray, the former head of the Atomic Energy Commission.

Mink speaks of her staff with pride, but she considers it too small for the tasks it has been assigned. Currently it consists of eight professionals, in addition to a small population office and a 22-member science and technology staff.

When asked what she considers to be her most significant achievement in her new post, Mink replied she is "not free" to discuss it. But the twinkle in her eyes seemed to hint that something big was afoot.

SPECIAL DISPATCH TO WER

UK Offers Incentives to Industry, Special Services, for Energy Cuts

LONDON—Five new energy-saving measures for industry, marking a new phase in the British government's "Save It" campaign, were outlined last month by Secretary of State for Energy, Mr. Tony Benn.

Speaking at the National Energy Manager's Conference in Birmingham, Benn said, "to be effective, we have to contemplate investments in conservation on the same financial scale as that required to produce new sources of energy."

A free telephone advice service and a free monthly newspaper for any organization interested in saving energy are two of the facilities offered under the plan. These are services aimed at spreading information quickly and offering concrete suggestions.

A third measure increases grants under the Energy Survey Scheme (*WER*, Jan. 17, p. 8) to 100 per cent, so that firms will receive up to \$105 towards the cost of employing an energy consultant.

The two remaining measures are likely to have the most far-reaching influence at ground level in industry and commerce. The government is investing \$2.6 million in a program of demonstration projects to show industry the potential and benefits of energy saving. Initially the projects will concentrate on waste heat recovery as likely to produce the most immediate returns. Eighteen projects have so far been recommended—nine through the Department of Industry and nine through the Department of Energy. They are involved with the timber, textiles, food, rubber and metals industries. Another 35 are currently under discussion. Under the projects, heat recovery devices and plants will be installed in representative firms where they will be monitored, costed and subsequently publicized.

BARBARA MASSAM

EPA Chief Calls for International Convention on Toxic Substances

WASHINGTON—U.S. Environmental Protection Agency Administrator Douglas M. Costle has called for an international convention to control the movement of toxic substances in world commerce.

"Such a convention," Costle told the fall plenary of the NATO Committee on the Challenges of Modern Society in Brussels, would build upon existing efforts of individual countries and "the vitally important programs presently sponsored" by such international organizations as the Organization for Economic Coordination and Development and the World Health Organization.

To be effective, Costle said, the agreement should be in place within five years. He conceded that his thinking was still preliminary, but said he envisioned projects that would reduce duplication in testing, research, and monitoring.

"Sometimes," he observed optimistically, "it is more difficult to achieve cooperation and coordination within one's government than among many governments."

SPECIAL DISPATCH TO WER

Mexico Holds International Seminar On Solar Energy in Architecture

MEXICO CITY—Solar energy accomplishments and future applications were discussed here recently during an international symposium on "Solar Energy in Architecture." Mexico already is using solar energy in desalinization systems and to power water wells in towns and isolated villages.

Using solar energy to generate a communications system is currently in the experimental stages, participants were told. A pilot program by the National Polytechnic Institute is developing solar cells which can store energy for its transmission. In the next five years, with the assistance of the Secretariat of Communications, a communications network among some 10,000 otherwise isolated villages will be created.

Further refinement of this system will allow the operation of television sets using solar energy as the primary power source, enabling children to participate in televised classes in those villages where no schools exist.

By using solar energy instead of gas in only one-tenth of the hot water heaters in Mexico City, the city's 12 million inhabitants could save \$42 million per year, the symposium was told. Use of solar energy also would eliminate the thousands of kilos of carbon monoxide gases that daily escape into the atmosphere.

Useful and cheap jobs for solar energy include drying grains, heating homes and buildings, heating water, and even for refrigeration through a reverse process, speakers

said. (One observed that the United States, for example, uses more electricity than is generated on the continents of Africa, Asia and South America, combined.)

Among the speakers were Luis Arnal Simon and Simon Bali, professors at the LaSalle University School of Architecture; Leopoldo Gonzalez Saena, official in the Secretariat of Human Settlements and Public Works; and Juan Luis del Valle, professor in the polytechnic's department of electrical engineering.

KATHERINE HATCH

ECE Urges Helsinki Conferees To Speed Up Environmental Protection

BELGRADE—Janez Stanovnik, the Yugoslav Secretary of the Economic Commission for Europe (ECE) has urged the states participating in the Helsinki review conference here to press ahead with environmental protection activities.

Stanovnik made the demand in reporting to the review conference on the activities of his Geneva-based organization that was charged under the Helsinki Accords with developing East-West cooperation.

The Helsinki Final Act made four general and seven specific references to ECE responsibilities. These, Stanovnik noted, dealt with cooperation in the fields of economics, science and technology, and the environment.

The prediction of the environmental consequences of economic activities and technological development has become a major project of the Senior Advisers to ECE Governments on Environmental Problems, Stanovnik reported, adding that a seminar on this subject is planned for 1979. The Helsinki Act, he said, also inspired another new important aspect of ECE activities: the study of the long-range transport of air pollutants. He told delegates that such a cooperative monitoring and evaluation program had been started.

Problems of water pollution and the protection of the marine environment—also proposed as subjects of cooperative action in the Helsinki Final Act—were being dealt with by the ECE Committee on Water Problems, he said.

Stanovnik also referred to ECE work on land use planning and the improvement of the environment in human settlements. The complex problem of land utilization had not been sufficiently developed within the ECE, he declared, and present work on the long-range transmission of air pollutants could be extended to cover substances other than sulphur dioxide.

The ECE spokesman said that after consulting with member governments, he was making an analysis of topics that might be considered at a high-level meeting on the protection of the environment. He added that he would make a report to the Commission in April 1978 on this subject.

SPECIAL DISPATCH TO WER

In Brief...

Britain Begins Reclamation Of Abandoned Coal Mines

Four hundred and forty acres of derelict land, the site of three former collieries, will be reclaimed under a major (\$2,262,000) project launched recently by Ken Marks, Parliamentary Under-Secretary, at Britain's Department of Environment.

Eighty-foot slagheaps, abandoned coal shafts and an abandoned railway line are some of the relics of a coal mining era which ended when the last of the three pits was closed in 1964. The site, at Higher Folds in the Wigan district of Greater Manchester, will eventually contain 203 acres of farmland, woodland, athletic fields and an 18 hole municipal golf course.

Clearance work has already begun with giant bulldozers flattening out the slagheaps to make a gently undulating landscape. When sub-soil has been laid the area will be grassed and planted with trees. After drainage, a stream will continue to run through a man-made valley. The scheme is planned for completion in two years.

Aircraft Engines Proposed As India Power Source

Experts are suggesting that the quickest and best way to overcome the power crisis in the industrial areas of Bombay and Calcutta is by using old aircraft engines to generate power.

The Indian Airlines and Air Force have now many obsolete Dakotas with engines that can produce up to 10 Mw. If ten Dakotas are dismantled, their twenty engines will produce not less than 200 Mw. Even Gnats which are being phased out of the Indian Air Force can be utilized

for generating power.

Three state governments—Karnataka, Maharashtra and Assam—have asked the Central Government to provide them with gas turbines but these turbines in the longer run would prove costly.

Gas turbines and aircraft engines more or less work on similar principles and with slight modification the latter will be able to produce power. Since the engines are readily available, say the experts, the cost would be a fraction of that of imported gas turbines and no foreign exchange is involved in the transaction.

Argentina's River Plate Called Dirty As A Sewer

The main tributaries of the River Plate are just as polluted as the sewers of metropolitan Buenos Aires, according to a study by the German Water Engineering Co., a West German firm. The survey, done for the Argentine government, confirms what Buenos Aires residents already suspected from sight and smell.

The study says the Matanza, Riachuelo and Reconquista Rivers have microbe concentrations, such as infectious hepatitis and poliomyelitis, usually associated with sewage. The main polluters are the 70,000 industrial firms in the area, said the West German company. It would take 4.5 million people to produce the same amount of pollution as these plants, the report adds.

The main culprits cited are slaughterhouses, oil refineries, metalworks, chemical companies, paper plants and food processing plants, said the study, with industrial wastes either untreated or insufficiently treated.

The West Germans suggested a \$3.5 million study to analyze ways of improving the situation. The Argentine government has not yet announced what action it plans to take.

Ban Sought on Leasing Of Mangroves in Philippines

Two Filipino scientists are seeking a government ban on the leasing of mangrove swamplands for use as fishponds. Dr. Flor Lancañilao of the Department of Zoology of the University of the Philippines and Dr. Benjamin Gabriel, head of the Mangrove Committee, told a recent seminar that converting mangrove swamplands into fishponds would destroy an important base of an elegant food chain supporting much of shore animal life.

The two scientists said studies showed that mangrove swamplands serve as a link in the food chain that supports small land animals, birds, crabs, shrimps, fishes, and other marine species. In addition, they said, these swamplands provide a safe and irreplaceable wildlife habitat both on land and in the water, around their roots. For some species, mangrove provides the only base for food sources, they added.

World Wildlife Fund to Study Sperm Whales off Peru Coast

The World Wildlife Fund has appropriated \$25,000 for a study of sperm whales off the Peruvian coast.

Technicians will arrive in Peru to carry out the study as soon as the Ministry of Fishing gives authorization, according to Pro-DENA, the organization for the defense of Peruvian wildlife.

The research is to be carried out in two parts. The first relates to sperm whales off the Peruvian coasts, which according to the International Union for the Conservation of Wildlife and Natural Resources (IUCN) "are believed to be seriously affected by current fishing trends."

Pro-DENA says that, "The study will determine the present population of sperm whales in Peru and thus guidelines can be given to establish new fishing quotas."

Sweden, Hungary Exchange Environmental Know-How

Sweden and Hungary have recently signed a treaty of cooperation on protecting the environment. The agreement provides for an exchange of experts and information in the field of environment and a study of the possibilities for cooperation between research institutions of the two countries.

In the next two years, the Swedes especially will study the consequences in Hungary of ditching on a big scale and the use of liquid manures and pesticides in agriculture. The Hungarians, in turn, are particularly interested in studying Sweden's air pollution problems and modern drainage techniques.

Kashmir Scientists Use Solar Energy to Preserve Apricots

Scientists of the Regional Research Laboratory in Kashmir have developed a device by which apricots can be dried and preserved in three days by use of solar energy.

The device has already been introduced in Ladakh which produces the bulk of apricots grown in Kashmir.

The traditional method of drying and preserving, said to be unhygienic, is cumbersome and takes at least a fortnight.

Fumigation of Colombian Rice Results in River Toxicity

Some 100,000 people living in a 10-mile-long zone along the shores of the Pamplonita River near the Colombian-Venezuelan frontier have been endangered by toxic substances which have accumulated

in the river following fumigation of nearby rice fields.

Alfredo Nunez Carvajal, the governor of the Colombian department (state) of Northern Santander has warned against use of the river water for drinking or cooking. Particularly affected are the slum poor in the border city of Cucuta who use the Pamplonita for drinking and bathing.

Meanwhile, government spokesmen have announced "drastic sanctions" for those responsible.

Danes Planning to Limit Polluting Aerosol Use

The Danish Government has prepared legislation to limit the use of spray cans with polluting gases as propellants. The cans are mostly used for cosmetics or cleaning agents.

Environment Minister Niels Mathiasen said final legislative action will await similar measures on an international scale. This was his reply to a question from the environment committee of the Folketing—Parliament—which wanted to know what was being done in the light of research in the United States and Sweden.

The Danish Environment Commission believes there are grounds to warn against and limit the use of freon gas. The Commission has urged Danish action as part of an international agreement. It recommended legislation giving a "positive list" or propellants which may be used by industry.

The Commission warned that over-hasty action by Denmark could lead to industry going over to materials which could be dangerous for consumers in other ways.

A group of feminist environmentalists recently sent hundreds of empty or half-empty spray cans to the Environment Commission to mark their disapproval of their use. The Commission had quite a problem getting rid of the canisters.

Adjacent Refinery No Threat To Taj Mahal, Report Says

An expert committee of India's Department of Science and Technology has reported that the adverse effects on the Taj Mahal due to emissions from the proposed refinery at Mathura, about 30 miles away, would be "insignificant."

The committee, established by the Ministry of Petroleum and Chemicals, has, however, recommended that "studies are to continue."

The committee found that the refinery which would process low sulphur crude would emit less than one ton of sulphur dioxide an hour. This gas is the principal pollutant which can adversely affect the Taj Mahal.

On the basis of available meteorological data and a mathematical analysis, the committee concluded that the refinery would produce just one millionth of a gram of sulphur dioxide per cubic meter.

Greek Code Sets Prison Terms For Car Drivers who Pollute

Greek drivers responsible for noise and atmospheric pollution will get prison terms of up to three months, according to a new traffic code recently ratified by parliament.

The code, which will go into effect towards the end of the year, also foreshadows stiff penalties (up to \$150) for drivers exceeding the 72 miles per hour limit.

Inclusion of the prison term in the code, effected for the first time, was made following suggestions by Athens prosecutor Spyros Kaninias. He had warned the government to be "merciless against infringers."

Kaninias, strongly backed by private environmentalist groups, had repeatedly charged that traffic was one of the major sources of noise and atmospheric pollution in the capital and other big cities.

Every Filipino Over 10 Must Plant a Tree a Month

Philippine President Ferdinand Marcos has warned that Filipinos could lose their citizenship privileges if they do not obey a recent environmental decree making it mandatory for everyone over 10 years of age to plant a tree a month for the next five years to avoid soil erosion and floods. He said trees should be planted in land owned or leased by the family, in public grounds, parks, schoolgrounds, by the roadside, near markets or in areas designated by the government. The trees must be fruit-bearing, shade-giving, ornamental, or for re-forestation purposes.

Violation of the decree can mean a fine of \$130, loss of citizenship privileges, including the right to acquire land or operate a bus or taxi. A violator could also be disqualified from public office, graduation from schools, or any law or civil service examination.

New British Pyrolysis Reactor Yields Superior Incineration

Pyrolysis plants using the "cross-flow" process are to be manufactured and sold by the British firm of Foster Wheeler Power Products Ltd. under an exclusive licence from the National Research Development Corporation (NRDC).

The cross-flow pyrolysis reactor, originated at the government's Warren Spring Laboratory, is more compact and has lower anti-pollution costs than standard reactors. Its energy products of oil, gas, or solid char, as opposed to those of refuse incinerators, can be stored and used elsewhere.

In the cross-flow pyrolysis reactor, solids are fed vertically down through the pyrolysis zone at 350-700 degrees C. while hot recirculating gases are passed horizontally through the bed. This leads to a high rate of

heat transfer to the material at a low pressure drop. These treatment temperatures enable a greater proportion of non-ferrous as well as ferrous metals to be recovered from the char.

Pyrolysis incineration is also attracting increasing attention in the private as well as the municipal sector of industry for disposal of industrial wastes. Tests have shown its success in treating used tires.

Extinction Threatens Oryx World Wildlife Fund Warns

The scimitar-horned oryx is gravely threatened with extinction within the next decade in Chad, where it has its last main refuge, according to a report just received by the World Wildlife Fund.

The WWF said that the oryx (*oryx dammah crettschmar*) is one of the few herbivores which can live in the harsh climatic and vegetative conditions of the Sahelian and sub-desert regions of Africa. There used to be enormous numbers, but in the past century—especially during the last 30 years—poaching, aided by motor vehicles and advanced weapons and human activity have reduced the species to a few thousands.

The WWF said that there are about 6,000 oryx in Chad.

The WWF has been providing funds for vehicles, patrol camels, guards' personal equipment, fuel and spares as part of the effort to save the oryx.

Last month, the WWF announced that the third annual J. Paul Getty prize of \$50,000—awarded for exceptional services in conservation of nature—would go to Commandant Ian Grimwood. The former British Army officer was active in conservation efforts in Africa, Asia and South America. One of his outstanding achievements, the WWF said, was the saving of the last three oryx of Arabia in 1962.

Viennese Claim Tire Burning Produces Carcinogens

Viennese research workers at Graz University's Institute of Hygienics have discovered that smoke dispersed in the air from pollution caused by the burning of used car tires contains a surprisingly substantial percentage of carcinogenic substances, about 1,000 times more than has so far been found and proved in the resultant ash.

To obtain a more differentiated result, samples of the developing smoke were collected by aircraft. The analysis showed not only hydrocarbons but also verified an extremely high lead content in the cloud's soot particles. The aircraft sampling of the incineration smoke constitutes the first part of a large-scale program in which carcinogenic substances of environment-polluting effect are to be systematically analyzed.

Polluters in Bavaria Fined \$.5M for Their Sins in 1976

The Bavarian Ministry for the Protection of the Environment announced recently that polluters in this southern German state shelled out \$434,782 for their sins during 1976.

The Ministry said that individual fines ranged from \$4.35 to \$21,740. During 1976 more than 10,000 fine processes were completed and about 12,000 begun, the report said.

The figures emerged from a statistical report that Environmental Protection Minister Alfred Dick provided to the State Parliament.

The most common violations were illegal dumping of commercial and domestic garbage and waste and abandoning of old cars illegally. These were followed, in order, by: interference with nightly rest by loud music, motors and barking dogs; violations of nature protection laws.



World Environment Report

57 NOV 1977

VOL. 3, NO. 22

Copyright ©1977. Center for International Environment Information.

OCTOBER 24, 1977

Amazon Forests Not "World's Lungs" Six-Year Brazilian Study Claims

RIO DE JANEIRO—On the basis of a six-year study of the hydrology and ecological balance of the Amazon basin, Brazilian scientists claim that the widely-held theory that the rain forest serves as the "lungs of the world" is a myth. This is one of the first conclusions of the study undertaken by Brazil's Center for Nuclear Energy in Agriculture under the leadership of Eneas Salati, professor of physics and meteorology at the Piracicaba Agricultural College.

The project, which was undertaken with the cooperation of other Brazilian institutions as well as those in neighboring countries such as Venezuela, Colombia and Peru, included studies of the hydrographic balance of the Amazon basin.

Between 1971 and 1977, thousands of samples were taken from many parts of the Amazon River network, from rainfall, from 13 meteorological stations, and of evaporation and evapotranspiration. The conclusions, which are qualified as being only partial, reveal some surprises but basically support the traditional warning of the ecologists that unscientific development of the Amazon basin can lead to ecological disaster.

Professor Salati, in a recent press conference, announced that claims that the Amazon region provides half the world's oxygen was not only refuted by the study, but the data show that all the oxygen produced is consumed by the region itself.

Salati also denied the assertion by a publication of the New York Botanical Garden, "Amazon Jungle: From Green Hell to Red Desert?", that if jungle were cut down the region would turn into a desert. He said the conclusions of the book were not based on research.

The Brazilian scientist explained that one of the first conclusions of the study is that only half of the rain falling in the Amazon jungle originates there. Using the isotope method, it was concluded that of the 2,200 millimeters of annual precipitation in the Amazon, half originates from the transpiration of plants.

"The other half, 1,100 mm," Salati said, "comes from the Atlantic Ocean.

"On the hypothesis that we cut down the whole jungle at once, at least 1,100 mm of precipitation would continue normally because that part of it does not depend on the jungle mass as it might appear to many people."

Salati said this 1,100 mm of rain falls because of the vapor that is brought from the east, that is, from the

Atlantic Ocean by the southeastern winds. Once over the jungle one part of this vapor falls as rain and the other part that moves farther west is boosted by the contribution of the transpiration of plants for additional rain.

But after seemingly scoring the foreign ecologists who are critical of Brazil's rapid and unplanned Amazon development, the study then joins those critics in warning that the removal of large parts of the jungle would logically bring changes to the ecological system. It adds that a return to a "balance of nutrients" could indeed take thousands of years.

The study corroborated the belief that most of the soil in the Amazon is "of poor quality because of its fluvial deposit nature."

But Salati is not against the development of the Amazon resources, provided this is done according to the criteria of "ecological agriculture." One proposal is to divide the Amazon in checkerboards and alternating squares for development—farming, grazing, industrial uses or others—and leaving the jungle untouched in the next square.

Salati and his co-workers feel that if less than 50 per cent of the jungle is cut down—in alternating squares—no great changes will occur in the climate of the region because 50 per cent of the evapotranspiration will be retained and thus the supply of the underground water reservoirs will be maintained which in turn means that the river system should not be affected.

The Center is now planning one such checkerboard model basin in an area of about 200 square kilometers somewhere near the city of Manaus, the capital of Amazonas State.

The Brazilian government has already allocated \$1 million for continuation of the study.

GEORGE HAWRYLYSHYN

In This Issue

Inter-German Pollution Dispute	2
Environmental Spending in Japan	3
Bangladesh Tough Water Pollution Laws	4
French-Japanese Nuclear Agreement	5
Philippine Paradise Threatened	6
In Brief	7

East and West Germany Squabble Over Polluted Werra River

BONN—The dearth of fish and the impurity of the water in the heavily-polluted Werra River, which wanders across the demarcation line between East and West Germany, is expected to become a major subject of debate in future meetings between representatives of the divided "country."

According to Walter Blumenroeder, an enthusiastic sport fisherman living near the river in the north Hessian village of Meinhard, "Before the war the river was swarming with roach, carp, pike, perch, and trout. Now eel is the only thing that can live there."

Blumenroeder's and others' complaints have moved the Minister President (governor) of the State of Hesse to write to Federal Chancellor Schmidt requesting that the pollution of the river be put on the standing agenda of intra-German negotiations between West German State Minister Wishnewski and Michael Kohl, the East German (DDR) representative in Bonn.

The source of the trouble is potash mining on the DDR side of the river. The potash there is mixed with substantial quantities of common table salt, along with lesser quantities of other impurities. These are separated from the potash and dumped into the river. Under the strict anti-pollution laws of West Germany, this practice is forbidden, and the unwanted salts from West German mines are disposed of by burial in worked-out mines, some as deep as 2,500 feet. No cases of water pollution have been traced to salts buried in this manner, although this volume involved comes to around 4.5 million tons a year.

The Werra's pollution has not only spoiled the fishing, but also the drinking water of hundreds of communities as far distant as Bremen. The Werra flows into the Weser at Munden, 40 miles north of the offending mines. Even at Bremen, where the Weser empties into the North Sea, the water is so salty that only 20 per cent of the city's water supply can be taken from the river. The rest must be taken from newly drilled wells, well back from the river channel.

A third complaint is coming from electric power companies that use Werra and Weser water for cooling, because the salt causes their condenser systems to rust out.

Up to 1974 it appeared that East-West German negotiators were making some headway towards protecting the two rivers. But then the West German Government established its Office for Environmental Protection in Berlin, which by agreement with the former Occupying Powers it was perfectly entitled to do. However, the DDR objected to the presence of a federal office of the West German Government there, and negotiations broke down. But now that the DDR is having its own trouble with fresh water supplies, the West Germans are hoping their Eastern brethren will take a more reasonable position.

J.M. BRADLEY

British Scientist Pleads For Genetic Resource Conservation

LONDON—A plea for the conservation of the world's genetic resources was made recently by an eminent British scientist at the annual meeting of the British Association for the Advancement of Science (BAAS). Prof. J.G. Hawkes of the Department of Plant Biology at the University of Birmingham said, "So serious is the threat and so rapidly accelerating the process of erosion, that it is rather doubtful whether much of the old genetic diversity will remain in the fields and the forests by the year 2000."

He argued that the success of plant breeding in improving the quality of crops had led to specialization and loss of diversity, on which further improvement depended. Forest clearance, widespread grazing, and streamlined farming practice, he claimed, had drastically reduced related wild plant species.

These two different processes, said Professor Hawkes, arose from the need to press more land into food production for an increased world population. They had caused a crisis of genetic resources in this half of the 20th century.

Six series of activity were necessary, he suggested, to conserve resources. The first three include surveying, storage, and making relevant material available. These would lead to the fourth essential activity of establishing a suitable computerized information storage and retrieval system. Owing to the number of disciplines involved, scientists would need special training in genetic resources activities. Finally, a well-organized world body would be needed to coordinate activities and prevent duplication.

BARBARA MASSAM

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address; UNASAMER. Subscription Rate: \$125 per year. \$15 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Ann C. Werner
Correspondents covering more than 60 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

SPECIAL REPORT: Japanese Industry Must Spend \$75 Billion In Next Decade to Meet Pollution Standards

TOKYO—Japanese corporations may be forced to spend \$75 billion or more on equipment to combat pollution in the 10-year period between 1976 and 1985, according to a recent report prepared by the Central Council on Environmental Pollution Control. The organization warned in its report that unless this level of spending is reached, perhaps even exceeded, industrial pollution in Japan is likely to double by 1985.

While admitting that this is an enormous sum of money for the private sector to be forced to lay out, the report pointed out that such spending is the only way to meet tighter Japanese Government standards.

The ratio of costs of pollution control efforts to Japan's gross national product (GNP), according to the report, will climb from the one per cent level of 1975 to a full two per cent by 1980. Apparently the ratio of the costs to each individual industry's annual output will reach approximately nine per cent in the paper and pulp industry and six per cent in the metal industry by 1985.

As a direct result, the report said, an increase in production costs in these two industries is inevitable. Other Japanese industries, however, will not be as badly troubled by rising output expenses.

Anti-pollution investments in Japan during the decade ending in 1975 totaled an estimated \$19.9 billion. As a result, air pollution caused by sulphur oxide has been steadily lessened year by year and is expected to soon reach the proposed standard across the entire nation. A significant reduction in air pollution caused by nitrogen oxide has also taken place in recent years.

But, although water pollution caused by cadmium, mercury, and other highly toxic substances falls within control standards throughout Japan, water pollution caused by organic matter at many places is still above allowable standards, especially in the country's lakes and marshes.

Nevertheless, with inflation taken into account, and due to the delay in economic recovery, there is a general decrease at present in spending on pollution control equipment by most Japanese industries. The fact of the matter is that some pollution-causing industries and government agencies involved in construction projects are pressing for a relaxation of strict anti-pollution regulations.

No doubt it is too early to say, yet environmental organizations in Japan are expressing disappointment with their government because future anti-pollution policies appear to be unclear, seeming to yield too much to arguments that the nation cannot afford strong measures when the economy is in a slump.

A number of prominent environmentalists in Japan, however, go so far as to argue that, at least to some extent, it was the end of the country's industrial high-growth rate brought about by the oil crisis of late 1973 that caused pollution rates to fall.

They contend that neither the attitudinal changes in Japanese industrial management nor an active involvement by government authorities really offer an adequate explanation for the halt put to the previously unchecked climb in pollution throughout the nation. Rather, the environmentalists claim, it is the prolonged stagnation in the level of industrial activity itself that most effectively braked the output of pollutants.

It is feared in such quarters that if high energy prices persist, Japan's industrialists may turn increasingly to more available, lower-cost energy substitutes. For example, a shift from high-priced, low-sulphur oil to coal would mean a considerable increase in the generation of nitrogen oxides.

This would bring up yet another problem. An attempt to further improve the quality of Japan's environment in the face of a likely change in the pattern of energy consumption would, in turn, require a corresponding jump in expenditures for pollution control on the part of private corporations and the Japanese Government.

As leading environmentalists here view the situation, the key to success of a continued national drive for a cleaner environment is precisely this question of how private enterprises and the public sectors can maintain their pollution control outlays at an adequate level for the long term under the constraints of low economic growth and high-cost energy sources.

Thus, the nation's environmentalists are warning that prolonged economic stagnation would squeeze private business earnings as well as tax revenues in the public sector, sharply reducing the ability of both the private and public sectors to invest in anti-pollution projects, including research and development for new pollution control technology.

This fear, in fact, seems to have been already borne out to some degree by the recent trend in Japan's private industry investments for pollution control. Although such investments expanded rapidly during the first half of the 1970s—until it accounted for slightly above 17 per cent of all private capital outlays in 1975—the proportion fell to only 15.3 per cent in 1976 and is expected to drop to an estimated 11.3 per cent this year. What the percentage will be in 1978 appears to be anybody's guess, but some environmentalists are predicting no more than 7 to 8 per cent.

A.E. CULLISON

ECE Experts Conclude that Natural Gas is Cleanest Fuel

GENEVA—A UN Economic Commission for Europe (ECE) experts symposium held recently in Minsk, Byelorussia, concluded that use of natural gas cuts air pollution. Some 144 delegates from 25 countries and four international organizations took part.

Delegates agreed that natural gas is the cleanest fuel available. With a current share of the world energy balance exceeding 20 per cent, it is destined, they stated, to play an increasingly important role in meeting total energy needs up to the end of the 20th century.

To illustrate their views, participants in the Symposium on the Gas Industry and the Environment pointed out that the toxic content of the clean gas combustion process is five to eight times less than that of solid fuel and three to four times less than that of liquid fuels.

The delegates concluded that the conversion of large heating and power plants from fuels containing sulphur to gas would provide the only means of sharply reducing air pollution in many large industrial cities now suffering from a high concentration of sulphur dioxide and nitrogen oxides. They noted that when the use of natural gas was accompanied by more modern technology and an improvement in efficiency, harmful emissions into the atmosphere were reduced. The products of natural gas did not contain dust or sulphur oxides and the quantity of waste gas discharged by gas-fired thermal plants was far smaller than when other fuels were used.

The symposium recommended three lines of research for the ECE Committee on Gas: establishment of those types of use of natural gas which had the greatest technologic economic impact and which carried the least risk of atmospheric pollution; use of modified improved equipment for gas firing and the extension of its use; and development of technologies for producing and using low-cost hydrogen.

WILLIAM G. MAHONEY

Bangladesh Enacts Tough New Laws To Curb Spread of Water Pollution

DACCA—The Bangladesh Government, at the behest of President Ziaur Rahman, has enacted tough new environmental laws to curb the pollution which is rapidly spreading from major cities to the rest of the country through an extensive and complicated riverine network.

The recent Presidential ordinance provides stiff punishment—fines and imprisonment—for individuals responsible for causing pollution. Where a commercial or industrial establishment is the polluter, the owner and the entire staff of officers or agents thereof shall be deemed guilty.

The same ordinance also rescinded the authority of the courts to interfere with the implementation of the new anti-pollution edict, and, instead, vested all enforcement authority in a 15-member board with as many as six governmental secretaries on it, thus making it the most powerful board ever set up by the government in any sector.

The government has also inaugurated studies to determine the nature and amount of water pollution throughout the country. A survey of the types and number of industries and sewage treatment plants discharging waste in the rivers has already begun, as has a chemical analysis of the concentration and types of herbicides and insecticides carried by each river and many of the more important streams. Priority, however, is being given to establishing the quality of water from contaminated rivers entering the country from neighboring India.

Regular monitoring stations have been built in the Karnaphuli Paper Mills complex (in Chittagong), Halda River near Chittagong WASA (Water and Sewage Authority) intake, Buriganga River near Chandighat waterworks intake (in Dacca), Demra and Ghorasal near Sitalakhyia River (in Narayanganj) and Tongi Bridge.

In addition, the Water Pollution Control Board has already fixed water quality standards for drinking, aquatic, and recreation waters in Bangladesh, and has established liaison with such international bodies as the United Nations Environment Programme and its International Referral System.

TAHMINA SAEED

Kenya Official Decries "Dumping" Untested Chemicals on LDCs

NAIROBI—The leader of Kenya's delegation at this year's Governing Council of the United Nations Environment Programme (UNEP). Dr. Gikonyo Kiano, has called for international action to ensure that developing countries are not used as "dumping grounds" for drugs and chemical products which have not been adequately tested in their countries of origin.

Dr. Kiano, Kenya's Minister for Water Development, was elected a vice-president of the UNEP Governing Council meeting in May.

Dr. Kiano raised the drugs issue during the Governing Council meeting, without specifying instances. But he said here: "I feel very strongly about this matter. The people of developing countries must not be made guinea pigs for testing the effects of various drugs and chemicals on the human body."

He said there had been several cases where such products had been marketed in developing countries before they were fully accepted in their countries of origin. He called for international rules and procedures to prevent this.

CHARLES HARRISON

Philippines Seeking to Recycle, Reduce Waste in Mining Operations

MANILA—The Bureau of Mines is undertaking an extensive research program aimed at reducing pollution resulting from mining operations. A recent study showed that in the Baugio mining district alone, some 27,000 tons of mine waste are discharged daily, representing almost 19 per cent of the estimated 140,000 tons discharged by the country's 24 mining companies.

According to Juanito C. Fernandez, the Bureau Director, the research program will focus on the possibility of recycling mine wastes and mill tailings. Its specific objectives are: 1) to seek economic ways of solving the problem of mines and mill wastes disposal; 2) to save agricultural and forest land and waterways from pollution and siltation; 3) to find new use for mineral resources and to improve the deteriorating environment in mining areas; 4) to support the government's low-cost housing program by providing a cheap source of construction materials; 5) to look into the possible recovery of precious metals such as platinum and cobalt; 6) to generate additional job opportunities.

In addition, Fernandez pointed out that initial studies by the research group show that some of the mine wastes and mill tailings are high in silica. This can be used for cement and glass manufacturing and also as construction materials. A preliminary survey of all the mine wastes and mill tailings discharged by the mining firms is now being carried out by the research group.

ARTHUR MILLER

France Agrees to Reprocess Japan's Spent Nuclear Fuel

PARIS—Over the vociferous objections of anti-nuclear environmentalists, France and Japan have reached agreement on a \$1 billion project for reprocessing Japanese spent nuclear fuel in France.

The work will be undertaken at Cape La Hague, near the English Channel port of Cherbourg, in an installation belonging to the Compagnie Generale de Matieres Nucleaires (Cogema), a subsidiary of France's Atomic Energy Commission.

Some 1,600 tons of nuclear waste is expected to be shipped to France. The plutonium will remain the property of the Japanese companies, which will be responsible for handling the storage of waste.

The arrangement is being hailed by the French Government and its supporters as an outstanding victory for French technology, particularly as Great Britain had stood an excellent chance of getting this profitable contract, thanks to its Windscale plant.

But environmentalists and anti-nuclear supporters are already calling the Cogema plant at La Hague "an

international nuclear garbage can," for the Franco-Japanese agreement is merely the latest of several that Cogema has won. A smaller contract with Svenska Kaernbraensle Foerserjning provides for Cogema to reprocess spent fuel from two plants which the Swedish Government is expected to bring into production later this year.

Japan's negotiations with Great Britain apparently foundered due to pressure from the British anti-nuclear lobby and public.

It is generally admitted, however, that the French Government takes the ecologists' protests much less seriously—unless they are seen as a threat to public order. This was the case with the massive demonstration at Creys-Malville in July when some 30,000 anti-nuclear protesters, not all of them French, turned up to protest against construction of France's "Super-Phoenix" fast-breeder reactor (*WER*, Aug. 15, p. 2).

Nevertheless, increasing anxiety is arising over the scale of activities at La Hague: a claim, rebutted by the authorities, has been made that between 1968 and 1974, plant workers' average radiation exposure had tripled although it was admitted that it remained below dangerous limits.

French ecologists are also concerned about "dangerous" wear and tear on plant and equipment at La Hague, particularly in view of the government's policy of seeking and acquiring foreign contracts for reprocessing spent nuclear fuel.

PETER DEWHIRST

UK Parliamentary Committee Urges Grants for Solar Heating Devices

LONDON—An all-party committee of MPs has urged the Government to encourage the use of solar energy in Britain.

In fact, the influential Select Committee on Science and Technology says that the installation of solar water and space heating devices should qualify for a grant of 50 per cent up to a maximum of \$700 per householder.

The committee says that although the contribution in the UK from solar space and water heating "is likely to be modest, and seasonal, we consider savings of this nature to be worthwhile."

The Committee's report reveals that it was far from impressed with government efforts so far in the field of renewable energy sources.

It notes that in 1975-1976, the Department of Energy's expenditure on research and development in renewable sources and conservation, together amounted to \$6.5 million whereas investment in the same period on nuclear energy amounted to \$256 million.

It adds that it detects in the Department of Energy "a certain complacency" toward the development of new sources and finds that the Department "appeared to attach low priority to these challenges." ALAN MASSAM

Pakistani Technology Provides India With Windmill Energy

ISLAMABAD—With help from Pakistan, India is exploring the utilization of windmill energy for pumping water for drinking and irrigation purposes.

The Chairman of Pakistan's Appropriate Technology Development Organization (ATDO), Ghulam Kibria, said recently that on request from Tata Energy Institute, Bombay, drawings and designs of the windmill successfully developed in Pakistan by the ATDO have been passed on to India. This technological gift, he added, has been greatly appreciated by the Indian institute.

Kibria said other possible cooperation in this field of research is envisaged with the International Development Research Centre, Canada. The Swedish Institute of Technology has also asked for ATDO's assistance in the development of wind power generators.

At present, four windmills, two each at Gaddani and Gaddap, near Karachi, are operating in Pakistan. Two more windmills are now being built in Bahawalpur.

One of the windmills set up at Gaddani, with the financial assistance of the Pakistan Science Foundation, is yielding good results. Local residents, formerly without an adequate source of water, are now getting it from a windmill-powered well, not only for drinking and other domestic purposes, but also for irrigation of coconut and other plantations.

It is estimated that duplicates of this windmill could be fabricated in India at a cost of \$2,400, with installation costs adding another \$3,200. MOHAMMAD AFTAB

Ecological Paradise of Mindanao Loses its Ecosystem Balance

MANILA—Mindanao, the ecological paradise of the Philippines only 20 years ago, is no longer that anymore. The once lush forests have been wantonly cut and it will take a long time for the island to restore its ecosystem balance, according to Dr. Dioscoro S. Rabor, special consultant in wildlife management at the College of Forestry at the University of the Philippines.

Reporting on his personal observations over the last four decades, Dr. Rabor said excessive forest destruction in Mindanao and the adjacent islands has resulted in the reduction of wildlife population, especially of birds and mammals. Forest destruction in these parts of the country are mainly due to unrestrained logging operations, followed by slash and burn farming.

There now exist 19 orders of birds and eight orders of mammals in Mindanao. The birds are represented by 68 families and about 350 species and subspecies. 101 species and subspecies are natives of the country and 13 of these are found only in Mindanao as endemic forms.

The mammals are represented by 19 families and 95

species and subspecies. Thirty-five species are found only in the Philippines and less than 20 are endemic to the island.

Dr. Rabor said several species of birds and mammals in Mindanao are near extinction. It is now extremely difficult to see the three species of hornbills—the Mindanao "kalaw," "angek," and the writhed-billed hornbill. Even the large pigeons cannot be found in places where they used to be very common, he said.

Apart from hornbills and pigeons, the four common owl species and four hawk species that feed mostly on ricefield rats are also gone. The warblers, the big frogs of Mindanao, the common ricefield frogs, many species of lizards, and harmless field snakes that feed on rats are now becoming very rare.

This reduction in population of wildlife in Mindanao, according to Dr. Rabor, is due to the modification of their habitat. A consequence of this is the increase in the number of other wildlife species, often less desirable ones.

SPECIAL DISPATCH TO WER

Swiss Government Urges "No" Vote On Sunday Automobile Ban Proposal

GENEVA—The Swiss Federal Council—the executive arm of the government—has urged the rejection of a proposal by environmentalist groups that use of all motor-driven vehicles on land, sea or in the air be banned the second Sunday of each month.

The proposal cited three objectives that were appealing enough to gain 115,673 signatures, forcing a nationwide referendum under the direct democracy system in force. The three objectives: to improve the protection of the environment; to raise the level of the quality of life; to conserve energy.

The Federal Council commented that while a majority of the population undoubtedly favors attaining the objectives cited, the scientific studies demonstrated that adoption of such a drastic measure would not achieve the desired results.

The Federal Council conceded that motor vehicle traffic noise was injurious to the environment. But referring to the oil crisis of 1973 when car traffic in Switzerland was banned for three Sundays, it noted that the only results of such measures are to change the schedule of traffic, not the amount.

The proposed ban, the Council said, "would only bring an insignificant reduction in the pollution caused each year by exhaust gas." It supported this with figures provided by the Federal Office for the Protection of the Environment.

But the basic argument, the Council message read, would be that "to ban all private traffic would constitute a serious injury to the individual liberties of many citizens."

WILLIAM MAHONEY

In Brief...

Filipino Vehicles Impounded For Excessive Emissions

The Philippine National Pollution Control Commission (NPCC) has started to apprehend vehicles emitting excessive smoke. According to NPCC, the maximum permissible emission limits are carbon monoxide three per cent, hydrocarbons 350 parts per million (ppm), and nitrogen oxides 800 ppm.

Apprehended public utility vehicles are given notice that they will be grounded at the Land Transportation Commission. There, frontplates of the vehicles are confiscated and a temporary operator's permit is issued by the NPCC. The vehicles are then tested for pollution violations at any NPCC test center and the vehicle is only released after it can meet NPCC requirements.

New Newsletter, Urban Edge, Launched in Washington, D.C.

The Council for International Urban Liaison, of Washington, D.C., has launched a monthly newsletter titled *The Urban Edge* to help planners and officials in the developing nations exchange practical ideas in service delivery to the urban poor. The pilot project in urban information exchange is being financed by the World Bank Group to provide a clearing house for urban professionals and decision makers engaged in the upgrading of squatter settlements, the provision of basic infrastructure, and transportation system in the crowded population centers of the Third World.

The *Urban Edge* will report on successful urban projects in countries that have heavy loan commitments from the World Bank Group and other international development finance institutions. Low-cost projects that create employment opportunities for the urban poor using technology appropriate to labor-

intensive conditions will also be reported on in the newsletter.

The publication will go to a select group of 2,000 key public and private sector professionals in about 30 countries over a six month period. Reaction to the information-sharing project will determine its continuation and expansion into other world languages and areas.

Further information about the new publication can be obtained from the Council for International Urban Liaison, 818 18th Street, NW, Washington, D.C. 20006.

Brazil Seeks Ways to Halt Oil Pollution of Beaches

Brazil is looking for the best way to halt the increasing oil and tar pollution on its beaches. The culprits are the oil tankers which have to be washed out after delivering their daily load of 800,000 barrels of imported crude.

The worst hit areas are Rio de Janeiro, Santos and Vitoria. Brazilian environmentalists suggest that either special areas be built at sea for the tank flushing or else the water used in flushing be pumped ashore. They note that such measures would not only save the beaches but would also be economical since about three per cent of the petroleum load is lost in the process. This three per cent could be recuperated and thus pay for the cost of the anti-polluting facilities.

Brazil's newest maritime oil port, in Angra dos Reis (*WER*, Jan. 17, p. 6), already was equipped with onshore water-oil separating and water cleaning facilities. All the water used to wash out the empty holds of tankers is pumped ashore where the crude is separated and the water is filtered. It is returned to the ocean clean, or else used in the next empty tanker.

Brazilians are justly proud of these new modern facilities in Angra but unfortunately they are an exception to the rule as other and older Brazilian ports have very few or no such facilities at all.

Argentina Installs Meters To Cut Urban Water Use

Argentina is planning to install three million water meters in urban areas over the next five years to cut down on water use. Currently, urban dwellers and industrial companies pay a flat yearly fee giving them unrestricted water use.

This has resulted in an irrational distribution between the unrestricted urban areas and the rural areas where the price is based upon the amount of water used, said Luis Urbano Jauregui, under-secretary for national water resources.

Argentine per capita water consumption is roughly 75 gallons daily, about 40 per cent above the world average. However, in urban areas, the daily average rises to 175 gallons.

Indonesia Closes Factories Polluting the Brantas River

Because of grave pollution of the Brantas River in East Java in Indonesia, the government has ordered the closure of two factories and the installation of industrial water treatment plants in four other factories. The government's action is designed to protect the Brantas River, the main source of drinking water for Surabaya, Indonesia's second largest city.

Colombia Bans Uncut Wood Export to Halt Deforestation

The Colombian government has banned the export of uncut wood in an effort to protect the country's diminishing forest reserves. Only finished lumber one foot in thickness can be exported. No valuable woods which are on the country's endangered list can be exported, even in finished form.

Colombia's annual lumber exports total \$30 million. However, approximately 1.2 million acres of forest are being destroyed each year. Spokesmen for the lumber export industry blame the hack-and-burn methods of colonizing peasants for this destruction.

Chilean Ecologists Oppose Government's OK to Whalers

A Chilean ecology group has strongly opposed a mid-September government decision to permit a national whaling firm to rent a Japanese ship and catch up to 500 sperm and sei whales per year for three years.

In response, a representative of the government whaling licensing agency, the Agricultural and Livestock Service (SAG), stressed that the government had limited the catch at the same time it approved the 350 ton whaler's rental by the Macaya company. Macaya is the only whaling firm in Chile and has operated for forty years without limitation. The boat it will rent is not equipped for processing, which will be done at the firm's plant in Talcahuano, a southern port. An increase from sixty to 200 workers is planned by the company.

Chilean ecologists have asked their government to join the proposed ten-year moratorium on whaling. The government said it would do so only if all countries agree to a moratorium. A SAG representative pointed out that neighboring Peru catches 2,000 whales annually.

Sri Lanka Erects Railroad Elephant-Crossing Signs

"Elephant Crossing" signs on the rail track between Trincomalee and Batticaloa in Sri Lanka's Eastern Province have been suggested as a safety measure for train travellers as well as wild elephants frequently run down by fast-moving trains. As many as five four-ton elephants are known to have been killed by a single collision.

The Wild Life and Nature Protection Society as well as the Government Department of Wild Life Conservation have expressed concern, and the Wild Life Department has taken the matter up with the Government-owned railway after two elephants were recently killed by the Batticaloa-bound night mail.

Although the railway has directed

its engineers to sound their whistles and reduce speed when approaching areas frequented by elephants, there have been several collisions sometimes leading to derailment of trains. However, no persons have been hurt as a result of these accidents.

Singapore's Air Pollution Undergoes Drastic Drop

Pollution in urban areas in Singapore has dropped drastically compared to a few years ago and Singaporeans now breathe cleaner air than before. The Anti-Pollution Unit says smoke in urban areas declined about 25 per cent during 1976. Total acidity also diminished about six per cent last year.

The Unit attributed the lower acidity to controls imposed last year on the sulfur content of automotive diesel fuel to a maximum of 0.7 per cent and it is hoped that the content will further drop to 0.5 per cent this year. A spokesman for the Unit said restrictions on vehicles entering Singapore's central business district during rush hours also contributed to lower pollution.

Malaysia Environmentalists Urge Government Action

Selangor, Malaysia's Environmental Protection Society, has sent a declaration to Prime Minister Datuk Hussein Onn signed by about 1,400 Malaysians, expressing concern at the deterioration of the country's natural heritage. The declaration called on the government to implement measures and standards to control all discharges into the environment.

According to Gurmit Singh, Selangor's president, the government so far has not issued standards for emissions and effluents. He proposed the National Sciences Council work out methods to treat the different types of effluent. He also suggested halting logging operations in the proposed Endau-Rompin National Park for six months so that a study can be made.

Australia Finally Authorizes Mining and Export of Uranium

The Australian government has decided to authorize the mining and export of the country's huge uranium reserves. The government's decision is the result of a year-long environmental study on the impact and consequences of uranium mining in the Northern Territory where the bulk of the country's reserves are found. In addition, the government has also established a uranium advisory council to monitor and coordinate the country's uranium industry. For the past four years, almost all mining of uranium has been banned and only small quantities of the mineral have been exported.

Hong Kong Sulphur Oxides Within Acceptable Limits

The Hong Kong government recently reported that air pollution caused by sulphur oxides is well within the acceptable limit in the colony. Franklin Chung, the Senior Smoke Inspector of the Labor Department, pointed out that if the concentration of sulphur oxides is above the threshold limit value of five parts per million (ppm), then the level of pollution is considered harmful to humans.

Chung noted that at present 33 monitoring stations are distributed throughout the colony to detect sulphur oxides in the air. Recent reports by them show that the level of sulphur dioxide was only 0.01 ppm in Hung Hom and 0.0005 ppm in Central. Therefore, he says, there is no real cause for concern.

However, Chung's statement contravenes a claim in a documentary film, "The Hong Kong Project," which detailed the findings of a survey on Hong Kong's urban conditions by three scientists from the Australian National University in Canberra. Their findings maintain that the sulphur content in the atmosphere has reached a level that has caused increased respiratory diseases and lung cancer deaths.



World Environment Report

21 NOV 1977

VOL. 3, NO. 21

Copyright ©1977, Center for International Environment Information.

OCTOBER 10, 1977

Swedish Environmentalists Attempt To Halt Aerial Chemical Spraying

STOCKHOLM—Swedish environmental activists swung into action late last summer in an effort to halt aerial spraying of forests with chemicals.

Demonstrators have chained themselves to planes. They have occupied small country airfields. They have prevented fueling and they have blocked isolated airstrips. Petitions to authorities have circulated under a general slogan of "Ban the spreading of poison in the forests and on the land." Nevertheless, the spraying mostly continued.

The uproar, in the public media as well, reached its height in August, the month when spraying to fertilize the forests as well as to keep down insects and underbrush smothering young trees is most effective. It also happens to be the time when Swedes are out in force picking wild berries, plucking mushrooms, or just hiking.

In the past, the activists have denounced spraying as a danger to public health, destructive of wildlife, and damaging to the environment. They still hold to that, but lately they have also protested that spraying prevents Swedes from going into the forests for berry picking and mushrooming and therefore violates their right of common access (*allemansraett*) to land owned by others, a traditional "sacred cow" concept peculiar to Sweden and only partially codified legally.

The protests apparently took authorities by surprise, particularly because various chlorinated phenoxyacid preparations suspected of containing small portions of poisonous dioxin were banned earlier this year in order to calm public opinion. The use of DDT had long been banned.

Minister of Agriculture Anders Dahlgren commented that activists were carrying their agitation "far beyond factual limits." Valfrid Paulsson, head of the state agency for the protection of the environment, denied that common access rights were being threatened.

Forest owners, including the state's forestry bureau—which manages a fifth of Sweden's forest lands or around eleven million acres—insist that spraying is essential if the forests are to remain viable and maintain a reasonable growth. Otherwise, they say, insects and underbrush threaten to get the upperhand. They also emphasize that only chemical preparations permitted by law are used, and then only in the non-dangerous small doses prescribed by regulations. SPECIAL DISPATCH TO WER

Oil-Short, Uranium-Rich Czechs Look Toward Nuclear Energy

PRAGUE—The growing price and declining availability of crude oil is hampering environmental improvements in Czechoslovakia and turning the oil-short, uranium-rich country towards nuclear energy.

While advanced countries rely on coal and lignite only for about 30 per cent of their fuel needs, in Czechoslovakia they provide almost 70 per cent, Czech Premier Lubomir Strougal disclosed recently. At the same time, an influential Slovak daily has been complaining that plans for a shift from coal and lignite to more refined types of fuels and energy had to be scrapped, impeding the improvement of the air pollution problem.

Speaking at a miner's rally here, Strougal confirmed that coal and lignite will have to remain the backbone of the nation's fuel and energy production. Not only will lignite use remain high, he said, but it will be necessary to use low-grade lignite with a high sulphur content because the high-quality, easily accessible beds have been exhausted.

The Premier said Czechoslovakia thus will have to orient itself increasingly to nuclear energy, especially because the country has ample supplies of uranium. He added that in addition to the nuclear plants already under construction, the government was also considering participation in the construction of a shared, mammoth nuclear power station to be built in the western part of the Soviet Union.

Although Strougal spoke of depleted mines and adverse geological mining conditions, he nevertheless called for action to stem and repair the ecological deterioration in the north Bohemian coal basin.

IVA DRAPALOVA

In This Issue

Windmill Energy	2
Asbestos Flap	2
Desertification Conference	3
Wetlands Reclamation	4
Endangered Species	5
Faulty Drainage	5
In Brief	6

Air Pollution Problem of Ash In New Delhi Found Insoluble

NEW DELHI—This Indian capital has no early prospect of clean air above the city because, seemingly, atmospheric pollution in the form of ash emitted from local power stations cannot be controlled. The reasons, according to the Delhi Electric Supply Undertaking, are twofold: technical difficulties in reducing the ash, and the acute economic crisis.

The Electricity Department now is seeking a huge Federal gift to ameliorate the situation. The Federal Government, however, is prepared only to grant a loan.

A spokesman for the department pointed out that "When one of these power stations was built in the early 1960s, the locale was quite deserted and pollution was not the main issue it has now become. But conditions have changed since 1972—since new buildings have arisen around the power station and a national highway is passing alongside—and we cannot foot the bill on our own."

The first power generating unit, installed in 1963, had a mechanical ash collector which could handle only 70 per cent of the ash particles. Even the four other units, which have electrostatic precipitators, can collect only 86 per cent of the ash fallout. Although project reports have been prepared to upgrade the precipitators with U.S. help, India's inferior coal has a low sulphur content that decreases the efficiency of precipitation.

Thus the prospects for controlling air pollution in Delhi look bleak indeed. R. MURALI MANOHAR

Irish Environment Ire Aroused By Use of Asbestos for Brake Pads

CORK—Production of disc brake pads containing asbestos will finally begin this month at the American-owned factory located here. The manufacturer, Raybestos-Manhattan, became the subject of a national environmental controversy earlier this year (*WER*, March 14, p. 4; May 9, p. 6) when local residents and environmental groups at Ovens near Cork City lobbied against the factory's use of asbestos—a carcinogen.

During the long and bitter dispute that followed, the company, with planning permission, built the plant. This was followed by another long drawn out battle during which the plant's application for a dump to hold the asbestos waste was opposed. This, in turn, led to the dump site being switched from the factory to a location on the edge of Cork Harbor, nearly 25 miles away. Once again, there was strong opposition.

This latter dump site belongs to the Irish Industrial Development Authority (IDA), which had initially invited Raybestos to set up, with the help of Irish Government financial grants, in Cork. The IDA at all

times defended the plant on the basis that it had thoroughly investigated the environmental situation and was satisfied that there would be no danger to health.

Cork County Council, the local government authority, gave approval but this was again fought by the residents of both Ovens and Ringaskiddy. Recently, however, they lost the final battle after a national public inquiry.

A new independent National Planning Board, which is Government-established but free of Government interference, gave the go-ahead for the dump to be used. Eighteen stringent conditions, however, were attached that restrict dumping to a number of scheduled "dumping days" and that require continuous monitoring of the dump and of the levels of asbestos in the atmosphere.

The IDA said that its investigations into the project had been the most thorough and wide-ranging of any industrial proposal in Ireland and, as a result, Ireland had become the first country in the world to set a specific standard for levels of asbestos in the environment.

But, predictably, opponents of the plant remained unhappy, and called a number of public meetings to assess future action. Mr. Timothy Forde, Chairman of the Ringaskiddy Residents' Association, which opposed the plant, described the final approval as "a cancer approval, because this is a decision to contribute to that dreaded disease through allowing this asbestos factory to begin production and to dump its waste only a short distance from a school."

"There is no way we are going to put up with this," he added. "The waste will have to be conveyed through built-up areas of Cork City and suburbs for dumping, constituting a health hazard to those areas. There is no way we are going to allow our children to be subjected to the hazards of asbestos waste." TOM MACSWEENEY

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$125 per year. \$15 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Ann C. Werner
Correspondents covering more than 50 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

SPECIAL REPORT: UN Desertification Conference in Nairobi Adopts Action Plan to Halt Desert Spread

NAIROBI—The United Nations Conference on Desertification (UNCOD), held in Nairobi from August 29 to September 9 and attended by delegates from nearly 100 countries, adopted a final Plan of Action designed to guide nations on ways of ensuring that the spread of the desert (which now costs \$900 million a year in falling land values) is halted by the year 2000.

In its final form, the plan incorporates scores of amendments from the earlier drafts (*WER*, May 9, p. 4), but essentially it wraps up the advice of expert scientists and administrators, taking into account the views of their governments and other bodies, on measures and policies needed at national, regional, and international levels to end desert encroachment and to reclaim at least some of the present desert areas.

One estimate is that an area almost the size of China has been turned into desert by human activities, rather than by natural causes, and afflicts some 680 million people in 63 countries.

Recommendations—With 26 detailed recommendations for action, the plan ranges from the evaluation of desertification and the improvement of land management, to corrective measures, to the strengthening of science and technology. At the international level, it calls for the support of all UN agencies.

The plan also recommends that the UN Environment Programme (UNEP) and the UN Environment Coordination Board be responsible for following up and coordinating its implementation. Dr. Mostafa K. Tolba, UNEP Executive Director and UNCOD Secretary-General, commented that this was the first in a recent series of UN conferences to reject the idea of a new institutional body to follow up its outcome.

The plan defines desertification as the diminution or destruction of the biological potential of the land, leading ultimately to desert-like conditions. Many factors in contemporary society—the struggle for development, population growth and demographic change, the effort to increase food production, and modern unadapted technologies—interlock in a network of cause and effect. In developing countries, the lack of financial resources is one of the greatest obstacles to overcoming such adverse factors.

Delegates Disagree—Delegates from the American, British, and French Associations for the Advancement of Science, and similar bodies in India, East Africa, and Latin America, warned the conference against over-optimism; they see the action plan as underestimating the time needed, and the general difficulty of changing life patterns in arid areas. They also caution against overestimating the adequacy of existing technology.

Dr. Harold Dregne, director of the International

Center for Arid and Semi-Arid Land Studies at Texas Tech University, said the scientists recommended a step-by-step approach to take advantage of experience gained and to avoid possible costly mistakes.

The question of financing the action plan figured prominently in the conference. A suggestion by Dr. Tolba for a tax on desert products (oil, minerals) consumed by developing countries was rejected as impractical. Until the last hours of the conference, it was expected that the finance issue would be left for UN action after the plan had been considered by the UN General Assembly—with the assumption that it would rely on existing sources of finance.

African Tactics—But the African group of nations, against the opposition of the U.S. and both Western and Eastern bloc states, forced through a recommendation inviting the General Assembly to create a special account, which would draw its resources from voluntary contributions, international taxation, donations, multilateral financial institutions, and interest-free loans.

All the African states voted in favor, as did some other third world states, to garner 37 votes. There were 18 votes against (most of them major donor countries) and 18 abstentions (including Eastern bloc countries). The British delegate warned that the U.K. would not contribute to a new fund; the U.S. took the same stance, as did other Western European states. East Germany, on behalf of Eastern European states, said they agreed the African proposal would not increase the available funds.

An alternative U.S. proposal that the General Assembly ask UNEP to convene a consultative group to investigate financial implications of the plan was rejected, as was a somewhat similar French proposal.

The surprise African recommendation, proposed by the Sudan, contrasted with the general goodwill displayed earlier in the conference. The reaction of most Western states was that it would not encourage the all-important cooperation of the main donor nations.

Few Confrontations—Otherwise, there were comparatively few political confrontations, although the Arab states forced through a resolution denouncing Israel's paper on the conquest of the desert in the Negev—because they objected to Israel's suggestion that neglect during the Muslim occupation of the area, from the 7th century onwards, had created the desert there. Dr. Joel Schechter, leader of the Israel delegation, asked the conference to concentrate on the desert issue, and not on politics.

A resolution on Namibia condemned South Africa's illegal occupation there (South Africa was not represented at the conference), and said the plan of action could not be implemented in Namibia until the area becomes

independent. Another resolution blamed South African Bantustan policies for increasing desertification because they restrict the majority black population to poor land areas.

Another resolution condemned the use of chemical and biological weapons which degrade the environment and so contribute to desertification.

Sahel Aid—The Sahel group of countries, on the southern fringe of the Sahara, secured the passage of a resolution recommending increased aid to them in view of the hardships they are now suffering from drought, and because they fear they may be facing another drought of the magnitude of the 1968-1974 disaster. This view was expressed by Mahmadou Diop, Mauritania's Minister of Primary Education, who is also chairman of the Sahel Group.

He said the rains which should have started in June did not start until August, and in most areas they were well below normal. By early September, Mauritania had received only a third of its expected rainfall, and Senegal, Cape Verde, Gambia, and Upper Volta had all declared themselves disaster areas because of the lack of rain. Niger, however, was an exception; here the rainfall had been so heavy that it had caused widespread damage.

Another resolution urged the UN and its agencies and institutions to extend appropriate technical and financial assistance to the least developed countries to enable them to combat desertification.

Preparation of the desertification conference had gone on for more than two years, and a range of technical studies had been undertaken in preparation for it. These included studies of existing work on desertification in such places as India (*WER*, Aug. 29, p. 1), the Soviet Union, Israel, Niger, Tunisia (*WER*, May 23, p. 6), and China.

Chinese Techniques—The Chinese experience in the Gobi Desert attracted wide interest. There a protective system of forest belts and networks, 500 miles long and 300 miles wide, safeguards a vast area of farmland.

Elsewhere in China, a "contain sand-cultivate grass" technique had ensured 50 to 60 per cent vegetative cover when water is brought in for irrigation. Sand dunes have been stabilized in three to five years by planting yukao (*artemisia ordosica*) on the windward slopes, and then building up plant cover to weaken the wind force on top of sand dunes. Another technique is to build a checkerboard of mud walls to stabilize shifting sand.

Israel's paper on the Negev Desert describes how towns, farms, and communal settlements, which have risen in former desert areas, counter the effects of thousands of years of excessive grazing and wood gathering in a naturally arid area.

Israeli Irrigation—Israel has introduced water from the north of the country, has developed the use of minimal rainfall, and the development of local brackish water

resources; new irrigation systems use both fresh and brackish water to overcome the desert.

Since the establishment of Israel in 1948, population in the Negev has risen from 14,000 to 230,000—80 per cent of whom live in urban settlements.

The Israeli study says the desert encroachment in the Negev was largely man-induced; there were few climatic changes over the centuries. Israel has, however, developed drip or trickle irrigation systems—with plastic tubes to deliver water direct to the roots of plants—to achieve high agricultural yields.

Global Problem—The desert conference as a whole produced different assessments of its achievements. Dr. Tolba had no doubts: "The conference has recognized that desertification is a global problem that concerns the whole of mankind," he said.

Dr. Gilbert White, an American geographer, said he had expected no revolutionary changes. "But the conference has provided a substantial nudge in the direction of evaluating priorities," he said.

A senior Western delegate was less happy at the outcome. The plan, he said, "is a shopping list for everything under the sun." Another delegate considered it "general to the point of meaninglessness."

The last-minute African action in forcing a resolution to create a special account soured much of the goodwill that had existed earlier. As one delegate put it: "It is sure to create tension between the wealthy nations who are pulling out of a world recession, and the poor nations who are tired of sifting through an increasing number of world agencies in a search for funds for development."

CHARLES HARRISON

Massive Reclamation of Wetlands To Increase Argentina's Crop

BUENOS AIRES—By reclaiming about 15,500 square miles of submeridian wetlands, Argentina can increase its grain and cattle production by about \$800 million annually, a recent government study disclosed.

The study calls for establishment of a drainage-ditch system to channel the current irregular water runoff and to control rainwater distribution in the surrounding 23,000-square-mile area. This would allow improved ecologic and economic development of the entire 48,500-square-mile area, the study showed.

Estimates of the entire block's production potential are: two million metric tons of wheat, three million metric tons of corn, one million metric tons of sunflower seeds, 200,000 metric tons of cotton, and 700,000 metric tons of beef.

The inter-Provincial commission conducting the study says it will need another two years to complete its investigation of how to reclaim the wetland area, which is located in northeastern Argentina near the border with Paraguay.

AGOSTINO BONO

One-Quarter of All Animal Species In Bavaria in Danger of Extinction

MUNICH—The Bavarian Ministry for the Protection of the Environment recently stunned nature lovers by announcing that fully one-quarter of all animal species in this vast southern German state have now been placed on its "Red List," i.e., "in danger of extinction."

The new "Red List" was compiled after an exhaustive two-year study of Bavaria's 35,000 animal (including insect, fish, bird) types. Approximately 40 leading scientists, assisted by numerous members of zoological institutions, participated in the preparatory work.

Some of the specific hard facts that the Ministry must cope with include:

- Of the 362 vertebrates native to Bavaria, 18 species are already extinct, 89 "seriously in danger," and 86 "endangered." This comes to a staggering 53 per cent on the "Red List."
- Of 75 mammals, 40 appear on the list (53 per cent).
- Of 201 domestic bird types, 108, or 54 per cent, are endangered.
- Seven of the 10 types of reptiles (70 per cent) are endangered.
- Ten of the 18 amphibians (56 per cent) are endangered.
- Of 58 fish types, 29, or 50 per cent, are endangered.

The insect study proved more difficult, since there are about 20,000 existing species in Bavaria. Scientists were forced to limit their focus to "representative types," then to draw conclusions applicable to the overall sector. Citing the diminishing number of butterflies, bugs, and ants in particular, the researchers estimated that the insect "endangered" species would probably equal that of the animal world—25 per cent.

The Ministry placed the blame mainly on destruction of living space and pollution of water and air. It noted that from 1952 to 1976, swampland had diminished by about 20 per cent (about 8,000 hectares). Other ecosystems have also been thrown out of balance, it commented. The ministry cited the use of insect sprays, weed defoliants, and other chemical preparations as bearing the guilt for upsetting the balance of nature.

Mammals: The brown bear, mink, wolf, beaver, and lynx are already extinct. Included on the "endangered" list are otters, wildcats, snow rabbits and ibex. Many bats and shrews are on the "seriously endangered" list.

Birds: Twelve types are already extinct, including four types of birds of prey. "Seriously endangered" are such well known birds as the wood grouse, moorhen, stone eagle, peregrine falcon, white stork, and little owls. There are another 48 bird species in the "endangered" category.

Reptiles: "Seriously endangered" are vipers, European swamp turtles, wall and emerald lizards, and cross adders.

Amphibians: Among those facing extinction are the midwife toad, the garlic toad, and the swamp frog.

Fishes: Salmon, May-fish, and sturgeon are already extinct. Thirteen types are "seriously endangered" and thirteen more "endangered." Among the latter are river trout, lake trout, and minnows.

Insects: Of the 1,400 butterfly types in Bavaria, about 25 per cent are "seriously endangered." Among these are the well known "Big Fox" and "Apollo." Of the 4,000 different species of bugs, eight are extinct and about 25 per cent of all types are "endangered." Of the 29 bumblebee types listed, 30 per cent are placed in the "highest danger" category. Thirty of the 50 ant types are "endangered," as are 38 per cent of the 61 dragonfly types.

SPECIAL DISPATCH TO WER

Unfinished Deep Drainage System In Mexico City Causes Flooding

MEXICO CITY—Frequent flooding of some areas of Mexico City during the annual rainy season has been blamed on an unfinished deep drainage system, free-flowing rivers, and the habit of routinely throwing trash and garbage into the streets. Alonso J. Doberning Garrido, Subdirector of Water and Drainage for the Mexican capital, recently suggested means to combat the problem.

Mexico City's deep drainage system is supposed to extend 63 miles, but only 42 have been constructed, he noted. "In the last administration, when it was announced that Mexico City was saved from flooding (after completion of those 42 miles), I resigned my job from the water commission of the Valley of Mexico," the specialist declared.

The section of the deep drainage system that exists is good, he continued. "Without it, the principal blocks in the downtown section of the city could be under as much as nearly three feet of water" during the frequent cloudbursts that occur from late May until early October. To complete the system now would cost around \$200 million, he added.

Doberning Garrido noted that rivers which flow openly on the south and west portions of the city constitute a "constant danger" during the rainy season, and urged enclosure of them. Although pumps are used to facilitate the rate of water flow, once the water reaches flood-stage, the pumps are no longer operable. One river frequently threatens to flood Mexico City's International Airport, he said, and should be enclosed a distance of 2.5 miles.

Residents' habit of throwing trash and garbage in the streets adds to the flooding, clogging storm drains with everything from pieces of furniture to dead dogs, he said. Mexico City always experiences either torrential rains or very light rainfalls, and the city's drainage system, he maintained, should be improved to cope with this problem.

KATHERINE HATCH

In Brief...

Sweden Restricts Boat Speed To Protect Marine Environment

To protect the environment in Stockholm's beautifully unique archipelago leading to the Baltic Sea, new and lower speed restrictions on boating and shipping have been ordered by the Swedish Government. The swell and wash of passing ships, particularly in the narrower channels, tend to erode the shoreline and damage piers and boats tied up at moorings.

Eight knots was set as the new speed limit for boats more than 12 meters long in particularly sensitive channel stretches, and 12 knots elsewhere. However, ferries running between Finland and Stockholm and boats operating a timetable service among the thousands of islands in the archipelago were granted permission to ply at 15 knots in 12 knot areas. The new regulation probably won't go into effect until next spring because of the time needed for signposting.

'Project Tiger' Program In India Yields 50% Increase

The number of tigers in India has risen by 50 per cent since 1972 in the nine reserves where the "Project Tiger" operation has been implemented. This was made possible by shifting villages away from the reserves, keeping a close watch on poachers, and improving the animals' habitat.

However, the director of Project Tiger, K.S. Sankhala, said: "Though people have become tiger conscious, it will take many more years to say that the Indian tiger is out of danger."

There have been incidents where even the villagers have become aware of Project Tiger. Early this month,

when a tiger in Sunderbans (West Bengal) killed a cow, it was chased into a kitchen of a house by the villagers, but not killed. Soon thereafter, the villagers sent for Project Tiger personnel who tranquilized the animal and sent it to the Alipore Zoo in Calcutta.

Thus far, the project has received \$1 million from the World Wildlife Fund for equipment and training, and the Indian Government has allocated \$4 million through 1979.

Lima's Water Supply Suffers From Faulty Flow System

The Peruvian Government recently revealed that Lima's water supply is endangered. Traditionally, the capital, which is located in a desert, is supplied from the sierra but planners are now worried that the existing system will be insufficient to meet demand by the turn of the century.

At the moment, the government is inviting consultants to submit designs for an ambitious water transfer project which would involve pumping water from the river Mantaro, in the central sierra, to a lake at Marcapomacocha, west of the river. Such a project would solve the problem of increased demand for the next twelve years at a cost of \$240 million. This stage would also incorporate plans to install a 600 Mw hydroelectric plant at Sheque that would significantly boost Lima's power supply.

The new hydroelectric station would increase the cost of the project by at least \$500 million, the cost being borne by the Peruvian Government and the World Bank.

Meanwhile, water conservation has been given top priority. The Sanitation Board (Empresa de Saneamiento de Lima) has started to repair damaged and inadequate fittings which have been responsible for huge wastages.

Australians Develop Liquid Fuel Containing Charcoal

A research project on the production of a liquid fuel suitable for industrial use is being carried out by scientists in Melbourne. The project, by Australia's Commonwealth Scientific and Industrial Research Organization (CSIRO), is based on mixing finely powdered charcoal with conventional fuel. If successful, the research will lead to valuable savings because of the rising cost of oil and the current pressure on supplies.

The charcoal used in the mixing with oil is actually sawdust from the country's sawmill waste. Mervyn Page, a spokesman for the project, said preliminary results of the research have been promising enough to shortly begin commercial trials. Page also added that, apart from sawmill waste, products such as forest residues, agricultural wastes like sugarcane refuse and peanut shells are also possible sources of charcoal.

Colombia Closes Polluting Sulphuric Acid Plant

The Colombian government has ordered the closure of a sulphuric acid plant in Cali on grounds of "serious contamination" of the atmosphere in the northern part of the city. The measure follows a similar order to close a soda plant in Cartagena which was responsible for mercury pollution of the coastal city's bay.

The Colombian Ministry of Health also has announced that three of the country's biggest companies have started a pollution-control program—Coltejer, Colombia's largest textile plant, with headquarters in Medellin; the state oil enterprise Eco-petrol located in Barrancabermeja; and Cementos Boyaca, a large cement factory in the department of Boyaca, central Colombia.

China Places First Japanese Order for Pollution Device

Tokyo Engineering Corporation (TEC) of Japan has received its first order from China for electric dust collecting equipment. According to TEC, the Chinese plan is to install the dust collector at the new Wuhan steel works being installed by Japanese and West German firms. It will be used for absorbing dust which arises in high temperature gas surface treatment of steel. The dust collector, with an operational capacity of 186,000 normal cubic meters per hour, will begin operating around June this year. This is seen as yet another example of China's intention to incorporate pollution control in new plants.

Environment Liaison Centre: Nairobi Picks New Manager

The newly-appointed Manager of the Environment Liaison Centre in Nairobi is Gary Gallon, 31, formerly Executive Director of the Society for Pollution and Environmental Control in Vancouver, B.C.

The liaison center is a world citizens' environmental organization which was established in 1975 to provide a link with the UN Environment Programme for all regional, national, and international non-governmental organizations. The center's board of directors includes anthropologist Margaret Mead and British economist Barbara Ward.

Lead Found Major Pollution Problem in Philippines

According to a recent study conducted by Prof. Ireneo L. Lawas of the University of the Philippines College of Medicine, lead plays a significant role in the country's pollution problem. The element, toxic to

the human nervous system, has been found in the blood, urine, scalp, and body hair of 247 Filipinos examined by medical scientists. Automobile factory workers in the city of Manila show the highest level of exposure to lead pollution, followed by painters, policemen, and ammunition factory workers. Those least exposed to lead are the farmers in Calauan, Laguna and Taguig.

FAO Pinpoints Pollution Problems in E. Asian Waters

In its preliminary review of marine pollution in east Asian waters, the Food and Agriculture Organization (FAO) recently pointed out that urbanization of the various population centers has led to the development of several types of pollution problems.

Following is the pollution situation in some of the countries surveyed:

With a population density of about 500 people per square kilometer, Indonesia has no sewage treatment facilities at all. Hence, inshore waters are heavily contaminated with sewage germs and, consequently, 30 per cent of all hospitalized patients within the country suffer from water-borne diseases.

In Japan, fisheries losses caused by all forms of pollution amounted to \$16 million or 5.5 per cent of the total catch value in river and lake fisheries in 1972-73. Therefore, in 1974, \$430 million was invested as part of a "Five-year Sewage Plan" to develop sewage treatment.

In Thailand, the sea mussel harvest in northern coastal waters 31 miles from Bangkok dropped more than 17 times in 3 years from 472,105 pounds in 1971 to only 28,697 pounds in 1974. The decline has been traced directly to a drop in water quality caused by highly concentrated pollution from various sources.

In the Philippines, Manila Bay has

an average coliform bacteria count of 1,000 per 100 milliliters of water, but the count goes to 2 million bacteria per 100 milliliters along the shore. Manila is only 12-15 per cent seweraged and the domestic sewage puts 350 tons of solid waste daily into the bay.

In Taiwan, losses of oyster and clam cultures amounting to \$2.5 million a year have resulted from water pollution.

Therefore, sewage and treatment facilities, according to the FAO, are not able to keep pace with population growth. As a result, assimilating capacities of natural water (the water's ability to carry pollution without damaging aquatic life) will continue to be exceeded for many years.

WWF Calls on Mexico To Save Endangered Ridley Turtle

The World Wildlife Fund (WWF), headquartered in Morges, has called upon Mexico to take steps to save the Ridley Atlantic turtle from extinction.

The WWF said that shrimp fishermen are the chief culprits, often involuntarily trapping the turtles in their nets, where the creatures drown.

WWF Chairman Sir Peter Scott wrote Mexican President Jose Lopez Portillo asking him to declare the only beach where the turtles lay their eggs a national reserve. He also requested the Mexican President to forbid fishing boats to enter the area during each reproduction season from April to July.

The sanctuary would include a 20-mile stretch—called Rancho Nuevo—about 62 miles north of Tampico.

Prof. Archie Carr of the University of Florida has found that the birth rate of the Ridley turtles fell from 40,000 in 1947 to 1,200 in 1974, indicating that the total population has fallen from more than 160,000 to under 5,000.

Singapore Study: Hydrocarbon Compounds Can Be Unhealthy

The Singapore Ministry of Health has warned that certain hydrocarbon compounds like halogenated aliphatic hydrocarbons used as solvents in degreasing and cleaning of clothes can cause poisoning. It says that exposure to the hydrocarbons may result in the loss of consciousness due to depression of the brain and irritation of the skin and eyes, causing rashes and pain. They can also severely damage the liver and kidney, it says.

"Where any of these substances is used in a process, precautions must be made to ensure that the vapor is not present in too high concentrations in the atmosphere in which the operators are working," it says. "Alcoholics and people with liver disease should not be employed where there is significant exposure to halogenated hydrocarbons."

EPA in Sweden Moves to Protect 20 Large Wetlands

The state agency for the protection of the environment is campaigning to protect Sweden's wetlands which it regards as vital in preserving birdlife, particularly for breeding wild duck and geese and as resting places when the birds are migrating. Over the last three years the agency has contributed about \$115,000 for research in restoring and caring for wetlands.

Recently the agency appealed against a court decision to restore Hammarmaden, a 100-acre watery meadow, to cultivation. Hammarmaden also is slated to become part of a larger nature reserve.

Hammarmaden is included in the so-called CW-list, the international wetlands convention which Sweden signed in 1974. Twenty large Swedish areas are on the list with the purpose of building up an international chain of protected areas for birds to nest, rest, and winter over.

Ecology Belt in BA To Serve As Huge 'Oxygen Factory'

By the year 2000, the Greater Buenos Aires area will have an ecology belt along its outskirts providing 123,550 acres of park and recreation land, according to Mayor Osvaldo Cacciatore.

The ecology belt plan will include the 17 municipalities composing Greater Buenos Aires, he said, and envisions transforming current idle land to recreational use.

The open space would also serve as an "oxygen factory" for the area, which now lacks adequate open spaces for its population, Mayor Cacciatore said.

ECE Plans Malta Seminar On Coastal Water Problems

The United Nations Economic Commission for Europe (ECE) will hold an international seminar in Malta next May to study how islands and coastal regions can make the best use of their water supply. A preparatory meeting was completed here last February.

Five topics will be discussed, beginning with the management of groundwater resources and its relationship to surface water. Subjects under this topic heading include: the general balance of aquifers with special reference to in-flow and out-flow; the natural and artificial recharging of aquifers; the prevention of intrusion of salt; self-purification; diminution of the out-flow of groundwater to the sea; groundwater recovery systems; and the application of mathematical and analogical models.

The control of the quality of groundwater and its protection will be the second topic, taking into account the situation in areas of low population and significant seasonal changes of population. Steps to protect groundwater will be studied as they relate to human settlements,

agriculture, industrial, and other economic activities.

Measures taken to reduce the agricultural, industrial, and municipal demands for water in situations where resources are limited will also be reviewed. These include water metering, the setting of tariffs, recycling, and improved methods of irrigation.

Pakistan to Construct Radar Weather Monitoring System

A radar system will start functioning at Sialkot, Pakistan, next year to monitor weather and rain conditions in the upper catchment areas of the Ravi and Chenab Rivers which lie outside the territory of Pakistan, flowing down from the Indian administered portion of Kashmir, in the Himalaya foothills.

Pakistan flood control authorities say the system will help in taking precautionary measures against impending flooding of the two rivers. In addition, a telemetric system will be installed to forewarn people of onrushing waters from hill torrents.

Japanese Use Windmills to Recharge Storage Batteries

Wind power will be used to recharge storage batteries at about 300 communication repeater stations mostly on mountain tops and uninhabited islands in the Japanese archipelago if tests by the Japan Telegraph and Telephone Corporation now in preparation are successful.

With its 16-meter span and 10-meter support tower, the experimental windmill at Oshima Island is now the largest in Japan and generates two kw at wind speeds in excess of 26 km/hr. The windmill stops automatically to prevent damage when wind velocity exceeds 70 km/hr.



World Environment Report

Library

10 OCT 1977

VOL. 3, NO. 20

Copyright ©1977. Center for International Environment Information.

SEPTEMBER 26, 1977

ELC Fears Adverse Environmental Impact From Sudan Canal Project

NAIROBI—The Environment Liaison Centre (ELC), an agency supported by more than 70 non-governmental organizations throughout the world, has called for the reassessment of the \$160 million Jonglei Canal project in the southern Sudan. The purpose of the proposed 174-mile canal is to divert the waters of the White Nile away from the Sudd swamps, and so make more water available for irrigation in the Sudan and Egypt.

But the Nairobi-based ELC, which maintains close liaison with the UN Environment Programme, warns that the canal project may produce serious and negative consequences. Oscar Mann, an ELC representative who is also the representative in Kenya of Friends of the Earth International, has produced a study of the likely environmental and social aspects of the Jonglei project.

He pointed out that the Sudd swamp area is one of the world's richest tropical ecosystems, with a wealth of aquatic life, water fowl, fish, and wildlife. The area is populated by around 200,000 people, Mann estimates, whose lifestyle is adapted to the harsh conditions there.

Changes in evaporation rates and a reduction in the area seasonally flooded, as the result of building a canal, could have far-reaching effects, he warns, but available information is too scanty to enable precise estimates to be prepared. On the other hand, if further surveys are postponed until construction of the canal has begun, it would be too late to act on them.

The Sudanese Government has replied to the ELC report by denying that the Jonglei project has been launched without full preparation. In a statement issued in Nairobi the government says the canal will have negligible effects on the level of the Nile waters, while its effects in reducing seasonal flooding will save some of the human and animal life now lost each year to floods. Furthermore, local residents would be provided with adequate water supplies during the dry season.

The Sudanese Government maintains that the beneficial effects of the canal—shortening the river navigation route by 200 miles, providing an extra 200,000 acres for agricultural production, and enabling roads to be built where none now exist—will far outweigh any harmful effects. It also maintains that fishing will be improved. And while admitting that some traditional tribal migration routes will be blocked, the government says it will provide alternative routes.

CHARLES HARRISON

Ireland Experiments With Crops As Alternative Energy to Oil

DUBLIN—A study of the feasibility of using the energy stored in crops as a possible alternative to oil is being undertaken in Ireland, with the backing of the European Economic Community (EEC).

The State Electricity Supply Board (ESB), the National Science Council, and the National Agricultural Institute are collaborating on a biomass study at the small Cahirciveen power station in County Kerry. Built in 1957, the 5 megawatt station currently burns up to 30,000 tons of native turf a year, and is considered the ideal size for the experiment. A recently conducted preliminary test burning of some of the crops under consideration has been encouraging enough for further tests to be scheduled, according to Prof. Charles Dillon, chairman of the ESB.

Biomass, the use of anything organic that will burn to provide energy, is being viewed in the Irish context as involving animal wastes, straw, seaweed, and short-rotation trees. In Cahirciveen, it is the growing of short-rotation trees which is under study. Because of favorable climatic conditions, it is believed that soft woods could be grown in from three to five years in the area and, with sufficient plantings, enough cuttings could be carried out each year to provide fuel for the power station. The aim is to make an acre of land produce an energy crop equivalent to about two tons of fuel oil.

The Engineer-in-Charge of the Cahirciveen Station, Liam O'Connell, said that if experiments proved successful it might be possible to consider purpose-built power stations to use biomass crops, or to adapt existing stations. Other biomass studies are being conducted at Swanlinbar in County Cavan and in Galway, Cork, Tullamore, and Carlow.

TOM MACSWEENEY

In This Issue

Solar-Irrigation	2
Crocodile Breeding	2
Sweden's Wildlife	3
Environment vs. Coal	4
Fine Particles	5
Airport Noise Pollution	5
In Brief	6

Peru Tests Feasibility of Solar Energy for Use in Irrigation

LIMA—The Peruvian Government is planning to install experimental solar energy equipment in Puno—the southern region beside Lake Titicaca—to test the feasibility of using it for irrigation purposes.

The project is based on a newly-signed agreement between the French Embassy and SENAMHI, the meteorological office, here in Lima. Under the contract, the French Government will provide appropriate technology to enable Peru to develop solar energy for agricultural and domestic purposes. The main ingredient of the experiment will be a French-made pump which, when driven by sun rays, will be capable of extracting subterranean water.

This is the first time that any such experiment has been undertaken in Peru, and, pending favorable results, especially concerning its economic viability, other installations may be made elsewhere in the sierra (mountain chain).

French engineer Perrin de Brichambaut Christian, a signatory to the agreement, says that he is satisfied with the progress being made thus far in Peru although certain studies "are still lacking."

He added that using solar energy in the sierra for agricultural purposes is particularly feasible since there are at least eight hours of sunshine each day.

LORETTA MCLAUGHLAN

India Provides Sanctuaries For Crocodile Breeding

NEW DELHI—The crocodiles in India need not shed any more crocodile tears. The Indian Government and the UN Development Programme (UNDP) recently signed an agreement to proceed with the second phase of the "Crocodile Breeding and Management" project, with the UN Food and Agriculture Organization acting as the executing agency.

The first phase of the project, which was implemented in 1975-76 in Orissa, was successful in the rehabilitation of the "gharial" species of crocodile, an indigenous species which had nearly become extinct. The states of Bihar, Uttar Pradesh, and Rajasthan were also involved in the program.

Project headquarters for the second phase will be established at Hyderabad where training in all aspects of crocodile breeding and in sanctuary operational management will be provided.

The long-term objective is to restock selected rivers in specially created sanctuaries with suitable crocodile resources. This would eventually lead to higher earnings from crocodile farming for villagers and, because crocodiles are also a great tourist attraction, to increased

revenues from tourist traffic. It is also hoped that substantial foreign exchange will be earned through the export of crocodile leather. R. MURALI MANOHAR

Lack of Environmental Safeguards Causes Colombia's Soil Erosion

BOGOTA—Three-quarters of Colombia's land surface is suffering from erosion, according to an "ecological map" recently completed by the Colombian wildlife service INDERENA with French technical assistance.

The three-year study, financed by Colombia's Bank of the Republic, blames this situation on devastation wrought by Colombian farmers, particularly in mountainous zones where the lack of environmental safeguards has destroyed formerly fertile hillside lands, such as Villa de Leiva and the Canon de Chicamocha in central Colombia.

INDERENA calculates that the erosion of these areas, representing five per cent of Colombia's total arable land, has cost the country some \$571 million in lost agricultural production—and agriculture is the economy's principal mainstay. Some 5.2 million acres have been permanently lost to erosion, three-quarters of which are located in the arid Guajira Peninsula in northeastern Colombia near the Venezuelan frontier. Another one million acres are seriously eroded, either because of over-farming or the construction of highways, dams, and towns. One-third of the country's surface, including all of Colombia's coffee-growing lands, is affected by moderate erosion.

PENNY LERNOUX

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$125 per year. \$15 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Ann C. Werner
Correspondents covering more than 60 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

SWEDEN'S FAUNA: A Look at Europe's Last Great Wildlife Reserve

STOCKHOLM—Sweden's soaring eagle is nearing extinction, and the pilgrim falcon isn't doing any better. But the bear is lumbering along nicely, and the wolverine is thriving, too.

While the beaver multiplies, the seal along Sweden's Baltic sea coast declines. The wolf has practically disappeared, yet the Swedish moose is breeding at such a rate that it has become a menace to motorists.

That is a partial picture of fauna in Sweden — which, along with Norway and Finland, shares Europe's last great wilderness — as reflected in recent spot reports from nature protection organizations and in *Miljoeaktuellt* (Environment News), the official publication of the National Environment Protection Board (NEPB).

Monitoring Trends—In the 10 years of its existence, the NEPB has been carefully monitoring the trends in Sweden's fauna and flora, husbanding its resources and furthering steps to protect nature against modern inroads. It has been building on the Swede's traditional love of nature to make him even more conscious of his environment. Information such as the recent flood of news about the state of wildlife is a key factor here. The major share of some \$1.5 million going into research over the next year is being applied to various phases of nature protection affecting animal, bird, fish, and plant life.

Bjoern Helander, administrator of Project Sea Eagle, reported recently that "at least 75 per cent of all eagle breeding has failed this year. We have been able to follow closely 30 pairs along the whole Swedish coast and found altogether nine fledglings. To consider the eagle's future secure, the figures should have been the reverse."

Poisonous Pollution—Helander said the main threat to the eagle arose from poisonous pollution in its habitat, but disturbance of the nesting places also played a role.

For the same reasons, the pilgrim hawk is among Sweden's most threatened species. Only seven took wing this year, according to Peter Lindberg, leader of Project Pilgrim Hawk. Another five young hawks were found dead below their nests, three of them in circumstances pointing suspiciously to deliberate killing. "The tendency continues to be very disturbing," said Lindberg.

The stock of bears, hunted down to the point of extinction as late as 1920, now is steadily increasing, and estimates put the number between 400 and 600, according to NEPB. Between 10 and 15 are now shot legally each year, and probably the same number illegally. A proposal to license the hunting of bear now is under consideration by NEPB.

Test For Hunters—The environment board also is encouraging the government to introduce, beginning in 1981, an obligatory theoretical and practical competence test for hunters in ecology, species recognition, general biology, the law, and art of hunting. The aim is to make

hunting more suitable ecologically, encourage greater regard for wildlife, adjust hunting to society's demands, and create better preconditions and interest for further development of wildlife.

Since the wolf is considered extinct in Sweden, the question of transplanting wolves, particularly into the country's national parks in the North, has come under discussion. A poll taken by NEPB showed that most Swedes questioned were positive, but Lapp owners of reindeer herds in the North and farmers in the South were negative.

The wolverine, put under protection in 1968, has started a comeback and NEPB patrols now estimate their numbers between 130 and 150.

Under state protection, the beaver has multiplied so rapidly that the NEPB has recommended that the government permit beaver hunting for a five-year trial period and then assess the results. However, the seal is so threatened by the pollution in the Baltic that seven "cradles" or protected areas were set up this summer in hopes that peace and quiet would help them breed better. A similar program along Sweden's north sea coast is said to have produced good results. The number of seal in the Baltic has decreased dramatically over the past 40 years from some 100,000 to around 5,000.

Moose vs. Motorist—Although the environment board has listed 15 animals and birds as acutely in danger of extinction and another 24 threatened in the long run, it doesn't have any such worries about moose, deer, or reindeer. They now are so numerous that they have become a threat on the highways, especially in early mornings and evenings. Moose alone are blamed for 1,500 traffic accidents annually. A recent official census indicated there are about 200,000 moose in Sweden, but other estimates go as high as 400,000.

SPECIAL DISPATCH TO WER

Conservationists in Sri Lanka Credited for Timber Export Ban

COLOMBO, Sri Lanka—In an effort to contain the depletion of the country's fast-disappearing forests, the Sri Lanka Government has banned all export of sawn and logged timber. The decision to ban was greatly facilitated by the intensive lobbying of local conservation groups.

As the ban went into effect, the Government's Conservator of Forests released a summary report for 1976 which said that over 100 acres of *alstonia* and *pinus* have been planted within the catchment areas of the two reservoirs supplying Colombo's water supply. About 1,500 acres were also planted, the Conservator said, in

forestry reserves in areas surrounding the catchment. The report maintained that many areas, both within the direct catchment as well as outside of it, had been subject to illicit fellings and clearings.

Encouraged by the export ban, the Wildlife and Nature Protection Society of Sri Lanka has mounted a campaign to persuade tea factories to desist from using firewood to fuel tea driers. The Society charged that valuable satin wood logs are being used for this purpose—a wanton waste of a durable and elegant tree that takes 150 years to reach maturity. The Society is also lobbying the Government, which is the single biggest tea plantation owner, to get it and other plantations either to secure their firewood reserves from unproductive land, or use their high tea profits to run their driers on furnace oil rather than firewood.

MANIK W. DE SILVA

Environmental Battle in Britain Triggered by Major New Coal Pits

LONDON—A battle royal looms over the 500 million tons of coal, with an estimated value of \$17 billion, which lie beneath the 90 square miles of the Vale of Belvoir, a rural beauty spot in the English midlands.

On July 18, the National Coal Board (NCB) announced its plans to develop the field by sinking three new pits. It promised to screen the pitheads with barriers built from colliery waste, to plant trees, and to progressively restore pit heaps to agricultural use. In a suggested 70-year lifetime for the field, this would mean only 100 acres of bare tip at each pit at any one time.

The Belvoir (pronounced "Beaver") coalfield is the second largest in Britain in terms of coal reserves. Since first estimates of its potential were made in 1976, the NCB has mounted a thorough public relations campaign to inform local residents of its plans and to reassure them of its concern for the environment. Some residents undoubtedly will be attracted by the prospect of more jobs and business in an area where young people often have to leave their villages to find employment.

But opposition is vociferous and organized, too. Residents are also kept informed on the environmental realities of mining coal where one ton of dirt is likely to be produced for every three tons of coal. The Vale of Belvoir Protection Group claims a membership of 18,000 and a fighting fund of more than \$34,000. The Duke of Rutland, whose Belvoir Castle stands in the center of the Vale and who owns much of its land, has described the NCB's \$850 million development plans as "staggeringly expensive and unnecessary." He has, in fact, threatened to lie down in front of the bulldozers.

Local M.P. Michael Latham, farmers, and even local cheesemakers are joining the forces of opposition. They match the NCB publicity with stickers, posters, leaflets, and public demonstrations. On a hillside near one proposed pit site, 20 tons of white lime have been used to paint the giant slogan, "No Pit."

The NCB is expected to make its official planning application next year. Opponents will demand a public inquiry so that the application can be judged against an overall national energy policy, and have called on the Government to clarify this.

BARBARA MASSAM

Argentina Criticized for Lack Of Centralized Environment Ministry

BUENOS AIRES—Argentina badly needs a Ministry for the Environment if it is to solve its growing problems, according to Guillermo Cano, international environmental expert and former Argentine Secretary of Water Resources.

Current problems requiring coordinated national planning, he said, include contamination of urban areas, pollution of the River Plate serving the fresh water needs of much of greater Buenos Aires, and water scarcities in about three-fourths of Argentine territory.

"One of the errors committed by recent governments has been to consider the environment as a sector of economic activity," added Cano, who is also on the advisory committee of "Natural Resources Forum," a UN magazine.

Cano criticized the present government for eliminating the secretariat for natural resources and the environment and dividing its tasks into three new agencies, each under a different government body.

"Now we have the under-secretariat of environmental planning under the secretariat of transportation and public works, the under-secretariat of natural resources and ecology in the secretariat of agriculture, and the national office of public safety under the secretariat of public health," he said.

Coordinating environmental planning is becoming increasingly indispensable, said Cano, who helped Venezuela establish its environmental ministry.

Better coordination is also needed on the local level to solve the problems of urban growth, Cano maintained. He said the greater Buenos Aires area, with about nine million inhabitants, is divided into 20 municipalities with different codes.

"So long as environmental problems are handled without coordination, it is useless that here in Buenos Aires (city) there is a good building code or that incinerators and oil burners are restricted to certain locations."

The environmentalist also suggests strong government action to stop the current "indiscriminate" urban growth of greater Buenos Aires. Instead, he prefers construction of satellite cities about 60 miles away to handle the continuing rural migration to the city.

"Today the growth of Buenos Aires is presided over by the real estate companies and not the government," he said. "If the government tells developers it will no longer provide them with water, light, and gas, this alone will stem the growth."

AGOSTINO BONO

ECE Experts Call Spread of Fine Particles an Environmental Hazard

GENEVA—A United Nations Economic Commission for Europe (ECE) task force agreed here recently that fine solid and liquid particles in the atmosphere—too fine to be visible to the naked eye—create health problems, cause nuisances, and may even affect the climate.

The 10-nation task force—created by the ECE's Working Party on Air Pollution Problems—has been drawing up a report to be assessed at the ECE Seminar on Fine Particulates to be held at Villach, Austria, in late October. The task force is expected to suggest ways in which fine-particle problems can be solved and to select areas for specific work in this environmental field.

The first problem will be to define the size and composition of fine particles. Switzerland sets the maximum diameter at 10 microns, while the upper limit accepted by France and the United States is 3 microns. Finland and Turkey settle for 3.5 and West Germany and Sweden for 7 microns. Hungary, Poland, and Britain stated no preference in the task force study.

Fine particles manifest themselves in many ways. Those which seem to cause the most concern on health grounds are in the smoke generated by various combustion processes, but "smoke" is a vague term. Mineral dusts, exhaust gases, smog, sulphates, acid mists, asbestos, and glass fibers are also sources of particles which can harm the human body when inhaled, the report said. Risks include damage to the lungs, neutralization of the body's defenses against diseases, and direct toxic or cancer-creating effects. Chronic bronchitis, emphysema, metal poisoning, and asbestosis all come from breathing in fine particles, the report noted.

Most task force delegates agreed that too little is known about the interaction of fine particles and gases; the effects of particles or heavy metals; how they breach defenses of the pulmonary system; and the relationship between their composition and bodily health. The British delegation cited the problem of progressive mass fibrosis in coal and quarry workers. The U.S. group was interested in the relationship between the dosage of air pollutants and the results they produce at community levels as a basis for sensible regulations and standards and for the type of cost/benefit that could determine control strategies.

The report found that although several instruments are currently being used for monitoring air particles, none meets all requirements. It concluded, for example, that a reliable instrument is needed to measure particles' distribution by size. Instruments are also needed to assess the chemical composition of particles, to measure the sulphuric acid content of the air, and to discriminate fibrous particles.

The report looks at sources of particles. Fuel combustion, crushed stone, iron and steel, and pulp mills were the largest industrial sources of fine particles in the United States in recent years. The energy industry

emerged in a survey in West Germany—as in all countries that submitted estimates—as by far the largest producer of fine particles. Other major sources were steel factories, glass, stone and earth industries, and traffic.

The task force found that no atmospheric or source emission standards or regulations existed for fine particles below 3.5 microns in diameter. However, Sweden is planning industrial hygiene standards for suspended particles with guidelines covering their emission, as well as that of sulphur dioxide. Standards to be adopted by Finland in its Clean Air Act will follow those of Sweden. Finland has no limits on emissions. Switzerland has guidelines on the emissions of particles by heating installations and municipal incinerators. Britain has no specific regulations on fine particles, but total particle emissions by certain industries are controlled. France has no air quality standards concerning fine particles, but emission limits are set in directives covering cement works, refuse incinerators, oxygen lance steel works, foundries, high temperature extraction plants, and ore processing. West Germany has standards for non-hazardous dusts with a diameter below 10 microns both in the ambient air and in exhaust gases; a special limit also exists for toxic materials. In Hungary an act regulating fine particles is not yet in force and in Turkey a draft regulation has not yet been approved.

WILLIAM G. MAHONEY

Mexico Tightens Its Regulations Against Airport Noise Pollution

MEXICO CITY—New rules for national and international airlines have been adopted at Mexico City's International Airport after a series of tests disclosed that the level of noise contamination in the airport neighborhood is more harmful to humans than is the level of atmospheric contamination by engines.

Although monitoring equipment installed in a laboratory at the airport, which lies on the southeast edge of this capital, disclosed no planes exceeded the 100-decibel level on the sound scale, a new rule gives airlines until 1982 to change their turbine-powered aircraft for jets or to substitute newer, quieter engines for the old, noisy ones.

Joining in the drive to protect and improve the environment around the airport are Miguel Angel Barbarena-Vega, sub-secretary of the Department of Commerce and Transport and Jorge Cendejas Quesada, director of Civil Aeronautics, an engineer.

Concern over noise pollution also was voiced in Guadalajara, where extreme noise levels were found to cause drastic changes in the hormone level of the blood, according to a Mexican scientist in this city of two million inhabitants. In fact, noise pollution has been called the primary environmental contamination nuisance in Guadalajara.

KATHERINE HATCH

In Brief . . .

Slowing of Receding Glaciers In India Halts Climate Threat

Glaciologists from India and elsewhere have found that some of the glaciers which have been receding for more than a century have either slowed down or have stopped receding.

At one time, according to Dr. Gunner Ostrem, a Norwegian glaciologist, it was thought all glaciers would vanish completely, thus depriving rivers of the water needed for irrigation and hydro-electric power, and possibly causing climatic changes that would seriously affect the monsoon and rainfall.

The 20-mile Gangotri glacier sprawling over a 1,250 square-mile basin is one of the largest in India. This glacier has steadily receded at a rapid rate ever since 1935, but now the recession has slowed down.

India has some of the largest glaciers in the world; its largest is at Siachen in Ladakh in Jammu and Kashmir. This 45-mile-long glacier is believed to be the world's second largest, containing millions of tons of ice with a depth ranging from 135 to 750 feet.

Radiation Poses No Danger On Russian Nuclear Ships

Lengthy tests conducted by Soviet physicians aboard nuclear-powered ships working in the Arctic have shown that radiation conditions are quite safe for the crew and the surrounding environment, according to a recent announcement by Tass, the Soviet news agency.

The tests were begun aboard the icebreaker "Lenin" and then were continued on the nuclear-powered "Arktika," the ship that recently became the first to reach the North Pole. Avdalik Burnazyan, USSR

Deputy Minister of Health, said that radiation security was reliable and that the personnel's annual radiation count have never exceeded acceptable levels.

Complex radiation control equipment is used aboard the "Arktika," Tass said. Individual radiation dose control is maintained through the latest methods, using thermoluminescent photo and condenser dosimeters, the report said.

According to Tass, the results obtained were of great significance in developing the use of nuclear energy aboard Soviet vessels of various types. The agency stated that a new nuclear icebreaker, "Sibir," is now being constructed at Leningrad and would help extend the frontiers of navigation in the north.

Most of Mercury Pollution In Sweden Traced to Dental Care

Swedish environment officials believe that the country's biggest discharge of the heavy metal pollutant mercury into the environment probably originates at the dentist's chair.

According to estimates by "Environmental News," official organ of the state Agency for the Protection of the Environment, about ten tons of mercury contained in the amalgam used in most teeth fillings reach the sewage system or the waste tip.

The agency hopes to reduce this potentially dangerous element in the environment with the support of environment protection laws and in cooperation with the Swedish Dental Association. One object would be to collect the waste at the time of dental treatment and recycle it, thus recovering not only mercury but also silver and gold.

Between 20,000 and 25,000 kilograms of amalgam are used annually in Sweden, according to the agency, but only about 6,500 kilograms of amalgam waste are collected, for example, by filters in the rinsing bowl beside the dentist's chair.

Australian Scientists Solve Sulphate Discharge Problem

Scientists from the Australian Commonwealth Scientific and Industrial Research Organization (CSIRO) have found a simple, inexpensive way to reduce the sulphate content of waste water discharged by textile mills. The treatment, developed by CSIRO's textile industry division, will help the mills meet discharge limits set by sewage authorities. The limits are generally within the range of 300-600 milligrams per liter because higher sulphate levels in sewage may cause concrete pipes to swell and crack.

The new treatment involves adding sulphate-free aluminum salt and lime to the mill effluent. It also allows the sulphate level to be adjusted to suit the required limit. The scientists said the new treatment offers considerable savings for those mills which previously had to carry out expensive procedures to comply with regulations.

Korean Engineer Evolves New Non-Polluting Heating System

A new system of heating is now being studied by Dr. Yu Hyong-dok, a chemical engineer of the Korea Advanced Institute of Technology. According to Dr. Yu, the system generates heat with little energy waste and will not cause any air pollution or gas poisoning.

Dr. Yu's system works on the principle that air, when compressed and heated at a depth of 656 feet to temperatures of 50 to 80 degrees Centigrade, can be brought back above ground and used for heating purposes. The hot air can be channeled through vents in the ceiling of houses. It is also economical for large buildings such as government complexes, hospitals, or schools because the new kind of heating is cheaper than either oil or electricity.

Dublin Searches for Insect To Control Creeping Thistle

The National Agricultural Institute in Dublin is beginning the search for an insect to control one of the country's most troublesome weeds—creeping thistle. The biological control of weeds, which has been very successful elsewhere in the world, has not heretofore been attempted in Ireland.

The technique involves the release of and subsequent attack by certain parasites, predators, or pathogens upon the unwanted organisms. This technique is viewed as a necessary replacement for certain chemical control agents, such as the organochlorines, which have created persistent ecological problems.

U.S. Pollution Control Firms Meet in Colombia

Two hundred U.S. firms specializing in pollution control recently held the first-ever exhibition of such equipment in Colombia in the cities of Bogota, Medellin, and Barranquilla under the auspices of the Department of Commerce. Exhibits ranged from water filters to industrial gas cleaners.

Colombia does not produce any pollution-control equipment, and a number of the U.S. firms expressed interest in contracting with local representatives or opening a manufacturing subsidiary.

Nutritious Feed from Animal Wastes Devised in Argentina

A high-nutrition animal feed made by grinding animal wastes from slaughterhouses and mixing it with ground animal bones has been developed in Argentina. The result is

a powder rich in protein, phosphates, and calcium.

To get the high protein content, the slaughterhouse wastes are cleaned of all hair, skin, horns, nails, stomach, and intestines before being processed. The process includes eliminating as much fat as possible through cooking and chemical separation.

Last year Argentina exported 37,804 metric tons of the powder for a total value of \$5,212,000. Japan was the biggest purchaser.

Rare Himalayan Pheasant Makes Comeback, Says WWF

The Western-horned tragopan, one of the rarest and most beautiful of the Himalayan pheasants, may not be as near to extinction as feared, according to the World Wildlife Fund (WWF).

A survey of the bird's habitat in the northern mountains of Pakistan located 70 specimens in a 41-square kilometer area of Azad Kashmir; and Z.B. Mirza, WWF Administrator in Pakistan, described the situation as "very satisfactory," although admitting that poaching is still a "problem."

Colombian Textile Plant Buys Dust Filter System

Fabricato, one of Colombia's largest textile plants, has purchased a \$1.7 million filter system from the United States to end the dust pollution which has been responsible for contamination of the Valley of Aburra in western Colombia for the past five decades. The new system will redirect the daily 18 tons of coal-produced dust to a cement plant where it will be used as a raw material.

In another move to eliminate pollution, the textile complex is experimenting with plastic capsules invented in the U.S. to reduce noise.

Hong Kong Constructs First Solid Waste Disposal Plant

The first solid waste disposal plant in Hong Kong, to be located at Chai Wan at a cost of \$7.6 million, will be constructed in the near future. K.C. Wong, Chief Engineer of the Consultants Management Division of the Public Works Department, said the plant, when fully operational at the end of 1978, will be capable of disposing of 240 tons of mixed urban refuse daily.

At present, about 760 tons of refuse are collected each day on Hong Kong Island. Of this total, 620 tons are burned at the town incinerator and the rest is dumped at controlled tips of the Public Works Department. The second pulverizing and composting plant now being planned will be located in Shatin, in the New Territories District of Hong Kong.

The chief advantage of the disposal plant is that the new composting process will not cause any atmospheric pollution. In addition, the solid waste is being reduced to about one-fourth of its original volume.

Costly Geothermal Program Begun in Philippines

The Philippine Energy Development Board (EDB) has drawn up a program to tap the country's geothermal sources for additional energy supply. The program envisions that by 1987, 8.5 per cent of the energy need will be filled through geothermal steam. This will mean a yearly saving of 16.1 million barrels of imported oil.

The program is estimated to cost \$1.425 billion. Of this, \$675 million will be spent to explore and develop 435 wells and \$750 million to build 15 power plants. Currently the Philippines has 25 volcanic-geothermal centers with a potential for 200,000 megawatts.

Dairy Plants in Poland Lack Adequate Waste Purification

Radio Warsaw reported recently that rivers in northeastern Poland were being polluted by dairy cooperatives with inadequate purification facilities.

The radio network singled out several dairy cooperatives and said that, for example, the purification plant of the dairy cooperative in Kolin had been constructed to handle wastes from processing 130,000 quarts of milk per day. However, the dairy now had to process much more milk and its purification plant could no longer treat the waste flow, the radio service reported. It quoted an official of the cooperative as saying that the plant had to pay about 1,000 zloty (non-convertible) in fines per day for polluting the river.

The report pointed out, however, that the dairy already had applied twice for expansion of its purification plant, but that its applications had not been approved.

Polluted Mexican Suburb Undergoes Regeneration

The ancient suburb of Xochimilco on the outskirts of Mexico's capital is undergoing a vital regeneration necessitated by urban problems that include environmental pollution, abandonment of farm lands, and rapid growth.

Professionals in a number of fields are working to return Xochimilco (pronounced Zo-she-meel-ko) to its former role as a popular recreation spot and a green breathing space. Although Mexico City once was a place of canals, the only principal canals remaining are in this suburb. Contamination of these canals through the discharge of waste and litter is one of the problems being faced by the professional teams working to restore the site.

Abandonment of farm lands—partially due to their lower produc-

tivity because of contaminated irrigation water—and urban growth described as "savage" are other situations to be dealt with. As recently as the first years of this century, Xochimilco was a gardening center. Planners hope to restore its role by creating new green spaces, cleansing the canals, and renewing the richness of the land.

ECE: Environment Should Play Major Role in Human Habitats

Environmental considerations should play a major role in determining human settlement policies, according to an experts' report now before a United Nations committee which met here recently.

The Committee on Housing, Building and Planning of the UN's Economic Commission for Europe (ECE) is preparing a declaration of principles to guide governments. The experts' report was prepared by Czelaw Kotela of Poland and Gote Svenson of Sweden.

As a matter of special concern, environmental considerations should be fully taken into account in shaping human settlement policies, the report said. Energy, and its long-term price and supply prospects, should be factors in deciding on locations, land-use planning, design, transport systems, choice of material and technologies, and the management of settlements and building. Transport and communication policies should help to fashion the desired patterns of development as well as satisfying the needs of the majority of the population.

It states that the use of land should be controlled by public authorities, with a policy for each country covering national, regional, and local requirements. Harmonious communities and neighborhoods, well-integrated into the natural environment and adequately equipped with services and facilities, should be the aim in planning, programming, and designing new settlements.

Efficient Oil-Spill Recovery Ships Developed in Japan

Bridgetone Tire Co., a leading Japanese rubber goods manufacturer, and the Japan Ship's Machinery Development Association of Tokyo recently announced that they have developed a highly efficient oil-skimming and water cleaning ship. The new ship, available in two models, is a U-shaped semi-catamaran with various devices installed in its split bow. The devices include an oil-skimmer, a garbage-gathering conveyor system, and an oil "guide fence" to lead oil slicks into the ship's reclaimer.

The ship is expected to recover nearly 100 per cent of floating oil and is highly resistant to waves. One of the two models weighs 3.2 gross tons and is about 25 feet long and the other weighs 4.9 gross tons and is 28 feet in length.

Power Plants in Philippines Cause 79% of Air Pollution

According to a recent survey jointly conducted by the Philippine National Science Development Board (NSDB) and the National Pollution Control Commission (NPCC), the three most common air pollutants in the city of Manila are carbon monoxide, sulfur dioxide, and suspended particulates. The study, conducted by researchers Rizal Jimenez and Trinidad Buni, includes a survey of 243 local industries.

The survey shows that power plants are the greatest contributor to air pollution, accounting for 79 per cent of the air pollution caused daily by the industrial concerns. Air pollutants spewed by power plants measured 1.6 million pounds a day. The other important industrial air polluters are chemical plants, metal foundries and smelting plants, textile and knitting plants, sawmills and wood processing plants, and food processing factories.



World Environment Report

VOL. 3, NO. 19

Copyright ©1977. Center for International Environment Information.

SEPTEMBER 12, 1977

ILO Considering New Standards Aimed at Occupational Hazards

GENEVA—The International Labor Organization (ILO) announced in May that it is considering the adoption of new international standards aimed at hazards to health and safety from air pollution, noise and vibration.

Draft texts of a Convention and a Recommendation concerning the Protection of Workers against Occupational Hazards in the Working Environment Due to Air Pollution, Noise and Vibration will be discussed at the annual International Labor Conference in Geneva (June 1-22). The texts are based on a first discussion held at last year's Conference and upon comments submitted by member states.

An ILO spokesman said that new substances in industrial processes, increasing mechanization, and the complexity of machinery and equipment have greatly increased the stress factors in today's working environment. He pointed out that most work processes involve the use of products or materials that are likely to release vapors and gases or dust and fumes that may present health hazards.

The assault on the human body by noise and mechanical vibration is causing growing concern, the ILO said. High noise level, and high vibration level, have a definite, although ill-understood, adverse effect on the human organism.

The draft Convention calls for measures at the national level "for the prevention and control of, and protection against, occupational hazards in the working environment" due to these three factors.

The Convention would apply to all sectors of economic activity, but ratifying countries could exclude particular sectors, after consultation with employers and workers concerned. They could also accept the obligations separately in respect to each of the three hazard areas.

Employers would be made responsible for compliance with national measures, and workers would be required to comply with safety procedures.

The Convention calls for criteria for determining hazards of exposure to air pollution, noise and vibration, and for the setting of limits and exposure on the basis of these criteria. Where technical and administrative measures do not make it possible to keep the hazards within the required limits, protective measures should be taken such as provision by employers for personal protective

equipment and appropriate training in its use.

The ILO has been active in setting international standards for occupational safety and health since its foundation in 1919. To date it has adopted 21 Conventions and 27 Recommendations related to this field.

WILLIAM MAHONEY

Mexico Expands Desalinization To Overcome Lack of Pure Water

MEXICO CITY—Although Mexico is making great strides in the desalinization of water, the disparities between population and access to pure drinking water remain large. Dr. Javier Ibarra Herrera, director of utilization of salt waters of the Federal Secretariat of Human Settlements and Public Works, said that in some areas of Mexico only 12 per cent of the water is piped to 60 per cent of the population.

But in other areas, such as the southeast, 40 per cent of the potable water goes to a mere eight per cent of the population, he said at a recent Mexico City seminar on desalinization. The director sees the availability of good water as the factor which "allows people to remain in their place of origin and, at the same time, permits the development of an infrastructure capable of permitting them to achieve economic development."

Mexico has designed, built, and put into service various desalting plants of different capacities and processes, he said. Some of them are serving communities; others are for research. Four government-created centers of investigation, operation, and maintenance eventually will give service to 40 separate plants. Of these, 26 are operational; seven are experimental, and the remainder are under construction.

KATHERINE HATCH

In This Issue

Radioactive Waste	2
Hydrogen Fuel	3
Taxes and Noise Pollution	4
Monsoon Behavior	4
Chile's Fishing Frontier	5
Endangered Reefs	5
In Brief	6

OECD in Paris to Monitor Sea Dumping of Radioactive Waste

PARIS—The Organization for Economic Cooperation and Development (OECD) in Paris has adopted a reinforced international surveillance of sea dumping of radioactive waste. It will be operated by the OECD Nuclear Energy Agency (NEA) with the participation of 20 countries.

The new program, established by the OECD Council on July 22, has as its objective the reinforcement of international cooperation and surveillance in relation to the disposal of radioactive waste other than highly-active waste, the latter being prohibited.

In view of the difficulties that certain countries have in disposing of their low- and medium-level radioactive waste underground, because of unfavorable hydro-geological and geographical conditions, it is likely that sea disposal of packaged solid low- and medium-level radioactive waste in deep water remote from coastlines will continue in the future.

This disposal method is currently governed by strict international rules under the 1972 "London Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matter," which entered into force on August 30, 1975, and covers all types of pollutants, chemical as well as radioactive.

This Convention has thus far been ratified by 32 countries, including 10 OECD member countries. Other member countries intend to follow suit in the near future, OECD says. The Secretariat of the London Convention is provided by the International Maritime Consultative Organization (IMCO).

The Convention has entrusted the International Atomic Energy Agency (IAEA) in Vienna with the task of defining those radioactive wastes that are unsuitable for dumping at sea and of recommending to national authorities the requirements to be fulfilled when authorizing and regulating the dumping at sea of radioactive wastes which do not fall within this definition. The experience acquired by NEA during the last ten years has been made available for this purpose to the IAEA, which has already promulgated Provisional Recommendations and has taken steps to keep these under continuing review.

The new OECD multilateral mechanism, which supplements these provisions, notably provides for:

- The establishment and regular up-dating by OECD, with the cooperation of IAEA, of standards, guidelines and recommendations to be applied by participating countries dumping waste at sea.
- A consultation system among participating countries regarding the conditions applicable to these operations.
- International surveillance by an NEA representative of operations authorized by the competent national authorities.
- Reports to the OECD Steering Committee for Nuclear Energy on the operations carried out.

On the basis of studies begun in 1965, NEA has provided a framework in most years since then for the organization of dumping operations in the Atlantic. These have involved the participation of eight European countries (Belgium, West Germany, France, Italy, the Netherlands, Sweden, Switzerland, United Kingdom). Waste disposed of originated mainly from nuclear research centers but small quantities of waste from nuclear power stations were also included in these operations in later years.

In all cases, the waste was of relatively low activity, the main radionuclides consisting of tritium (over 50 per cent) and various mixtures of activation products and beta-gamma fission products, as well as small quantities of alpha-emitting trans-uranium elements.

Three dumping areas have been used since 1967 following recommendations of an international group of experts. The area used from 1971 to 1976 was represented by a circle of 35 nautical miles radius at a distance of about 1,000 km. from European coasts and at a depth of about 4,500 miles.

For these operations NEA has, on the one hand, provided technical and legal assistance in their organization and, on the other hand, has exercised, in the absence of any specific legal framework, international surveillance on a purely voluntary basis. As a result of NEA action, OECD countries are, in general, no longer conducting dumping operations on a purely national basis.

PETER DEWHIRST

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$125 per year. \$15 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
 Editor-in-Chief Albert Wall
 Circulation Manager Ann C. Werner
 Correspondents covering more than 60 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

UN and USSR to Help Mongolia Preserve Great Gobi National Park

NAIROBI—A four-year conservation and management program costing about \$1.3 million has been proposed for one of the world's largest national parks, the Great Gobi National Park in the Mongolia People's Republic. The park covers 20,000 square miles, and represents a fragile eco-system in a comparatively undisturbed part of the Central Asian cold desert belt.

The proposed program follows a two-week visit by a mission composed of representatives of the United Nations Environment Programme (UNEP), the UN Food and Agriculture Organization (FAO), the UN Educational, Scientific and Cultural Organization (UNESCO), and a USSR delegation.

The visitors, at the request of the Mongolian Government, discussed with officials there the possibilities of setting up an ecologically-based management policy for the park.

Although the park area was declared a protected area in 1976, many problems have not yet been dealt with—such as the seasonal migration of nomads, and measures for the protection of rare animals unique to this area, including the wild camel, the Gobi bear, the Przewalski horse, the Argali sheep, the wild ass, and the snow leopard.

The plan envisages a center for global environmental and scientific research, and an educational program to teach young Mongolians to appreciate the value of their country's wildlife and rare plants.

CHARLES HARRISON

New Car Fuel: Indian Scientists Substitute Hydrogen for Gasoline

NEW DELHI—Scientists at the Indian Institute of Technology at Madras have successfully run the spark-ignited engine entirely on hydrogen. Mass production of such engines utilizing hydrogen as fuel would cut auto pollution considerably.

The breakthrough, said to be the first in India, is the result of research for the past few years on hydrogen as a promising alternative fuel to gasoline, diesel, or biogas.

The Director of the Institute, Prof. R.G. Narayanmurthi, said that "The problem of engine exhaust pollution has to be tackled by developing control measures for existing methods of producing energy or by developing new low-polluting energy sources. There is no alternative to making a more judicious use of conventional fuels and making strenuous efforts to minimize pollution from them."

In related engine experiments, the Indian government is now working on simple and inexpensive expedients to curtail air pollution resulting from inefficient diesel

performance. Currently, diesels account for 30 per cent of India's total consumption of petroleum products, most of it consumed by road vehicles.

Several recent studies have revealed that considerable fuel economy and, not so incidentally, substantial reduction of pollution are possible through greater attention to operational and maintenance parameters. The Indian Institute of Petroleum, for example, found that variations of 20-30 per cent in fuel consumption were attributable to driving habits alone.

But Dr. A. Ramachandran, Secretary of the Department of Science and Technology division, has suggested that "the most important factor that will contribute to fuel economy and reduced pollution is proper maintenance of the diesel fuel injection system and the filter. Proper calibration and de-rating of fuel injection pumps and checking of nozzle spray patterns will go a long way in ensuring fuel economy and smoke-free operation."

The Institute also reported that an average fuel economy of 15-20 per cent could be achieved through use of higher compression ratio engines matched with optimized engine settings. It also recommended a concomitant change in axle ratio design to suit local road conditions.

R. MURALI MANOHAR

Warm Currents and Overfishing Endanger Peruvian Anchovy

LIMA—The Peruvian anchovy, traditionally a huge dollar earner for the country, is fast becoming an endangered species, according to local scientists. The Instituto del Mar (Sea Institute) and the UN Food and Agriculture Organization have both strongly recommended to the government a ban on all anchovy fishing for the next two years.

Stocks are currently estimated to be around two or three million tons—an all-time low—compared with typical former stocks of about 20 million tons. The dramatic drop is apparently due to the flow of warm waters from the "Nino current" plus overfishing carried out at the beginning of the decade.

As an interim measure, the government has switched to fishing sardines, mackerel, and Pacific hake, the latter to be processed into fish oil and fishmeal. Thus far, however, the sardine switch has been disappointing. The quantity found off Peru's northern coast has dropped considerably over the past few months because of an over-intensive seven-week fishing campaign which began last March.

Says one fishing spokesman: "What happens is that fishermen net more than enough fish to top off the boat in the second set and have to dump half of it back into the sea again. Those fish sink to the bottom, decompose, release gas, and pollute the waters—forcing fish out of the area for the next month or until the current cleanses itself."

LORETTA McLAUGHLAN

Tax Break Given to Sufferers Of Airport Noise Pollution in Bavaria

MUNICH—Bavarian regulations providing for tax assessment reductions on property surrounding noisy airports could provide a model for a solution to New York's problem with landing rights for the supersonic Concorde.

The Bavarian system officially rates decibels in airport areas and establishes two basic zones. This rating is the basis which permits landowners to pay decreased tax assessments as compensation for the noise damage.

Alfred Dick, Bavarian Minister for Environmental Protection, recently explained the system in answer to a Parliamentary question. He said that the plan covered civilian airports at Munich and Nuremberg and military air bases at Erding, Leipheim, Memmingen, Neuburg-am-Donau, Lechfeld, and Furstenfeldbruck.

Officials of the Ministry classify the surrounding areas into Zones 1 and 2. Zone 1 covers areas where the permanent noise level exceeds 75 decibels. Zone 2 covers areas where the permanent noise level is between 68 and 75 decibels. Ministry officials told *World Environment Report* that the Zones were set up to conform to the federal (Germany-wide) Aviation Noise Law standards that went into effect in 1971.

The spokesman explained that Zone 1 permits assessment deductions of up to 10 per cent around airports that handle jets and up to five per cent for those not handling jets. Zone 2 permits deductions up to five per cent for jet airports and up to three per cent for others.

He noted that generally there was rather stringent regulation of flying schedules in Germany and that at most airports scheduled passenger traffic ended by 10 P.M. and that no landings or takeoffs—except in cases of emergency—were permitted after midnight.

Although the Ministry said no figures were available on the total number of property owners who enjoyed deductions, the figure would be relatively high given the large number of civil and military airports in Bavaria—all surrounded by Zones 1 and 2. Bavaria is a "front-line" state in the NATO-Warsaw Pact confrontation, with borders fronting on Czechoslovakia and East Germany.

The spokesman noted that many landowners built in airport areas simply because land was cheaper there. Germany has limited "lebensraum" and as a result land is very expensive when compared to U.S. costs. For some, excessive noise can be an acceptable irritant when it lowers the purchase price level.

Nevertheless, the spokesman said that during these days of increasing environmental awareness, there is a definite trend for communities in airport areas to limit, and often halt completely, building for housing purposes. Many such communities, he said, are refusing construction permits for housing of any sort.

Thus Bavaria is not accepting the premise that "noise pollution is permissible as long as we pay for the inconvenience and health hazard." Much of the property was

held in families before the advent of jets and the build-up of NATO's military airfields. And it is becoming increasingly difficult for new would-be homeowners or developers to build in airport areas.

West Germany's relatively strict regulation of noise and other pollution can be illustrated by the Concorde case itself. Although West Germany is a member of the Common Market—as are France and England—and is a leading if not the most active member of a unifying Europe, the Concorde cannot enter this country's airspace and there is no public outcry about this ruling. The authorities in Bonn simply note that the International Civil Air Organization (ICAO) regulations do not provide for supersonic passenger craft.

However, Bavaria has a much greater concentration of military air bases than the United States and supersonic air force jets operate regularly in both countries without causing any great protest. United States air bases tend to be located away from metropolitan areas, but in Germany such dispersion is impossible. For example Erding and Furstenfeldbruck air bases are Munich suburbs—so close that they are included in the Bavarian capital's subway network.

WILLIAM G. MAHONEY

International Scientific Group Probes Mysterious Monsoon Behavior

COLOMBO—A team of scientists from different countries has launched a study of the erratic behavior of monsoon rains which drench the Indian Ocean basin and which provide life-giving water for hundreds of millions of people.

The study will seek to determine why the monsoon rains vary from year to year, why they sometimes arrive early, sometimes late, or why they fail, producing severe drought in water-dependent regions.

The unpredictable monsoons are seasonal winds resulting from differences in temperature trends over land and sea that bring summer rains—usually torrential tropical downpours—to South Asia, Africa, Southeast Asia and Northern Australia.

The investigation, which has been titled "Monsoon-77," began just before the annual South West monsoon broke over India, Burma, Bangladesh and Sri Lanka. Monsoon-77 is the precursor of a larger monsoon study, Monex-79, due to begin two years hence under the aegis of the World Meteorological Organization and the International Council of Scientific Unions.

A team of Indian scientists is co-operating with Soviet meteorologists in the monsoon study. The Indians recently boarded four Soviet ships in Singapore that will eventually link up with two Indian Navy ships, temporarily converted into weather ships for the investigation. The six ships will collect extensive weather data over the Arabian Sea, along the Equator, in the Indian Ocean and

in the Bay of Bengal before, during and after the monsoon breaks. A fifth Soviet ship is also to be deployed near Somalia to study sea temperature changes there believed to affect the Asian monsoon.

The United States will also be participating in the investigation by collecting weather data by air along the Kenyan coast, while several other countries including Bangladesh and Sri Lanka are assisting with intensified data collection.

Mr. K. D. N. de Silva, Director of Meteorology of the Government of Sri Lanka, told *World Environment Report* that particular attention was being paid to the observation of upper air circulation and that the frequency of a variety of observations routinely made were being increased.

South Asian meteorologists believe that many other countries should be interested in the investigation because a knowledge of the Asian monsoon is essential for the understanding of global weather and climates. The present investigation will continue for ninety days.

MANIK DE SILVA

Sabah's Reefs in Indo-Malayan Archipelago Found Endangered

HONG KONG—As part of its recently-launched campaign, "The Seas Must Live," the World Wildlife Fund and the International Union for the Conservation of Nature will investigate Sabah's reefs, which lie within the Indo-Malayan archipelago.

The reefs support one of the world's richest and most varied arrays of marine life—now endangered. They also play an important part in the region's fisheries industry.

Actually, the diminishing value of Sabah's reefs was first ascertained three years ago when a study by a team of scientists from Universiti Sains Malaysia showed that about four miles of fringing reef in the Labuan area are being exploited annually. The study also claimed that if the same rate persists, all the reefs in the area will be damaged within six years. In fact, very few large coral heads now remain on the reefs around Kota Kinabalu.

Perhaps one of the most important factors contributing towards the destruction of living reefs is the mining of limestone (the coral skeleton) for building and road-making.

Another important factor is the devastation of the reefs by fishermen who have replaced their traditional nets, lines, and baited traps with carbide "bottle" bombs or sticks of dynamite—thus wiping out shoals of young fish and smashing the corals.

Thus, many of Sabah's more accessible reefs have sustained damage. Fortunately, however, a number of the reefs are being incorporated into Sabah's National Parks system—where there is a ban on such activities as

collecting, bombing, and spearfishing—and if this protection can be extended, Sabah's reefs presumably can be conserved.

ARTHUR MILLER

With UNDP Help, Chile Seeks To Bolster its Fishing Industry

SANTIAGO—The Chilean Government has established an Under-Secretariat on Fishing as one step towards developing the economic potential of its 2,600-mile coastline, often referred to as the country's "real frontier" by fishing experts. For despite this shoestring nation's lengthy seacoast, it nets only about 1.2 million of the world's annual 70 million metric ton fish catch.

"The sea is one of the country's areas of comparative advantage," said Naval Captain Jose Radic, the newly appointed fisheries under-secretary. "The current annual catch could be easily raised to two million metric tons. And if krill were included, it could easily go to eight million metric tons."

The United Nations Development Program (UNDP), and the Fundacion Chile, a research foundation jointly funded by the Chilean Government and ITT, are also gearing up marine research programs.

"The Chilean territory is larger over water than it is over land if a 200-mile limit is used," said UNDP representative Eduardo Gutierrez. "So fishing should represent much more than its current less-than-one per cent contribution to the national product."

The UNDP has budgeted \$2 million in its 1977-81 program for marine projects in Chile, one of which would stock the country's southern waters with salmon.

M. Wayne Sandvig, executive director of Fundacion Chile, said he expects fishing research to claim more of the center's 10-year, \$50 million funding than any other area. The foundation will spend a modest \$50,000 this year researching the breeding habits of "locos," sea snails similar to abalone, as part of an expanding effort to develop the shellfish potential of Chile.

"Chile is regarded as having one of the most ideal sets of infrastructure—the proper climate, waters, and nutrients—for shellfish culture," said Sandvig. The country currently produces only one to 1.5 per cent of the shellfish marketed world-wide.

Krill is another untapped Chilean sea product. Bright blue packages of ten breaded krill sticks are now selling for 85 cents a package in Santiago supermarkets in a six-month marketing test by the government Instituto de Fomento Pesquero. The Institute, which has also cooked up another 25 krill-based foods, is discussing the development of the capital-intensive krill industry with 20 foreign firms.

Meanwhile, Santiago housewives are frying up the krill sticks and pronouncing them tasty.

NINA SERAFINO

In Brief...

New Japanese Vehicle Floats on Magnetic Field

The Japanese National Railways Experimental Center for high-speed surface transport (HSST) opened recently at Mimitsu, Hyuga City in Miyazaki Prefecture. The HSST is a vehicle that "floats" on a magnetic field and is propelled by a linear motor. It is expected to reach a velocity of 310 miles per hour.

Electromagnets enable the coach to float about one centimeter off the tracks, thus eliminating friction. The HSST is also pollution-free, virtually noiseless, and does not vibrate.

At the opening ceremony, the experimental coach, which is 13 meters long, 2.7 meters high, 3.8 meters wide, and weighs 10 tons, made its appearance for the first time on the track.

The Experimental Center will attempt to reach the final speed goal in 1979, when the whole trackway will be completed.

British Study Evaluates Waste Paper Industry

A study of the economics of waste paper recycling in Great Britain — a first attempt to evaluate the U.K. waste paper industry — has just been completed by the University of Leicester's Public Sector Economics Research Centre. The study concludes that considerable savings in imported paper waste and pulp used by Britain's paper mills would result from an increase in the supply of domestic waste paper during peak demand periods.

Applying econometric analysis to long- and short-term forecasting of British waste paper demand, the authors deduce that the packaging industry could easily plan an even more crucial role in the utilization of low grade paper residuals. Because the

supply elasticity of waste paper is very low, increased supplies becoming available only in case of major price increases, a major shift in the demand/supply pattern is not likely to occur unless consumers accept changes in some of the characteristics of their paper products or there are significant advances in upgrading technology, such as de-inking and bleaching processes.

Britain's consumption of waste paper reached 2,053,487 metric tons in 1976, of which close to 1.5 million tons are estimated to have gone into the production of other wrappings and packaging materials.

Tax Break for Filipinos Who Use Anti-Pollution Devices

In an effort to better the environment, the Philippine government is now providing tax exemptions or credits to individuals and companies that install and utilize anti-pollution devices. Some of the incentives are:

- 1) Exemption up to 50 per cent of tariff duties and compensating tax for the importation of anti-pollution devices, spare parts, and accessories for a period of five years.
- 2) Tax credits of about 50 per cent of the compensating tax and tariff duties on the anti-pollution devices if they were obtained from domestic manufacturers.
- 3) Research projects undertaken to develop technologies for the manufacture of pollution control devices for commercial use will have deductions of about 50 per cent of the cost from taxable income.

In addition, the government decreed that "pollution control equipment, devices, spare parts and accessories shall not be sold, transferred or disposed of within five years from the date of acquisition without prior approval of the National Environmental Protection Council; otherwise the importer or purchaser shall pay twice the amount of the tax exemption or tax credit granted."

Exhaust Fumes Cause Most of Bangkok's Toxic Pollution

The growing problem of air pollution in Bangkok calls for prompt action by the government, according to Deputy Governor Opass Thamavanich, who is responsible for public health. He says excessive exhaust fumes are the main source of toxic pollution in Bangkok, pointing out that 80 per cent of toxic gas comes from vehicles, 10 per cent from heavy industry, and the remainder from fires and smoke.

As a result of a recent meeting attended by representatives from agencies concerned with the problem, the Land Transport Department of the Ministry of Communications has warned that it will take stern measures against drivers of offending vehicles. The Mass Transit Authority is planning to replace old buses. The Fuel Organization of Thailand (FOT) has suggested that vehicles powered by natural gas be utilized because they have lower exhaust emissions than gasoline-powered engines.

Sweden Installs Its First Wind Power Generator

Sweden recently installed its first experimental wind power generator at Alvkarleby, some two hours drive north of Stockholm.

The windmill is a 25-meter-high concrete tower with an 18-meter-wide blade. It was designed to produce 50 kilowatts of power or the energy equivalent to that used by several households each year, including heating.

Minister of Power Olof Johansson disclosed at the dedication ceremony that the Swedish government expects to decide this autumn about building larger prototypes, including one, on the Swedish island of Gotland in the Baltic Sea, which he said would be the world's largest wind power station.

Pakistan Found Rich In Sea Weeds Resources

Dr. S.M. Haq, Director of the Federal Institute of Marine Biology in Pakistan has reported that his country is very rich in sea weeds, of which at least 300 species exist.

In a paper on "Pakistan's Resources of the Sea," Dr. Haq says that these weeds could be used in the production of medicines, lubricants, and cosmetics.

According to Dr. Haq, sea weeds are "potential sources" of food, and he cited some species in Europe, Hawaii, Japan, and China which already are being used directly as food. Sea weeds, he pointed out, are also important sources of vitamins A, B, and C.

Colombia Prohibits Use of Phosphorous Insecticide

The Colombian government has prohibited the manufacture and sale of Phosvel, a phosphorus insecticide concentrate used in the fumigation of rice, cotton and potatoes, pending further studies of its neuro-toxic effects on humans and animals.

Produced by Velsicol Laboratories of Colombia, the insecticide was banned from the local market after repeated complaints against contamination by farmers in central and southwestern Colombia. The product was removed from the U.S. market five years ago.

ECE Publishes Transnational List on Forestry Techniques

The United Nations Economic Commission for Europe (ECE) has recently published a descriptive list of organizations in 24 European countries, Canada, and the United States, that are concerned with forest-working techniques, and with

mechanization and environmental problems in forestry.

The new publication aims at stimulating contacts between institutes dealing with similar problems in different countries.

It will be provided free of charge on application to: ECE/FAO Timber Division, ECE Secretariat, Palais des Nations, 1211 Geneva, 10, Switzerland.

South Koreans Urged to Burn LPG in Place of Briquettes

Urban homeowners in South Korea are being encouraged by the government to use more liquefied petroleum gas to reduce the number of briquette gas (carbon monoxide) accidents, and to help solve the environmental problem of increasing amounts of debris from burned briquettes. Nine major cities in South Korea, including Seoul, Pusan and Taegu, soon are expected to have liquefied petroleum gas supply centers for cooking fuel. And each household will be linked to the centers by pipelines to ensure safe delivery.

UNDP and India Establish Institute of Hydrology

An agreement has been signed between the UN Development Programme (UNDP) and the Government of India under which UNDP has agreed to assist India in establishing a National Institute of Hydrology to improve water development procedures, including flood and cyclone control.

Total cost of the five-year project is estimated at \$1.6 million, with UNDP and the Indian Government contributing about equally. The funds will be utilized to send officers of the Institute abroad for specialized training.

Noise Now No. 1 Pollution Irritant to Dubliners

Special noise monitoring equipment is being purchased by Dublin officials to check on the growing number of complaints. According to Con Healy, the city's chief health inspector, noise is now the greatest pollution irritant to the nearly one million people living in and around this capital.

Releasing details of the Dublin Corporation annual health survey, Healy said that noise control had emerged as a new area of concern. Over the last year, the unit received and processed 55 major complaints, both domestic and industrial. Of these, 28 were deemed justifiable, and so far the nuisance has been abated in 16 cases.

Britain Establishes New National Nature Reserves

The establishment of two new National Nature Reserves (NNRs) and extensions to four existing ones were announced recently by the British Government's Nature Conservancy Council (NCC). This makes a total of 153 NNRs in England, Scotland, and Wales, covering 297,680 acres.

The new Scar Close Reserve in North Yorkshire covers 230 acres and consists of horizontal sheets of limestone (clints) broken by vertical fissures (grikes), and of flat expanses of limestone without grikes but with islets of peat. The peat islets and grikes support strongly contrasting flora, some of which are nationally or regionally rare species.

The special interest of the new Forge Valley Woods NNR, also in North Yorkshire, is to ensure the survival of the semi-natural mixed deciduous woodland of oak, ash, elm, and alder with its associated plant and animal life. To help achieve this, tree species not native to the woodland in this part of England will be progressively removed.

Ban on Non-Biodegradable Detergents Urged in Mexico

A prohibition of the use of detergents would be "ideal" in Mexico but is hardly likely at the present time of economic stress, the sub-secretary for planning in the federal Secretariat of Agriculture and Water Resources has said. But he added that it is imperative that the use of detergents be reduced before valuable agricultural land in the Valley of Mexico is ruined.

Gerardo Cruickshank, an engineer, told Mexican President Jose Lopez Portillo the country should ban all use of non-biodegradable detergents, noting that while the U.S. has all but prohibited their use, they remain the most common type used in Mexico. But there are large investments in detergent manufacturing in Mexico, the sub-secretary pointed out, and to prohibit the use of detergents would provoke "very serious losses to the economy."

Viennese Scientist Simulates Earthquakes in Laboratory

Push-button earthquakes, simulated in a laboratory, are the aim of a Viennese scientist, Rainer Flesch, who works as an assistant engineer at the Institute for Hydro-Power stations and Water Traffic Construction in Vienna's Technical University.

He has drawn up plans for a department whose task would be to prevent dangerous situations arising in dam construction, high-rise buildings, bridges, and in nuclear power plants. Basic research will concentrate on the effects of earthquakes on all man-made technical installations. Project studies will measure the tectonic resistance of potentially endangered constructions and conduct routine investigations into power industry products such as large insulators and transformers and low current fittings such as nuclear power plant controls.

G.B. Says New Alloy Removes 99% of All Car Pollutants

Britain's Atomic Energy Research establishment claims it has developed a device that can remove 99 per cent of all pollutants from a gasoline-powered car.

The device depends for its efficiency on a new alloy, Fecralloy, originally developed for use in atomic reactors. (The name derives from the alloy's chief components: iron, chromium, aluminum, and small amounts of yttrium.) It is said to be more resistant to heat corrosion than any known material, able to withstand 1,250°C temperatures almost indefinitely. It will not break or corrode. At high temperatures the aluminum in the alloy oxidizes to form a tough skin which, if pierced or scraped, simply renews itself.

The device comprises wafer-thin sheets of Fecralloy pressed into a corrugated strip, coated with platinum, rolled up and inserted into a car's exhaust system. The platinum coating acts as a catalyst to encourage oxidation of the noxious gases.

A British car fitted with the new device has been successfully tested over 50,000 miles, with no sign of wear on the alloy. Other uses envisioned for Fecralloy include furnace equipment that will last a lifetime.

Caribbean Solar Development Fund Proposed in Venezuela

The creation, funding, and administration of a Caribbean Solar Development Fund was proposed in an energy conservation resolution by the first Caribbean Tourism Conference held recently in Caraballeda, Venezuela. More than 500 delegates represented both public and private interests from some 24 island states, Venezuela, Canada, U.S., Costa Rica, and Belize. Government observers from Cuba, Mexico, Colombia, and Surinam also attended.

Because the high costs of con-

ventional energy strain natural resources, depress tourism profits, and aggravate the foreign debt problem of the Caribbean nations, the delegates resolved to recommend to their governments the active consideration of laws, incentives, and industrial development promoting the use of solar and wind energy, including such measures as tax credits, solar-wind energy offices, and the Caribbean Solar Development Fund which would provide long and medium-term loans.

In a companion resolution the Conference proposed feasibility studies for the development of a Caribbean Oil Patrol in consultation with member governments, and the oil industry to: coordinate oil pollution reports received from pilots, sailors, and tourists, and alert governments to damage; to disseminate techniques for dealing with oil pollution damage; and to promote regional meetings to formulate policy and suggest administrative action.

Haiti Finally Forms Its First Environmental Agency

Although many foreign environmental experts have expressed the fear that the damage already done to Haiti's delicately-balanced tropical ecosystem may be irreversible, the Haitian Government recently announced that it is forming its first environmental protection agency.

Called "The National Council for the Environment and Fight Against Erosion," (CONATELE), the Government said that some first priorities will be environmental protection, erosion control, economic development safeguards, and soil conservation.

After years of neglect, defoliation, runaway erosion, and watershed destruction, Haiti this year is paying the toll in the form of a severe crop failure and food shortage, a severe electrical failure, and insufficient potable and irrigation water.



World Environment Report

20 SEP 1977

VOL. 3, NO. 18

Copyright ©1977. Center for International Environment Information.

AUGUST 29, 1977

UNESCO/UNEP Plan Environmental Education Conference in USSR

NAIROBI—An international inter-governmental conference on environmental education is to be held in Tbilisi, USSR, from October 14 to 26 by the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the UN Environment Programme (UNEP).

It will be the first meeting of its kind at the ministerial level. UNESCO is organizing the conference, with expert advice and financial support from UNEP. The main aim will be to formulate recommendations for the promotion and development of environmental education at national, regional, and international levels.

The conference will consider the role of education in facing the challenge of environmental problems, and strategies for the development of environmental education of the general public inside and outside the school system. Specific educational programs will be considered for people whose decisions and actions have a major effect on the environment.

A UNEP spokesman in Nairobi said UNESCO and UNEP had jointly launched the International Program for Environmental Education in January 1975. Its activity has thus far been concentrated on research, and the collection and dissemination of information.

CHARLES HARRISON

India Will Unveil Efforts to Combat Arid Areas at UN Conference

NEW DELHI—The Indian government is planning a major presentation to the forthcoming UN Conference on Desertification on its efforts to reduce the growth of arid areas, especially the Rajasthan Desert.

Agriculture Minister, Prakash Singh Badal, considers it "a matter for urgent action" to make deserts green. Almost 12% of India's area is arid, barely supporting 19 million people and 23 million head of livestock.

Though India spent over \$70 million to make desert areas green, Badal admits, "We have not been able to achieve a significant breakthrough."

Presently, UNESCO has selected Luni desert comprising 106 villages in Rajasthan for a case study. Under

the aegis of the United Nations Environment Programme, the experts will study desertification processes in ecological and socio-economic circumstances and examine the success and failures of remedial action.

The scientists of the Central Arid Zone Research Institute in Jodhpur (Rajasthan), the only institute of its kind in Southeast Asia, is now engaged in multi-disciplinary research for reclamation, improvement and amelioration of desert conditions.

A major hazard of the desert dweller is high velocity winds carrying sand particles which bury cultivable lands and villages houses. For example, an entire building complex which was once a flourishing tuberculosis sanatorium is now buried under the sands, near Bikaner in the Rajasthan desert.

Indian scientists say that the crucial problem in the Rajasthan desert is human ecology. The population in the desert areas rose by 157% from 1901 to 1971.

All this resulted, they claim, in the depletion of the natural vegetation and induced instability of the soil surface. Over-exploitation of vegetation disturbed the ecological balance; ploughing and over-grazing denuded the land of useful perennial grasses. Trees were cut though people in this area worship trees.

Scientists claim that the desert has been spreading at the rate of half a mile per year for the last 50 years.

However, K.D. Muthanna, the Institute's silviculturist, is optimistic. He says, "Luckily, the Institute has the world's largest collection of eucalyptus, acacia and grasses. We fence a particular area, place micro-wind breaks against wind direction, plant trees and grass seedlings."

Whatever their optimism, the Indian scientists place great faith in the UN conference which meets in Nairobi in August. It will spotlight Luni and other parts of the Rajasthan desert and is expected to pave the way for the global plan of action to combat desertification here and elsewhere.

R. MURALI MANOHAR

In This Issue

New Sun Oven	2
Army Worm Menace	2
EEC's Environment Chief	3
Streetcar Revival	4
Interamerican Nuclear Meeting	5
Hungary's Water Problems	5
In Brief	6

Dane Designs New Sun Oven For Domestic Use in Upper Volta

COPENHAGEN—A sun oven designed by Major Axel Aller, of the Danish Army, is currently undergoing trials in Upper Volta, West Africa. The oven has a heating power equivalent to 1,000 watts, which is the same as the largest boiling plate on many electric stoves.

Thus far, 250 have been distributed free of charge, and its inventor, recently returned from seven weeks in Upper Volta, reported that "during a visit to one village an official dinner for eight people was cooked in the sun oven. Pork chops took ten minutes. A kettle holding several liters of water boiled in just under twenty minutes."

Aller described the oven as a 15-ft. square parabolic concave mirror of polished aluminum or foil which focuses the reflected sun's rays at a suspended kettle or saucepan. The reflector is adjustable so that it can always face the sun at right angles.

The aluminum mirror version costs about \$40 to produce; the foil version is \$10 cheaper. A Danish factory produces the mirrors, and local artisans make the iron rack on which the oven is mounted.

Aller's financial support came from the Lutheran church aid organization, Danchurchaid, which put up \$17,000 for development and production, and a further \$14,000 for a one-year follow-up program.

UN officials are also taking an active interest in this sun oven in connection with its program for educating girls and women in Upper Volta. Liberation from some of their present domestic chores would give them more time for school and other forms of instruction. They now spend an average of seven hours per day collecting wood and cooking.

The inventor admitted, however, that the sun oven has its limitations. It requires a clear sky although he has seen it working when there was a slight haze. Obviously, it was of no use for cooking pre-dawn breakfasts or suppers after sunset.

Finally, he pointed out that the introduction of these ovens would help curtail the deforestation in the Upper Volta where tribespeople use an enormous amount of firewood.

CONSTANCE CORK

Haiti's Corn Crop Menaced By Army Worm Proliferation

PORT-AU-PRINCE—Haiti, hard hit and hungry as a result of a prolonged drought, is facing a new environmental crisis—a population explosion of the army worm (*spodoptera sp.*), which is destroying much of Haiti's subsistence corn crop in the most needy areas—the island of La Gonave and the dusty northwest.

Entomologists think that the huge increase in the army

worm has been caused by an environmental imbalance. The destruction of Haiti's once mighty forests has reduced the bird population—many of them insect eaters—to near zero.

The rapacious army worm can defoliate a tender corn plant very quickly. Thousands of sulphur-colored butterflies in the affected areas are believed to be the flying stage of the army worm, after it emerges from its cocoon.

A team of agronomists and other experts, representing the U.S. State Department Office of Foreign Disaster Assistance, and the Agency for International Development (USAID), is currently assisting the Haitian Department of Agriculture in combatting the worm invasion.

USAID agronomist Charles Wiggin was asked what methods of control he would recommend, considering that the peasants of the affected regions were not trained to properly handle strong insecticides. Wiggin replied: "We took that into consideration and are going to use what we consider the safest insecticide available, 'Carbaryl.' It has almost no toxic effect on humans or the environment, it is a water-soluble powder which is biodegradable and has only a week's persistence. We will instruct the farmer in its use—two applications at the peak of the infestation."

Wiggin also said, "We conducted a general survey on La Gonave island and found that, in just about any area, one-quarter of the crop was unaffected, one-half was 60-80 per cent destroyed and one-quarter was totally destroyed."

All radio stations throughout Haiti have been asked to make periodic announcements to farmers requesting that they burn all plants killed by the army worm.

ARTHUR CANDELL

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$125 per year. \$15 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Ann C. Werner
Correspondents covering more than 60 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

SPECIAL REPORT: An Interview With the EEC's Environment Chief

BRUSSELS—Michel Carpentier and the division he heads figure prominently in the European Common Market's desire to alter its public image as an organization of industrialists and bankers to an institution that is responsive to the needs of the average citizen.

This effort should mark an important turning point during the coming year for the European Economic Community (EEC), for Carpentier, and for the EEC Environment and Consumer Protection Service he has led since its inception in 1971. Previously, Carpentier, with a background in law and economics, had worked for the French Atomic Energy Commission.

For the EEC itself, it will mean a time of severe test as it moves toward further enlargement of its membership, the milestone first direct elections of the European Parliament, and toward an improved economic and political climate.

Power Struggle—All this will have to occur in the context of the eternal power struggle between the EEC central authorities, like Carpentier, who believe in joint efforts, and national governments reluctant to yield any additional sovereignty to the EEC in Brussels. "We should not try to replace local authorities," observes Carpentier, "but there are some things that can be done better jointly. For example, we could serve as the research infrastructure where none exists."

In all instances, it will be important for the EEC to shed its bureaucratic reputation and prove its relevance to the European public—which perhaps explains why Carpentier and his Environment-Consumer Service have been singled out for higher priority in the EEC pantheon of issues and personalities.

As a first step, Carpentier was recently elevated to the rank of Director-General, the highest in the EEC civil service. This is not just a personal gesture toward Carpentier but, in his estimation, a recognition of the importance of the issues he deals with.

New Scope—"You can no longer look at them as technical or minor matters, but as political issues that affect European integration," he noted recently in his new offices a few blocks away from the EEC's sprawling headquarters complex.

It also means that Carpentier and the service he has seen expand from a staff of six in 1971 to about 70 at present will have more responsibility and influence. Examples of this new scope are an important new pan-EEC committee on nuclear safety headed by Carpentier that met for the first time in early July, and the work of another new group on waste management and recycling.

There is clearly a new emphasis on such people-oriented issues in the plan of the new EEC Commission in Brussels. This has been stressed repeatedly by the Commission's President, Roy Jenkins, and other members.

According to Carpentier, a high priority will continue

to be given to water quality. This will be accompanied by new efforts at coordinating with EEC national governments and on the international level. The latter will take the form of increased EEC participation in global or regional efforts such as the Baltic Sea compact, UN special bodies, and also through bilateral accords with other non-EEC nations. The EEC already has formal environmental information exchange programs with the United States, Japan, Canada, and Switzerland, expects one with Austria soon, and has more informal but regular contacts with Norway and Sweden.

Major Disasters—EEC Commission experts also want to formulate legislation and plans to prevent or prepare for such major disasters as Seveso, Ekofisk, and the problem of tanker oil spills. They will work on environmental impact statements for the EEC countries, a system of levies for polluters, the fight against noise pollution, and expanded use of aerial and satellite environmental reconnaissance and mapping.

Other broad areas of interest will involve the first implementation and policing of various legislative rules adopted in the past five years and more spending for research on waste management and other environmental issues.

Although Carpentier refuses to call it a new approach or direction for the EEC planners, he feels that in the future there will be fewer legislative proposals introduced than in the past and more coordination within the Commission and the member countries. This trend might have been foreshadowed by the fact that in recent months it has been increasingly difficult to obtain passage of such environmental measures through the decision-making EEC Council of Ministers.

Conscience For Growth—"What I want to make of this service," observes Carpentier, "is a sort of conscience for a certain type of growth which has a high respect for resources, in which economics is not an end in itself. This may sound easy, but this is not a banal thing to say to industrialists."

He also feels that "we will try to integrate environmental considerations better into larger EEC issues such as agriculture, energy, transportation, and social and regional policies. We want to be a warning signal on the environmental effect of other programs. We will probably reduce the number of instructions toward the outside and concentrate more on interior coordination."

This new approach, described by Carpentier as a stage of "maturity," also comes at what has openly become a difficult period for the EEC environment program.

After several years of significant gains in enacting new EEC-wide policies to combat pollution in several areas, work had come almost to a standstill on the means of implementing these broad statements of principles. For instance, a new five-year plan for the environment in the

nine EEC countries recently breezed through the Council of Ministers. But other recent meetings have produced embarrassing deadlocks on various issues.

Disagreement—In a year that has seen such environmental incidents as the contamination of Seveso in Italy, the Ekofisk oil field blowout in the North Sea, "red tide" pollution of the seas and other major tanker accidents, the EEC has been unable to agree on how to react in some cases.

Time after time, the discussions on such issues as toxic waste control, water standards, and others have broken down. One major difficulty has been the different attitudes and needs of the various EEC member countries. For instance, Great Britain, with an independent water supply, views the problem of water cleanliness differently than its Continental EEC neighbors. The Netherlands and other countries who depend on the polluted Rhine River for their water want tough emission control standards to regulate the wastes dumped into the water supply, while Britain finds this approach unnecessary and costly.

Nevertheless, looking back on this five-year history, Carpentier believes his team has proved itself but adds "we cannot be triumphant about the past nor pessimistic about the future."

DAVID FOUQUET

Mexican Ecologist Urges Rapid Exploitation of Subterranean Water

MEXICO CITY—Extraction and exploitation of Mexico's subterranean water is the key to saving this country from "ecological disaster," says Dr. Francisco Guel Jiminez, director of the National Commission on Arid Zones. Of the nation's 2 million square kilometers of surface area, fully 1.1 million square kilometers are now classified as arid zones, he told *World Environment Report* in a recent interview.

Dr. Guel Jiminez said four factors have caused the enlargement of Mexican desert areas: exportation of human resources, emigration of small farmers to the cities, over-exploitation of ground water, and over-grazing of marginal lands.

He pointed out that in one season of drought—and some regions have experienced four years without rainfall—many communities lose one-half of their population in emigration. Residents of the parched communities have the choice of remaining as slaves to their meager crops or leaving to seek work—and probably find new poverty—in the U.S. or on the fringes of Mexican cities.

Some 10 million Mexicans live in the arid zones, the director said, most of them below the subsistence level. He also noted that river land previously was productive for crops, but the growth of industry in Mexico has soured the soil with pollutants and rendered most river valleys unusable for cultivation.

KATHERINE HATCH

Tokyo Sees Merit in Streetcars As Non-Polluting Energy Savers

TOKYO—Encouraged by Tokyo's liberal-minded governor, Ryokichi Minobe, city fathers of the Japanese capital have decided to spend \$950,000 in 1978 on improvements to the one remaining streetcar line in the metropolis.

The Tokyo authorities, who maintain that to transport one person one kilometer by streetcar uses no more than 150 kilocalories of energy, compared with 698 kilocalories required by an automobile, intend to use the new appropriation next year to adapt the streetcars and passenger platforms for persons in wheelchairs and to install heaters and public address equipment.

Officials of the Tokyo Metropolitan Transportation Bureau hope that the funds will help save the streetcar service from extinction. Some within the bureau even go so far as to suggest that the possibility now exists that streetcar lines in the world's largest city may be revived as a vital system of urban transport in the 1980's.

More than a decade ago the Tokyo Government began pulling up the streetcar tracks. However, by the time the construction workers got around to the final streetcar line there were many in the Minobe administration who were beginning to have second thoughts about the whole idea.

Governor Minobe now believes it was "a highly ill-conceived concept" to attempt to cater to automobiles at the sacrifice of a much more efficient, unpolluting, cheaper, and energy-saving transportation system.

Today there are just 631 kilometers of streetcar tracks remaining in Japan, compared with more than 1,680 in 1960.

One city that resisted the demise of the streetcar was Hiroshima, which has continued to prohibit automobiles from driving within the corridors reserved for streetcars and thereby has speeded up the service sufficiently to encourage passengers to return to the low-cost trams. As a result, the system has been saved from threatening financial collapse.

In Kyoto, on the other hand, city authorities are proceeding to eliminate all its remaining streetcars because they cause traffic jams and suffer heavy operating deficits. Currently, the city is tearing up three of its nine lines.

Those in Japan who look upon Governor Minobe's latest move as an opportunity to reverse the trend in other Japanese cities are pushing the Ministry of Transport to launch a feasibility study on the construction of larger and faster streetcars.

Fans of streetcars also contend that privately-operated lines in Hiroshima and Nagasaki manage to yield profits despite the fact that in some cases the fares are lower than those of the bus services. Governor Minobe and his supporters in the Tokyo Government tend to agree and apparently are willing to give the concept one last chance in the world's largest city.

A. E. CULLISON

Peru Hosts Interamerican Meeting on Nuclear Energy for 17 Nations

LIMA—Representatives from 17 countries arrived here recently for the Tenth Meeting of the Interamerican Commission for Nuclear Energy (ICNE), sponsored by the Organization of American States (OAS).

The objective of the Commission was summarized at the beginning of the conference by Dr. Marcelo Alonso, executive secretary of the ICNE, when he stressed the importance of international cooperation among member countries of the OAS. He maintained that nuclear power would not be used in Latin America for "military applications" but only for peaceful purposes: "I am sure that we will never be worried about the introduction of nuclear arms in Latin America."

Although Dr. Alonso mentioned the value of scientific and technical uses of nuclear energy, he said that in the case of South America it is more valuable for generating electricity and reducing dependence on oil. He therefore urged cooperation between countries for the exploration of uranium and thorium, processing and design, and construction of electro-nuclear centers.

It was decided in the course of the conference that a minimum budget of \$400,000 would be allocated as follows: 50 per cent for utilization of radioisotopes in agriculture and industry; 12.5 per cent for formation of groups for development programs for electro-nuclear energy; 20 per cent for formation of groups for the exploration and processing of radioactive minerals; 5 per cent for extension of the International Nuclear Information Service; and 12.5 per cent for regular operation and adjustments.

Juan E. Simon, Chief of Agrarian Research in Lima, told the conference about the use of radioactive isotopes to sterilize the Mediterranean fruit fly instead of excessive use of insecticides.

"The technique of radioactive sterilization of the Mediterranean fly has been shown as both practical and economic," he said. "In particular, Peru has become the leader in the introduction, research, and application of this technique, which has been used extensively on the South American fruit fly, *Anastrepha fraterculus*." He added that the process could be used in other countries to control the pest and diminish other sources of infection. Currently, 100 million flies a week are being sterilized.

LORETTA MCLAUGHLAN

Hungary Beefs Up Expenditures To Improve Nation's Water Supplies

BUDAPEST—Istvan Gergely, President of the National Water Authority, reported recently to the Hungarian National Assembly that present economic planning calls for a sharp rise in spending to improve the country's

water supply.

Looking backward, he told Assembly parliamentarians that at the close of World War Two only one-fifth of the population was connected to water mains, and a considerable number of towns and villages were without a centralized water network.

Today, he said, every Hungarian town has its own water works, and central water networks supply 1,100 villages. Today, he continued, two-thirds of Hungary's population is connected to water mains.

Industry is the largest water consumer, he reported, demanding more than 60 per cent of available fresh water. Agriculture, which is increasingly characterized by intensive farming and the use of closed production systems, also is demanding more and more from the water economy. Today the irrigation network covers 400,000 hectares of farmland, Gergely said.

Flood control measures also have been increased, he said, commenting that 2,750 miles of dikes protect one-fourth of the country's territory and the properties of one-half of the population.

Gergely further observed that as water demand and supply increases, the volume of polluted water grows. This is complicated by the relatively small size of the country, the high density of the population, and the fact that the bulk of the water supply comes from abroad (rivers such as the Danube), he said.

But despite this, Hungary has managed to slow the pace of pollution through technical, legal, and economic regulations, he said.

In the period 1976-80 the number of people connected to water mains will grow by one million and by 1980 will amount to three-fourths of the total population, he stated. By that time, canalization will serve 43 per cent of the population. The expansion of the sewage water purification capacity gives priority to the major towns that are most severely affected by pollution: Budapest, Debrecen, Győr, Miskolc, Pécs, Kaposvár, Nyíregyháza, Szolnok, Szeged, as well as Lake Balaton.

During the current plan period, water reservoirs with a total capacity of nearly 300 million cubic meters will be built—a tenfold increase over the fourth five-year plan period. Strengthening of 175 miles of dikes is planned and the water supply to an additional 100,000 hectares of farmland will be ensured, Gergely reported.

A total of 44 billion forints will be spent during the current plan to expand the water economy, he said, and about two-thirds of this amount will be devoted to expanding waterworks and canalization.

Expansion of cooperation in international water economy is an important element in the long-term plan, he declared. He cited the bilateral water economy agreements between Hungary and five neighboring countries. But cooperation in common water catchment areas demands a more sophisticated form of collaboration, Gergely maintained. Comecon—the Communist world's version of the Common Market—would be an efficient instrument for such cooperation, he suggested.

SPECIAL DISPATCH TO WER

In Brief . . .

Nudes, Helicopters Disturb Endangered Birds in Bavaria

Bare bosoms and bottoms basking along Bavaria's sunny Isar River banks are now being indirectly blamed for disturbing the only reserve in Germany for some endangered bird species.

Ornithologists of Bavaria's Environmental Protection Ministry have protested that helicopter pilots—who should be reporting on traffic flow, checking gas lines, or fulfilling military duties—are windmilling low over the Isar to better appreciate nature in the raw.

Unfortunately, they note, the bare beauties seek the sun in a nudist area near the "Bird Island" reserve in the Pupplinger Au area of the Isar. The noise of the machines and the strong winds kicked up by their rotors not only have panicked the birds, but sometimes have blown eggs out of nests, experts charge.

The Ministry spokesman said that among the many species found on Bird Island are three in danger of extinction: the sand martin or river swallow, the river-bank runner or rail, and the river Golden Plover.

The ornithologists have suggested that the sun worshippers carry cameras and photograph the helicopters so that the registration numbers of the errant choppers can be passed on to authorities.

British Environmental Agency Asked to Protect the Otter

"The otter is now rare or absent in some parts of Britain," says a report published recently by the Joint Otter Group, a body sponsored by the Nature Conservancy Council (NCC) and the Society for the Promotion of Nature Conservation (SPNC).

There is evidence that the otter, once commonly hunted in most

English counties, has been declining in numbers since the middle of the last century, but the report notes a more serious decline since the 1960s. River pollution, habitat destruction, and increased recreational activities in the countryside are some of the causes cited.

The NCC and SPNC had already taken some action prior to the report's publication. They have asked the Secretary of State to the Department of the Environment to grant the otter legal protection, set new otter surveys in progress, and begin discussions to set up experimental otter havens with the Anglian Water Authority, covering the eastern counties of England.

Malaysia Sets Up Oil Spill Surveillance in Malacca St.

The collision of the Japanese super-tanker Showa Maru in the Malacca Strait in 1975 and the resultant massive oil spill may turn out to be a blessing in disguise.

As a result of that spill, the Malaysian Department of Environment (DOE) has now established an effective mechanism for surveillance of the busy Strait and for dealing with any oil spill problems, according to Encik Hamzah Majid, Director General of DOE.

Under the government's contingency plan, the three main ports of Western Malaysia—Klang, Penang, and Pasir Gudang—will be equipped with skimmers and booms to deal with future problems.

DOE, which will coordinate with the ports implementing the plan, has already ordered two sets of skimmers, six booms, six barges, and tenders for work-boats.

"Under the plan," Hamzah said, "the moment a ship is involved in an accident resulting from an oil spill, the captain of the ship is to contact the harbor master at the nearest port. The harbor master will then immediately contact DOE and we will start coordinating the work."

Colombia Orders Closure of Large Sulphuric Acid Plant

The Colombian Ministry of Health has ordered the closure of Quin Industries, the only producer of sulphuric acid in southwestern Colombia, on charges of polluting the atmosphere in the suburbs of Cali, the region's industrial hub.

The factory produces 3,000 tons per month of ammonium sulphate and phosphorus fertilizers in addition to 2,100 tons per month of sulphuric acid.

Quin director Carlos Navarro maintains that the Health Ministry's decision was "purely political," stating that "no one ever established the real degree of contamination caused by the factory." Nevertheless, the pollution factor was sufficient to persuade municipal authorities in the nearby industrial zone of Yumbo to veto a Quin proposal to move its installations to Yumbo even though this would have brought the area a \$3.3 million investment. The city of Manizales, located north of Cali, also refused Quin permission to relocate.

Vietnam Mounts Program to Recycle Factory Wastes

Vietnam is paying increasing attention to its environmental problems. One recent example of this is that factories within the country are being encouraged to convert wastes into useful material. The Hanoi Cotton and Textile Corporation, for example, has now turned out garments, sheets and pillow cases made from cloth used for wrapping and padding. Workers of the Copper Wire Company in Ho Chi Minh City (formerly Saigon) have produced bronze plates from available waste materials. Metalware cooperatives in Hanoi have also produced bicycle spare parts and furniture from the 1,000 tons of scrap copper and iron collected in the first quarter of this year.

New Environmental Award "Honors" Worst Performance

An Austrian environmental protection idea has caught on. For some years the Austrian Union of Garden and Landscape Architects in Klagenfurt, capital of the southern province of Carinthia, has awarded a derisory prize to the person or organization responsible for the worst disfiguration of nature and the landscape.

The Executive Committee of the International Federation of Landscape Architects (IFLA) at its recent meeting in Copenhagen adopted the idea. Therefore, beginning in 1978, a "withered branch" will be awarded to the IFLA country (from among the United States, Canada, Mexico, Australia, and all West Europe countries) inflicting the worst disfiguration of the landscape on their public. The "withered branch" will be known worldwide as the "Filipsky Warning Prize" in memory of the Austrian landscape architecture pioneer, Prof. Karl Filipsky.

Philippines Create New Natural Resources Center

The Natural Resources Management Center of the Philippines was inaugurated on May 17. The Center, created last October, is an agency for gathering, analyzing, and compiling data about the physical environment of the country. The Center also assists other government agencies and private companies in detecting sources and causes of pollution, crop protection, disease control, and potential oil and mineral sites.

UNEP Booklets Summarize Its Industrial Seminars

As a follow-up to its separate industrial seminars on pulp and paper, aluminum, motor vehicles, pe-

troleum, and the agro-industrial sector, held in Paris and Rome under the auspices of the UN Environment Programme (UNEP) and that of the Director of the Industry Programme, Leon de Rosen, UNEP is now publishing a series of booklets summarizing the results of the five sessions.

Three distinct types of booklets are being issued for each industry sector: an overall view, a technical review, and a practical in-plant analysis.

Japanese Develop Dehydrator For Treating Sewer Sludge

Suzuki Kogyosho K.K. of Tokyo claims to have developed a unique, cheap dehydrator for treating almost all kinds of industrial or sewer sludge without the need for any energy requiring heat. It is said to reduce soft sludge which is nearly 100 per cent water to a more manageable hardness. The production of the dehydrator has been placed in the hands of Mitsubishi Metal Corporation. It is expected that Mitsubishi will add various improvements to the device, including treatment of industrial drain or mineral slurry sludges that can be pumped via long pipelines.

Buenos Aires Sets Strict Standards on Otter Killing

The Province (state) of Buenos Aires has established May 15 through Sept. 15 as the only times during the year in which otters can be killed for commercial purposes.

The new regulations also set a minimum body length of about 26.5 inches measured from the eyes to the beginning of the tail. Hunters are required to have a commercial license issued by the province and breeders must register with the provincial Natural Resources Office.

Breeders also must get annual permission to kill otters.

U.S. Can Learn Much From U.K.'s Drought Management

The Interstate Commission on the Potomac River Basin (ICPRB) has just published a study of the manner in which Great Britain dealt with 1976 drought and the implications of the British strategies for the Washington, D.C. Metropolitan Area. The study by the commission, which groups the four states and the District of Columbia which draw water from the Potomac, concludes that "as Washington looks towards the development of a drought management strategy there is much to learn from the United Kingdom and especially from London."

Determined British actions to limit water use and expand supplies reduced consumption by up to 50 per cent during the emergency and kept industry running on the water that was saved. New supplies were tapped from deeper groundwater levels, mobile treatment plants were dispatched to new sources, and milk trains harnessed to carry water to shortage areas.

The Drought Act gave the Thames River authorities draconian powers to restrict use and develop new sources. This was facilitated by a major reorganization of the U.K. river basin authorities which reduced 29 inter-governmental jurisdictions to a total of ten.

In contrast, notes the study, metropolitan Washington is handicapped in coping with a water crisis not only by a lack of efficient storage and interconnection among supply reservoirs but by a fragmentation of decision-making. "There are 16 local jurisdictions of varying size and population which comprise the Metropolitan Area. They cooperate through the Council of Governments (COG) but have given COG no real authority... In most of the metropolitan Washington jurisdictions, water supply, water quality, storm water management and other water-related activities are the responsibilities of separate agencies — in water supply alone 20 separate entities are involved."

Rockefeller Foundation Funds 20 Environmental Grants

In its on-going program, the Rockefeller Foundation is once again funding about 20 grants of one year's duration for Fellowships in Environmental Affairs.

The program seeks creative applicants, from all countries, with specialized training (a Ph.D. or its practical equivalent) who wish to broaden their capability for leadership in environmental public service, interdisciplinary research, or scientific study.

Applicants seeking further details should write to: Fellowships in Environmental Affairs, The Rockefeller Foundation, 1133 Avenue of the Americas, New York, N.Y., 10036, USA.

W. Germany Steps Up Used Glass Tonnage for Recycling

A network of some 3,000 used glass collection containers in the urban neighborhoods of West Germany (FRG) yielded some 260,000 tons of bottles and other glass containers for recycling during 1976, according to a report released by the FRG's Environment Office. The used glass tonnage collected last year was 30 per cent higher than in 1975 and represents approximately 10 per cent of the entire glass container production of the Federal Republic during the year.

While the recycled glass can presently be used only for the production of colored bottles of a predominantly dark green shade, R&D programs underway in 11 glass industry research laboratories are on the verge of finding economical color separating techniques.

The collection initiative is sponsored by the glass industry through some sixty collective contracts with community-owned and private waste treatment plants. The program has been successful in reducing the volume of household garbage and in

conserving resources. Local collection campaigns have yielded funds for charitable community organizations as a side benefit inasmuch as industry processors pay for the used glass which is delivered to their plants by voluntary groups.

Purest Drinking Water Found In Austria's High Alps

Recent studies show that the Austrian high-Alpine regions have a volume of about 1,500 million cubic meters of top-grade drinking water as an annual reserve—probably the highest concentration of pure drinking water reserve in Europe and, unlike other large water reserves, not subject to loss by extremes of temperature.

If the annual drinking water consumption of about 220 million cubic meters of the 1.6 million people in Vienna is taken as a basis for calculation, the water resources of Austria's high-Alpine regions are sufficient to secure an adequate supply of pure drinking water to nearly 11 million users.

India Fabricates Houses Of Polyester-Jute Resin

The Indian Institute of Technology at Madras has fabricated models of low-cost houses, silos, and fishing boats, using a polyester resin made from jute.

With this process the cost of a 10 by 20 foot house will cost just 400 dollars and is considered most suitable because it is labor intensive, resists heat and moisture, and has an estimated life of 20 years.

First a wooden mold is prepared and is fitted to an axle which is rotated by a wheel and a shaft using oxpower. Then yarn is passed through polyester resin and wound over the mold. It takes about 30 minutes for the layer to dry and become unbreakable.

Concorde's 'Bang' in Paris Can be 'Heard' in Sweden

The "bang" of the giant supersonic airliner Concorde when it breaks through the sound barrier to land at Paris or London can be "heard" in northernmost Sweden, according to a member of the Kiruna Geo-physical Institute.

The Institute's laboratory worker Ludwik Liszka disclosed recently in an article in the science publication "Research and Progress" that the Institute's noise meter registers the "bang" two hours later. And three hours after that, according to the article, the noise of the start in the United States can be recorded "backwards."

The airliner causes infra-sound—in audible sound of low frequency—of a high intensity over Scandinavia.

When registered, the bang has compressed itself and lasts about five minutes, according to the article.

Bulgaria's Architects Urged To Better Human Settlements

The Politburo of the Bulgarian Communist Party's Central Committee recently issued a decree calling upon the nation's architects to "improve the spatial organization of society" in carrying out their program for "an adequate living environment."

The state wire service, the Bulgarian Telegraph Agency, said that the decree urged architects and builders to synthesize their efforts with the other arts in meeting the challenges posed by "deep socio-economic changes" and "technological progress."

The decree stressed the "maximum organization of the national territory and the rational use and development of natural resources" and set forth certain requirements for territorial development, urbanization, housing, cultural and communal construction, and industrial architecture.



World Environment Report

VOL. 3, NO. 17

Copyright ©1977. Center for International Environment Information.

AUGUST 15, 1977

Experts from 16 Mediterranean States Propose Pollution Codes

ATHENS—Environmental experts from 16 Mediterranean coastal states have recently recommended that codes be formulated to provide engineers, scientists, and industrial planners with guidelines on effective and economical ways of controlling land-based pollution of Mediterranean waters.

The experts represented all but two of the basin's 18 nations—Albania and Syria did not take part—at a five-day workshop held here from June 27 to July 1 on controlling Mediterranean coastal pollution. It was sponsored jointly by the UN Environment Programme (UNEP) and the World Health Organization (WHO).

Dr. Ian Waddington, WHO Chief of Environmental Protection in Europe, said participants expressed concern that "substantial sums already committed for pollution control were not being used in the best and most economical way, and that pollution abatement programs could take as long as 10 to 20 years to complete." Moreover, he said, "We want to find low-cost solutions to these problems since the public will be paying."

Dr. Alexander Gilad, manager of the UN Development Program (UNDP)/WHO project in Greece, estimated that the equivalent of about \$5 billion will need to be invested to improve the disposal of sea wastes or, alternatively, to reclaim and re-use the wastes.

"Like land and water, the quality of the environment is no longer free, but this estimated cost represents only \$10 per capita for the inhabitants of the Mediterranean coastal states," he said.

Those attending the meeting—from Algeria, Cyprus, Greece, Egypt, France, Israel, Italy, Lebanon, Libya, Malta, Morocco, Tunisia, Turkey, Monaco, Spain, and Yugoslavia—placed particular emphasis on the need for training manpower to carry out the protocols.

Dr. Gilad said the Greek Government has already offered to arrange practical training for personnel from other Mediterranean countries at its environmental pollution abatement center in Athens.

Dr. Waddington concluded by saying that experts at the meeting were not pessimistic about the future of the Mediterranean. "We believe that certain measures must and will be taken to safeguard the Mediterranean. And this without stopping the socio-economic development which all countries of the area want."

KYRIACOS CONDOULIS

Mexican Climatologist Urges UN Law on 'Atmospheric Patrimony'

VERACRUZ, Mexico—The fearful possibility of worldwide "weather wars" has been raised by a Mexican climatologist who is urging the United Nations to draft an international law on "atmospheric patrimony." Prof. Cesar Luna Bauza, director of the Mexican Center for Weather Forecasting of the Gulf of Mexico, said recently that a meteorological war would be "a war against humanity."

Noting that the U.S. armed forces already has "created" rainfall over enemy supply trails in Asian campaigns, Professor Luna Bauza said the day is not far off when man will be able to exercise control over the weather—whether used for good or evil.

"It can provoke rainfall in dry areas and help feed the world's people, or it can foster starvation," he said. And a meteorological war, he added, would be worse than one using poison gas or the atomic bomb.

The climatologist stated it is "urgent" that the UN legislate the matter of atmospheric patrimony, which is part of a nation's birthright and personal possession, and suggested the UN rule that nations with the technical resources to control or change the weather use these resources only for peaceful ends.

The key is in disarming or detouring atmospheric disturbances, he explained. Mexico, in particular, has a large interest in weather phenomena, sustaining an average of 14 such occurrences annually in the Pacific and Gulf of Mexico and another seven in the Atlantic and Caribbean.

Some countries, such as the U.S., USSR, and France, already have techniques for changing the weather, such as seeding clouds with dry ice to cause a rainfall. Although these techniques are not now entirely successful, he predicted they and others will be perfected in the near future.

KATHERINE HATCH

In This Issue

Fast Breeder Cooperation	2
Law of the Sea	3
Recycling Tea Leaves	3
Japan to Block U.S. Cars?	4
Noise Pollution in Asia	5
UK and Solar Heating	5
In Brief	6

France, W. Germany to Cooperate On Fast-Breeder Nuclear Reactors

PARIS—France and West Germany have finally signed a long-term agreement on cooperation in the development of fast-breeder nuclear reactors. The move basically is seen as a merger of France's technology and West Germany's financing and industrial potential.

The new accord, which took 18 months of careful negotiation to work out, has been concluded despite President Jimmy Carter's opposition (stated in his April and subsequent nuclear policy declarations) to fast-breeders because of the increased risks of plutonium proliferation.

The agreement, signed here at the headquarters of France's Atomic Energy Commission (AEC), has two parts: one, close, long-term cooperation (over 20 years) between the AEC and West Germany's Interatom and Karlsruhe research center. This provides for all work carried out in this field by the two countries to be coordinated to prevent duplication. Total joint expenditure is expected, however, to remain at about the present level of some \$200 million per year.

The other part covers commercial utilization of nuclear technology through a recently established corporation named SERENA.

An important segment of the agreement concerns the association, through earlier agreements, of three other West European countries in the future atomic collaboration of France and West Germany: Italy through its agreement with the AEC, and Belgium and the Netherlands through their agreements with West Germany.

French reaction to the Franco-German accord thus far is mixed. On the one hand, there is some reservation about France's AEC having worked out an arrangement, possibly involving several secret clauses, with a private German firm (Siemens). On the other hand, it is recognized that France could hardly "go it alone" in this field, and has perforce come up with a workable partnership.

Meanwhile, in Luxembourg, some uneasiness has also been voiced within the European Economic Community (EEC) over President Carter's stand against fast-breeder nuclear reactors and a warning has been issued about a possible danger to EEC unity.

The Chairman of the EEC's Council of Foreign Ministers, Belgium's Foreign Minister Henri Simonet, said in his first speech to the Council that the solidarity of the EEC "Nine" may be threatened by Carter's opposition and added that he saw "disturbing signs" in the world energy situation.

Simonet, who was previously the EEC Energy Commissioner, said "I am thinking, in particular, of the nuclear policy, the general outline of which was given by the President of the United States on April 7, and which could hold up the installation of our own electro-nuclear capacity, and indeed prove a threat to the solidarity of the Community."

Hard on the heels of this collaborative effort came the

massive demonstration on July 31 at Creys-Malville, a rural area 300 miles southeast of Paris, in which 30,000 anti-nuclear protesters clashed with the police at the construction site of the Super Phoenix (fast-breeder) reactor. One demonstrator was killed, 20 or more injured, and five officers were wounded.

Perhaps for the first time, demonstrators in France were joined in large numbers by like-minded contingents of protesters—West Germans, Belgians, Swiss, and Scandinavians—from other countries. France already has an experimental 250-megawatt breeder reactor, but the main thrust of massive protest has been directed at Super Phoenix, which is scheduled to produce 1,200 megawatts by the end of the decade.

PETER DEWHIRST

Miles O. Colwell, M.D.

On behalf of the Advisory Committee and Staff, the Center for International Environment Information wishes to convey its deep sense of loss at the death of Miles O. Colwell, M.D., Member of the Advisory Committee and Vice President, Health-Environment, Aluminum Company of America.

Deeply committed to protection of the environment—national and international—he gave generously of his time, energy, and wisdom in support of the Center. He will be sorely missed.

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$125 per year. \$15 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
 Editor-in-Chief Albert Wall
 Circulation Manager Ann C. Werner
 Correspondents covering more than 60 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

UN Law of Sea Conference Fails To Resolve Deep Sea Mining Issue

UNITED NATIONS, New York—On an equally ominous note one day after this city experienced a complete blackout in mid-July, the sixth session of the Third UN Law of the Sea Conference (UNCLOS) ended, like all of its preceding sessions, in complete failure to agree on the key issue—mining the deep sea bed.

Some 1,600 participants from 150 nations had toiled for two months to rewrite and produce some 400 articles for a 198-page document entitled the "Informal Composite Negotiating Text." But said text was promptly disavowed at a press conference held by the U.S. chief negotiator, Ambassador Elliot L. Richardson, who termed it "fundamentally unacceptable" because it "deviates markedly" from the compromises proposed during the negotiating sessions. The text, he added, "treated weeks of serious debate and responsible negotiation as essentially irrelevant."

Although Mr. Richardson praised the progress made on such other UNCLOS issues as pollution, scientific research in coastal waters, and freedom of navigation, he charged that the proposed International Seabed Authority would limit the growth of sea bed mining (a provision desired by land-based producers of minerals), and would generally inhibit and put certain specific restraints on private industry.

Many of the UNCLOS delegations expressed the fear that this latest setback to a treaty would enhance the possibility that private companies will unilaterally begin mining operations at sea. A U.S. House Merchant Marine subcommittee, for example, already has passed a measure setting up an insurance fund to indemnify companies against losses caused by any future UNCLOS treaty. And a Senate subcommittee has also begun drafting a deep sea mining bill. It is not unlikely, therefore, that a final vote on such a measure will be held in the next congressional session.

Meanwhile, and seemingly undaunted by this latest impasse between the developed and developing countries, the UN has convened a seventh UNCLOS session in Geneva from March 28 to May 19.

A.W.

Sri Lankan Scientists Recycle Waste Tea Leaves as Cattle Fodder

COLOMBO—The possibility of usefully recycling waste tea leaves from instant tea factories for use in cattle fodder and also of extracting the high protein content in these leaves by chemical means has been established by scientists at Sri Lanka's Tea Research Institute (TRI).

Dr. M.A.V. Devanathan, Director of the TRI, said that millions of housewives the world over throw away a vast quantity of utilizable protein with the dregs in their

teapots every day. It has not been generally realized that black tea contains 25 per cent by weight of protein and a similar amount of water soluble polyphenolic substances which, together with very small amounts of the stimulant caffeine, constitute the main ingredients in the brew.

Collecting spent tea leaves from households is obviously impracticable, Devanathan said, but the development of the instant tea industry is making available large quantities of a by-product material from which a concentrated protein source may be obtained.

Already underway in the Department of Animal Husbandry of the University of Sri Lanka is a two-year-long trial substituting spent tea leaves for fish meal in cattle food. The process has obtained promising results with grazing calves who found this feed not only fully acceptable but also gave them brighter coats and generally better health.

Devanathan pointed out, however, that the protein in tea leaves is not soluble in hot water and therefore should not be infused into the tea while brewing. About 25 per cent of the protein residue in the spent leaves is locked up as a structured protein and is difficult to isolate. But 50-60 per cent of it can be recovered in a more concentrated form and lends itself to the preparation of textured tea leaf protein that can be impregnated with chicken and other meat flavors to produce meat substitutes and other extenders as is done presently with soybean protein base.

The TRI Director announced that his Institute, in collaboration with USAID, will shortly set up a pilot plant to manufacture tea protein isolates using large quantities of spent leaves. "There will no doubt be many technical problems to be solved but these do not seem insuperable," he said.

MANIK DE SILVA

Denmark's Environmental Agency Blocks Building of PVC Plant

COPENHAGEN—After a year-long study, Denmark's Environmental Protection Agency has blocked the building of a \$50 million polyvinyl chloride plant—the first of its kind in Denmark. Plans had called for its construction at Skelskoer, fifty miles south of Copenhagen, and adjacent to a large fruit plantation.

By its decision, the Agency overruled local and town councils which had already approved the project, under which some 100,000 tons of polyvinyl chlorides were to be produced each year for use in plastic packing materials.

An annual emission of 350 tons of polyvinyl chloride in the air and waste water had been accepted by the local authorities, and trade union environmental experts had limited the emission to not more than 1 ppm of polyvinyl chloride produced.

But other environmental groups insist that emission must be zero, citing the risk of various forms of cancer and genetic damage to those exposed to emission gases.

CONSTANCE CORK

Geneva Treaty Prohibits Military Techniques That Modify Environment

GENEVA—The Convention on the Prohibition of Military or any other Hostile Use of Environmental Modification Techniques, approved by the United Nations General Assembly last December, was opened for signatures May 18th at UN Geneva headquarters. On the first day, 33 countries, including the U.S. and USSR, signed the treaty. Those who did not do so by Convention's end may do so at UN headquarters.

The Convention, which is of unlimited duration, provides that each State party undertakes not to engage in military or other hostile use of environmental modification techniques having "widespread, long-lasting, or severe effects as the means of destruction, damage, or injury to any other State party."

The instrument defines "environmental modification techniques" as any technique for "changing—through the deliberate manipulation of natural processes—the dynamics, composition or structure of the earth, including its biota, lithosphere, hydrosphere and atmosphere, or of outer space."

The Convention also declares that States parties undertake to exchange scientific and technological information on the use of such techniques for peaceful purposes.

If any State party has reason to believe that any other State party is violating the treaty (once it enters into force), it may lodge a complaint with the UN Security Council, which, in turn, may initiate an investigation and subsequently inform the State parties of the results of that investigation.

A Consultative Committee of Experts may be convened at the request of any State party to "make appropriate findings of fact and provide expert views relevant to any problem raised in relation to the objectives of, or in the application of the provisions of, the Convention."

The instrument enters into force after ratification by 20 governments. Five years after its entry into force, a conference of the States parties is to be convened at Geneva to review the operation of the Convention to ensure that its purposes and provisions are being realized.

WILLIAM G. MAHONEY

Strict Japanese Emission Controls May Halt Importing of U.S. Cars

TOKYO—Japanese automobile emission standards, already the stiffest in the world, most probably will work to keep most American and other foreign autos out of Japan's car market in 1981 and for some time thereafter.

Originally, the Japanese Ministry of Transport and the Environment Agency had planned to enforce rigid 1978

auto emission controls across-the-board for all new passenger vehicles. But it was finally decided to postpone application of the tight restrictions to foreign cars for three years because foreign car manufacturers had protested that they would not be able to meet the high nitrogen oxide (NO_x) standards by the 1978 deadline.

Japan's 1978 emission standards, scheduled to be enforced for all new domestically produced passenger cars as of April 1, 1978 and for older models now in production as of March 1, 1979, will require the makers to reduce NO_x in auto exhaust fumes to around 0.25 grams per kilometer run. In fact, the new requirements are designed to cut nitrogen oxide emissions by 60 to 70 per cent of 1976 levels.

Under Environment Agency Notification No. 1 of January 1974—as later revised to tighten the maximum permissible limits of NO_x exhaust emissions for automobiles—it is admitted that the 0.25 grams of NO_x per kilometer will have to be only an average figure. It is understood, for example, that certain upward variations will have to be allowed because data on the new 1978 models of Japanese automobiles is not yet sufficient to allow estimates of just how wide the variations will be.

Based upon a statistical study of data on mass production of local autos subjected to anti-exhaust regulations in 1975 and 1976, however, the agency was able to establish a "relative expression of mean value and standard deviation" and, using the same approach, the agency was not surprised to find a standard deviation figure of 0.115 grams per kilometer as opposed to the mean value of 0.25 grams.

As a result, the agency set a more realistic permissible limit at 0.48 grams per kilometer, allowing for a management margin in accordance with past practices. A few foreign car makers expressed confidence that they will be able to meet this maximum figure by 1981.

There also remains the problem of improving the accuracy of measurement equipment now on hand in Japan and the tightening of quality controls in the factories. Moreover, not a single one of the 70,000 car servicing garages in Japan presently are equipped with the sophisticated instruments needed to measure nitrogen oxides.

Official inspection stations here readily admit that they are not individually prepared to spend up to \$380,000 on the purchase and installation of NO_x measurement instruments. In addition, a great many of these garages simply are much too small to accommodate such instruments even if technically competent mechanics could be found to use them.

Japanese automotive engineers have reminded the Environment Agency that it is quite likely that most of the new domestic cars meeting the tough 1978 NO_x emission standards on the production lines will no longer meet them after operating in ordinary highway conditions. These cars, they contend, should therefore be checked at inspection stations at various intervals. But apparently they won't be, and this poses a major, perhaps insurmountable, problem.

A.E. CULLISON

Noise Pollution Throughout Asia Rising Rapidly; Japan Leads Way

From his travels throughout Asia and from various sources, WER's Hong Kong correspondent has assembled this report on noise pollution.

HONG KONG—The decibel level of complaints about noise pollution in Asia is rising rapidly. In fact, Government environment officials are getting more complaints from citizens about noise than about any other type of environmental pollution.

A massive building boom, industrial expansion, and increasing air traffic—all are contributing to the problem, which affects every country of the region, from Japan to Afghanistan.

As in the case of many other forms of environmental problems, Japan leads the way, with that country's Environmental Agency saying it has received thousands of complaints about noise each year for the past decade. A sizeable number relate to construction noise, with noise in factories and at airports running in second and third place.

Last September, in an unprecedented move, some 40 residents near the Yokota Airbase in the western suburbs of Tokyo demanded that the government pay them \$19,000 each in damages for noise from U.S. military aircraft. More recently, a group of Tokyo residents filed a complaint with the Pollution Affairs Bureau about the tinkling noise of hanging bells at Japanese homes. Those residents considered the noise irritating.

At present, there are few regulations to control household noise unless it infringes on environmental control regulations.

In neighboring South Korea, officials say more and more citizens are complaining about noise from traffic, factories, and construction sites, even though violators of anti-noise pollution laws have been subject to two years in jail or fines up to \$4,000 ever since 1971. Horn honking has been banned since last year, but with mixed results.

In the British colony of Hong Kong, building sites, roads, and the airport are considered the major noise blackspots.

The government is now planning to introduce legislation to prohibit pile driving from 7 p.m. to 7 a.m. daily beginning in July 1979, and the government also plans to ban side-street cassette tape and record dealers from playing music too loudly over their loudspeakers.

In the Philippines, Thailand, and Malaysia, noise pollution has not yet reached an alarming level, but officials are already taking precautionary measures. In Thailand, officials of the National Environment Committee have urged the government to control the sound level, especially from traffic. The officials have also recommended an annual check on the condition of buses, trucks, private cars, and motorcycles.

Although a majority of the Malaysian population still lives in kampongs, in the capital of Kuala Lumpur congested motor traffic and construction of high-rise

office buildings are posing a serious noise problem.

Rapid industrialization, big construction projects, and a fast growing shipbuilding industry are also causing serious noise problems in Singapore.

Last year, more than 1,000 industrial workers were found to have serious hearing defects. In view of this, the Singapore government has appealed to industrial establishments to reduce noise levels and also asked them to provide their workers with mufflers. **ARTHUR MILLER**

Sales of Solar Heating Systems Expected to Rise Sharply in GB

LONDON—"By next summer sales of solar heating systems will take off in Britain as they did in the United States in 1974-75," forecasts Anthony Wogens, organizer of "The Solar Household" exhibition held recently in the Hertfordshire town of Welwyn Garden City, some 25 miles from London.

The Government's \$6.3 million R&D investment in solar heating, announced in February 1977, has boosted interest in its conservation possibilities.

Three new solar energy collectors, all suitable for mass production, were demonstrated at the two-day exhibition. Another leading manufacturer displayed panels made with polypropylene.

Although sales are increasing, solar systems are unlikely to become economically attractive for the average householder until prices are brought down either by some form of government subsidy or by mass production. The policy of municipal housing authorities could therefore be crucial.

In the new town of Milton Keynes, the Corporation has built two experimental houses using solar heat. But three-quarters of the houses which will be in use in Britain in the year 2000 have already been built, so some local authorities have been experimenting with systems on existing housing stock.

With the cooperation of London's Islington Borough Council, Kevin McCartney, of the Architectural Association's School of Architecture, has set up a solar test house. With a grant from the government's Science Research Council, he is monitoring the performance of four solar collectors. His survey suggests that as many as 68 per cent of the Borough's housing could reasonably be converted to solar water heating.

A program of lectures by solar experts accompanied the exhibition, which was the second organized by the "Country College"—an organization set up by Wogens (who is also a journalist and environmentalist) "to encourage sustainable lifestyles." Run from a small office in the Hertfordshire village of Digswell, its first energy exhibition in the village hall, showing woodstoves, attracted environmentalists from much further afield and was featured in the national press and on television networks. **BARBARA MASSAM**

In Brief...

American-Haitian Company To Recycle Human Urine

An American company has incorporated a Haitian subsidiary to collect and export a unique item—human urine.

A recent issue of the Port-au-Prince weekly newspaper, *Jeune Presse*, says that a Florida company the Rand Research and Development Corporation (not related to the Rand "Think Tank" Company in California), has formed a Haitian corporation, the Haytian-American Research Corp., S.A., to collect and process enormous quantities of human urine in Port-au-Prince for medical and industrial purposes.

Jeune Presse said that fractions of human urine are useful for medical, research, therapy, diagnostic, and industrial uses. One of the substances extracted from human urine is an anti-coagulant useful in the treatment of phlebitis.

The newspaper did not say what collection procedures would be used for this recycling effort.

Vietnamese Scientist Reveals Extent of Defoliant Damage

Prof. Nguyen Thac Cat of the University of Hanoi in Vietnam has recently revealed the extent of destruction caused by defoliants during the war. According to him, rubber output has been cut by half in southern Vietnam. Forty per cent of fruit trees have died and farm produce has been slashed by 39 per cent. Only six per cent of the devastated forests have been restored.

Describing the defoliants as "weapons of genocide, biocide, and ecocide," Professor Cat said the toxic chemicals "have had horrifying effects on animals and men. Pregnant women affected by defoliants have given birth to stillborn babies.

Several categories of rare fauna and flora have been wiped out."

He said the United States sprayed more than 500,000 tons of toxic chemicals on five million acres of the country's arable land in the last eight years of the Vietnam War, and added that "a U.S. contribution to restoring the environment poisoned by toxic chemicals is a responsibility and obligation required by international law and the International Conference on the Protection of the Environment held in Yugoslavia in April 1974."

Bavaria Tightens Regulations On All X-Ray Equipment

The Bavarian Environmental Protection Ministry announced here recently that henceforth it will regularly control both new and old x-ray equipment to ensure against radiation leakage.

A Ministry spokesman said that the necessity for such on-going control became evident during a series of test spot-checks in which "a not inconsiderable portion showed faults."

It noted that the West German Federal radiation directive provides for only a one-time check.

Under the new directive, new x-ray sets must be controlled by experts on radiation protection before being put into operation. They will also control the x-ray room itself. All other x-ray sets in Bavaria, some 9,000, are classified as "old" sets.

The Ministry spokesman stressed that experts had found no faults that could lead to serious health damage. Faults are classified into three categories: minor, medium-serious, and serious.

When faults are found, they must be corrected immediately. The spokesman said that a large number of the faults already discovered involved such indirect hazards as lack of protective aprons for dental patients and lack of signs warning of radiation danger.

Singapore Prohibits Smoking In Nearly All Public Places

Singapore is now one of the 10 countries in the world with stiff laws against smoking. In 1970, all cigarette advertisements were banned on Radio Television Singapore. A year later, all cigarette advertising was banned from the mass media.

Now the campaign against smoking is being intensified. Smoking is prohibited in buses and public vehicles. Drivers, conductors or passengers caught smoking are liable to fines of up to \$200. The same applies to smoking in auditoriums, cinemas, theaters, and elevators. Civil servants, doctors and hospital staff, teachers, taxi drivers, food vendors, and stock broking clerks are warned not to smoke when they deal with the public. Recent surveys showed that more and more young people, especially those in the 14 to 16 age group, take up smoking. Free no-smoking courses have been held by hospitals in Singapore to help the kids kick the habit.

Small Coastal Town in India Leads World in Mosquito Bites

According to the Indian Council of Medical Research, Pondicherry, a coastal town 100 miles south of Madras, leads the world in mosquito bites.

A recent survey showed that a typical person in this town was being bitten 242 times a day—or 88,500 bites every year.

It revealed that "one out of every five persons in Pondicherry, once the capital of former French settlements in India—is either a microfilaria carrier or a patient with filarial disease."

The mosquitoes are of the *Culex* species which breeds very rapidly due to "an enormous increase in the surface area of breeding places," such as the backwaters of three textile mills in the town.

Israel Speeds Up Recycling Of Discarded Rubber Tires

To overcome the growing problem of waste rubber resulting in part from a five per cent annual increase in new tire manufacture, Israel is making a concentrated effort to recycle millions of old tires which are discarded annually. Thus far, only 30 per cent of such waste is being reclaimed.

In the reclamation process, old tires are treated with chemical agents, heat, and intensive mechanical energy. The reclaimed rubber mainly goes into the production of new tires, tire repair material, inner tubes, auto mats, hoses, and hard rubber products.

Cheap Fiberglass Housing Constructed in Pakistan

Pakistani Minister for Science and Technology, Niaz Ahmad Wassan, announced recently the Government will shortly begin construction of fiberglass housing.

The first group of plastic homes will be erected in Tharparkar district, in Sind Province. The Minister said each house will consist of two bedrooms, one bath, and a kitchen, and will cost about \$1,200. Purchase can be made by modest installment payments over 10 years.

Signature Campaign Aids Environment in Malaysia

Malaysia's Selanger Environmental Protection Society has conducted a signature campaign aimed at creating awareness among Malaysians about the deterioration of the country's natural environment. Thus far, a total of 428 signatures has been collected and the Society hopes to collect 1,000 signatures by the end of July. Gurmit Singh, the Society's President, said

copies of the signatures will be submitted to Prime Minister Hussein Onn and the Ministry of Science, Technology and Environment. The Society will shortly change its name to Malaysian Environmental Society and is planning to become a national organization.

Argentine Crops Attacked By New Insect Species

A new insect is attacking Argentine alfalfa and soybean crops. Although damage is slight so far, government agronomists are worried because local crops have not yet built up a resistance.

The insect has been identified as the blue alfalfa aphid by Ruben A. Parisi, agronomist for the National Institute for Agricultural Technology. It was first spotted in the U.S. in 1974 and registered under the technical name *acyrthosiphon kondoi shinji*.

Philippines Sets Standards For Anti-Pollution Devices

Brig. Gen. Guillermo A. Pecache, the Acting Commissioner of Philippine National Pollution Control Commission (NPCC), recently announced that only working models of anti-pollution devices for motor vehicles will be accepted by the Commission for testing.

According to General Pecache, the NPCC has been flooded with requests from inventors of anti-pollution devices since President Ferdinand Marcos issued a decree requiring all motor vehicle owners and operators to install anti-pollution devices. He also pointed out that he will use two standards to test the efficiency of anti-pollution devices: a concentration of 4.5 per cent of carbon monoxide emissions, and no visible emission of dust density for 10 minutes for motor vehicles.

South Korea Secures Foreign Funding to Control Pollution

South Korean Foreign Capital Inducement Committee has approved another package of foreign loans and direct investments which will bring a total of \$154.54 million in foreign funds to finance industrial and other development projects in the nation. One of the four direct investment projects involving \$6.74 million approved was a plan of the Samsung group and the leading Japanese shipbuilder Ishikawajima-Harima to build a joint-venture factory manufacturing pollution control devices and equipment related to power and sewage plants and mining.

Sweden Opens Its Largest Nature Reserve—1M Acres

In the Vindel mountain area in the far north, Sweden has ceremoniously opened its largest nature reserve. The protected land covers an area of 1,186,000 acres as against the 741,000 acres in 935 nature preserves established so far. Ten years ago Sweden had only set aside 61,755 acres as nature reserves.

In connection with the ceremony, Valfrid Paulsson, director general of the environment protection agency, outlined some of Sweden's main modern day tasks in protecting nature:

- A protective watch must be kept over certain natural areas as they look today and in some areas nature should be allowed to develop without hindrance.
- Care must be taken that lumbering and agriculture are carried out in harmony with nature.
- The forms of exploitation which are allowed now should be checked and limited so that damage will be as small as possible.
- Old damage, gravel pits for example, should be repaired and restored to an aesthetically attractive environment.

Nepal Designates Wildlife Reserves at Mount Everest

The Nepalese Government has designated three new areas—including 480 square miles around Mount Everest—as wildlife reserves and national parks. The New Zealand government is cooperating closely with Nepal in the venture.

The Everest National Park has a variety of wildlife including the Himalayan panda, which is becoming extinct as a result of poaching. An area in eastern Nepal containing about 78 wild buffaloes has been designated the Koshi Toppu Wildlife Reserve. A 60-square-mile area in western Nepal containing black buck has been declared the Royal Sukl-phata Wildlife Reserve.

Director Chosen for Hawaii's E-W Environment Institute

Dr. William H. Matthews, senior research scholar at the Austrian-based International Institute for Applied Systems Analysis, has been appointed the first director of the East-West Center at the University of Hawaii. The institute, to be established Oct. 1, will be one of the five problem-oriented institutes of the East-West Center.

Dr. Matthews' career has included work in the areas of climate change, ocean pollution, toxic substances, environmental impact assessment, ecological modeling, energy strategies, and alternative development approaches.

Dr. Everett Kleinjans, President of the East-West Center, said "the new institute's program is being designed to promote better understanding and relations among East and West nations through cooperative efforts to generate new knowledge, develop policy aids and educational materials, and organize mutual learning about the interdependence and international consequences of policy of all types affecting the environment."

Caribbean Sea Environment Program Aided by UNEP

An environmental program by nations on the Caribbean Sea, similar to a Mediterranean project (*WER*, Feb. 28, p. 2), has been initiated and will be coordinated by the United Nations Environment Programme (UNEP) and the UN-related Latin America Economic Commission.

Currently, possible areas of work by the project countries include the sea, health, human settlements, tourism, natural resources and ecosystems, industry, natural disasters, and energy, said Dr. Vicente Sanchez, Director of UNEP's Latin American regional office. An inter-governmental conference will make the final determination on projects, he said.

"Within 18 months or two years, we hope to come out with a statement on the environment in the Caribbean—what has been done that is useful, what is being done, where there are gaps in research and information, and where those gaps can be filled," he said.

Dr. Sanchez also noted that "there has been an explosion of interest in environmental issues in Latin America and the Caribbean. Many nations, such as Venezuela, have created cabinet posts to deal with environmental problems. Compared to the Latin America of three years ago, there is a great interest and awareness as governments have faced their environmental problems."

Czechs Reclaim Coal Strip Mines by Planting Acorns

Conservationists in Czechoslovakia's mining town of Ostrava have recently reported outstanding success in the recultivation of untreated coal mine tips using red oak but without adding topsoil.

In the process, the tip cone was levelled by bulldozer and approaches were built. The hill was so steep

that the tree planters had to be guyed by ropes. Experiments with beeches and mountain ash failed, but the oak growing from an acorn puts out leaves which protect its tender roots and produce a microclimate allowing growth. After about four years the little oak trees equal in height comparable trees growing in more favorable conditions.

Intentionally the acorns were not planted into imported topsoil because of the fear that once they had used up the new nutrients they would not be adapted to survive in the stony ground.

The new trees are now being cultivated on an area of more than 11 hectares at a cost of \$3,600 per hectare.

Japan Builds World's Largest Waste Water Treatment Plant

The world's largest closed system for waste water treatment was recently constructed by Mitsubishi Heavy Industries, Ltd. (MHI) for the new Onomichi plant of Yokohama Rubber Co., Ltd. Current operational data shows excellent efficiency, with no problems in scale, slime, or erosion.

The plant, built on reclaimed land, manufactures jumbo-sized tires for mammoth bulldozers used for strip mining. Faced with the dual problems of needing vast quantities of water for cooling and for boilers and of meeting the municipal regulations on waste water disposal, Yokohama Rubber decided to install a closed waste water purification system.

The system provides for the cycling of 5,000 to 7,000 tons of cooling water as well as the purification of 100 tons of waste water daily, by centrifuging of impurities and salts and by other forms of treatment. No water is released outside the plant and the 150 tons lost daily through evaporation at the cooling tower is replenished by the nearby Numata River.



World Environment Report

15 AUG 1977

VOL. 3, NO. 16

Copyright ©1977, Center for International Environment Information.

AUGUST 1, 1977

Sweden Steps Up Drive to Save 40,000 Lakes Dying of Acidity

STOCKHOLM—Sweden is stepping up its drive to rehabilitate and save some 40,000 lakes dying because of acidity caused by sulphur being washed out of the atmosphere.

The government recently authorized the state Forest Service to buy shares for \$30,000 in a newly-formed environment protection company called Movab Inc. The new company immediately took out full-page newspaper advertisements warning the public of the dangers to Sweden's lakes and fish life.

In another effort to reverse the trend, the State already has set in motion a five-year program of liming lakes at an annual cost of \$4,200,000 (*WER*, April 11).

Concurrently, the government also announced that new legislation will take effect October 1 tightening regulations regarding the sulphur content not only of heating oil but also all other oils, coal, coke, and other fossil combustibles. Thus much of Sweden will thereafter be limited to using fuels with a maximum sulphur content of one per cent. In some areas, particularly the far north where there is less industry, the limit was set at 2.5 per cent. In the case of thinner fuel oil and diesel fuel the permitted sulphur content was reduced from 0.8 to 0.5 per cent.

Environmentalists here say that if the degree of acidity reaches 3.5, all fish and other life in a lake will die. At least 15 per cent of the lakes in the province of Svealand and 30 to 35 per cent in Goetaland are said to be affected.

SPECIAL DISPATCH TO *WER*

Eight States Draft Action Plan For Protection of Persian Gulf

NAIROBI—A draft action plan for protecting the environment of the Persian Gulf and its coastal area was discussed here recently by experts from the Gulf states, in preparation for a full conference to be held in Kuwait late in September.

The Gulf is regarded as one of the most fragile and endangered ecosystems in the world—a shallow land-locked body of sea, 600 miles long and 180 miles wide. Along the coastline are industrial projects ranging from oil refineries to plastic plants and shipyards, as well as

numerous oil production sites on land and in the sea. More oil is loaded in and shipped from the Gulf than in any other body of water in the world.

Because of heavy congestion at almost all Gulf ports, numerous ships wait for months before being off-loaded, creating serious dangers of oil spillage. Moreover, increasing population in the Gulf area is multiplying the volume of sewage discharged into the sea, in the absence of treatment plants.

A spokesman for the UN Environment Programme (UNEP) headquartered in Nairobi said the Gulf states were aware of the need to coordinate action to protect the area. At its first session last year, UNEP's Governing Council agreed that immediate steps should be taken to protect the marine area of the Gulf.

As now drafted, the action plan includes a coordinated regional environmental assessment program, studies and records of development and environmental management activities, and a legal agreement to provide a fundamental basis for regional cooperation.

A regional convention for cooperation on the protection of the marine environment and a protocol on cooperation to combat pollution by oil and other harmful substances in cases of emergency will be presented to the Governments of the eight states—Bahrain, Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates—at the forthcoming Kuwait meeting.

Subsequently, additional protocols will be prepared on pollution from land-based sources, pollution resulting from exploration and exploitation of the continental shelf and the seabed and its subsoils, and on scientific and technical cooperation.

An existing international organization will be named to act as the interim secretariat for the area, until a permanent Regional Organization for the Protection of the Marine Environment is established.

CHARLES HARRISON

In This Issue

Brazilian Oil	2
Australian Whaling	2
Britain's Environment Chief	3
Rhine Cleanup	4
Habitat's New Administrator	5
Amazon's Deforestation	5
In Brief	6

Desperate for Oil, Brazil Allows Private, Off-Shore Exploration

RIO DE JANEIRO—Despite almost 25 years of intensive efforts by Petrobras, the Brazilian state oil monopoly, this country only produces 17 per cent of its current oil needs. Before the energy crisis this rapidly developing nation could well afford its oil bill, but today the annual cost has soared to \$.35 billion to pay for a daily consumption of almost one million barrels.

To cope with this energy shortage, Brazil has recently closed down gasoline stations on weekends and holidays and has generally discouraged consumption. These measures have been partially successful, resulting in a seven per cent reduction over the previous year.

Concomittantly, private companies were allowed to explore for oil in Brazil—for the first time in recent history. In the first round of risk contract exploration, four companies—British Petroleum, Shell, Elf-AGIP, and Exxon—won area concessions and are now preparing to drill.

In addition, Petrobras has recently announced another emergency measure, called the Strategic Exploration Plan (SEP), covering the four-year period from 1978 to 1981. It is aimed at determining the country's offshore petroleum potential, and calls for the doubling of all offshore efforts in probing for oil in the Brazilian continental platform.

According to a recently evolved continental separation theory, Brazil, which forms the Atlantic bulge in South America, was once part of Africa. The two areas fit together roughly like a large jigsaw puzzle. Geologists have found that some of the rock structures on the Brazilian coast and the continental shelf are similar to their corresponding areas on the African coast. And because large oil reserves have been found along the western coast of Africa, Petrobras officials hope to find big oil reserves in the corresponding segments off the Brazilian coast.

The main oil discoveries in Brazil reinforce this theory. The Campos offshore find corresponds geographically to the site of the oil strikes in Cabinda and Angola. The onshore and offshore oil fields in the Northeast and Bahia correspond to the oil areas in Nigeria, Gabon, Zaire, and the Congo.

But the SEP also gives priority to exploring the regions next to already discovered fields. Of the 325 wells that are to be drilled offshore during the four-year plan, 90 will be in the highly promising Campos area. Those 90 are to be wildcats and the other wildcat wells are to be distributed thus: northeast-60; south from Campos-42; Amazon-30; Sergipe-Alagoas-25; and Bahia-23. The other 55 are to be extension wells. The total cost of the plan is estimated at \$1.16 billion, so that the cost and the number of wells to be drilled will double all of the previous Brazilian offshore efforts which began in 1968.

G. HAWRYLYSHYN

Friends of the Earth Campaign Against Australian Whaling

PERTH—A group of international conservationists dedicated to a 10-year moratorium on whaling are about to mount a \$30,000 campaign against Australia's only whaling station at Albany on the southwest coast.

Friends of the Earth plan to disrupt the industry by using a Greenpeace ship to harass the whalers. The craft—probably the same one used for a similar operation against Japanese whalers in the Pacific which stopped whale catches for two weeks—will launch motorized rafts which will intrude between the whalers and the catch.

The manager of the Cheyne Beach whaling station, J. Reilly, says that the proposal is without merit because an international agreement allows Australia a quota of 624 whales this year. This quota, he points out, would produce between 3,500 and 4,000 tons of sperm oil and vital protein stockfeed, and ease the world shortage of these substances.

Western Australia's Minister for Fisheries and Wildlife, and Conservation and the Environment, Graham Mackinnon, has contributed to the public debate by attacking the campaign as madness: "These people should be locked up and not allowed to put to sea to risk lives on the ocean. Whales are a natural resource and they are being harvested in Australia in accordance with the recommendations of the scientific committees of the International Whaling Commission."

DON LIPSCOMBE

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$125 per year. \$15 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
 Editor-in-Chief Albert Wall
 Circulation Manager Ann C. Werner
 Correspondents covering more than 60 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

SPECIAL REPORT: An Interview With Britain's Environment Chief

LONDON—That the British are said to have an affinity for flexibility certainly seems to be borne out in their approach to environmental problems.

In an interview here with *World Environment Report*, Secretary of State for the Environment Peter Shore emphasized that British "statutory powers provide only the supporting skeleton for a flexible system of pollution control. For example, difficult industrial emissions are controlled on the basis that the *best practicable means* (my emphasis) must be employed."

"Under this system," he said, "the Alkali Inspectorate can take account both of the environmental consequences, including for example growing scientific awareness that a particular substance is more harmful than had been thought, and also of technical processes available to control emissions and their economic consequences. This system helps to ensure that continuous, but not insupportable, pressure is maintained on industry for the improvement of environmental quality."

(This reliance on the "best practicable means" as an alternative to tighter regulations has provoked some cutting criticism from environmental lobbyists.)

Mr. Shore, who is 53 and identified with the Left-wing of the governing Labor Party, is known for his analytical mind and intellectual grasp of complex issues. He said that this flexible approach to industrial emissions would be applied to other forms of pollution and in a more unified way in the future.

"I am considering recommendations by the Royal Commission on Environmental Pollution that we should use air quality guidelines and set targets for reducing particular pollutants in sensitive areas," he said.

"I also hope to see the continuing extension of smoke control and of the new instrument of noise abatement zones, which will allow us to concentrate resources on areas where the stress is greatest. It is essential that we develop a strong foundation of scientific and economic facts on which to base our objectives and controls, and our priorities in spending the money available."

What are the special problems likely to be? The Secretary of State said that he was very conscious of the speed of change in society. Each year a great many new chemicals come onto the market for the first time and his department cannot be sure what their environmental impacts might be.

"I am particularly conscious of the difficulties of assessing the effects of different chemicals in combination and of low doses repeated over a long period of time," he said. "My department is cooperating with the Health and Safety Executive (which deals with occupational health) in developing a notification scheme for new chemicals, which should help to give advance warning about their environmental effects."

Mr. Shore then turned to an issue which is rapidly becoming a topic of intense national debate—the development of North Sea oil and gas as an energy source, and,

even more controversial, the prospects for expanding nuclear energy.

"The scars of coal mining are still far too obvious in many parts of the United Kingdom, despite progress in the derelict land reclamation program," he said. "Certainly, the problems get no less difficult over time, as the recent Ekofisk blow-out in the Norwegian sector of the North Sea showed.

"In the case of North Sea oil we have sought to ensure that supervision is sufficiently strict to minimize the amount of pollution caused accidentally; secondly, we need to have the resources available to deal with any pollution that might occur. I am sure we shall learn from Ekofisk in taking precautions for the future."

Mr. Shore further claimed that Britain's land use planning system would go a long way to ensure that energy developments—whether associated with coal, oil, or nuclear power—would take full account of environmental factors because "Public inquiries are held into all major energy developments and both the applicant and the objectors have the opportunity to put their case and to cross-examine the other side.

"For example, I have recently arranged for an inquiry to be held into the proposal to build a new plant for reprocessing nuclear waste at Windscale in Cumbria (on the British northwest coast). After the inquiry, the inspector I have appointed will report to me with recommendations, and I shall take the final decision.

"I am very conscious of the particular problems posed by long-lived highly radioactive waste, and we shall be working to ensure that an acceptable means exists for solidifying such wastes and disposing of them."

So what are Britain's priorities for environmental spending? "We must get on with the unspectacular, often slow process of cleaning our air of smoke," the environmental secretary said. "We must continue the gradual improvement of our rivers, taking into account the use to which the water is to be put.

"I also attach a high priority to research, particularly into assessing the effects on health and the natural environment of low doses of pollutants over a long period."

Questioned by *WER* on the need for environmental education, Shore said: "It is only over the past 10 years that people in general have become concerned about the threats to our environment. I believe that concern has helped to effect the rate of improvement."

"Unless people are properly informed and able to assess the information they receive, we may fall either into the trap of ceasing to be vigilant, or into the trap of worrying unnecessarily about the hazard presented by a particular pollutant perhaps to the extent of wasting resources on needless controls.

"Environmental controls are one part of our wider economic and social strategy, and that may mean at present that progress is slower than we would like. My

concern is to ensure that we are ready to advance when the time is appropriate, and that meanwhile we maintain the gains already achieved."

Mr. Shore said the Department of the Environment was playing a considerable part in the solar energy program as it related to applications in buildings, adding that "world energy prices look certain to rise later in the century to levels which may justify substantial changes in energy use.

"Projections of these price increases have been, of course, taken into account in planning the present research program, but were they to prove wrong, the research priorities could well change correspondingly.

"The solar program may well be smaller than those in countries whose climate is more favorable to the early exploitation of solar energy and who do not have reserves of hydrocarbon fuels. A number of studies into alternative energy sources have been made and programs have been decided as a result of the extensive consultation upon which every department leans in formulating its research program."

Mr. Shore re-emphasized that his department works very closely with the Department of Energy on these questions and stressed that it was "fully aware of the advantages of energy conservation since almost any form of energy production has some adverse environmental consequences, and any energy saving made represents a contribution to the quality of the environment quite apart from relieving the pressure on our finite fuel resources."

The measures the Government had taken already included doubling the requirements of the Building Regulations for the thermal insulation of new dwellings; a plan for roof insulation of local authority housing.

"Consultations are now taking place on the best way of improving and extending insulation standards for new buildings in the non-domestic sector," the Secretary of State added. "We are also conducting research into the problems of condensation that may affect inadequately-ventilated buildings in our humid British climate, so as to ensure that the financial savings made by insulation measures are not offset by the cost of subsequent remedial work."

Britain's Department of the Environment was set up in November 1970 following developments in public thinking emphasizing the links between land use planning, transport and housing; between housing and the construction industry; and between all these and environmental conservation. Various liaison arrangements for policy formulation and the management of expenditure programs (often very large) had been established between the departments most concerned in these fields—the Ministry of Transport, the Ministry of Housing and Local Government, and the Ministry of Public Buildings and Works. Their amalgamation in the Department of the Environment (together with the Central Unit for Environmental Pollution) was designed to achieve more fully integrated working, under a single secretary of state.

BARBARA and ALAN MASSAM

W. German Firms Spend Substantial Sums to Clean Up the Rhine

BONN—The German Federal Government and the six states touching on the Rhine or Bodensee (Lake Constance) have agreed to contribute \$680 million over the next three years to clean up both the river and the lake. Additional contributions by local communities will bring the total investment in the clean-up program to more than \$850 million.

Most of this money will go for the construction of biological sewage treatment plants and related sewer lines. Upon completion of the program as now laid down, roughly 75 per cent of all domestic sewage in the Rhine area will be treated biologically. The biggest projects will be at Dusseldorf, Bonn, Frankfurt, Mainz, and Ludwigshafen. Four large plants are scheduled to be built at major population centers on the banks of the Bodensee. As in the case of Frankfurt, which is on the River Main, tributary rivers will be cleaned up to retard their pollution of the Rhine.

Meanwhile, industrial wastes are being treated by the industries concerned with little or no outside help. The papermaking industry, for example, whose plants are scattered widely throughout the country, spent \$80 million on environmental protection measures between 1971 and 1975 out of total capital investments of \$800 million.

Among firms in other sectors making substantial efforts to eliminate water and other forms of pollution is Mannesmann AG, Germany's leading producer of steel pipe. At a new pipe mill, costing \$180 million, which went onstream in late June, \$21 million was spent on environmental protection measures.

The chemical manufacturer, Bayer, has long been a recognized leader in environmental technology and practice. Over the past decade the company has invested \$320 million in equipment or processes to eliminate or neutralize pollutants from its plants, and has spent an additional \$740 million in related operating costs.

Equally deserving of mention is BASF, the Bayer competitor, in Leverkusen. Between 1971 and 1975 its investments in environmental protection equipment came to \$280 million, and the related operating costs to \$340 million. The biggest single item was a mechanical-chemical-biological treatment plant costing just over \$100 million, completed in 1975.

In the past year the three companies mentioned above have invested an additional \$100 million in measures to protect the environment. They are thus spending on their own account at about one-third the rate which the federal and state governments are spending on the entire Rhine drainage system. A continuation of public and private investment at this rate can eventually convert the Rhine from the sewer of Europe, as it is now derisively called, to the clean stream that formerly inspired romantic poets and kept Europe's tables stocked with fresh salmon.

J. M. BRADLEY

UN's First Human Settlements Administrator Takes Up His Post

NAIROBI—The first administrator of the United Nations Habitat and Human Settlements Foundation (UNHHSF), Cesar Quintana, has taken up his new post at the UN Environment Programme (UNEP) headquarters in Nairobi. Mr. Quintana, 44, is an agronomist and engineer by training, and before being appointed to his new post was Director of Malaria Control, Environment and Sanitation in the Ministry of Health of his native Venezuela. He was also vice-president of the World Association of Rural Housing.

UNHHSF was established by a 1974 resolution of the UN General Assembly as an international institution for human habitat management, environmental design and improvement of human settlements. Its objectives include the provision of seed capital and technical and financial assistance to mobilize domestic resources, particularly in developing countries, for these purposes.

When interviewed by *World Environment Report* in his Nairobi office, Quintana emphasized that the main problem of human settlement in developing countries is the lack of finance. Poor people, who are in the greatest need of housing assistance, lack the capital and collateral to improve their housing. And for governments, the sheer size of the problem makes it difficult for them to provide the urgently needed finances.

This is the challenge before UNHHSF, and the one which Quintana is now tackling.

The Foundation has a provisional target of \$50 million to be raised through voluntary contributions by the world's nations. With such a fund, UNHHSF will be able to advance loans at low interest rates—or even to make outright grants—with the aim of improving the living conditions of people all over the world.

Giving some examples of the type of project UNHHSF has in mind, Quintana noted a \$1 million proposal for the Sudan, to design and construct environmentally sound housing, using stabilized earth as the building material. Bricks are scarce and expensive in the Sudan, he pointed out, but stabilized earth (mixed with a limited quantity of readily available asphalt) is a cheap and effective building material. UNHHSF is considering providing \$300,000 towards this project.

The administrator noted that Lesotho needs a housing finance corporation, but lacks the finances and know-how; UNHHSF could meet this need. Ethiopia wants assistance in developing a housing investment policy—the list is nearly endless, he said.

Although UNHHSF has only 15 staff members in Nairobi, including economists, engineers, and financial management experts, it can engage expert staff as needed for individual projects, and thus avoid building up a large bureaucratic organization of its own.

An immediate task for Quintana is raising money. Only \$1.6 million has been pledged—by such governments as Belgium and Saudi Arabia. Several developing countries have made pledges, but none of the major

powers have come forward with pledges, despite their support for the Foundation at the Habitat conference.

Shortly after the UNEP Governing Council concluded its annual meeting, Quintana flew home to Venezuela and talked to his own Government and to local institutions. The Venezuelan Government promptly pledged \$100,000 and the International Rural Housing Association, with headquarters in Caracas, pledged a token (but useful) \$1,000.

"This shows that it is not difficult to get money once we explain what UNHHSF is, and what it has in mind," he says.

Venezuela started from scratch in 1959 with a low-cost program for 200,000 houses which has been progressing at the rate of 10,000 houses a year. This is an example of existing progress in the human settlements field and is one which Quintana hopes to see repeated many times in the next few years.

CHARLES HARRISON

British-Colombian Team Studies Deforestation in the Amazon

BOGOTA—A combined British-Colombian scientific team began a four-month ecological study of the Colombian Amazon on July 1. The principal purpose of the "Amazonas 77" expedition, which will include some 100 scientists from both nations, is to investigate the effects of significant deforestation here that may have implications for climatic conditions in similarly important areas around the world.

The 70-million-year-old Amazon Jungle is the largest surviving forest reserve in the world. Continuing destruction of its soil and trees by colonists and large cattle ranchers could adversely affect precipitation patterns throughout the hemisphere, according to American and European authorities.

The proposal for the binational expedition, being led by Great Britain's John Temple, was first suggested in 1973 by the Society of Scientific Exploration of England in collaboration with the Royal Military College of Sciences. Representatives of the Colombian ministries of defense, education, and health, plus various universities and scientific institutions, subsequently agreed to participate in the project.

Some 15 tons of equipment are en route to Araracuara, Puerto Leguizamo, and La Tagua—the three areas to be explored by the expedition.

The expedition also will study the Amazon's sedimentary formation and then will attempt to evolve systems for exploiting the jungle's natural resources without destroying them. Among the methods that will be considered are the replacement of cattle ranches by tapir and deer farms.

PENNY LERNOUX

In Brief...

Bavaria's Environment Costs Raise Prices by Only 1%

Bavarian Environmental Protection Minister Max Streible recently advised the Action Group for Economy, Science and Politics meeting in Munich that the costs for environmental controls do not overburden the economy.

Calculations of costs of environmental protection measures during the period 1970-75, he said, showed that these increased the price level in related sectors by only about 1 per cent. But this minimal effect was balanced out by a positive growth in employment that resulted directly from environmental control measures, Dr. Streible noted. He said that as a result of environmental control measures during the period 1975-79, the number of related jobs may rise by 370,000 per year.

Dr. Streible reviewed Bavaria's active program — it is the only German state with its own environmental ministry — and said it could set an example for other states.

Battelle Conducts Power Plant Survey in Venezuela

The impact a new power plant will have on the coastal environment of Venezuela is being assessed by researchers at Battelle's Columbus Laboratories in Ohio.

Researchers are studying the impact of a 2,000-megawatt facility—consisting of five 400-megawatt units—located at Punta Moron, near the north-central coastal city of Puerto Cabello, west of Caracas. Two units of the power plant are expected to be completed late in 1978, one unit in 1979, and the remaining two in 1980.

Sponsoring the research is Ingenieros Electricistas y Mecanicos C.A. (INELMECA), an engineering consulting firm under contract with

C.A. de Administracion de Fomento Electrico, a national electrical utility which is building the power plants.

According to Dr. Kenneth M. Duke, who heads the Battelle research team, this is one of the first impact studies in Venezuela since new environmental protection laws were established there in 1976.

During the seven-month, \$150,000 project, Battelle researchers will develop a plan to study the changes that may result from the construction and operation of the power plants. Potential changes in the air, land, and water environments of Punta Moron and the impacts these changes will have on human, animal, and plant life will be considered.

Great Britain Cracks Down On Cigarette Advertising

A series of steps have been taken this year in the continuing attempt to discourage Britons from cigarette smoking, to which is attributed some 50,000 premature deaths annually. Smoking is hurting the National Health Service to the tune of \$172 million each year in the course of treatment for cancer, heart disease, and chronic bronchitis—all either caused or exacerbated by smoking.

While the Health Minister opposes any outright smoking ban as being impossible to carry out, he does believe more efforts should be made to persuade smokers that they have to be responsible for their own health.

One of the persuasive measures taken this year is to strengthen the Government health warning on each packet of cigarettes sold in Britain so that it now reads "... Smoking Can Seriously Damage Your Health."

In addition, the advertising industry has agreed to discontinue the advertising in the press, posters, or movie theaters of cigarettes yielding 29 mg or more of tar. Cigarette advertisements are already banned on television and radio. In the future, advertising will be concentrated on cigarettes yielding less than 17 mg.

Coconut Oil May Replace Diesel Fuel in Philippines

Research on using crude coconut oil as diesel fuel is being conducted jointly by the University of the Philippines (UP) and the Philippine Coconut Authority (PCA) at the Industrial Research Center. Dr. Ibarra Cruz of UP is the project consultant and Deogracias Domingo, the project coordinator. Cruz reports that in 75 experimental runs, the comparative fuel research (CFR) engine "ran on coconut oil, performed nearly as well as and sometimes better than when the engine used diesel fuel."

Based on this finding, Luis R. Baltazar, PCA administrator, is confident that if the country is cut off from its fuel sources, trains, trucks and cars using diesel engines can continue to run using crude coconut oil. The same engines, he said, with the addition of coconut shell charcoal gasifiers, can run as efficiently after priming with either coconut or diesel oil, at about four cents less per brake horsepower hour than when using only diesel oil.

Argentina Signs Antarctic Treaty Provisions of 1975

Argentina has finally approved recommendations initially arrived at in Oslo in 1975 at the eighth consultative meeting of the signers of the Antarctic Treaty. The recommendations include rejection of the Antarctic as a dumping area for nuclear wastes.

Argentina now has one nuclear energy plant in operation, and plans to have two more yielding radioactive wastes within a few years.

Other recommendations provide for the protection of flora and fauna on the Palmer Islands.

Argentina was one of the original signers of the 1959 Antarctic Treaty which provides for international cooperation regarding antarctic scientific research.

Ireland's First Subway To Be Built in Dublin

Land in Dublin is being purchased for the Irish Republic's first underground railway system, according to a recent announcement by the National State Transport Company (CIE).

A CIE spokesman said the proposed subway is designed to reduce pollution and noise. It will not only serve the capital's center but will link up with the overground lines that have been extended to the new satellite towns on the city's outskirts.

Protein Self-Sufficiency Nearly Achieved in Austria

Austrian scientists have nearly succeeded in attaining nationwide self-sufficiency in protein production. This self-sufficiency depends on the systematic cultivation of such protein-supplying plants as soya bean, pea, and lupine. The large-scale experimental project is in a wooded area 80 miles west of Vienna, and is being guided by Vienna's Central Institute of Meteorology and Geodynamics.

Colombia Imposes Strict Controls on DDT Usage

The Colombian government has authorized the Ministry of Health and the Agriculture and Livestock Institute (ICA) to exercise tighter controls on the use of DDT in pesticides. The Health Ministry has been empowered to demand the registration of all pesticides containing DDT, the amount sold and frequency of use in agricultural zones, and to outlaw its use in aerial spraying of cotton fields, one of the most common uses of DDT in Colombia. The Ministry also must approve the use of DDT in any campaign to eliminate such diseases

as malaria.

Ten firms market DDT in Colombia, including Shell and Schering, as well as the National Federation of Cotton Growers and the Farmers Credit Bank.

Bilateral Agreement on Gulf Sought For U.S., Mexico

A bilateral agreement between Mexico and the United States to halt and prevent contamination of the Gulf of Mexico has been suggested by Jorge Carranza Fraser, director general of the Mexican National Fish Institute.

Waste from U.S. industries in the east and northeast, as well as contamination that pours into the Mississippi River and, eventually, into the gulf, already has caused a higher-than-normal level of mercury in marine specimens tested by Mexican scientists, he said.

Desalination Units Rushed to Jidda to Fight Water Shortage

The Government of Saudi Arabia is taking emergency measures to cope with a serious summer shortage of drinking water in Jidda, the major seaport city. Seven small desalination units are being rushed to Jidda to provide "an effective and immediate solution to the drinking water shortage," the Saudi Ministry of Agriculture and water announced.

Some neighborhoods in Jidda have been without water for weeks, informed sources said. Other areas have been hit by sporadic water cut-offs of up to three or four days, and underground water reserves are dwindling rapidly due to the city's phenomenal growth rate and an unusually hot summer. Temperatures in Jidda soared to about 120 degrees earlier this month—20 degrees hotter than normal for this time of the year.

World Bank Loan to Finance Greek Development Program

The World Bank has approved a \$35 million loan to Greece to help finance an integrated regional development program in North-eastern Greece to improve living conditions for nearly 140,000 farmers.

Minister of Public Works Christoffer Stratos said the plan calls for investments in agriculture, the construction of new roads, protection against floods, improvement of the water supply, and irrigation of new lands. He said the project will cost \$81 million and is to be completed by the end of 1982.

NATO Awards Environmental Fellowships to Nine Scholars

Dr. Joseph M.A.H. Luns, Secretary General of the North Atlantic Treaty Organization, recently announced the award of ten grants under the 1977 Fellowship Programme of NATO's Committee on the Challenges of Modern Society (CCMS). The Committee was established in 1969 to help solve some of the major environmental and social problems facing NATO members and other developed countries.

The CCMS Fellowship Programme is designed to stimulate serious study of public policy in relation to the natural and social environment and to contribute to the training of promising individuals for national and international positions which involve the formulation of public policy.

The areas of study include: marine pollution, toxic and hazardous waste management, energy and protection of the environment, public decision-making analysis, public policy, and consumer habits.

The ten grants will go to scholars in nine member countries: Belgium, France, Iceland, Italy, the Netherlands, Portugal, Turkey, the United Kingdom, and the United States.

Brazil Installs Lat-Am's First Solar Energy Plant

Brazil is now installing what it claims to be the first solar energy power station in Latin America. The mounting of this pilot project machine is being completed at the University of Paraiba, and later this summer tests will begin on the production of one kilowatt of energy.

Future plans call for the expansion of this station and the construction of others to produce electrical and mechanical energy in the arid northeast of Brazil, which has plenty of sun but few hydropower or other energy resources. The project is being carried out with the cooperation of the French company of Thermic Studies and is the result of research and experiments in the area which began in 1972.

Hong Kong Plugs Loopholes In Its Wildlife Ordinance

A bill aimed at plugging loopholes in the Public Health (Animals and Birds) Ordinance has been introduced in Hong Kong. The bill will enable the governor-in-council to impose regulations on the importation of animals and birds and for their landing and removal. The bill will also extend the current restriction on the importation by land and sea to the importation by air of animals and birds from any disease-infected point of origin.

Crown-of-Thorns Starfish Invades Philippine Islands

The Crown-of-Thorns, the starfish that threatened to eat away coral formations in Australia's Great Barrier Reef in the early 1970s, has now extended to the central islands of the Philippines.

This type of starfish was first spotted in Philippine waters in 1974,

and is now found in the central islands of Marinduque, Romblon, Panay, Negros, Cebu, Masbate, Leyte, Palawan, and Soqijor. The local species have been observed to feed on polyps of hard coral, the major reef builders.

Officials said the giant starfish has not yet reached the menacing level, but unless its growth is curbed, it could harm the country's marine resources. The Crown-of-Thorns has also been spotted off the coasts of Borneo and in the Gulf of Siam.

India's First Solar Grain Dryer Has 10-Ton Capacity

The first solar grain dryer in India was recently installed at the central State farm in Ludhiana. The dryer, designed by the Indian National Industrial Development Corporation (NIDC), has a capacity to dry 10 tons of grain a day. It can even operate in stormy weather. Operation of this kind of dryer is cheap, about 33 cents a ton. The NIDC plans to install the driers in various parts of the country.

Pollution in Bogota River Fought by Massive Dredging

Bogota's municipal authorities have agreed to dredge 66 miles of the 246-mile-long Bogota River in an effort to revive the capital's highly polluted waterway. The Regional Corporation of the Bogota Savanna (CAR) will begin dredging the river in the valleys of Chiquinquirá and Ubaté sometime this summer.

Recent studies show that the Bogota River is receiving eight cubic meters of sewage per second, including detergents, pesticides, petroleum, and such toxic substances as mercury, all of which have transformed the river into "an open sewer," according to CAR.

Kuwait Mandates Incinerators For all Hotels and Homes

All hotels, residential areas, and cooperative societies will have to make their own arrangements for incinerating their garbage, the Municipal Council of Kuwait has decided. In a recent ruling, the Council said that it will no longer provide garbage collectors and removal trucks.

Although no reason was stated for the decision, it is understood that it results from the increasing scarcity of laborers for garbage collection and disposal. It is hoped that with the help of the new self-incinerating system the labor pressure will be relieved. If the new system proves successful it may be gradually expanded to cover the whole country. The Municipality, for its part, will provide advice, guidance, and equipment for incinerators.

Karachi Undertakes Survey of Culex Mosquito Breeding

Karachi, Pakistan's biggest city (population 4.5 million), is undertaking an extensive entomological survey to ascertain the density of larvae and adult mosquitoes as part of its program to control mosquito breeding.

According to the entomologists, hot and humid weather from March through June was found most favorable for mosquito breeding. They observed that insecticidal control during this season was largely ineffective. However, the process of granule dispersal of 10 per cent "dizinin"—an organophosphoric compound—was judged the most effective method, with an efficacy of eight to ten days in checking breeding to minimize larvae density.

The researchers concluded that Karachi is infested mostly with the mosquitoes identified as culex, whereas the density of malaria-causing mosquitoes (anopheles) was considerably lower.



World Environment Report

29 Aug 1977

VOL. 3, NO. 15

Copyright © 1977. Center for International Environment Information.

JULY 18, 1977

UN Natural Resources Committee Holds Geneva Meeting on Energy

GENEVA—The 54 nations belonging to the United Nations Committee on Natural Resources met here recently to review global energy and minerals problems.

They discussed how States—in particular the developing countries—can step up energy development and exploration; what role coal might play and, even further, how much coal there is available. The Committee is a subsidiary body of the UN Economic and Social Council (ECOSOC) and convenes every two years. Its latest session has assumed additional significance, because it followed in the wake of President Carter's warning that the world must act quickly and in concert on the energy issue.

A UN spokesman said that given current estimates of petroleum reserves and anticipated consumption rates, it is generally accepted that virtually every nation will be compelled to diversify its sources of energy supply if it is to meet increasing demand over the next two decades. This fact, he said, was especially dramatized by the events of 1973-74 in the energy sector and it is significant that even a number of the Oil Producing Exporting Countries (OPEC) have already begun to invest in alternative energy sources.

Among the documents considered by the Committee were:

- Recent energy trends and future prospects with particular emphasis on the situation in the least developed countries.
- The status and prospects for coal and oil-shale production and utilization in developed and developing countries.
- The status of geothermal energy and its future potential in developing countries.
- Possible approaches to strengthening international cooperation in energy research and development including a proposal for a consultative group.
- Information activities and projections in the field of natural resources.
- Developments in permanent sovereignty over natural resources.
- Relevant development in the technical cooperation among developing countries.

The UN spokesman said that this documentation provides the Committee with practical proposals for increasing UN activities in these sectors. If the proposal

to set up a Consultative Group for Energy Research and Development is approved, this group would then draw upon the existing capabilities within the UN system in the energy area and would devote its efforts to: assisting in the promotion of technical assistance; encouraging research and development; facilitating the application of new energy technologies; aiding in the training of technical and managerial personnel; and improving access to information.

The Committee is expected to draft recommendations on natural resources development that will subsequently be reviewed by ECOSOC when it next meets this summer in Geneva.

WILLIAM G. MAHONEY

CIEI's Advisory Committee Elects George P. Lutjen as Chairman

NEW YORK—At its seventh Advisory Committee meeting held here in June, the Center for International Environment Information unanimously elected George P. Lutjen as Chairman of the Committee. He succeeds Arthur Reef, Vice President of AMAX Inc., who had served in that capacity since the Center formed the Committee in 1974.

Mr. Lutjen is currently Publisher, Newsletter Publishing Center, McGraw-Hill, Inc. A graduate of Columbia College and of the Columbia School of Mines, he is a former Editor-in-Chief of Engineering & Mining Journal, co-author of the book, "Prospecting for Atomic Minerals," and the winner of the Jesse H. Neal Award for editorial excellence in 1955, 1956, and 1971.

Two Canadians were elected to the Committee: Mrs. Peggy Heppes, Administrator of the Canadian Nature Federation and Paul Beaulieu, Director of the International Programs Branch, Environment Canada.

A.W.

In This Issue

Coastal Oil Pollution	2
Coconut Crop Failure	2
Pest Management Projects	3
'Right to Sunshine' Law	4
Fight Over Zinc Refinery	5
Algal Ponds and Nutrients	5
In Brief	6

Britain's Coastal Oil Pollution Called Cause for Serious Concern

LONDON—Results of a survey of oil pollution along the coasts of the United Kingdom in 1976 "provide a serious cause for concern," says the London-based Advisory Committee on Oil Pollution of the Sea (ACOPS) in its recently published annual report.

Altogether, 595 pollution incidents were recorded, an increase of 20 per cent over 1975, and the number underestimates the real situation because much of the data could not quantify the extent of the pollution. "It is also difficult," the report adds, "to monitor pollution along the entire coast of the United Kingdom and adjacent seas."

Since 1975 the Committee has been pressing for a policy of comprehensive sea-use planning which would include consultation with all potential polluters and all those suffering pollution—including local authorities, fishing, tourist, and wildlife interests—in establishing liability and compensation.

The rise in the number of incidents chronicled in the report is considered to be particularly disappointing because there were certain mitigating circumstances in 1976 which might have been expected to bring about a decrease. These were the reduction in oil imports and in domestic demand, due to the exceptionally warm weather, and the worldwide slump in shipping.

The report takes note that the tendency of local authorities to mount clean-up operations on shore just before the tourist season leaves the danger of undiscovered slicks at sea being blown ashore at a later time.

ACOPS records its continued support for multilateral action against marine pollution. It fears that any failure of the current UN Law of the Sea Conference, now being held at UN headquarters in New York, to reach treaty agreement will increase the likelihood of unilateral action. It will continue to impress its views on the British delegation to the sea conference, particularly with regard to the acceptance of port State jurisdiction.

BARBARA MASSAM

Debilitating Drought in Sri Lanka Causes Coconut Crop to Plummet

COLOMBO—Deep disturbance over the plummeting coconut crop—an essential part of the Sri Lankan lifestyle and diet—has intensified a campaign here to cope with the root causes: a debilitating drought coupled with reduced applications of fertilizer.

Fragmentation of plantations following land reforms and plucking of green nuts for quick income have also aggravated the problem. Recently, letters in the press have demanded the ban on the export of coconuts. The value of burying husks in the plantations rather than

exploiting them totally for fiber also is being stressed.

"We start our day with a coconut *sambol* (a pungent chili relish) and our husbands end theirs with coconut arrack," says a village housewife. "Unfortunately, the price of a single nut has recently jumped fivefold from about five cents to 25 cents." To the average Sri Lanka family whose daily income is about \$1, this is an impossibly high price to pay.

The coconut tree not only provides basic sustenance for the Sri Lankan stomach but also performs a myriad of other services. Many homes here are thatched with woven coconut palm fronds; coconut husk fiber makes brooms for every household; coconut shell charcoal is a useful fuel and a minor export product; coconut *ekels* (the strong and pliable midrib of the leaf) has many domestic uses; the coconut flower is tapped for the white and frothy toddy which is the poor man's drink; and distilled toddy provides the coconut arrack which is the country's preferred liquor.

The rising price of coconuts has already had political repercussions for the Government and there has been no Opposition rally where the question has not been asked: "When before have you paid Rs. 2 (25 cents) for a coconut?"

Such criticism has prompted Prime Minister Sirima Bandaranaike to personally take the initiative of educating people on the value of coconut conservation. "Don't pluck young coconuts," she exhorts at public meetings. "Give them a chance to mature. The supply of nuts can't match demand and the poor find the prices unbearably high."

Thus the country has been put on notice that the ubiquitous nut cannot be taken for granted any longer.

MANIK DE SILVA

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$125 per year, \$15 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Ann C. Werner
Correspondents covering more than 60 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

SPECIAL REPORT: FAO and UNEP Undertake New Pest Management Projects in the Middle East, Africa, and Lat-AM

ROME—The Food and Agriculture Organization (FAO) and the UN Environment Programme (UNEP) are undertaking new pest management projects for cotton in Middle East, Africa and Latin America, for sorghum/millet in the Sahel, and for rice in Southeast Asia. The FAO/UNEP projects fall under the purview of the Cooperative Global Program for the Development and Application of Integrated Pest Control (IPC) in Agriculture, established in 1975.

About 20 agricultural experts, officials from international agencies, and scientists met in Rome recently at FAO headquarters for a final review of the projects, which are designed to spare developing countries the cost of unnecessary synthetic pesticides, and to protect the natural environment from the hazards of persistent, noxious chemicals.

In the last quarter century the excessive dependence on chemicals for crop protection has invariably led to a number of secondary problems, including pest resistance followed by pest resurgences and outbreaks, toxicity to operators, unwanted residues in food, and pollution of the environment.

In some cases developing countries risk becoming the "dustbin" of the chemical industry because they still use cheap but effective pesticides that are not authorized in affluent countries. Moreover, not all developing countries have the technical means to test the safety of pesticides proposed by foreign dealers, and they lack staff trained in their use.

These needs are at the basis of the FAO/UNEP-IPC program which is being supervised by a Global Program Coordinator. The man in charge is Dr. Lukas Brader, 42, a Dutch entomologist with a background of ten years' field experience in Chad and the Ivory Coast.

In his 20 months as IPC's Global Coordinator, Brader has travelled extensively on the five continents, visiting more than 30 countries to interest their authorities in the IPC concept, and seeking financial help from cooperative governments and international funding organizations.

The first basic concept of IPC, Brader says, is to establish the right balance between economy, effectiveness, and environment so as to avoid superfluous applications of insecticides. "A right balance will spare many nations a great deal of money," he says.

"Our long term projects for IPC in cotton, sorghum/millet and rice growing will certainly take at least ten years. For the first three years, a rough estimate of the costs is \$18 million for the cotton projects and \$20 million for the sorghum/millet project in the Sahel. As for the rice projects in Asia, financial plans are still in the preliminary stage but the required minimum funding will amount to about \$5 million."

"Against this expenditure I expect that the amount of pesticides that normally was used will be cut in half. This

result," Dr. Brader says, "has been clearly shown by past experience. Applied to two of the countries involved in the cotton program, Sudan and Turkey, this could lead to a combined decrease of expenditure for pesticides of at least \$20 million per year."

The FAO/UNEP project for cotton protection has just been initiated in the Middle East with headquarters at Aleppo, Syria, and current activities include appointment of experts, recruiting of consultants and organization of intercountry meetings. Project proposals have been developed for Iran, Iraq, Pakistan, Syria and Turkey. Similar intercountry projects are being developed for Africa and Latin America, the interested countries being Egypt and Sudan, plus Bolivia, Brazil, Colombia, El Salvador, Guatemala, Nicaragua, Mexico and Peru.

For the first three-year period, about \$82 million will be needed for each project. In the Middle East, UNEP is contributing \$150,000 in 1977-78 as seed money. Other funding sources will have to provide \$1,700,000 up to 1979.

Headquarters for the coordination of the intercountry activities in Africa are located at Wad Medani, Sudan. Sudanese and Egyptian national projects will include demonstration of the IPC approach for field workers, growers, advisors, administrators, decision-makers, bankers, chemical sales people. They will rely as much as possible on biological control through maximal use of parasites and predators, host plant resistance, and cultural practices.

For sorghum/millet an intercountry project is being developed in the sub-Sahara (Sahelian) area. In the first five years, up to 1983, the project will benefit Cape Verde, Chad, Gambia, Mali, Mauritania, Niger, Senegal, and Upper Volta.

"For the present, estimates of damage due to pests—insects, plant diseases, and weeds—range from one-quarter to three-fifths of the crops," Dr. Brader says. "A 50 per cent reduction in these damages would have negated the need for external grain donations and imports which in recent years totaled several thousand tons of food grains."

Meanwhile, to carry out research on major pests in the first phase of the project, five teams of scientists will be distributed over the whole Sahelian zone and located in Chad, Mali, Niger, Senegal, and Upper Volta, each to work on a major group of pest problems of the sorghum/millet ecosystem.

For the rice project, it is planned to develop activities in Southeastern Asia. Contacts have already been established—Dr. Brader told *World Environment Report*—and project proposals will concern basically the same approach as the sorghum/millet project.

VITTORIO PESCIALLO

Opposition Arises Over Greece's Plans for First Nuclear Station

ATHENS—The Greek government is encountering political and environmental opposition to its plan to construct the country's first nuclear power station.

The decision to go nuclear was taken by the government late last year, with the expectation that the station would be operational by 1986. But when it recently announced the possible installation site, residents in the area reacted strongly.

Backed by the government's political opposition, the people of Karystos, a town on the Aegean island of Euboea 75 miles east of Athens, recently held a series of demonstrations. They warned the government that they would never let their region "face a nuclear danger."

Opposition deputies also brought up the question in parliament, saying that the government should carefully examine the whole energy issue before taking "hasty decisions."

"The country possesses other energy sources which can successfully cover Greece's needs for many decades," the opposition argued. This was a reference to the country's huge lignite (brown coal) deposits which are estimated at four billion tons and which in 1976 accounted for 44.6 per cent of the country's electricity needs. The remaining 31.4 per cent was produced by hydroelectric power, and 24 per cent by oil.

The government intends to progressively increase the use of lignite for energy and reduce that of oil, all of which is now imported. Plans call for lignite to cover 54 per cent of the country's electricity needs by 1983.

KYRIACOS CONDOULIS

Japan's 'Right to Sunshine' Law Retards High-Rise Construction

TOKYO—Only a year ago, Japanese construction companies were complaining that the nation's courts were interpreting the "right to sunshine" provisions of the Construction Standards Law in such a liberal way that many of the firms were facing the threat of financial collapse.

Thousands of claims were being settled each year in favor of heavy compensation payments to residents protesting that new construction was robbing their homes of valuable sunshine. Court decisions usually allowed organized residents claiming the absolute right to sunshine to resort to obstructive actions to prevent construction. Decisions almost always favored the residents even if the company had offered major concessions, such as promising to lower the proposed building by several stories or to pay damages for reduction in sunlight.

As a result, some of the construction companies had no recourse but to abandon their projects and assume big

financial losses. Alterations of building plans sometimes cost the construction firms as much as \$1 million or more. Construction company executives protested that the law was not sufficiently clear and that, in any event, the courts were allowing organized residents to engage in illegal demonstrations and sometimes outright sabotage.

Even semi-governmental organizations have been ordered by the courts to pay "sunshine rights" compensation to residents living alongside buildings or expressways. Faced with organized homeowners in Tokyo, a number of foreign embassies in recent years have had to considerably modify their construction plans to satisfy demands for "sunshine rights" by local residents—at a cost of millions of dollars.

However, late last year the Japanese Diet revised the Construction Standards Law. And although the revision does not actually guarantee the "right to sunshine" as a basic human right—as demanded by a number of environmental groups in Japan—it does provide certain public guidelines which will help resolve future disputes.

The revised law gives local governments a free hand to control their own prefectural and municipal ordinances and to match them to local conditions.

Should a regional government or municipality decide to adopt the strictest standards provided under the revised law, the length of time a new high-rise building will be allowed to cast a shadow beyond its compounds and over a nearby home or apartment house will be limited to no more than two or possibly three hours each day. Violators would be fined up to approximately \$300 per case under the law, and construction of the building would be suspended under court order.

Although the revised law seemingly protects homeowners who are demanding "the right to sunshine," the Japanese courts are tending to interpret the law in favor of the construction firms. In a recent case brought before the Tokyo District Court, for example, seven residents were ordered to pay \$94,834 to a construction company which claimed they were obstructing its operations.

The court case dated back to May 1970 when the Fujisawa Kensetsu Company began preparing a housing site for construction of a six-story condominium. It was at that time that a group of 32 nearby residents implanted steel pipes in a road leading to the site. The cemented pipes prevented trucks from reaching the construction area.

Despite an offer from the company to lower the proposed building from six to four stories and to pay concession money as payment for loss of sunshine, local residents refused to bargain, insisting that the company abandon its plans entirely. When it realized that the residents were not going to negotiate, the firm filed suit for compensation with the district court.

Since that decision, there has been a rash of new construction starts throughout Japan by companies which had been held up by similar situations. As a consequence, it is expected that there will now be more flexible negotiations and compromises on the part of all concerned with the sunshine issue.

A.E. CULLISON

Peru's Environmentalists Fight Construction of Zinc Refinery

LIMA—No sooner had Mineroperu, Peru's state mining company, signed a \$102 million loan to finance a new zinc refinery here, than local environmental groups claimed that the expected fumes and discharge will create not only a potential air pollution problem but might also contaminate Lima's water supply.

"These are poisonous fumes which have been suspected of causing lung irritation, and in extreme cases, kidney necrosis," said one enraged ecologist.

Economists, too are complaining that the project is an "expensive luxury" because it will not produce many jobs. Meanwhile, Mineroperu has "guaranteed" pollution control by stating it will use an electrolytic process of refining.

The refinery is to be located in the Cajamarquilla area, some 23 miles from Lima's port of Callao. Total cost is estimated at \$200 million. Joint financing is to come from West Germany and Belgium.

The plant will process 200,000 metric tons a year of zinc concentrate and produce 101,500 metric tons a year of refined zinc and 176,000 metric tons a year of sulphuric acid besides such other sub-products as refined cadmium and copper cement.

LORETTA McLAUGHLAN

Danes Use Algal Ponds to Remove Nutrients From Polluted Water

COPENHAGEN—Over the past year the Water Quality Institute of Denmark has been investigating the use of algal ponds for removal of nutrients from polluting river water. It has now issued a report on its findings.

The investigators sought to determine whether the use of algal ponds in combination with separation of algae from the effluent (by chemical coagulation) would be a feasible technique for nutrient removal under Danish climatic conditions. They then compared results with the nutrient reduction when using direct chemical precipitation.

Experiments were conducted at Halsted Aa, a small stream flowing into a sanctuary, the Nakskov Inner Fjord, which is an estuary approximately 1 sq. km. in area with an average depth of 0.8 m.

In Nakskov Inner Fjord the eutrophication problems are severe. Between 1960 and 1970 thousands of birds died from botulism there.

Pilot ponds built last summer seemed to indicate the necessity for predators of zooplankton to achieve a stable system. It was concluded that flotation was probably the most promising technique for treating algal pond effluent.

Construction costs of an algal pond plant with ad-

herent chemical precipitation and flotation properties comes to approximately \$1 million and that of a plant for direct precipitation of stream water with equalizing basin and a similar separation plant about \$840,000. Annual operational and chemical costs of the two plants were estimated at \$88,335 and \$77,500 respectively.

In an interview with *WER*, M. Bahn, of Denmark's Environmental Agency, said there was still some hesitancy about the program because of a lack of information about the natural processes in the Inner Fjord, particularly about danger to bird life. "In Israel," he said, "where we sent some of our investigators, the algal ponds are functioning very successfully. In Denmark, however, the ponds can only be used successfully in the summer."

CONSTANCE CORK

Malaysia's Environmental Director Finds Nation's Ecology Improved

HONG KONG—The quality of life in Malaysia has been much improved in recent years thanks to the formation in 1974 of the Division of Environment (DOE), said Encik Hamzah Majid, Director-General of DOE, in a speech made available here, but "we are also acutely conscious that our income and employment depends on the renewable resource sectors, such as forestry, agriculture and fisheries."

"We realize, however, that these sectors are capable of yielding a high rate of productivity only within the framework of a healthy environment," the director-general added. "If the environment deteriorates, the future productivity of these sectors will certainly decline."

As administrator of Malaysia's Environmental Quality Act, the DOE's director-general is responsible for coordinating all activities relating to the discharge of wastes, the prevention of pollution, and the protection of the environment.

In its recent surveys of Malaysia's air pollution, the DOE has found that the major air pollution sources are transportation, power stations, industries, petroleum refineries, and wood burning.

The principal causes of water pollution, the DOE found, were organic wastes from sewage, oil palm, and rubber effluents. Draft regulations for the control of oil palm effluents have already been completed, as have regulations relating to the discharge of block rubber effluents. After only the first year of regulation enforcement, it is expected that the effluent load discharged into the water by palm oil and rubber will be reduced by about 70 per cent.

Discharge standards for toxic substances are also being formulated along the lines recommended by the World Health Organization. Regulations for these are expected to be enforced before the end of the year.

SPECIAL DISPATCH TO *WER*

In Brief...

Silos Solve Argentina's Surplus of Wood and Grain

Argentina's National Forestry Institute is developing a project designed to solve simultaneously two problems of overabundance: "that of forests and that of cereals," said Benigno Santos, director of the Institute. The solution, he thinks, is the construction of low-cost, prefabricated, portable wood silos—thus providing a new market for wood and storage for grain.

Currently, the National Grain Board, the state regulatory agency, is testing several wood silos with storage capacities ranging from 10 to 70 metric tons. The Institute says that huge silos with storage capacities of up to 10,000 tons may also be feasible.

According to Institute research, wood silos have certain advantages over metal ones, including the ability to absorb humidity, and offering greater protection against solar heat.

Israel's Governing Party Seeks Environmental Action

The subjects of environmental quality and protection were major platform issues in the multi-party election campaign held recently in Israel. In particular, the Likud party, which won the elections, and which has since formed the government, made the following references to ecological matters in its platform:

- The policy of the appropriate local governmental agencies for the 1980s should concentrate on improving the environment, with special reference to planning of construction, public transport, sanitation, waste disposal, and air and water pollution.
- The Likud party recommends the transfer of certain environmental municipal services to private industry, and also urges the concentration

of all authorities dealing with environmental problems, now dispersed in the various ministries, into one central authority, namely the Ministry of the Interior.

- The Likud party seeks an effective preventive policy implementation, and sees a necessity for full cooperation at all levels between governmental and public agencies, scientific disciplines, and professionals. It considers allocation of more funds to environmental problems to be in the national interest.

Romania Begins Vast New Water Protection Program

Through its national press agency (Agerpresse), Romania recently announced that its water protection projects will henceforth be carried out under a unified, long-term plan involving all sectors of government.

Agerpresse said the program will include a vast structure of operations and measures for the entire hydrographic networks, adjustment of waterways, and reservoirs. All these operations, in turn, will be coordinated with the expansion of irrigation, fighting soil erosion and water pollution, use of power potential, development of navigation on inland rivers, and the growth of piscicultural production.

The volume of the envisaged operations is huge. Expenditures will amount to \$85 billion over a 30-year period, the news agency said. It is one of the most expensive and complex programs in Romanian history.

Planned for the 1976-1980 period alone are: establishment of reservoirs with a total volume of 3.2 thousand million cubic meters; construction of 219 miles of canals; river-bed adjustments and damming operations affecting some 855 miles; building hydro-electric power stations with a 1,800 megawatt power output; irrigation operations affecting some 1.1 million hectares; and establishing more than 800 purification stations.

Solar Water Heat Installed in Singapore Hospital

The St. Mark's Hospital in Singapore is the first hospital in this nation to install a solar water heating system. The system, installed recently by Solectra Pte. Ltd., replaces the hospital's former electrical and gas water heaters.

Dr. Chiam Joon Tong, Solectra's Managing Director, said that given a sunny day, the system heats up water to 58 degrees C. in four hours. As further mixing with cold water is necessary for use, the actual volume of hot water available is twice the volume of hot water produced. The system is designed to supply 1,508 gallons of hot water daily on the basis of only four hours of sunshine a day. On rainy days, hot water is produced by an electrical heating element installed in the tank.

Solectra is promoting the use of solar heating systems in line with the government's energy conservation policy. Singapore's weather conditions, with an average of 5.6 hours of sunshine daily, are ideal for harvesting solar heating.

Holland Supplies Indonesia With Water Purifying Plant

The first purification plant designed by Pielkenrood-Vinitex BV of Assendelft, Holland, has recently been turned over to the Indonesian government to help ease the chronic drinking water shortage in Jakarta. The plant is an independent and modular one that will make water from River Krukut fit for human consumption.

At present, less than 50 per cent of the six to seven million population in the capital is served by a water supply system. Of this, half have to rely on water vendors. Three other small water purification plants will be set up in the capital when experiments with the first plant have been successfully completed.

Two Rare Tree Species Discovered in China

Two rare and valuable broadleaf tree species, the Kwangsi Lauan and the Wang Tien, have been discovered in the Kwangsi autonomous region and Yunnan province in China. The Kwangsi Lauan grows in Kwangsi's Pama, Lungchou, Tuan, and Tunglan counties at altitudes of 1,180 feet to 1,476 feet. The tree is locally known as the skyscraper for its tall trunk and fast growth.

Measuring 98 inches in girth and 197 feet in height, a Lauan tree can produce about 1,416 cubic feet of lumber for making fine furniture, musical instruments, and sports equipment. It is also used in the construction of bridges, ships, and vehicles.

The Wang Tien grows in Yunnan's Mengla county at altitudes of 2,493 feet to 3,608 feet, and has a lumber potential of between 6,450 and 9,316 cubic feet per acre. It is suitable for making plywood, railroad ties, and furniture, and for certain construction purposes.

Ecological Danger Declared in Bay of Cartagena

The Colombian government has declared an "ecological emergency" in the Bay of Cartagena, forbidden all fishing in the area, and announced its intention to close a large soda plant, one of the principal sources of mercury contamination of the bay (*WER*, May 9, p.8).

The government's decision to close the soda plant was made after an exhaustive analysis of bay waters showed that 65 per cent of the fish contained mercury and in some cases reached 180 times the tolerance limit set by the World Health Organization.

Although the soda plant is less than five years old, no anti-pollution controls had been installed to prevent the outflow of mercury

residuals. The complex's electrolytic division already has been closed, and the national government intends to shut down the entire plant until safety measures can be established.

The Colombian Navy, which is headquartered in Cartagena, has been appointed to enforce the no-fishing law. Meanwhile, the Colombian wildlife service INDERENA has started a relocation program for bay fishermen in another, nearby, unpolluted bay, Barbacoas.

Conservationists Protest Whaling Quotas in Brazil

Despite protests of Brazilian and international conservationist groups, this country's whaling season began on schedule on June 24. Also despite these protests, the whale hunting quota was increased from 700 last year to 1,000 this year.

Only one whale hunting ship operates in Brazil, the "Sheiro Maru" which is owned by the Japanese Brazilian company Companhia de Pesca do Norte do Brazil. On its daily trips, the ship brings back as many as six whales at a time to the north-eastern city of Joao Pessoa. Here the whales are processed and cut up and the produce sold as fresh meat (similar to beef), dried meat, and oil. Until last year tickets were sold so tourists could watch the butchering process. It is not known if this practice will be allowed to continue.

WWF Study Finds Tiger In Java Nearly Extinct

The World Wildlife Fund (WWF) based at Morges, Switzerland has issued a warning that the Javan tiger in Indonesia is in imminent danger of extinction. Its report said that only four or five tigers still survive.

These tigers are in the nature reserve of Meru Betiri on the moun-

tainous southern side of the eastern tip of Java. But according to Dr. John Seidensticker, the investigator, they are in an area relatively poor in deer and pig, which are their main prey, and they have to compete with the leopard and wild dog.

However, an official of the Central Java organization of animal lovers has denied that there are only five Java tigers left in Indonesia. But he did admit that the species is on the brink of extinction.

The WWF report also said that the nearby Bali tiger is now considered extinct and that recent surveys in Iran and eastern Turkey found no positive signs of the Caspian tiger—although some animals might survive in the mountains of northern Iraq.

ICIE Meeting in Stockholm Chooses New Chairman

At its Fourth General Meeting in Stockholm last month, the International Centre for Industry and the Environment (ICIE) chose Dr. J. William Haun as Chairman, succeeding Mr. John F. Langley who led the Centre since its founding in 1973.

Dr. Haun is Vice-President of General Mills, Inc., Minneapolis, and chairman of the Environmental Quality Committee of the National Association of Manufacturers of the United States. He commented that the meeting, one of the most successful yet held, pointed up the value of industry-government cooperation in Sweden in achieving substantial progress toward common environmental goals.

The Federation of Swedish Industries, one of the founding members of the Centre, cooperated with the Centre in presenting an environmental workshop at the Stockholm meeting.

The meeting examined the Swedish experience of government-industry cooperation in environmental improvement, and heard presentations by representatives of Swedish industry and of the Swedish Environ-

ment Protection Board.

Mr. Langley, Director of Imperial Group, London, said he was particularly pleased that the ICIE was meeting on this occasion in Stockholm where it had its origin at the time of the U.N. Conference on the Human Environment. "It has always surprised me," he went on, "that the key role which industry is playing in environmental matters is not more widely recognized. Without the technology, the resources and the enterprise of industry, all the endeavors of those devoted to the solution of our environmental problems will be sterile and impotent."

ICIE's membership is composed of representatives of diversified industrial organizations from five countries, of international organizations covering the oil, aluminum, iron and steel, and lead and zinc industries, as well as members from the regional organizations of the chemical, oil, insulation materials, and pulp and paper industries.

Thailand Plans Massive Reforestation Program

The National Economic and Social Development Board (NESDB) of Thailand has drafted an integrated plan to plant trees in the northern part of the country. Rung Ruang Isarangkura, secretary of the board's sub-committee on northern agricultural project formulation, said recently that about seven million acres of forest area in the country is destroyed every year, mostly in the north. According to him, forest destruction was caused by the increasing demand for farming areas and wrong methods of cultivation by hilltribe and lowland farmers.

The integrated plan is expected to act as a guideline to develop the northern part of the country, mainly reforestation of watershed areas in eight provinces—Chiang Rai, Chiang Mai, Nan, Phrae, Lamphun, Lampang, Mae Hong Son, and Tak.

Malaysia To Fluoridate Entire Drinking Supply

The Penang Water Authority of Malaysia has drawn up a program for the fluoridation of drinking water throughout the country. The chemical to be used is sodium silicofluoride. Water from the Balik Pulau filtration plant and the Bukit Panchor filtration plant in Province Wellesley is already undergoing the new treatment.

Austrian Lake Designated As a 'Biosphere Reserve'

Central Europe's only steppe lake, Lake Neusiedl, which Austria shares on its eastern frontier with Hungary in its province of Burgenland, has been declared a "biosphere reserve" by UNESCO, which has awarded the area a special citation for its consistent protection of the lake's flora and fauna. The lake is the summer home of many migratory birds, including the famous storks, from North Africa.

By this award Lake Neusiedl has become Austria's first natural reserve under international observation, and it consequently obliges Austria to continue to safeguard the lake from the threat of oil waste discharges and from efforts to develop the Austrian banks as a holiday resort.

Colombia to Create 21 New National Parks of 5.5M Acres

The Colombian government has decreed the creation of 21 new national parks covering 5.5 million acres in central, western, and northern Colombia. They include seven mountain ranges, a chain of Caribbean islands (Rosario) and the forests and uplands of southwestern Colombia.

Philippines Will Import Pollution Control Equipment

Bienvenido Garcia, officer-in-charge of the National Pollution Control Commission of the Philippines, has suggested tieups between manufacturers of imported pollution control equipment and their local counterparts to solve the country's pollution problems. This arrangement, he said recently, "will greatly reduce the cost of the needed pollution control equipment" and thus contribute to the national objective of minimizing pollution.

The commission has already surveyed 1,335 industrial firms and discovered that 55 per cent of these contributed to air pollution while 45 per cent added to water pollution. Of the total firms surveyed, 50 per cent of those contributing to air pollution have already installed pollution control devices. Sixty per cent of those with water pollution problems have already set up the necessary treatment facilities.

British 'Save It' Campaign Bolstered by New Funding

The British Government has allocated \$3.38 million to continue and develop its "Save It" campaign over the next three years, and "recognizes the growing importance of a long-term commitment to energy conservation," said Dr. John Cunningham, Parliamentary Under Secretary of State for Energy.

The campaign of advertising and publicity on energy-saving methods for both domestic and industrial users, was launched in January, 1975 and has cost \$10.7 million to date.

Unfortunately, the Department of Energy cannot point to specific results from the campaign because the Report of the Working Group on Energy Elasticities, published last March, details the "formidable difficulties" in accurately measuring savings.



World Environment Report

18 JUL 1977

VOL. 3, NO. 14

Copyright ©1977. Center for International Environment Information.

JULY 4, 1977

UNEP Seminar in Paris Tackles Environmental Petroleum Problems

PARIS—As part of its continuing series of seminars on industry and the environment, the UN Environment Programme (UNEP), aided by the International Petroleum Industry Environmental Conservation Association (IPIECA), held its fifth such session here on March 29-April 1. The subject this time was "Environmental Conservation in the Petroleum Industry." Then last month, the documented Findings and Conclusions, which had been circulated to and fully endorsed by the 216 expert participants from 36 oil producing and consuming nations, was finally released.

There was general recognition by the participants that one of the most serious environmental impacts is coastal pollution arising from accidental oil spills. And there also was agreement that where containment and pickup were not feasible, dispersion by means of detergents or other dispersant was often necessary, even though some of these agents have known toxicity. It was reported, however, that newer dispersants now exist that are biodegradable and thus without residual effects in the food chain.

Other discussants pointed out that some 85 per cent of all tanker accidents result from human failure. Consequently, the seminar urged States to attend a forthcoming conference later this year on the training of tanker crews.

In his address to the seminar, Mr. Leo J. Blatz, newly elected chairman of IPIECA, and Environmental Conservation Coordinator of Exxon, drew attention to the dangers of a facile approach to technological exchange. "One of our joint roles," he said, "is to develop an understanding of pollution abatement technology...At times I am appalled by the views of some of my fellow developed country citizens who seem to feel that technology is like a cookbook. All it takes is the book to become a gourmet cook. There is a need to develop an appreciation of technology as a process...selecting a suitable technology for ambient conditions...This is where UNEP, by working through IPIECA and like organizations, can assist the environmental development objectives of the less developed nations."

In his remarks to the seminar, Dr. Mostafa K. Tolba, UNEP's Executive Director, emphasized the impossibility of regarding the petroleum industry, vis-a-vis the environment, "in isolation," and said he regarded the

concentrations of hydrocarbons in the seas and sulphur oxides in the atmosphere as two global concerns for UNEP and the entire petroleum industry.

The technical part of the seminar explored six main subjects: exploration and production; inland and marine transportation; refining; eco-toxicological considerations; petroleum industry guidelines for environmental protection; and environmental trends.

In addition, the final report recommended, among other subjects for future study, the monitoring of off-shore installations; certification of drillers and tool pushers; positioning of fail-safe valves; and guidelines on refinery siting.

Several contentious issues arose but were not reconciled. These included lead in gasoline, desulphurization, and the general application of "the polluter pays" principle.

All in all, however, the seminar was accounted highly successful—singularly free of acrimony and demonstrating a strong preference of developing countries for technical information and guidance, with emphasis on preserving their local environments. The exception to this view involved the regulation of operational and accidental spillage from tankers which, by its ocean-freighting nature, requires international regulation.

SPECIAL DISPATCH TO *WER*

Public Inquiry on Breeder Reactor Cheers British Environmentalists

LONDON—To the delight of environmentalists, the British Government has accepted the main recommendations of the Report of the Royal Commission on Environmental Pollution (*WER*, July 19, p. 1, Sept. 13, p. 3, Oct. 11, p. 6, 1976) for caution and for full public inquiry before expanding nuclear power, especially through fast breeder reactors.

Explaining the Government's response to the report on

In This Issue

International Environment Forum	2
UNEP's Rural Energy Program	3
Politics and Conservation	4
Weather Changes in Mexico	5
Largest Open Pit Lignite Mine	5
In Brief	6

May 27, Peter Shore, Secretary of State for the Environment, said, "I do not think anyone can doubt that we are dealing with problems of quite exceptional character, and are making decisions that inevitably go far into the future in their implications."

In response to the Commission's particular concern with radioactive waste, the Government is to transfer responsibility for nuclear waste management from the Department of the Environment. The Commission had recommended that management of disposal from all nuclear sites should be under a nuclear waste disposal corporation. The Government will not be implementing this in the near future but will "soon" carry out another recommendation for the formation of a nuclear waste management advisory committee.

A public inquiry into fast breeder reactors may likely frustrate the hopes of the United Kingdom Atomic Energy Authority (UKAEA), which has been pressing the Government for an early decision on its plans to build Britain's first such commercial reactor to succeed the smaller prototype presently functioning at Dounreay in Scotland.

Any such decision is now unlikely before 1979 because the present Government response, contained in a policy White Paper, is to be followed by a discussive Green Paper on energy policy later in the year.

Government commitment to a public hearing, as opposed to a planning inquiry system, means that all the political and environmental implications of any nuclear program can be brought under scrutiny. This is something environmentalists and other opponents of nuclear power have long struggled to achieve, and it received its first demonstration at the recent Windscale public inquiry (*WER*, June 6, p. 1). BARBARA MASSAM

International Environment Forum Addressed by Dr. Mostafa Tolba

NEW YORK—International Environment Forum (IEF) held its second meeting here on June 9 under the aegis of the Center for International Environment Information. The all-day session was attended by representatives from major industries who heard Dr. Mostafa K. Tolba, Executive Director, UN Environment Programme (UNEP) speak on "International Environmental Trends."

Presiding was Miles O. Colwell, M.D., Vice President for Health-Environment of the Aluminum Company of America. Discussants were Leo J. Blatz, Environmental Conservation Coordinator of Exxon, and Gordon Harrison, author, and formerly officer-in-charge, Resources and Environment, the Ford Foundation.

At the meeting's conclusion it was announced by the Center's director, Dr. Whitman Bassow, that the third IEF session would be held on September 14 with Patsy T. Mink, Assistant Secretary of State for Oceans and International Environment and Scientific Affairs, as speaker. A.W.

ECE Debates Major Overhaul Of Its Environmental Program

GENEVA—The United Nations Economic Commission for Europe (ECE)—which held its annual plenary session here in late spring—debated a major overhaul of its program that includes international activities to protect the environment.

The programs of the Commission itself and of its 15 principal subsidiary bodies have been modified over the past year in response to the provisions of the Helsinki Security Conference accords.

The Commission's work is directed towards four main objectives: the promotion of international trade and in particular East-West trade; scientific and technological cooperation; the protection of the environment; and projections and programming in the interests of long-term economic planning.

A report on the work already done or underway in the fields of the protection of the environment and the development of transport and energy were debated at this session.

Progress reports have been submitted to the Commission on four topics linked to the Helsinki Accords. These topics are: the promotion of the publication and dissemination of economic and commercial information; the promotion of international agreements and other arrangements dealing with the acceptance of certificates of conformity with standards and technical regulations; the development of an extensive program for the monitoring and evaluation of the long-range transport of air pollutants; and the harmonization of administrative and technical provisions concerning safety in road, rail, and river transport. WILLIAM G. MAHONEY

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$125 per year. \$15 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Ann C. Werner
Correspondents covering more than 60 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Program (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

SPECIAL REPORT: Dr. I. H. Usmani Talks About UNEP's Rural Energy Program Being Tested in Sri Lanka

One of the UN Environment Programme's (UNEP) major experimental projects for producing cheap energy in rural areas of developing countries is now undergoing trials at Pattiyapola village in southern Sri Lanka. Architect of the program is Dr. Ishrat H. Usmani, who for the past three years has been UNEP's Senior Energy Advisor.

Before assuming his present post, Dr. Usmani, among other positions, had served as Chairman of Pakistan's Atomic Energy Commission, and as Chairman of the Board of Governors of the International Atomic Energy Agency in Vienna. He obtained his Ph.D. in atomic physics from London University in 1939.

To find out the details of this rural energy pilot demonstration, World Environment Report recently interviewed Dr. Usmani in his New York office.

WER—What is the rationale for this project?

Usmani—What we are trying to demonstrate at Sri Lanka in Asia, at Senegal in Africa, at Mexico in Latin America, is the concept that the locally available renewable sources of energy like the solar, the wind, the biogas, and the hydro could be all integrated to meet the basic energy needs of a small rural community of about 100 to 200 families. We also think that the socio-economic development of these scattered rural communities will never be met by the two conventional methods of rural electrification—the extension of the electrical grid or the power produced by diesel engines—for the obvious reasons that they are too capital intensive, and that oil is very expensive.

Studies show that the basic energy needs of these rural communities are the following: energy required for cooking food and pumping water; lighting of huts, schools, streets, and community centers; power for small village industries such as the carpentry workshop and village blacksmith. We have surveyed these needs and find that, other than cooking, all can be met from a village rural energy center, generating about 130 kilowatt hours of electric power per day, and that this can be produced by harnessing what we call SWB—solar energy, wind energy, and biogas made from fermenting animal and agricultural waste.

WER—How available and how costly is SWB in these rural areas?

Usmani—By far and large in every village of the regions

mentioned you have some agriculture produce, some animals, and some wind, and invariably lots of sunshine. The cost of the proven devices—which exist now, not in the future—is of the order of about 150 to 200 thousand dollars per village energy center, with each capable of generating about 30 to 50 kw rating capacity. Now this is about five times higher than the capital cost of a diesel engine of equivalent capacity. But the diesel is not an engine unless it is fed continuously with oil, and the price of diesel fuel in these villages has now reached about 80 cents per gallon or more.

Hence most of our SWB devices versus the diesel system not only breaks even, but comes off better. And the savings that you make on oil more than compensate for the extra difference in the capital cost of the two—depending upon the time and the rate of interest at which you finance. In the comparison of the capital cost of the two systems—the diesel and the SWB—one should not forget that where the diesel is a mass-produced item that has been with us for the last 70 years, the SWB devices, namely the wind generator and the solar collectors, are not yet mass-produced.

WER—In Sri Lanka, where you find the conditions ideal for SWB, whose equipment are you using?

Usmani—We are trying the latest design of windmills from Australia, Canada, West Germany, the United States, and Switzerland. The solar devices come principally from the U.S.—the only country in the world which has a budget for solar energy research and development of about \$300 million a year. So they are very advanced compared to other countries. As far as biogas is concerned, we are getting the plants from India. So it is a truly international mix by which we take the finest and latest technology.

WER—Can you be more specific about the technology of solar energy?

Usmani—Yes, indeed. One remarkable development is that we will soon have panels of photovoltaic cells—similar to the ones that we shot into space on the satellites. These were photovoltaic cells which convert solar light directly into electricity, without the intervention of any engine or moving part. At the moment these sophisticated cells are very expensive, but if you look back to the price structure of 10 years ago—and envision the probable price structure ten years hence—the figures are as follows: In 1967, the price of solar cells, in terms of dollars per watt, was \$70 per watt; in 1977, the price is \$15 per watt, and in 1987, according to the estimates, it will be about half a dollar a watt. Now if that can really happen in the next decade, then I am absolutely certain that many of the developing countries would

switch over from all other devices like windmills and biogas collectors to solar cells.

Thus we are definitely of the opinion that our experiments at these demonstration centers will open a new chapter for rural electrification of areas which badly need new forms of energy. This will also lead, in my opinion, to the decentralized concept of power generation, even in advanced countries. Even your little communities, your shopping plazas, need not necessarily be connected to Con Edison. They will become self-sufficient in their own right.

WER—Are you saying then that bigger is not necessarily better?

Usmani—Well, the bigger is often better, but we believe the smaller, the more beautiful. And I have no doubt that if we can demonstrate the possibility of integrating and harvesting all the available renewable resources locally available, it would have an impact on the developed countries also. So, in other words, these SWB projects of UNEP truly have a global dimension. We hope to be able to show the results within a year or so.

WER—Have you encountered any opposition on the part of the inhabitants?

Usmani—On the contrary. I have personally been to a number of villages, and they show tremendous enthusiasm, asking "why don't we start more?" Moreover, I found they were very keen to protect their water supply because they suffer from intolerable intestinal diseases. By giving them an inexpensive pump costing, say, \$5,000, we draw ground water and also filter it. And what we propose to do at these centers is to have an overhead tank of clean water which will supply a number of community taps where the womenfolk can come with their pitchers instead of going to the well.

I find that in the advanced countries the concept of SWB creates a sense of unreality for a simple reason. I recently attended a meeting in Washington where they were discussing the question of harnessing the wind, and somebody said, "We would like to have some support for R&D for harnessing from 10 to 20 kw from wind." And one gentleman replied: "Look, we are not interested in such small chicken feed for the economy of the U.S." I intervened, and said, "this is exactly the chicken I need for small rural communities."

There is a final thing I wish to emphasize, and that is simply that if these developing countries follow the commercial fossil fuel route which you have followed, it has been calculated that their demand will work out to about 30 million barrels of oil per day. Now, as oil resources are finite, and if these people start dipping into the source where you are already dipping, you can imagine the competitive tensions. So it is in the interest of the oil-producing countries and the advanced countries to invite the developing countries to go the SWB route rather than to the fossil fuels.

A.W.

Ecologists Concerned Over Fate Of Aldabra Island in Seychelles

MAHE, Seychelles—The overthrow of the Seychelles Government in early June has aroused new concern among conservationists over the fate of Aldabra Island.

Only days before the Government of President James Mancham had been overthrown, organized conservationist groups had publicly praised the government for its assurances that the unique scientific heritage of Aldabra Island would be preserved. Now scientists question the value of the assurances given by the Mancham government.

The problem began back in 1966 when there was a proposal to convert the island into an Anglo-American air staging center. This was eventually dropped, ostensibly on the grounds of economy, but most believe the project was cancelled following the outraged protests of various environmental groups and concerned scientists.

Meetings had been held in London, attended by representatives of the former Seychelles Government, the World Wildlife Fund, the International Union for Conservation of Nature and Natural Resources, the Royal Society, the Smithsonian Institution, and other interested groups and individuals.

The Seychelles' cooperative attitude at these meetings led Sir Peter Scott, Chairman of the World Wildlife Fund, to write to Mancham to say how encouraging it was that Aldabra was unlikely to be spoiled by uncontrolled tourist development.

"I share with my colleagues a concern that this incredible atoll should somehow avoid the grave alterations to its unique character which would inevitably result from establishing hotels, roads, harbors, or airfields," he declared.

The London meetings also discussed plans to ensure continued conservation of the island after the Royal Society's lease expires on March 31, 1980.

Most participants favored a proposal to establish a Seychelles Island Foundation that would ensure conservation and research on Aldabra, Cousin, and Aride Islands. Limited tourism would be allowed but no facilities such as an airstrip or hotel would be constructed on Aldabra.

It is estimated that there are 150,000 Giant Tortoises on Aldabra, relics of the Age of Reptiles which survived on oceanic islands, only to be wiped out by mariners and settlers—except on Aldabra and the Galapagos Islands in the Pacific. There are also endemic birds such as the flightless white-throated rail, the Aldabra warbler, and the Aldabra drongo.

The WWF spokesman said that "the rugged coral island is of special interest to science as a living laboratory virtually untouched by man."

Conservationists are now waiting to see if the new Seychelles regime will honor the commitments of the former government.

SPECIAL DISPATCH TO WER

Weather in Mexico City Undergoes Drastic Change Due to Pollution

MEXICO CITY—Mexico City's weather has changed drastically in recent years because of increased population, pollutants, and motor vehicles, says the director of the National Weather Service, Dionisio Aguilar. Observing the recent centennial of the service, the director cited the following data:

In the last 30 years, he said, Mexico City's highest recorded temperature, in May of 1953, was 91 degrees. (Surprisingly, the day after he made this observation the mercury hit 90 degrees.) The lowest temperature recorded during the three decades was 14 degrees in January, 1965.

Last year witnessed nearly three times the normal amount of rainfall on the capital, with some 65 inches pouring down compared to the annual average of just 27 inches. The strongest wind registered last year was at 25 m.p.h. For the nation as a whole, rainfall varies from an annual average of 153 inches in the jungle state of Chiapas to eight inches in the twin states of Baja California.

The director said motor vehicles add substantially to the pollutant quotient by blocking off the natural amount of sunlight and by increasing, paradoxically, the city's surface heat. Population growth, he added, has created significant additional heat and pollutants in the capital.

KATHERINE HATCH

W. Germany to Develop World's Largest Open Pit Lignite Mine

COLOGNE—In mid-May, mining and conservation authorities of the German State of North Rhine Westphalia authorized the mining concern Rheinische Braunkohlenwerke (Rheinbraun) of Cologne to start development of an open pit lignite mine near the village of Hambach, midway between Cologne and Aachen. It will be the biggest such project ever undertaken anywhere in the world, and it will also be a major eyesore on what has hitherto been a pastoral landscape.

When fully developed, the enormous pit will cover an area of 30 square miles and will reach a maximum depth of 1,400 feet. The surface being displaced is now farm and forest land in roughly even proportions. The forests contain some of Germany's oldest stands of oak. Some 5,000 persons living in the area on farms or in villages will have to be displaced from properties that have been in the same families for centuries.

The bait for this seemingly wholesale destruction of the environment is a massive deposit of lignite, estimated at around 2.5 billion tons. It occurs in seams between 60 and 220 feet thick, at depths ranging from 620 to 1,400 feet.

Lignite now provides the primary energy for about one-third of Germany's electric power production, a role it will continue to play for about the next twenty years. After that, since the mine's life will run for over 50 years, the lignite will be used as raw material to manufacture synthetic natural gas and chemicals.

Rheinbraun, having had 30 years' experience with similar, though smaller, projects, will utilize its advanced techniques for controlling erosion and restoring disturbed land and its successful practices in caring for people forced to move from their homes. In the course of bulldozing away some 50 villages and thousands of acres of farmland, the company has resettled over 20,000 persons. More than 85 per cent of them say they are better off than they were before, and that even the restored farmlands are invariably more productive.

The work sequence at Hambach will first entail scraping off the topsoil from the initial area to be excavated and then hauling it off for stockpiling. The first pit to be dug, providing access to lignite at the 620-foot level, will take at least five years. It will produce about a billion cubic meters of clay, sand, and gravel overburden which will be formed into an artificial mountain over 500 feet high and several miles in length. It will be promptly planted with trees to form a permanent forest.

As work from that pit progresses to successively deeper deposits, some of the overburden will be hauled to the rear as backfill, and some will be used to fill older pits, as much as 12 or 15 miles distant, which by that time will be worked out and ripe for recultivation.

The refilling and recultivation of the Hambach pit will be restricted to the terracing and grading of its upper banks, filling only the shallower areas. The main pit, instead of being treated as an intolerable curse, will be preserved as a blessing. To make the best of the blessing, a tunnel will be bored, using the same type of machine as is used in driving galleries in underground mines, a distance of about 25 miles, to connect the pit with the Rhine River. The tunnel will be cut through solid rock lying under the lignite deposits and will serve as a siphon to fill the pit, which thereafter will serve as a water reservoir.

When full, the reservoir will hold over two hundred million acre-feet of water. This compares with 137 million acre-feet in Egypt's Aswan reservoir. It is roughly half as much again as the volume of all existing German reservoirs. Although the Rhine is not noted for its purity, the volume of water in the reservoir will be great enough that it will soon begin to purify itself through biological regeneration.

Boring the tunnel will be a four-to-five-year job, but its cost will be only a fraction of the cost of building dams across rivers to hold an equal volume of water, assuming such a number of dam sites to exist, which they do not. With the supply of fresh water in Germany for agricultural, industrial, and domestic use already becoming a critical problem, the Hambach reservoir will be an asset of inestimable value to the densely settled area between the Rhine and the Dutch border.

J.M. BRADLEY

In Brief . . .

Danes Design Experimental Homes to Lower Fuel Costs

Because their climate is often wet, windy, and cold, Danes are forced to use half their imported fuel exclusively for home heating. Recently, in an effort to mitigate this expensive practice, the Skive community in northern Jutland and the Danish Building Center commissioned nine architects to build prototype "low energy" houses in Skive. Then at the end of 1978 a comparative study will be made of a year's use of the low energy methods incorporated in the different structures.

One new design is an almost circular house which is said to be 60 per cent cheaper to heat than a rectangular house of the same square footage.

Solar heating, by itself or used together with old fashioned wood burners, underground heating, or wind power, are among other methods proposed. One group of architects claims that its entry, relying mainly on solar heating, can provide heating and hot water at about \$100 a year—or about one-quarter of the present oil heating cost.

Increased use of insulation, of course, plays a major role in all the new designs.

New Peruvian Method Recovers Copper From Water

As an anti-pollution measure, ground was broken recently for the construction of a \$15.3 million water treatment plant at Cerro de Pasco copper mine, in the central Andes of Peru.

For the past ten years, copper has been recovered from mine waters by a process of cementation. But these waters remained heavily contaminated with iron and acid, and were routinely discharged into the San

Juan River which flows into the more important Mantaro River.

Last year, during negotiations with the World Bank for a loan to cover the Cerro de Pasco water treatment plant, the World Bank pointed out that the mining company responsible for Cerro de Pasco is violating Peruvian pollution laws. The bank recommended that ecological standards be improved as soon as possible and that the project be given top priority.

The Mantaro clean-up project will eliminate the cementation plant and substitute a new solvent extraction and electrowinning unit. It is expected to be completed by 1980. By then, the waste material should be purified to a neutral pH6 or pH7. Acidity will be reduced by 99.9 per cent and iron content will be down to 0.1 grams per liter.

80 Per Cent of Hong Kong's Cars Fail Emission Tests

A month-long campaign to prevent air pollution in Hong Kong, launched by the Anti-Pollution Subcommittee of the Advisory Committee on Environmental Pollution, has turned up some disturbing findings. As part of the campaign, three smoke meters were set up at different locations within the colony for spot checks on vehicle exhausts. Drivers whose vehicles showed above the permitted level of smoke were reported and summoned to court. The campaign was concentrated mainly on diesel vehicles, public light buses, taxis, and private cars.

One finding of the campaign was that 80 per cent of the vehicles stopped by the police for emission tests failed to meet the minimum requirements and the owners were charged. In addition, the exhaust emissions from vehicles were so bad that traffic police carrying out tests with roadside smoke meters had to be issued face masks to safeguard their health.

Philippines Seeks Sources Of Radioactive Minerals

Philippine President Ferdinand Marcos has declared all areas containing radioactive minerals open to mining. In addition, he has ordered the grant of a \$1,360 bonus and other benefits for those who discover, locate, register, explore, and exploit radioactive minerals in the country. This is mainly intended for private individuals.

Radioactive minerals are those which contain uranium, thorium, and other elements occurring singly or in association with other minerals from which radioactive power and substances may be generated. The new regulations provide for mining operators in areas having radioactive minerals to process, manufacture or refine these materials subject to the requirement that 1) the products derived from the manufactured radioactive minerals shall be sold or disposed of only to the government at prevailing international prices, and 2) the lessee and operator shall be repaid all production cost plus a certain percentage of profit as recommended by the Secretary of Natural Resources and approved by the President.

New Environmental Affairs Forum Formed in S. Korea

The Korean Environmental Affairs Forum (KEAF) was inaugurated in South Korea recently by 100 university professors and experts on pollution. KEAF will conduct integrated research activities on environmental problems and make recommendations to the government on ways to reduce the destructive effects of heavy and chemical industries. The forum is headed by Noh Jaeshik, head of the environmental administration office of the Korea Atomic Energy Research Institute. Its membership is open to specialists in law and public administration and experts in environment technology.

First Antarctic Aquarium Created by Argentina

The Argentine Antarctic Institute is planning to install what it says will be the first aquarium in the Antarctic. Purpose of the aquarium, to be located at the Argentine Almirante Brown station, is to study and cultivate local marine species in their own habitat.

Water piped into the tanks will be kept at the same temperature and saline content as it had been in the sea. Currently, Antarctic marine observations must be carried out by soundings that require ships to follow the migratory patterns of each species.

The Argentine investigation is aimed at helping preserve local species rather than for economic exploitation, according to Jorge Alberto Fraga, director of the Institute.

Haiti's Electricity Crisis Eased By Imported Generators

With the advent of the rainy season, and as emergency U.S. Army Corps of Engineers oil turbine generators, flown in by C5A Galaxie transports, "pump" electricity into the lines, the electricity crisis of Port-au-Prince has somewhat eased on a short-term basis (*WER*, April 11, p.5).

Also adding to the available current is a standby, antiquated diesel generator and five new 32-cylinder diesel generators purchased by the Haitian Government at a cost of \$2.2 million in Texas two months ago. Technicians working day and night have now put three of these "on line." A generator complex is under construction near the airport industrial park, but this will not be operational until 1978.

Meanwhile, the city is still short of its normal 37 million watts necessary for everyday needs, and the cash outflow in dollars to feed the many hungry diesel generators with foreign

bought oil is costing many thousands of dollars daily which will seriously affect Haiti's balance of payments.

The long-term outlook for food, energy, and water in this Caribbean republic, where population goes up and food productivity goes down each year, is not good. Experts from the United Nations and many other world organizations are attempting to find a solution to Haiti's self-destructive route of blithely defoliating the entire country by ruthless tree cutting and primitive farming methods.

British Develop Method For Cleansing Water of Nitrates

A new and cheaper biological method of removing nitrates from river water used in the domestic supply cycle has been developed at the Water Research Center's laboratory at Medmenham, England.

Research into denitrification at all stages of the water cycle is taking place at the Center. The leaching of agricultural fertilizers from the land and the increase in sewage effluent have caused higher concentrations of nitrate in water over recent years. Last year's drought caused especially high levels in some areas of the country. In southeast England, for example, the Anglian Water Authority had to issue specially bottled water to safeguard infants from methaemoglobinaemia—the "blue baby" effect—which can be caused by a nitrate concentration of more than 50mg/liter.

Fluidized beds of fine sand particles have proved the cheapest and most reliable of the biological methods studied. These concentrate the natural denitrifying process which takes place on a river bed. Water pumped through the beds is first dosed with methanol to deoxygenate it. Subsequently the nitrate concentration is reduced by two-thirds.

Malaysia Copes With Sludge Pollution From Palm Oil

Malaysia's current annual output of five million metric tons of palm oil produces two million tons of sludge which pollute the rivers, lakes and seas. Studies show that the safety level of pollutants in Malaysian streams should not exceed 500 ppm B.O.D. (Biochemical Oxygen Demand) and in drinking water the pollutants should be less than 50 ppm B.O.D. The wastes discharged by palm oil mills into the rivers, however, cause the present pollution level to be around 20,000 ppm.

Several experiments have already been conducted to find ways of solving the problem. In 1975, five scientists teamed up to produce a machine called CENSOR (Centrifugal Solids Recovery) which can turn oil palm sludge into a valuable animal feed. And recently the Danish firms of Erling V. Jorgensen (EVJ) and Hotaco Nordisk Tricclair (HNT) have designed equipment that will reduce the pollution load of oil palm waste into the waters to an acceptable level of 200 ppm. Moreover, they claim to have succeeded in developing a process of milling oil palm sludge into an animal feed.

Santiago's Restaurant Food Found Highly Contaminated

A recent inspection campaign by the Chilean National Health Service (SNS) has disclosed that fully 30 per cent of the food eaten in Santiago's soda fountains and restaurants, including high-priced establishments, is contaminated. Many have been heavily fined or closed down.

The inspection of the city's restaurants is the third phase of a SNS sanitary control program which began with inspections of slaughter houses and means of animal transport.

Ex-Governor of Mexican State Fined for Cutting Own Trees

The ex-governor of the northern Mexican border state of Sonora has been fined \$10,000 for cutting and burning 220 Eucalyptus trees on his ranch. And another rancher was assessed \$2,363 for destroying 52 trees on his ranch. In Mexico, it is against the law to cut a tree—even on your own property—without the permission of authorities, and excessive cutting is outlawed.

U.S. Pollution Control Firm Will Help French Industry

The American pollution control company Engineering-Science Inc. has crossed the Atlantic to help French and Benelux industries solve their pollution problems.

Engineering-Science, with headquarters in Arcadia, Cal., and branches in eight other cities, has joined with the French engineering consulting and research firm Petrotechna-R. Eloy in the formation of Petrotechna's new anti-pollution department. The American firm has a staff of 300 engineers, ecologists, and researchers.

Northern Leyte Undertakes Major Geothermal Project

A 6,382-foot deep geothermal well at Tongonan in Northern Leyte province in The Philippines will soon start generating three megawatts of power—sufficient to supply the needs of Ormoc City, and is expected to generate 55 megawatts of power before the end of 1979.

The geothermal project, which will be a major force in lifting Leyte province from its present state as the most under-developed region in the country, is a joint undertaking of the Philippine government and the New Zealand government.

Polluted Water in Thailand Bankrupts Shrimp Farmers

Many shrimp farmers in Samut Songkram, Thailand, are reported to have gone bankrupt following the recent damage to their farms caused by polluted water released by factories along the banks of the Mae Klong River. At the same time, the pollution of the water in the Thachin River, running from Suphan Buri to Samut Sakhon, is also worsening.

The Thai Ministry of Industry and other authorities concerned are being called on to find immediate solutions since thousands of people living along these two major rivers rely on the river for their water supplies. In addition, the polluted water has also damaged river life and crops. The factories along the river banks have relied on alum to treat their waste water, but this has not provided adequate pollution control.

Greenland Reviews Hazards Of Off-Shore Oil Drilling

Before the scheduled four test borings for oil off the west coast of Greenland this summer, Greenlanders are asking for a reassessment of the environmental hazards involved.

Because of the recent Ekofisk oil well blowout in the North Sea, local officials have asked Denmark's Ministry for Greenland if it is planning additional safety regulations. The Ekofisk well off of Norway pumped an estimated 28,000 tons of oil into the North Sea during the seven and a half days before it was capped.

It has become obvious that Arctic waters pose extraordinary difficulties for oil production off Greenland. If there were an oil spill it might spread under the Arctic sea ice with incalculable consequences.

A spokesman for the Ministry has stated that the government can impose any safety measures it wants on operators; any phase of oil exploration or production off Greenland is

subject to government surveillance; no phase of an operation may be initiated without prior inspection and approval; and, finally, that, for safety reasons, all drillings must be carried out from ships or semi-submersible platforms. Mobility is essential in waters with drifting icebergs. It is also necessary to be able to take quick action in drilling a relief well if a non-cappable blowout occurs.

Future exploration will be in a 7,000-mile area in the sea between Southwestern Greenland and Canada. Six international groups—some 21 companies—have been given 13 exploring and production licenses on 46 blocks.

Austria To Spend Huge Sums On R & D Energy Projects

Public authorities in Austria and some private organizations plan to spend \$582 million this year on R&D projects which will concentrate primarily on the sectors of energy and raw material. Significant examples are development work on the Austrian "solar house" project, with prototypes designed to advance a heat-saving housing construction process; analyses and elaboration of concepts concerning electro-thermal energy storage; work on projects concerning gas resources; and research into methods of underground coal carbonization.

Poland's Waterways Claimed Fully One-Quarter Polluted

A Polish expert claimed recently that fully one quarter of that East European country's waters are polluted. In an interview broadcast by Radio Warsaw, Ilona Jacyna stated that these waters were so polluted that they could not be exploited in any way. She added that the shortage of clean water had also become a barrier to industrial development.



World Environment Report

INDEX

VOLUME 3, 1977

JANUARY-JUNE

- 1 NOV 1977

A

Acid Precipitation

- Sulphuric downpour in Norway, Jan. 17, p. 2
- Sulphuric fallout into Swedish lakes, Apr. 11, p. 4

Africa

- Energy sources discussed, Jan. 17, p. 7
- Greenbelt planned by northern nations, May 23, p. 6
- Wildlife Management College gets UNEP grant, May 23, p. 8

Agriculture

- Coffee blight threatens Mexico, Apr. 11, p. 7; June 6, p. 7
- Compost from garbage used in Austria, Mar. 28, p. 6
- Drip irrigation in Israel increases crops, May 9, p. 5
- Fertilizers pollute water in India, May 9, p. 1
- Food production capacity (CEO report), Mar. 28, p. 1
- Pesticide effects on water studies in Britain, Apr. 25, p. 1
- South Korean acreage damaged by pollution, Jan. 17, p. 7
- Sugar cane disease in Caribbean, Mar. 28, p. 7
- A threat to British wildlife, June 20, p. 5
- Waste recycling seminar of FAO/UNEP, Feb. 28, p. 4

Air Pollution

- Active soda (Akso) method of sulphur dioxide reduction, Jan. 31, p. 2
- Airplane monitoring of, June 20, p. 7
- Ankara, at crisis level, Feb. 28, p. 6
- Auto emissions in Karachi, June 6, p. 6
- Bavarian monitoring system, Jan. 17, p. 7; Mar. 14, p. 8; June 20, p. 7
- Cement plant as cause, Bulgaria, Mar. 14, p. 8
- Chimney filters distributed in Ankara, Apr. 11, p. 6
- Czechoslovakia, Mar. 28, p. 6
- Lead, Jan. 31, p. 1; Mar. 28, p. 7
- Maltese control measures, Mar. 28, p. 6
- Mexican motor vehicle standards, Jan. 3, p. 8
- Mexican problems, Apr. 11, p. 5; June 20, p. 8
- Mexico closes chrome-plating plant, Apr. 25, p. 2
- Motor traffic as main source in Sweden, May 23, p. 4
- NATO cities surveyed, Jan. 31, p. 2
- New Delhi, India, Jan. 17, p. 5
- Nitrogen oxide exhaust limits set by Common Market, Jan. 3, p. 2
- Parking garages in Britain, May 9, p. 7
- Plant growth retarded by, May 9, p. 8
- Respiratory disease in Piraeus, Greece, Feb. 28, p. 7
- South Korea, Jan. 17, p. 7
- South Korea proposes auto emission control, Jan. 31, p. 7
- Sulphur oxides, Jan. 17, p. 2; Jan. 31, p. 2; Feb. 28, pp. 6, 7; Mar. 14, p. 3; Mar. 28, p. 6; Apr. 11, p. 4; June 20, p. 7
- Swiss vehicle ordinance, June 6, p. 6
- Taiwan legislation, Jan. 3, p. 8
- Trans-border, Scandinavia, Jan. 17, p. 2; Mar. 14, p. 3; Apr. 11, p. 4
- Trans-border, Texas to Mexico, Mar. 28, p. 7

Algeria

- Green Barrier, May 23, p. 6

Argentina

- Energy production budget, Apr. 25, p. 8
- Environment zones to ignore political subdivision boundaries, May 23, p. 2
- Garbage compaction replaces incineration in Buenos Aires, Feb. 14, p. 7; Mar. 14, p. 8
- Honey storage drums found contaminated, Jan. 3, p. 8
- Industrial forestry promotion, Feb. 14, p. 6
- Leather curing toxicity fought, Mar. 14, p. 8
- Loan of zero-type reactor to Peru, June 20, p. 3
- Medical equipment found to cause disease, May 9, p. 8
- River Plate lowlands reclamation project, June 20, p. 7
- Shared-river project with Uruguay, May 9, p. 6
- Wind power feasibility study, June 20, p. 3

Arlosoross, Saul

- On Israel's desalination and irrigation programs, May 9, p. 5

Asbestos

- Dust removal system developed, Mar. 28, p. 1
- Irish permit controversy involves U.S. firm, Mar. 14, p. 4; May 9, p. 6
- Progress in precautions, Feb. 28, p. 6; Mar. 14, p. 4

Asia

- Bio-gas as fuel alternative, May 9, p. 3

Association of Southeast Asian Nations (ASEAN)

- Navigation Safety Agreement, Apr. 11, p. 6

Australia

- Cape Barren goose hunt, May 9, p. 7
- Forest destruction by dieback fungus, Feb. 14, p. 4
- Quake-proof heater developed, Mar. 14, p. 7
- Rubber safety surface material developed, Feb. 14, p. 8
- Solar-heated factory, May 9, p. 4
- Solar heating units developed, Apr. 25, p. 8
- Solar power subsidy to NSW farmers, Apr. 11, p. 7

Austria

- Garbage conversion to compost, Mar. 28, p. 6
- Hot spring heating test in Waltersdorf, June 6, p. 7
- Nuclear plans slowed for fear of risk, Apr. 11, p. 6
- Solar heating unit tested, May 23, p. 1
- Waste water purification process developed, May 9, p. 7
- Water pollution problems, Jan. 31, p. 5; June 20, p. 6

B

Balkans

- Electric power system, Jan. 17, p. 8

Baltic Sea

- Conference discusses water protection, Apr. 25, p. 6
- Helsinki Convention of 1974, Apr. 25, p. 6; June 6, p. 1

Bangladesh

- India charged with Ganges diversion, Apr. 11, p. 8

Beale, Jack

- Australian environment expert consultant to Sri Lanka, Mar. 28, p. 6

Belgium

- Fluorocarbon problem surveyed, Jan. 3, p. 4

Benn, Tony

- Orders nuclear leaks reported at once, Feb. 14, p. 1
- Review of nuclear reactor policy, Feb. 28, p. 5
- And Windscale nuclear hearings, June 6, p. 1

Bennett, Stephen W.

- Pan American Center for Human Ecology and Health, June 6, p. 3

Bio-Gas

- Asia's new fuel alternative, May 9, p. 3

Birds

- Cape Barren goose menaced by hunt, May 9, p. 7
- EEC assumes role in protection, Feb. 14, p. 5
- Oil-soaked sea birds to be treated in Britain, Jan. 31, p. 6

Black Sea

- Bulgarian anti-pollution measures, Jan. 31, p. 7
- Danube brings water pollution, Jan. 31, p. 5

Bottles and Cans

- Crushing device developed, June 6, p. 7

Brazil

- Aerial photos locate resources, Apr. 11, p. 7
- Amazon forest exploitation, Apr. 11, p. 7; June 20, p. 6
- Coffee blight, Apr. 11, p. 7; June 6, p. 7
- Motorbikes and cycles boom, save fuel, Apr. 25, p. 7
- New petroleum port praised, Jan. 17, p. 6
- Organic fertilizer comeback, May 9, p. 2
- Rock salt and chlorine plant opposed, Jan. 17, p. 8
- Shared-water information exchange opposed by, Apr. 25, p. 5
- Water shortage, and roof catchment, May 23, p. 5

Britain

- Asbestos dust removal system developed, Mar. 28, p. 1
- Energy management group formed, Apr. 25, p. 7
- Energy Survey Scheme subsidy, Jan. 17, p. 8
- Environmental protection spending, Mar. 28, p. 4
- Farming methods as threat to wildlife, June 20, p. 5
- Fluorocarbon problem surveyed, Jan. 3, p. 3
- Nuclear power program, Feb. 14, p. 1

- Nuclear reactor types debated, Feb. 28, p. 5
- Oil-soaked sea birds to be treated, Jan. 31, p. 6
- Pesticide effect on water supplies studied, Apr. 25, p. 1
- Toxic gases level in parking garages, May 9, p. 7
- Waste disposal on land prohibited, June 20, p. 8
- Water conservation experiment, Apr. 11, p. 7
- Wave energy research expanded, June 8, p. 8
- Whole wheat flour and water milling, May 23, p. 6
- Windscale nuclear reprocessing plant, Feb. 14, p. 1
- Windscale nuclear hearings, June 6, p. 1

Bulgaria

- Air and water pollution concerns, Mar. 14, p. 8
- Environmental protection measures, Jan. 31, p. 7

C

Canada

- Seal killing protested by WWF, Mar. 14, p. 6

Carcinogens

- Action urged in UNEP report, Apr. 11, p. 2
- Asbestos, Mar. 14, p. 4
- Chrome-plating factory closed in Mexico, Apr. 25, p. 2
- Vinyl chloride, Feb. 28, pp. 6, 7

Caribbean

- Sugar cane disease identified, Mar. 28, p. 7
- UNEP/FAO workshop on marine pollution, Feb. 14, p. 5

Center for International Environment Information (CIEI)

- New address, Feb. 14, p. 5

Chemical Pollution [see also Toxic Chemicals]

- ILO list of permitted levels for worker exposure, Feb. 28, p. 6

China

- Bio-gas production, May 9, p. 3
- Desalination research progressing, Jan. 31, p. 8
- Purification unit for oil refinery waste water, June 6, p. 7

Coal

- Alternative in German electric power production, Feb. 14, p. 4
- Bio-gas as Asian alternative to, May 9, p. 3
- Mexican mining and power-generating plants, May 23, p. 7
- Open-pit mining eco-technology discussed at ECE symposium, Feb. 28, p. 8
- Source of Ankara air pollution, Feb. 28, p. 6

Coastal Water Pollution

- Caribbean, UNEP/FAO workshop held, Feb. 14, p. 5
- Cartagena Bay, Colombia, May 9, p. 8
- Japan, Apr. 11, p. 3
- Japan, caused by Soviet fishing fleets, Mar. 28, p. 8
- Liberia, May 9, p. 2
- Mediterranean coasts, third UNEP conference, Feb. 28, p. 2
- Mediterranean coasts, UNEP followup conference, Mar. 14, p. 1
- Middle Eastern coasts, UNEP forum, Feb. 28, p. 5
- Nimbus-G satellite to gather data, Mar. 28, p. 8
- Persian Gulf protection planned, Feb. 14, p. 1

Cochrans, Charles A.

- ICIE Chief Executive, Jan. 31, p. 3
- At Seminar on Non-Waste Technology, Jan. 17, p. 4

Colombia

- Criticized for DDT sales offer, Feb. 28, p. 8
- Drought forces water and power rationing, June 20, p. 5
- Parks program, Feb. 14, p. 7
- Traffic problems in Bogota, June 6, p. 5
- Water pollution in Bay of Cartagena, Jan. 17, p. 8; May 9, p. 8
- Water treatment financed by industry fines, Jan. 31, p. 7
- Water treatment plant for Magdalena River, June 20, p. 7
- Weather station pact with U.S. renewed, May 23, p. 8

Conservation [see also Parks; Wildlife]

- Irish legislation, June 20, p. 3
- Japanese program, Jan. 17, p. 2
- Malaysian program, May 23, p. 2
- Sri Lankan tree planting campaign, Jan. 3, p. 5; May 23, p. 7
- WWF efforts, June 6, p. 8

Center for International Environment Information

300 East 42nd Street, New York, N.Y. 10017

Cousteau, Jacques-Yves

Recipient of Pahlavi Environment Prize, June 20, p. 1

Czechoslovakia

Air pollution and solid waste disposal problems, Mar. 28, p. 6
 Also method of sulphur dioxide reduction, Jan. 31, p. 2
 Anthill relocation, June 6, p. 6
 Danube water pollution, June 20, p. 6
 Fuel imports cut, Jan. 3, p. 8
 Hail-prevention rocket developed, Mar. 28, p. 8
 Nuclear power called the only alternative, Mar. 14, p. 6
 Sodium cyanide accident pollutes river, Feb. 28, p. 7
 Weather prediction and engineering breakthrough, June 20, p. 1

D**Dahlgren, Anders**

Ban on herbicide in Sweden, June 6, p. 2

Danube River

Pollution problems, Jan. 31, p. 5; June 20, p. 6

Deforestation

Called problem in 24 developing countries (CEQ report), Mar. 28, p. 1
 Colombian water shortage aggravated by, June 20, p. 5
 Dieback fungus disease in Australia, Feb. 14, p. 4
 Haiti, effect on water table, Apr. 11, p. 3
 Japanese control measures, Apr. 11, p. 5
 Philippine problem, Apr. 11, p. 8; June 20, p. 8

Denmark

Bran shown to cause diseases, Apr. 25, p. 8
 Environmental protection spending, Mar. 28, p. 5
 Food labelling campaign of NOAA, Jan. 17, p. 3
 Interview with outgoing Minister Nielsen, Mar. 14, p. 3
 Tree health monitored by infra-red film, Jan. 17, p. 7

De Rosen, Leon

Agro-waste technology discussed, Feb. 28, p. 4
 On Motor Vehicle Seminar report, Mar. 14, p. 2

Desalination

Chinese research progressing, Jan. 31, p. 8
 Israel's nuclear power process, May 9, p. 5
 Solar power economically feasible, May 23, p. 5

Desertification (see also UN Desertification Conference)

"Green belt" countermeasures in North Africa, May 23, p. 6
 World-wide statistics, May 9, p. 4

Desert Irrigation

Peruvian project, Jan. 17, p. 1

Disease (see also Carcinogens)

Coastal Mediterranean endemic diseases, Feb. 28, p. 2
 ILO warnings on behalf of workers, Feb. 28, p. 6
 Respiratory, Feb. 28, pp. 6, 7

E**Earthquakes**

Quake-proof heater, Mar. 14, p. 7

Economic and Social Commission for Asia and the Pacific (ESCAP)

Bio-gas endorsed, May 9, p. 3

Economic Commission for Africa (ECA)

Energy sources discussed, Jan. 17, p. 7

Economic Commission for Europe (ECE)

Committee on Electric Power meeting, Jan. 17, p. 8
 Energy technologies for future discussed, May 23, p. 5
 Lead reduction in gasoline urged, Jan. 31, p. 1
 Open-pit mining eco-technology discussed, Feb. 28, p. 8
 Recommendations to World Water Conference, Jan. 17, p. 6
 Seminar on Non-Waste Technology, Jan. 17, p. 4
 Sulphur emission controls proposed, Apr. 11, p. 4
 Symposium on Use of Wood Residues, Jan. 31, p. 8
 Trans-European Highway plans, June 20, p. 6

Economy

Balancing with environmental protection in Denmark, Mar. 14, p. 3

Egypt

Green belt program, May 23, p. 6

Electric Power

Balkan countries interconnect systems, Jan. 17, p. 8
 Battery storage, May 23, p. 5
 Coal-fired plant planned in Coahuila, May 23, p. 7
 "Eco-fuel" as source in Ireland, Mar. 14, p. 5
 French nuclear plants, Apr. 11, p. 5
 Generation from wind power suggested, Feb. 14, p. 7; June 20, p. 3
 Haiti forced into blackouts, Apr. 11, p. 5
 Hydroelectric power discussed by UN Water Conference, Apr. 25, p. 4
 Nuclear power seen as only alternative to coal in Czechoslovakia, Mar. 14, p. 6

Swiss solar power project, Apr. 11, p. 2

Technologies of future discussed in ECE report, May 23, p. 5

West German sources discussed, Feb. 14, p. 4

Energy (see also Geothermal Energy; Nuclear Energy; Solar Energy; Wind Power)

African needs and sources discussed by ECA, Jan. 17, p. 7
 Argentine production goals and budget, Apr. 25, p. 8
 Bio-gas as source, May 9, p. 3
 Czech alternatives discussed, Mar. 14, p. 6
 ECE report on eight new technologies, May 23, p. 5
 "Eco-fuel" recycling from rubbish, Mar. 14, p. 5
 Lava residual heat harnessed in Iceland, Mar. 14, p. 6
 Swedish study to develop policy, May 9, p. 1
 Wave energy research, Britain, June 6, p. 8
 West German alternatives discussed, Feb. 14, p. 4

Energy Conservation

French program lagging, Mar. 28, p. 2

Environmental Impact Statements

Considered by EEC, Jan. 31, p. 4

European Association of Scientists for Experiments on Pollution (EURASEP)

Nimbus-G satellite project, Mar. 28, p. 8

European Economic Community (EEC) (Common Market)

Environmental protection cost estimates, Mar. 28, p. 5
 Five-Year Environment Program, Jan. 31, p. 4
 Fluorocarbons discussed, Jan. 3, p. 4
 "Law and Practice Relating to Pollution Control..." compendium described, Mar. 28, p. 3
 Nimbus-G satellite project, Mar. 28, p. 8
 Nitrogen oxide exhaust limits, Jan. 3, p. 2
 Sewage sludge disposal research, Feb. 14, p. 8
 Signatory of Rhine antipollution agreement, Jan. 17, p. 1; Jan. 31, p. 4
 Signing of Helsinki treaty on Baltic pollution debated, June 6, p. 1
 Vinyl chloride monomer (VCM) packaging of foods opposed, Feb. 28, p. 7
 Wildlife protection a concern, Feb. 14, p. 5

Evansen, Jens

Law of the Sea talks, Apr. 11, p. 1

Evteev, Sveneld

UNEP Asst. Exec. Director for Program, Apr. 25, p. 3

F**Fertilizer**

Bio-fertilizer as by-product of bio-gas production, May 9, p. 3
 Organic now cheaper than synthetic, May 9, p. 2
 Replaced by compost from garbage, Mar. 28, p. 6
 Water pollution by, Apr. 25, p. 1; May 9, p. 1

Fisheries

Japanese protests against Soviet fleets pollution, Mar. 28, p. 8
 Mideast coastal areas, Feb. 28, p. 2
 New methods urged to save porpoises, Apr. 25, p. 7
 South Korea suffers damages from pollution, Jan. 17, p. 7

Flood Control

Sri Lanka's Gin Ganga, Jan. 31, p. 4
 World Bank loan to Pakistan, Mar. 28, p. 7

Fluorocarbons

Survey of controversy, Jan. 3, p. 3
 UNEP conference, Jan. 3, p. 4; Mar. 28, p. 2

Food

Argentine honey-contamination warning, Jan. 3, p. 8
 Bran warning in Denmark, Apr. 25, p. 8
 CEO report on Food-People Problem and land use, Mar. 28, p. 1
 Labeling campaign by NOAA, Denmark, Jan. 17, p. 3
 Packaging with VCM products opposed, Feb. 28, p. 7
 Whole wheat flour on the rise in Britain, May 23, p. 6

Food and Agriculture Organization (FAO)

Agricultural waste recycling seminar, Feb. 28, p. 4
 Latin American office established, June 20, p. 7
 Workshop on Caribbean pollution, Feb. 14, p. 5

Forests (see also Deforestation; Reforestation)

Amazon rain forest protection urged by WWF, June 20, p. 6
 Conifer heart rot fought in Ireland, Jan. 17, p. 5
 Industrial forestry promotion in Argentina, Feb. 14, p. 6
 North African afforestation projects, May 23, p. 6
 Tropical rain forest studies, June 6, p. 8

France

Energy conservation program lagging, Mar. 28, p. 2
 Environmental protection spending, Mar. 28, p. 4
 Fire barrier created by goat herd, Apr. 25, p. 7
 Fluorocarbon problem surveyed, Jan. 3, p. 3

PWR nuclear plant at Fessenheim, Apr. 11, p. 5

Rhine anti-pollution pact signatory, Jan. 17, p. 1

Fuel

Bio-gas as Asia's new alternative, May 9, p. 3
 Czechoslovakia cuts imports, Jan. 3, p. 8
 "Eco-fuel" from rubbish, in Ireland, Mar. 14, p. 5
 "Jwala"—smokeless domestic fuel of India, Jan. 17, p. 5
 Methanol-petrol mixture for cars, Mar. 14, p. 6

G**Gabaldon, Arnold Jose**

Venezuelan Environment Minister, Feb. 14, p. 3

Garbage

Buenos Aires, compaction replaces incineration, Feb. 14, p. 7; Mar. 14, p. 8
 Buenos Aires land reclamation uses fill, June 20, p. 7
 Compost production in Austria, Mar. 28, p. 6
 Mexico City collection urged, Apr. 25, p. 7

Gardiner, Robert

At UNHHSF meeting, June 6, p. 2

Geothermal Energy

Austrian town to be heated in test, June 6, p. 7
 ECE report on, May 23, p. 5
 Heating in Icelandic cities, Mar. 28, p. 3
 Pakistani potential, Feb. 14, p. 8
 Present production, Feb. 14, p. 8

Germany (West)

Air pollution monitoring in Bavaria, Jan. 17, p. 7; Mar. 14, p. 8; June 20, p. 7
 Anti-nuclear demonstrations, Apr. 11, p. 4
 Bat study and protection in Bavaria, Mar. 28, p. 7
 Bavarian snail-taking law shows results, May 23, p. 7
 Coal mining in Ruhr, Feb. 14, p. 4
 Electric power sources discussed, Feb. 14, p. 4
 Environmental "hotline" successful, June 6, p. 7
 Environmental protection spending, Mar. 28, p. 4
 Environmental Technology Fair, May 23, p. 1
 Fluorocarbon problem surveyed, Jan. 3, p. 4
 Natural gas for clean air, in Bavaria, Jan. 31, p. 7
 Nuclear power and waste disposal, Feb. 14, p. 4
 Nuclear power plans curtailed, Jan. 31, p. 6; Apr. 11, p. 4
 Radioactive steam leak from nuclear power plant, Feb. 28, p. 8
 Rhine anti-pollution pact signatory, Jan. 17, p. 1
 Water pollution detection by isotope tracers, May 9, p. 6
 Wildlife threatened in Bavaria, Feb. 14, p. 2

Greece

Air pollution, and respiratory disease in Piraeus, Feb. 28, p. 7
 Christmas tree cutting banned, Feb. 14, p. 6
 Irrigation projects, Jan. 3, p. 8
 Prosecution of violators of environmental laws, June 6, p. 4
 Reforestation and parks programs, Jan. 31, p. 7; Feb. 14, p. 6
 Traffic noise pollution intolerable in cities, May 23, p. 8

H**Habitat**

Delay in implementation of decisions, June 6, p. 2; June 20, p. 2

Hail Prevention

Rocket developed by Czechs, Mar. 28, p. 8

Haiti

Drought, and power shortage, Apr. 11, p. 5
 Low-cost housing program, Apr. 11, p. 7
 Offshore oil drilling, Feb. 14, p. 7

Health

Air pollution effects in Piraeus, Greece, Feb. 28, p. 7
 Air pollution effects on Mexican children, Mar. 28, p. 7
 Asbestos as danger, Feb. 28, p. 6; Mar. 14, p. 4; May 9, p. 6
 Auto pollution in Karachi a serious hazard, June 6, p. 6
 Crisis in Ankara due to air pollution, Feb. 28, p. 6
 Danish warning against bran, Apr. 25, p. 8
 Hazards of Mediterranean coastal pollution, Feb. 28, p. 2
 ILO toxic substances listing, Feb. 28, p. 6
 Medical equipment misuse as threat, May 9, p. 8
 Mercury poisoning effects, Jan. 17, p. 8
 Microbiology research, MIRCENS centers, Apr. 25, p. 8
 Pan American Center, June 6, p. 3

Herbicides

Swedish ban controversial, June 6, p. 2

Hong Kong

Anti-pollution laws consolidated, Jan. 3, p. 8
 Harbor pollution ameliorated, Mar. 14, p. 6; Apr. 11, p. 6
 Noise pollution, Feb. 14, p. 6
 Nuclear power plant deemed uneconomical, Jan. 31, p. 8

Horticulture
Bark praised as mulch at ECE symposium, Jan. 31, p. 8

Housing
Low-cost program in Haiti, Apr. 11, p. 7
Mexico City, Jan. 3, p. 7; Mar. 14, pp. 3, 6

Human Ecology
Pan American Center, June 6, p. 3

Human Settlement
Mexico stresses community organization, Mar. 14, p. 3
UN Foundation, Apr. 25, p. 3; June 6, p. 2

Hungary
Water pollution incidents, May 9, p. 8

Hydroelectric Power
Discussed by UN Water Conference, Apr. 25, p. 4

I

Iceland
Geothermal heating in cities, Mar. 28, p. 3
Lava residual heat as energy source, Mar. 14, p. 6

Incineration
Replaced by garbage compaction and landfill in Buenos Aires, Feb. 14, p. 7; Mar. 14, p. 8

India
Farraka dam diverts Ganges, Apr. 11, p. 8
New Delhi air pollution problems, Jan. 17, p. 5
Noise found abated by trees and shrubs, June 6, p. 5
Water evaporation prevention method studied, Mar. 14, p. 7
Water pollution from nitrogen fertilizers, May 9, p. 1

Industrial Wastes
Agro-industrial recycling technology, UNEP/FAO seminar, Feb. 28, p. 4
Baltic Sea pollution figures, Apr. 25, p. 6
Bavarian "fingerprint" monitoring, Mar. 14, p. 8
Colombia's Bay of Cartagena polluted, Jan. 17, p. 8; May 9, p. 8
Damages in South Korea assessed, Jan. 17, p. 7
Danube River pollution, June 20, p. 6
ECE Seminar on Non-Waste Technology, Jan. 17, p. 4
Istanbul factories install water purifiers, May 23, p. 7
Leather curing, toxic wastes, Mar. 14, p. 8
Mercury, Jan. 17, p. 8; May 9, p. 8; May 23, p. 3; June 6, p. 8
Nordic Organization for Waste Exchange, Jan. 17, p. 4
Recycling compulsory in Japan, Feb. 14, p. 6
"Red Mud" (titanium dioxide), EEC discussions, Jan. 31, pp. 4, 5
Rhine River pollution, Jan. 17, p. 1
Steel mills: Reduced Pellet recycling, Jan. 3, p. 7
Swedish stop dumping, increase materials use, May 23, p. 3
Water pollution at Bangkok, June 20, p. 8
Water pollution in Japan, Apr. 11, p. 3
Water pollution in Liberia, May 9, p. 2
Water pollution in Mexico, Apr. 25, p. 2; June 20, p. 4
Water pollution in Philippines, June 20, p. 8

Industry
Air pollution cases, Jan. 17, p. 7; Mar. 14, p. 8; Mar. 28, pp. 6, 7; Apr. 25, p. 2
Energy management formed in Britain, Apr. 25, p. 7
Environmental spending, Europe, Mar. 28, pp. 4, 5
Lumbering promoted in South America, Feb. 14, p. 6; Apr. 11, p. 7; June 6, p. 8

International Cell Research Organization (ICRO)
GIAM V meeting, Apr. 25, p. 8

International Center for Industry and the Environment (ICIE)
Functions, goals, membership, meetings, publications, Jan. 31, p. 3
Seminar on Non-Waste Technology, Jan. 17, p. 4

International Environment Forum (IEF)
First meeting planned, Mar. 14, p. 1

International Labor Organization (ILO)
Statement in Motor Vehicle Seminar report, Mar. 14, p. 2
Toxic substances listing, Feb. 28, p. 6

International Referral System for Sources of Environmental Information (IRS)
Satellite link-up with UNEP HQ Nairobi, June 20, p. 6

International Union for the Conservation of Nature (IUCN)
Maurice Strong elected chairman, June 20, p. 5

International Whaling Commission (IWC)
Agreement on whale conservation needed, June 20, p. 2

Iran
Prince Abdorreza Pahlavi, June 20, pp. 1, 7

Ireland
Asbestos use controversy, Mar. 14, p. 4; May 9, p. 6
Conifer heart rot fought, Jan. 17, p. 5

Lake eutrophication, June 20, p. 7
Rubbish conversion to "eco-fuel", Mar. 14, p. 5
Water quality program, Apr. 11, p. 6
Wildlife Act passed, June 20, p. 3

Irrigation
Called problem in CEO report, Mar. 28, p. 1
Drip system advanced in Israel, May 9, p. 5
Greek projects, Jan. 3, p. 8
Mexican Cerro de Oro dam, Apr. 11, p. 1
Needs discussed at UN Water Conference, Apr. 25, pp. 4, 5
Nigeria, May 9, p. 5
Peruvian desert land, Jan. 17, p. 1

Israel
Advances in desalination and irrigation, May 9, p. 5
Electric Company forced to use oil, not coal, Apr. 11, p. 8
Environmental Protection Service role, Jan. 17, p. 3
Yarkon River cleansed by sea water dumping by power plant, Feb. 14, p. 8

Italy
Environmental protection spending, Mar. 28, p. 4
Fluorocarbon problem surveyed, Jan. 3, p. 4
Geothermal power capacity, Feb. 14, p. 8
Wolf protection decreed, Mar. 14, p. 7

J

Japan
Contribution to UNEP, Apr. 25, p. 6
Electric-powered vehicles promoted, Apr. 25, p. 1
Environment law booklet published, May 23, p. 7
Fluorocarbon problem surveyed, Jan. 3, p. 5
National parks program, Jan. 17, p. 2
Noise from U.S. airbase litigated, Jan. 17, p. 8
Noiseless electric trains for Osaka, June 20, p. 8
Noise pollution and vibration to be alleviated by railroad, Feb. 28, p. 3
Quake-proof heater sales, Mar. 14, p. 7
Solar homes promoted by low-cost loans, June 20, p. 8
Steel-mill waste recycling, Jan. 3, p. 7
Waste recycling made compulsory, Feb. 14, p. 6
Water pollution problems, Jan. 17, p. 2; Apr. 11, p. 3
Waters polluted by Soviet fishing fleets, Mar. 28, p. 8

Jauregui, Luis
UN Water Conference President, May 9, p. 6

K

Kaninias, Spyros
Vigorous prosecutor of environmental law violators, May 23, p. 8; June 6, p. 4

Kenya
Ms. Kenyatta appointed as UNEP representative, Mar. 28, p. 7
Wildlife Ministry criticized, Jan. 17, p. 5
Wildlife protection order, June 6, p. 6

Kuenen, Donald
IUCN President, June 20, p. 5

L

Land Reclamation
Buenos Aires lowlands at River Plate, June 20, p. 7
Peruvian desert, Jan. 17, p. 1

Land Use
Japanese parks and conservation program, Jan. 17, p. 2
Relationship to food production capacity, Mar. 28, p. 1
Rural, conservation problem in Britain, June 20, p. 5

Latin America
Amazon forest protection urged by WWF, June 20, p. 6
Andean Pact nations to exploit lumber, June 6, p. 8
Center for Human Ecology and Health, June 6, p. 3
Coffee blight, Apr. 11, p. 7; June 6, p. 7
Shared-river resources, Apr. 25, p. 5; May 9, p. 6
Traffic congestion in capital cities, June 6, p. 5

"Law and Practice Relating to Pollution Control..."
EEC reference compendium described, Mar. 28, p. 3

Law of the Sea Conference
Informal talks fruitful, Apr. 11, p. 1

Lead
Automobile exhaust problem, Jan. 31, p. 1
EEC directs blood testing program, Jan. 31, p. 4

Legislation
Air pollution control, Mexico, Jan. 3, p. 8; Apr. 25, p. 2
Air pollution standards, Taiwan, Jan. 3, p. 8
Bird protection, by Common Market, Feb. 14, p. 5
Greek updating asked, May 23, p. 8; June 6, p. 4
Hong Kong anti-pollution laws consolidated, Jan. 3, p. 8
Irish Wildlife Act, June 20, p. 3
Italian wolf protection, Mar. 14, p. 7
Mandatory recycling of wastes in Japan, Feb. 14, p. 6
No-smoking law in Malta, Mar. 28, p. 6

Nuclear safety, Sweden, May 9, p. 1
Philippine Marine Pollution Decree, Feb. 14, p. 7
Polish Environment Code drafted, Mar. 14, p. 2
Swedish laws and enforcement, May 23, p. 3
Swiss auto exhaust and noise standards, June 6, p. 6
Synopsis of environment law issued in Japan, May 23, p. 7
Ugandan elephant protection, Mar. 14, p. 7
U.S. Marine Mammal Protection Act, Apr. 25, p. 7
Water pollution control, Japan, Apr. 11, p. 3

Lessendjina, Ms.
Zaire's Environment Chief, Apr. 25, p. 3

Liberia
200-mile territorial sea limit, Mar. 14, p. 8
Water pollution problems and control, May 9, p. 2

Libya
Green belt afforestation program, May 23, p. 6

Litigation
Greek prosecutor's campaign, June 6, p. 4
Turkey warns Marmara Sea polluters, June 6, p. 7
U.S. airbase noise in Japan, Jan. 17, p. 8

Lumber and Lumber Industry
Andean Pact Nations to use reserves, June 6, p. 8
Aerial photos show Brazilian resources, Apr. 11, p. 7
Promoted in Argentina by forest land sales, Feb. 14, p. 6

Luxembourg
Rhine anti-pollution pact signatory, Jan. 17, p. 1

Lykke, Erik
Fluorocarbon caution urged, Jan. 3, p. 4

M

Mageed, Yahia Abdel
Secretary General of UN Water Conference, Apr. 25, p. 5

Malaysia
Levy on oil tankers in Malacca Strait debated, Jan. 31, p. 6
Tropical rain forest study, June 6, p. 8
Wildlife management, May 23, p. 2

Malta
No smoking in public places law, Mar. 28, p. 6
Oil Spill Combating Center, Jan. 3, p. 7

Marine Pollution (see also Coastal Water Pollution; Oil Spills)
Baltic Sea, Apr. 25, p. 6
Caribbean, UNEP/FAO workshop held, Feb. 14, p. 5
Maltese Oil Combating Center opened, Jan. 3, p. 7
Mediterranean, third UNEP conference, Feb. 28, p. 2
Mideast nations confer at UNEP forum, Feb. 28, p. 5
Persian Gulf protection planned, Feb. 14, p. 1
Philippines, Feb. 14, p. 7; June 20, p. 8

Marinov, Uri
Israeli Environment chief, Jan. 17, p. 3

Marumo, Shigesada
Water pollution concerns, Apr. 11, p. 3

Mead, Margaret
Criticizes slow progress of UNHHSF, June 6, p. 2

Mediterranean
Anti-pollution agreement and EEC, Jan. 31, p. 4
Clean-up cooperation urged by Lions International, Jan. 17, p. 7
Coastal protection and Blue Plan discussed at third UNEP conference, Feb. 28, p. 2
Followup conference on land-based pollution sources, Mar. 14, p. 1
Oil Spill Combating Center in Malta, Jan. 3, p. 7

Mercury
Dumping controls in Sweden, May 23, p. 3; June 6, p. 8
Dumping in Colombia's Bay of Cartagena, Jan. 17, p. 8; May 9, p. 8

Mexico
Air emissions from Texas affect children, Mar. 28, p. 7
Air pollution problems in capital, Apr. 11, p. 5; June 20, p. 8
Cerro do Oro irrigation dam, Apr. 11, p. 1
Chrome-plating plant closed for carcinogenic emissions, Apr. 25, p. 2
Coal mining and power plant in Coahuila, May 23, p. 7
Coffee blight threat, Apr. 11, p. 7; June 6, p. 7
Environmental overview, June 20, p. 4
Housing and community organization, Mar. 14, p. 3
Housing shortage in Mexico City, Mar. 14, p. 6
Lake Chapala rehabilitation plan, June 20, p. 4
Motor vehicle emission standards, Jan. 3, p. 8
Nuclear plant "cleanest" ever built, May 23, p. 4
Population pressure in Mexico City, Feb. 28, p. 1; Apr. 11, p. 5
Public transit system for Mexico City, Feb. 14, p. 8
Shanty towns of Mexico City, Jan. 3, p. 7
Trash collection improvement urged, Apr. 25, p. 7
Valley of Mexico, ecological rehabilitation, June 20, p. 4

Water management computerized, May 9, p. 7
 Water pollution control, Jan. 31, p. 6; June 20, p. 4
 Wind generation of electricity suggested, Feb. 14, p. 7

Microbiology

MIRCENS centers set up, Apr. 25, p. 8
 UNEP, UNESCO, ICRO meet to plan GIAM V, Apr. 25, p. 8

Mideast

Coastal environment discussed at UNEP forum, Feb. 28, p. 5
 Irish Sika deer colony established, Jan. 31, p. 8

Mineral Resources

Seabed, and Law of Sea, Apr. 11, p. 1

Mining

Open-pit, eco-technology discussed at ECE symposium, Feb. 28, p. 8
 Philippine farm land damaged by mine tailings, June 20, p. 8
 Sweden bans slate strip mining, Feb. 14, p. 6

Monitoring

Air pollution, by plane, June 20, p. 7
 Air pollution, in Bavaria, Jan. 17, p. 7; Mar. 14, p. 8; June 20, p. 7
 Athens starts special police unit, June 6, p. 4
 Isotope tracers used for water testing, May 9, p. 6
 Tree health checked by infra-red film, Jan. 17, p. 7

Morocco

Green belt afforestation program, May 23, p. 6

Moser, Herbert

On Water pollution detection, May 9, p. 6

Motor Vehicles

Air pollution in Karachi, June 6, p. 6
 Electric car in Taiwan, Mar. 14, p. 7
 Electric-powered, Japanese promotion, Apr. 25, p. 1
 Exhaust gases in parking garages, May 9, p. 7
 Latin American capital cities congested, June 6, p. 5
 Lead in exhaust gases, Jan. 31, p. 1
 Methanol-Petrol fuel mixture, Mar. 14, p. 6
 Mexican emission standards, Jan. 3, p. 8
 Mexican pollution problems, Apr. 11, p. 5
 Motor bikes and cycles boom in Brazil, Apr. 25, p. 7
 Nitrogen exhaust limits set by Common Market, Jan. 3, p. 2
 Noise pollution, May 23, pp. 4, 8
 South Korea proposes auto emission controls, Jan. 31, p. 7
 Swedish main air pollution source, May 23, p. 4
 Swiss noise and exhaust emission standards, June 6, p. 6
 UNEP Seminar, final report issued, Mar. 14, p. 2

Munro, David

At UNEP's Mideast coastal protection conference, Feb. 28, p. 5

N**Natural Gas**

Bavaria increases use of gas for clean heat, Jan. 31, p. 7

Netherlands

Environmental protection spending, Mar. 28, p. 5
 Rhine anti-pollution pact signatory, Jan. 17, p. 1
 Safe nuclear fuel dialogue urged, May 23, p. 6

Nicaragua

Coffee blight, Apr. 11, p. 7; June 6, p. 7

Nielson, Helge

Interview on Danish environment efforts, Mar. 14, p. 3

Nigeria

Water development policy, May 9, p. 5

Noise Pollution

Cut by certain trees and shrubs, June 6, p. 5
 Hong Kong, Feb. 14, p. 6
 Incident in Mexico City restaurant, May 9, p. 8
 Japanese railroad, countermeasures, Feb. 28, p. 3; June 20, p. 8
 Swedish road traffic increase, May 23, p. 4
 Swiss vehicle ordinance, June 6, p. 6
 Traffic noise intolerable in Greek cities, May 23, p. 8
 U.S. airbase near Tokyo, Jan. 17, p. 8

Nordic Organization for Waste Exchange

Functions described, Jan. 17, p. 4

North Sea

Scrap dumping, Jan. 3, p. 7

Norway

Scrap dumping on continental shelf policed, Jan. 3, p. 7
 Seal killing protested by WWF, Mar. 14, p. 6
 Sulphuric acid precipitation, Jan. 17, p. 2

Nuclear Energy (see also Radioactive Wastes)

Austrian delays reflect fear of risk, Apr. 11, p. 6
 British debate on reactor types, Feb. 28, p. 5
 "Cleanest" plant ever built in Mexico, May 23, p. 4
 Czech need stressed, Mar. 14, p. 6
 Danube River plants, Jan. 13, p. 5
 German expansion depending on waste disposal, Feb. 14, p. 4
 German opposition again violent, Apr. 11, p. 4
 German plans curtailed, Jan. 31, p. 6; Apr. 11, p. 4
 Hong Kong plant deemed uneconomical, Jan. 31, p. 8
 Peruvian project, June 20, p. 3
 Poland plans first nuclear plant, Feb. 28, p. 7
 PWR plant at Fessenheim, France, Apr. 11, p. 5
 Radioactive steam leak at German power plant, Feb. 28, p. 8
 Safe fuel dialogue urged by Dutch, May 23, p. 8
 Soviet 1000 Mw station and future plans, Apr. 25, p. 8
 Swedish safety legislation enacted, May 9, p. 1
 Windscale waste reprocessing plant, Feb. 14, p. 1
 Windscale hearings in Britain, June 6, p. 1

O**Ocean Dumping**

Scrap, North Sea continental shelf, Jan. 3, p. 7

Ochoki, Ludvik

President of UNEP Fifth Governing Council, June 20, p. 2

Offshore Oil

Drilling in Haitian waters, Feb. 14, p. 7

Ogutu, Matthew

Kenyan Wildlife protection policies, Jan. 17, p. 5; June 6, p. 6

Oil

Argentine production goals, Apr. 25, p. 8
 Bio-gas as Asian alternative to, May 9, p. 3
 Brazil's new petroleum port praised, Jan. 17, p. 6
 Haiti, exploration, Feb. 14, p. 7
 Refinery waste water purification unit, June 6, p. 7

Oil Spills

Hong Kong Harbor, Apr. 11, p. 6
 Japanese waters, Jan. 17, p. 2
 Malacca Strait, levy on tankers considered, Jan. 31, p. 6
 Maltese Oil Combating Center, Jan. 3, p. 7
 South Korean waters, Jan. 17, p. 7

Oltmanns, Horst-Peter

UNEP Assistant Executive Director for Fund and Management, Apr. 25, p. 3

Organization for Economic Cooperation and Development (OECD)

Fluorocarbon concern, Jan. 3, pp. 3, 5

Osiogu, O. William

On Nigerian water development, May 9, p. 5

Ozone Layer

Conference of UNEP, Jan. 3, p. 4; Mar. 28, p. 2
 Fluorocarbon problem surveyed, Jan. 3, p. 3

P**Packaging**

Vinyl chloride monomer (VCM) products opposed, Feb. 28, p. 7

Pahlavi International Environment Prize

Awarded to Cousteau and Scott, June 20, p. 1

Pakistan

Commemorative coins for environment, June 20, p. 6
 Flood control loan from World Bank, Mar. 28, p. 7
 Green turtle endangered, Jan. 31, p. 7
 Indus Basin salinity workshop, May 9, p. 7
 Karachi air polluted by autos, June 6, p. 6
 National science and technology policy, Feb. 28, p. 8
 Tests for geothermal power potential, Feb. 14, p. 8
 Wild animal skin exports banned, Apr. 11, p. 8

Paper and Pulp

EEC discussion of waste discharges, Jan. 31, pp. 4, 5
 Swedish processes stop dumping, increase fiber use, May 23, p. 3

Parks

Athens program announced, Jan. 31, p. 7; Feb. 14, p. 6
 Colombian program, Feb. 14, p. 7
 Japanese conservation program, Jan. 17, p. 2
 Malaysian national sanctuaries program, May 23, p. 2

Parra Pardi, Gustavo

Venezuelan Environmental Research Chief, Apr. 25, p. 2

Pauisson, Valfrid

Swedish Environment chief interviewed, May 23, p. 3

Persian Gulf

Protection planned against pollution, Feb. 14, p. 1

Peru

Amazon rain forest conservation, June 20, p. 6
 Desert irrigation project, Jan. 17, p. 1
 Hunting permit for Iranian Prince protested, June 20, p. 7
 Nuclear reactor project, June 20, p. 3

Pesticides

Study of pollution effects in Britain, Apr. 25, p. 1
 Swedish ban on DDT, May 23, p. 4; June 6, p. 2

Philippines

Bio-gas production, May 9, p. 3
 Denuded forests upset ecosystem, Apr. 11, p. 8; June 20, p. 8
 Environmental Protection Council established, June 20, p. 8
 Marine Pollution Decree, Feb. 14, p. 7
 Water pollution, June 20, p. 8

Plastics

Vinyl chloride danger to workers, Feb. 28, pp. 6, 7
 Vinyl chloride monomer (VCM) in packaging opposed, Feb. 28, p. 7

Poland

Environment Code drafted, Mar. 14, p. 2
 Methanol-petrol fuel mixture for cars, Mar. 14, p. 6
 Nuclear power plant proposed, Feb. 28, p. 7

"Polluter Pays" Principle

Bogota River industries, Colombia, Jan. 31, p. 7
 Endorsed by World Water Conference, Apr. 25, p. 4
 European nations, Mar. 28, pp. 4, 5
 Oil spills in Strait of Malacca, Jan. 31, p. 6

Population

Mexico City pressures, Feb. 28, p. 1; Apr. 11, p. 5
 Seoul growth, and control measures, Mar. 28, p. 8

Polychlorinated Biphenyls (PCBs)

Regulation in Europe vs. U.S., Jan. 3, p. 4

Q**Quintana, Cesar**

UN Habitat and Human Settlements Foundation Chief, Apr. 25, p. 3

R**Radioactive Wastes**

Disposal problems of West Germany, Feb. 14, p. 4
 High-pressure storage technique, Mar. 14, p. 4
 Windscale reprocessing plant, Feb. 14, p. 1

Recycling

Bottle and can crushing device available, June 6, p. 7
 ECE Seminar on Non-Waste Technology, Jan. 17, p. 4
 Industrial wastes, in Sweden and Turkey, May 23, pp. 3, 7
 Mandated by legislation in Japan, Feb. 14, p. 6
 Old tires, for rubber safety surface material, Feb. 14, p. 8
 Seminar on agriculture waste management, FAO/UNEP, Feb. 28, p. 4
 Steel-mill waste: Reduced Pellet method, Jan. 3, p. 7

Reforestation

- Greek program, Jan. 31, p. 7; Feb. 14, p. 6
- Philippine uplands, Apr. 11, p. 8
- Sri Lankan program, Jan. 3, p. 5; May 23, p. 7

Research

- Microbiology centers set up, Apr. 25, p. 8
- Venezuela consolidates agencies in BER, Apr. 25, p. 2

Rhine River

- Anti-pollution agreement signed, Jan. 17, p. 1; Jan. 31, p. 4

Richardson, Elliot

- Law of the Sea talks, Apr. 11, p. 1

Romero Alvarez, Humberto

- Air pollution in Mexico City battled, Apr. 11, p. 5
- Chrome-plating plant closed by, Apr. 25, p. 2
- Interview, June 20, p. 4

Royal Geographic Society of London

- Tropical rain forest expedition in Sarawak, June 6, p. 8

S**Saouma, Edouard**

- At FAO/UNEP agro-waste seminar, Feb. 28, p. 4
- Latin American FAO office opened, June 20, p. 7

Satellites

- Nimbus-G to gather water pollution data, Mar. 28, p. 8

Scott, Sir Peter

- Amazon rain forest protection urged, June 20, p. 6
- Recipient of Pahlavi Environment Prize, June 20, p. 1

Sewage Disposal

- Baltic Sea pollution, Apr. 25, p. 6
- Japanese problems, Apr. 11, p. 3
- Sludge disposal studies of EEC, Feb. 14, p. 8

Shared Natural Resources

- Bangladesh and India clash over Ganges River, Apr. 11, p. 8
- Bi-national project on Uruguay River, May 9, p. 6
- Seabed minerals, Apr. 11, p. 1
- UNEP guidelines, Jan. 3, p. 2; Feb. 28, p. 1
- World Water Conference discussions, Apr. 25, p. 5

Shore, Peter

- Statement on Windscale nuclear reprocessing plant, Feb. 14, p. 1

Sierra Club

- Tropical rain forest study published, June 6, p. 8

Smoking

- Prohibition in public places in Malta, Mar. 28, p. 6

Soil Erosion

- Called problem in 43 countries (CEQ report), Mar. 28, p. 1

Solar Energy

- Australia's first solar-heated factory, May 9, p. 4
- Australian (NSW) subsidy to farmers, Apr. 11, p. 7
- Continuous-flow heating tested in Austria, May 23, p. 1
- Desalination economically feasible, May 23, p. 5
- ECE report on technologies of future, May 23, p. 5
- Electricity generation from, May 23, p. 5
- Emphasized by third UNEP conference on Mediterranean, Feb. 28, p. 2
- Heating units developed in Australia, Apr. 25, p. 8
- Japanese promotion of home heating, June 20, p. 8
- Microwave transmission from space, May 23, p. 5
- Photoelectric cell technology, May 23, p. 5
- Swiss project, Apr. 11, p. 2
- Technology discussed at UN symposium, Feb. 14, p. 2

Solid Waste Disposal

- British law prohibits dumping on land, June 20, p. 8
- Czechoslovakian problem, Mar. 28, p. 6
- Garbage compression and landfill in Buenos Aires, Feb. 14, p. 7; Mar. 14, p. 7
- Ireland plans waste conversion to "eco-fuel," Mar. 14, p. 5
- Mexico City system called primitive, Apr. 25, p. 7

South Korea

- Auto emission controls proposed for Seoul, Jan. 31, p. 7
- Industrial pollution damages, Jan. 17, p. 7
- Population pressure in Seoul, Mar. 28, p. 8
- "Wide-zone" waterworks project, Feb. 28, p. 7

Sri Lanka

- Beale (Jack) as environmental consultant, Mar. 28, p. 6
- Flood control on Gin Ganga, Jan. 31, p. 4
- Tree planting campaign, Jan. 3, p. 5
- Tree planting method, for moisture, May 23, p. 7

Stedman, Bruce

- Retirement from UNEP, Apr. 25, p. 3
- At UNEP microbiology meeting, Apr. 25, p. 8

Steel Industry

- Reduced Pellet method of recycling, Jan. 3, p. 7

Strip Mining

- Ban in Sweden, for slate, Feb. 14, p. 6
- Eco-technology discussions at ECE symposium, Feb. 28, p. 8

Strong, Maurice

- Chairman of IUCN Bureau, June 20, p. 5
- Recipient of 1976 Pahlavi Environment Prize, June 20, p. 1
- At UNHHSF meeting, June 6, p. 2

Sweden

- Baby seal skin imports stopped, Mar. 28, p. 6
- Ban on DDT and herbicides, May 23, p. 4; June 6, p. 2
- Energy policy to be developed, May 9, p. 1
- Environmental overview, May 23, p. 3
- Environmental protection spending, Mar. 28, p. 5
- High-pressure technique of radioactive waste storage, Mar. 14, p. 4
- Mercury dumping controls, May 23, p. 3; June 6, p. 8
- Nuclear power legislation, May 9, p. 1
- Strip mining of slate banned, Feb. 14, p. 6
- Sulphur acid precipitation into lakes, Apr. 11, p. 4
- Transport of dangerous substances regulated, June 6, p. 6

Switzerland

- Motor vehicle exhaust and noise ordinance, June 6, p. 6
- Rhine anti-pollution pact signatory, Jan. 17, p. 1
- Solar power plants planned, Apr. 11, p. 2

T**Taiwan**

- Air pollution control law, Jan. 3, p. 8
- Electric car introduced, Mar. 14, p. 7

Thacher, Peter S.

- On Mediterranean cooperation at Split, Feb. 28, p. 2
- On Mediterranean draft principles for land-based pollution sources, Mar. 14, p. 1
- UNEP Deputy Executive Director, Apr. 25, p. 3

Thailand

- Water pollution at Bangkok, June 20, p. 8

Tidal Power

- ECE report on, May 23, p. 5

Tolba, Mostafa K.

- Offers UNEP help to Mexico for clean air, June 20, p. 8
- At Pahlavi prize award ceremony, June 20, p. 1
- Reports to UNEP Governing Council, Apr. 11, p. 2; Apr. 25, p. 6; June 6, p. 4; June 20, p. 2
- Secretary-General of UNCED, May 9, p. 4
- At third Mediterranean conference of UNEP, Feb. 28, p. 2
- UNEP Executive Director, Jan. 3, p. 1; Mar. 14, p. 1; Apr. 25, p. 3
- At UNEP/FAO agrowaste seminar, Feb. 28, p. 4

Townley, Ralph

- Heads Desertification Conference secretariat, Jan. 31, p. 1

Toxic Chemicals (see also Carcinogens)

- Asbestos, Feb. 28, p. 6; Mar. 14, p. 4
- Asbestos dust removal system developed, Mar. 28, p. 1
- DDT sales offer by Colombia protested, Feb. 28, p. 8
- ILO list of permitted levels for worker exposure, Feb. 28, p. 6

In Japanese waters, Apr. 11, p. 3

- Lead in auto exhaust gases, Jan. 31, p. 1
- Lead level in blood, EEC testing campaign, Jan. 31, p. 4
- Lead, zinc, cadmium, arsenic in Texas-to-Mexico air pollution, Mar. 28, p. 7
- Leather curing, Mar. 14, p. 8
- Mercury, Jan. 17, p. 8; May 9, p. 8; May 23, p. 3; June 6, p. 8
- Strict controls advocated in Denmark, Mar. 14, p. 3
- Vinyl chloride, Feb. 28, pp. 6, 7

Train, Russell E.

- Fluorocarbon caution urged, Jan. 3, p. 4

Transportation

- Dangerous substances, Swedish regulations, June 6, p. 6
- Latin American capital cities, June 6, p. 5
- Motorbikes and cycles boom in Brazil, Apr. 25, p. 7
- Noiseless electric trains for Osaka, June 20, p. 8
- Public transit system for Mexico City, Feb. 14, p. 8

Treaties and Conventions

- Baltic nations' Gdansk Convention, Apr. 25, p. 6
- Helsinki Convention (1974) on Baltic Marine Environment, Apr. 25, p. 6; June 6, p. 1
- Mediterranean Convention, Jan. 31, p. 4
- Navigation Safety Agreement of ASEAN, Apr. 11, p. 6
- Rhine anti-pollution agreement, Jan. 17, p. 1; Jan. 31, p. 4
- Trade in Endangered Species, June 6, p. 8
- U.S.-Colombian weather station pact, May 23, p. 8

Tunisia

- Green belt afforestation program, May 23, p. 6

Turkey

- Air pollution in Ankara at crisis level, Feb. 28, p. 6
- Air pollution filters for Ankara, Apr. 11, p. 6
- Ankara central heating system proposed, Feb. 28, p. 6
- Legal action against Marmara Sea polluters, June 6, p. 7
- Water purifiers in Istanbul factories, May 23, p. 7

U**Uganda**

- Elephant decimation, Mar. 14, p. 7

UN Desertification Conference (UNCOD)

- CEQ report on Food-People Problem submitted, Mar. 28, p. 1
- Planning, Jan. 31, p. 1; Apr. 11, p. 2; May 9, p. 4; June 20, p. 2

UN Development Program (UNDP)

- Grant toward Trans-European Highway, June 20, p. 6
- Technology transfer for water development proposed, Apr. 25, p. 5

UN Educational Scientific & Cultural Organization (UNESCO)

- Microbiology meeting, Apr. 25, p. 8
- Solar power technology symposium, Feb. 14, p. 2
- Tropical Ecology Center established, Jan. 31, p. 6

UN Environment Fund

- Oltmanns appointed as Assistant Executive Director, Apr. 25, p. 3
- Program activities allocations 1977-79, June 20, p. 2

UN Environment Programme (UNEP)

- Agricultural waste recycling seminar, Feb. 28, p. 4
- Appointments announced by Waldheim, Apr. 25, p. 3
- Desertification Conference preparations, Jan. 31, p. 1; Apr. 11, p. 2; May 9, p. 4; June 20, p. 2
- Fifth Governing Council, Apr. 11, p. 2; Apr. 25, p. 6; June 6, p. 4; June 20, pp. 2, 6
- Financial status, Apr. 25, p. 6; June 20, p. 2
- Grant to African Wildlife College, May 23, p. 8
- Industry Seminars, Jan. 31, p. 4
- Ms. Kenyatta appointed as representative, Mar. 28, p. 7
- Mediterranean clean-up program, Jan. 3, p. 7; Feb. 28, p. 2
- Mediterranean Conference (third) and Blue Plan, Feb. 28, p. 2
- Mediterranean followup conference on land-based pollution sources, Mar. 14, p. 1
- Microbiology meeting, Apr. 25, p. 8
- Mideast forum on coastal environment, Feb. 28, p. 5
- Motor Vehicle Seminar, final report, Mar. 14, p. 2
- Ozone layer conference, Jan. 3, p. 4; Mar. 28, p. 2
- Participant in Rutgers international seminar, Jan. 3, p. 6
- Persian Gulf protection plan to be devised, Feb. 14, p. 1
- Satellite link-up with IRS Geneva, June 20, p. 6
- Shared natural resources guidelines, Jan. 11, p. 2; Feb. 28, p. 1; Apr. 11, p. 2
- Summary of Council recommendations, June 20, p. 2

Summary of history and work outlook, Jan. 3, p. 1
Tropical rain forest study in Venezuela, June 6, p. 8
War materials remnants discussed, June 6, p. 4
Workshop on Caribbean pollution, Feb. 14, p. 5

UN Habitat and Human Settlements Foundation (UNHHSF)
Operations and funding, June 6, p. 2; June 20, p. 2
Quintana appointed as Administrator, Apr. 25, p. 3
Slow progress criticized by Dr. Mead, June 6, p. 2

UN Industrial Development Organization (UNIDO)
Technology Transfer Congress held, Mar. 28, p. 6

UN Water Conference
CEQ report on Food-People Problem submitted, Mar. 28, p. 1
ECE paper on water problems, Jan. 17, p. 6
General recommendations, Apr. 25, p. 4
Mageded interview, Apr. 25, p. 5
Specific national activities report, May 9, p. 5

United States
CEQ report on Food-People Problem, Mar. 28, p. 1
Contribution to UNEP, Apr. 25, p. 6
Environmental efforts assessed at Rutgers international seminar, Jan. 3, p. 6
EPA meeting on ozone layer problem, Mar. 28, p. 2
Geothermal power capacity, Feb. 14, p. 8
Weather station pact with Colombia renewed, May 23, p. 8

Urban Planning
Mexico City, Mar. 14, p. 3

Uruguay
Shared-river project with Argentina, May 9, p. 6

USSR
Contribution to UNEP, Apr. 25, p. 6
Fishing fleets pollute Japanese waters, Mar. 28, p. 8
Nuclear plant at Kursk in use, Apr. 25, p. 8

V

Venezuela
Environment Ministry functions and goals, Feb. 14, p. 3
Environmental research programs and agency, Apr. 25, p. 2
Traffic problem in Caracas, June 6, p. 5
Tropical rain forest preservation, June 6, p. 8; June 20, p. 6
UNESCO Center for Tropical Ecology founded, Jan. 31, p. 6

Vibration
Japanese railroad, countermeasures, Feb. 28, p. 3

Vizcaino Murray, Francisco
President of UNEP Governing Council, Apr. 25, p. 2

Vollmer, Fritz
Protests rare species hunting in Peru, June 20, p. 7

W

Waldheim, Kurt
Presents Pahlavi Environment Prize, June 20, p. 1
UNEP appointments announced, Apr. 25, p. 3

Waste Matter (see also Garbage; Industrial Wastes; Solid Waste Disposal)
Agro-waste recycling seminar of FAO/UNEP, Feb. 28, p. 4
British law prohibits dumping on land, June 20, p. 8
Recycling compulsory in Japan, Feb. 14, p. 6

Waste Water Purification
Oil refinery unit, June 6, p. 7
Submersion reactor unit, May 9, p. 7

Water Conference. See UN Water Conference

Water Pollution (see also Coastal Water Pollution; Marine Pollution)
Baltic Sea, Apr. 25, p. 6
Bangkok's Chao Phya River, June 20, p. 8
BOD and COD measurements in Japan, Apr. 11, p. 3
British study of pesticide and fertilizer effects, Apr. 25, p. 1
Bulgarian clean-up program, Mar. 14, p. 8
Chromatic acid an alleged carcinogen, Apr. 25, p. 2
Danube River, Jan. 31, p. 5; June 20, p. 6
ECE paper, Jan. 17, p. 6
Fertilizer effects in Punjab, May 9, p. 1
Hong Kong harbor clean-up, Mar. 14, p. 6; Apr. 11, p. 6
Hungary, May 9, p. 8
Industry fines finance clean-up in Colombia, Jan. 31, p. 7
Irish lake eutrophication, June 20, p. 7
Isotope tracers used for detection, May 9, p. 6
Istanbul factories install purifiers, May 23, p. 7
Japan, Jan. 17, p. 2; Mar. 28, p. 8; Apr. 11, p. 3
Legislation urged to control industrial pollution, Apr. 25, p. 5
Liberia plans control legislation, May 9, p. 2
Liming combats acid precipitation in Swedish lakes, Apr. 11, p. 4
Mexican spending to be increased, Jan. 31, p. 6
Mexico, Apr. 25, p. 2; June 20, p. 4
Philippines, Feb. 14, p. 7; June 20, p. 8
Rhine anti-pollution agreement, Jan. 17, p. 1; Jan. 31, p. 4
Sodium cyanide accident on Jizera River, Feb. 28, p. 7
South Korea, Jan. 17, p. 7
Tokyo, control measures, Apr. 11, p. 3
Venezuelan progress in controls, Apr. 25, p. 2
Yarkon River, Israel, cleansed by sea water dumping by power plant, Feb. 14, p. 8

Water Resources and Supply
Argentine/Uruguayan shared-river project, May 9, p. 6
British conservation experiment with variable toilet flushes, Apr. 11, p. 7
Called problem in 16 countries (CEQ report), Mar. 28, p. 1
Drought episodes of 10 years discussed, May 9, p. 4
Drought in Colombia forces rationing, June 20, p. 5
Drought in Haiti, Apr. 11, p. 5
EEC discussions, Jan. 31, p. 4
India experiments with prevention of evaporation, Mar. 14, p. 7
Irish program, Apr. 11, p. 6
Israeli advances in technology, May 9, p. 5
Mexican Cerro de Oro dam project, Apr. 11, p. 1
Mexico computerizes water resources, May 9, p. 7
Nigerian development activities, May 9, p. 5
Shortage in Brazil, roof catchment planned, May 23, p. 5
South Korean "wide-zone" waterworks plan, Feb. 28, p. 7
Treatment plant for Colombia's Magdalena R., June 20, p. 7
Venezuela, Feb. 14, p. 3
World problems and goals discussed at UN Conference, Apr. 25, p. 4

Wave Energy
British research expanded, June 8, p. 8

Weather
Hail prevention rocket developed by Czechs, Mar. 28, p. 8
Prediction and engineering breakthrough claimed by Czech, June 20, p. 1
U.S.-Colombian agreement on station renewed, May 23, p. 8

Wildlife (see also Birds)
African Wildlife College gets UNEP grant, May 23, p. 8
Bat study and protection in Bavaria, Mar. 28, p. 7
Bavarian snail-taking law shows results, May 23, p. 7
British farming as threat to, June 20, p. 5
Dangers and programs in Malaysia, May 23, p. 2
EEC assumes role in protection, Feb. 14, p. 5
Elephant decimation in Uganda, Mar. 14, p. 7
Green turtle endangered in Pakistan, Jan. 31, p. 7
Irish legislation, June 20, p. 3
Irish Sika deer form new colony in Mideast, Jan. 31, p. 8
Kenyan parliamentary debate, Jan. 17, p. 5
Kenyan protection order, June 6, p. 6
Pakistan bans skin exports, Apr. 11, p. 8
Porpoise and dolphin protection urged, Apr. 25, p. 7
Seal killing protested by WWF, Mar. 14, p. 6
Swedes stop import of baby seal skins, Mar. 28, p. 6
Threats of extinction in Bavaria, Feb. 14, p. 2
Trade in Endangered Species Convention, June 6, p. 8
Vicuna protection, June 6, p. 8
Wolf protection in Italy, Mar. 14, p. 7

Wind Power
Argentine feasibility study, June 20, p. 3
ECE report on, May 23, p. 5
Harnessing in Mexico suggested, Feb. 14, p. 7

Wood Residues
ECE Symposium extolls use of bark, Jan. 31, p. 8

World Bank
Flood control loan to Pakistan, Mar. 28, p. 7
Greek irrigation projects aided, Jan. 3, p. 8
Loan to Kenya for wildlife protection, Jan. 17, p. 5

World Health Organization (WHO)
Air pollution criteria in Motor Vehicle Seminar report, Mar. 14, p. 2
Fluorocarbon concern, Jan. 3, p. 5
Sulphur dioxide limits, Jan. 17, p. 3; Feb. 28, pp. 6, 7

World Meteorological Organization (WMO)
Solar power technology symposium, Feb. 14, p. 2

World Wildlife Fund (WWF)
Amazon rain forest protection urged, June 20, p. 6
Leathery turtles program, May 23, p. 2
Porpoise and dolphin protection urged, Apr. 25, p. 7
Praise for Italy's wolf protection, Mar. 14, p. 7
Rare species hunting in Peru protested, June 20, p. 7
Seal killing by Canada and Norway protested, Mar. 14, p. 6
Tropical rain forest study grant, June 6, p. 8
Urges ratification of Endangered Species Treaty, June 6, p. 8

Z

Zaire
Environmental Ministry and programs, Apr. 25, p. 3

Zuleta, Bernardo
At Law of the Sea talks, Apr. 11, p. 1

World Environment Report...

Is the first and only publication of its kind: an eight-page, biweekly newsletter that keeps you informed of significant happenings on today's world environment scene. *WER's* staff of 50 correspondents posted around the world monitors the environmental activities of governments, corporations, international organizations, scientists, universities, and citizens groups. It is published by the Center for International Environment Information, a private, non-profit organization established by the UN Association of the USA with the support of the UN Environment Programme. The Center alone is responsible for all material presented in *WER*.



World Environment Report

28 JUN 1977

VOL. 3, NO. 13

Copyright ©1977, Center for International Environment Information.

JUNE 20, 1977

Pahlavi Environment Prize Won By Conservationists Cousteau and Scott

UNITED NATIONS, New York—Coincident with the annual celebration of World Environment Day on the June 5 weekend, Secretary-General Kurt Waldheim presented Commandant Jacques-Yves Cousteau of France and Sir Peter Scott of the United Kingdom with The International Pahlavi Environment Prize for 1977. This was only the second such presentation, the first having gone last year to Maurice Strong of Canada, the first Executive Director of the UN Environment Programme (UNEP).

The Prize, which includes an award of \$50,000 donated by the Government of Iran through the United Nations, is given annually for the most outstanding contribution in the field of the environment. It was presented at a special ceremony here attended by His Imperial Highness Prince Abdorreza Pahlavi, representing the Government of Iran; Misael Pastrana-Borrero, Chairman of the Advisory Selection Committee and former President of Colombia, and Mostafa K. Tolba, Executive Director of

The two recipients who shared this year's Prize are both internationally distinguished environmentalists. Commandant Jacques-Yves Cousteau was one of the first persons to draw world attention to marine pollution. By his oceanographic campaigns, aboard his famous ship "La Calypso," and in writing, films, and speeches, he attracted the world's attention to the necessity of preserving its underwater resources. As Director of the Monaco Oceanographic Museum, initiator of the "Pre-continent" diving program, Secretary-General of the International Commission for the Scientific Exploration of the Mediterranean, and member of the French Prime Minister's "High Committee for Environmental Matters," Commandant Cousteau, according to the citation, has brought and is still bringing an invaluable contribution to the preservation of our environment.

Sir Peter Scott, the citation said, has devoted his life to the preservation of our environment. A great ornithologist, author, painter, illustrator and broadcaster, Sir Peter has made an invaluable and far-ranging contribution to the preservation of the world's wildlife. Founder of the World Wildlife Fund among many other important conservation activities, Sir Peter "has done much for the preservation of the natural heritage."

A.W.

Czech Scientist Claims Major Discovery in Weather Prediction

PRAGUE—The claim of a major discovery by Czechoslovak scientist Vaclav Bucha, chief of the Geophysical Institute of the Czechoslovak Academy of Sciences in Prague, promises to revolutionize weather prediction and consequently farming methods. Ultimately the discovery could be used for weather engineering on a global scale.

Bucha noted that increased solar activity leads at regular intervals to the ejection of corpuscular radiation in the direction of the earth. This radiation, initiated by increased geomagnetic activity, is trapped by the earth's magnetic field and accumulates several thousand miles above the earth. In the areas of greatest accumulation an explosion occurs, sending part of the radiation in the direction of the earth, to the north auroral oval defined by Greenland, Spitzbergen, Kamchatka, and north Canada. Ionospheric storms follow, with electrical currents warming the atmosphere over the auroral belts by as much as 30 degrees.

Within two to five days, air over the entire oval is warmed, cyclones develop over the geomagnetic pole, and weather in the northern hemisphere begins to change. It takes 10 to 16 days for the change to reach central Europe, Bucha says. Comparable studies for the U.S.A., he adds, are yet to be made.

Bucha successfully predicted last year's summer drought in Europe and this year's long winter. If weather can be precisely predicted, he says, it will be possible to adapt farming methods to expected weather. Bucha's theories about solar-meteorological relationships could provide a foundation for the understanding of the causes of long and short-term climatic changes and ultimately provide a key to the control of climate.

IVA DRAPALOVA

In This Issue

UNEP's Governing Council	2
Wind Power in Argentina	3
Peru Goes Nuclear	3
Irish Wildlife Legislation	3
Mexico's Environment Chief	4
Strong Appointed to IUCN Post	5
In Brief	6

UNEP's Fifth Governing Council Agrees on Long-Range Programs

NAIROBI—The fifth Governing Council of the United Nations Environment Programme (UNEP), held here May 9-25, succeeded in developing a sound framework for UNEP's transition, after its initial five years, into a rapidly-maturing organization which has now earned a permanent place in the world's international bodies.

Despite the predictable clashes between the Soviet Union and China, and between Israel and the Arab states, the Council agreed on a wide range of activities, including the approval of a \$150 million target for the Environment Fund for the 1978-81 period. Some states, including the U.S. and France, had at first opposed the increase (up from \$100 million for 1973-1977) as too big.

Delegates and observers from 67 countries attended the meeting. Ludvik Ochocki, of Poland, was elected President, with Dr. Gikonyo Kiano (Kenya Minister for Water Development), Anthony Spaulding (Jamaica Minister of Housing), and Hans Pflaumer (West Germany) as vice-presidents, and Namir Y. Zainal (Iraq) as rapporteur.

The Council devoted two days to preparations for the UN Conference on Desertification (UNCOD), to be held in Nairobi from August 29 to September 9, including the reports from the previously-held four regional preparatory meetings.

Among the main decisions adopted by the Governing Council were:

- The authorization of allocations (in millions) for program activities of the Environment Fund at the rate of \$35.7 in 1977, \$31.6 in 1978, and \$30 in 1979, with \$14.9 for support costs in 1978-79.
- That the needs of developing countries be given careful consideration when forming future projects.
- That an information service for housing and human settlement financing is needed to help developing countries.
- That the U.N. General Assembly be invited to set a target for voluntary contributions for 1978-81 for the UN Habitat and Human Settlements Foundation (UNHHSF), bearing in mind the Executive Director's proposal of a \$50 million target.
- That potentially harmful food and chemicals, unacceptable for domestic purposes in the exporting country, should not be "unloaded" on to another country.
- That UNEP, in collaboration with other agencies and organizations, develop an action program to improve the working and living environment of workers in industry and agriculture.
- That states which have not yet acceded to international conventions against marine pollution should be urged to do so as soon as possible.
- That UNEP and the International Whaling Commission (IWC) agree on dates for a planned conference on whale conservation.
- That governments and international agencies support

the world plan of action on the ozone layer.

- That a detailed assessment be made of one important pollutant (the precise one to be selected).
- That UNEP convene a preparatory meeting to combat pollution in the Gulf of Guinea, and help develop a scientific program for the management of East Asian seas.
- That UNEP review environmental problems associated with iron and steel and non-ferrous metals industries, and develop its industry program geared to the increasing needs of developing countries.
- That UNEP welcomed the establishment of a regional program activity center for environmental education and training in Africa, and endorsed intentions to establish similar centers in other regions.

The USSR delegation, however, did not support the decision on a whaling conference, and placed its opposition on the record.

In his closing statement to the Council, the Executive Director, Dr. Mostafa K. Tolba, said: "You have clearly indicated that UNEP's role is to report to the world community when the evidence suggests there is a potentially great risk to the environment, and to promote alternative courses of action which are less damaging to the environment. I can assure you, and the peoples whom you represent, that we attach the utmost importance to this responsibility. We shall exercise it with care but without fear or reluctance."

On the subject of UNHHSF, and allegations of unjustified delay in implementing the decisions of the Vancouver Habitat conference, Dr. Tolba said he hoped the "temporary uncertainties" would be solved at the forthcoming meetings of the UN Economic and Social Council (ECOSOC) and the General Assembly.

CHARLES HARRISON

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$125 per year. \$15 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
 Editor-in-Chief Albert Wall
 Circulation Manager Ann C. Werner
 Correspondents covering more than 60 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Program (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

Peru Signs Its First Nuclear Contract—With Argentina

LIMA—Peru has signed its first nuclear contract through which Argentina will loan a zero-type reactor, free of charge, to the Instituto Peruano de Energia Nuclear (IPEN), Peru's nuclear agency.

This is the first step towards research and training in nuclear energy in the country. The zero-type reactor will be installed on a site adjacent to IPEN's headquarters in the center of Lima, and is scheduled to go critical next March. Although the zero-type has almost no thermal output—technically it “produces” nothing—it is a sophisticated simulator of a real light water reactor and therefore is ideal for IPEN's purposes of training personnel before creating a new nuclear complex at Huarangal, in the Chillón Valley, 25 miles north of Lima.

The proposed nuclear complex is to be furnished with a 10-14 Mw light water reactor (swimming pool type), laboratories for geology, mineralogy, physics, and other scientific research plus a training school with classes run in conjunction with studies carried out by students from local universities. It is expected that the complex will also manufacture yellow cake (uranium oxide)—the raw material used to produce fuel elements for nuclear reactors.

The project will cost an estimated \$50-80 million and it is hoped that it will be completed in 1981. A Letter of Intent, signed with Argentina last March, states that until that agreement expires in September, Peru cannot negotiate for reactors with any other country. However, according to local sources, GEC of Britain and Technicatome of France are still interested in supplying the reactor and technology for the center in the Chillón Valley. Moreover, a Peruvian delegation is currently in France and has been reported as being particularly interested in French nuclear technology for Peru.

Plans for the nuclear complex are to be submitted to the International Atomic Energy Authority (IAEA), which is responsible for enforcing safety precautions. The Authority has already asked for a special seismic report since it is believed that the nuclear center may be situated in a potential earthquake zone.

IAEA clearance means that the energy can only be used for peaceful applications. IPEN says it hopes to eventually convert the reactor energy for use as an alternative to oil. The agency is well aware of the energy problem, especially since Peru's main source of energy at the moment is oil and dependency on it is increasing at one of the fastest rates in Latin America.

There are 17 hydroelectric stations in the country and this type of station could be developed as a feasible alternative to oil and be less expensive than going nuclear. At the moment, they only use five per cent of economically usable and potential capacity.

LORETTA MCLAUGHLAN

Ireland Passes First New Wildlife Legislation in Nearly 50 Years

DUBLIN—A new Wildlife Act, signed into law this June in Ireland, is the first such comprehensive wildlife legislation in this country in nearly 50 years.

The Minister for Fisheries, whose purview formerly extended only to administering land use, now takes over all responsibility for the conservation of animals, birds, and plants. A Wildlife Advisory Council is to be established to advise the Minister.

All wild birds, except a few pest species, and less common wild animals, are now protected, along with endangered flora. There are powers to set up nature reserves, marine reserves, and refuges for fauna.

Hunting laws, unrevised since 1930, now allow only qualified persons with lawful access to sporting rights to hunt game during statutory open seasons, and residents and visitors must all have hunting licenses. Trade in protected game and fauna will be restricted.

New controls debar unsuitable firearms and certain devices, traps, decoys, and lures. A person convicted of deliberately, or through gross negligence, causing a fire in woods and plantations faces a heavy fine and a claim for damage.

TOM MACSWEENEY

Argentina Studies Wind Power To Generate Electricity

BUENOS AIRES—The Energy Office of Buenos Aires Province is studying the feasibility of using air-powered generators for producing electricity, particularly in isolated rural areas cut off from main power lines.

Many Argentine rural regions have average wind speeds allowing for energy generation, the study pointed out, and air-powered generators are already being used here to extract well water.

The study also noted that experiments during the 1940s in the U.S. produced machines with capacities from 100 to 1,000 kilowatts, and that in Denmark one generator was developed that produced 118,000 kilowatt hours per year.

Aside from high costs, the major problem is providing an outlet for the accumulated energy generated. Massive generation has to be tied into a major energy-releasing network or be used in a system which has no restrictions on hourly usage. The energy, of course, must also be transformed into electricity, and such experiments thus far have proven uneconomical.

Nevertheless, the study showed it was feasible to use wind power for small generators of up to 10-kilowatt capacity. Battery-powered converters then can be used to transform the energy into electric current.

AGOSTINO BONO

SPECIAL REPORT: Interview With Mexico's Environment Chief

MEXICO CITY—An experienced professional who views his work as a series of challenges and solutions rather than as an endless procession of problems is Mexico's new chief of environmental improvement, Sub-secretary Humberto Romero Alvarez. A civil engineer with a master's degree in Public Health Engineering from the University of Michigan, Romero Alvarez's dedication to public health already has brought him honor as the first non-physician elected to Mexico's National Academy of Medicine.

The 54-year-old official, appointed to his job by Mexican President Jose Lopez Portillo on assuming office last Dec. 1, has restructured his secretariat to meet problems head-on in whatever level of the environment they may occur. Whereas his predecessor had every problem channeled through a system of investigators, coordinators, and analysts, Romero Alvarez has developed teams of specialists in each field who investigate, analyze, recommend solutions, and carry them out in the areas of water, atmosphere, food, plants, and waste products.

"We are program oriented, rather than oriented toward an administrative system," Romero Alvarez said in an interview with *World Environment Report*. "Our basic team is composed of physicians and engineers, working together to see the problems and, we hope, to solve them."

Romero Alvarez remarked on Mexico's peculiar environmental problems. "On the one hand, probably 40 per cent of our population is without adequate sanitation facilities. On the other hand, we have problems of chrome, arsenic, and lead emissions in the atmosphere from factories—the problems inherent in an industrialized nation. Thus, we combine the ecologic problems of the poor nations with the problems of the developed countries."

The new sub-secretary plans to work closely with other departments of government, such as Water Resources and Public Works-Human Settlements, in "promoting, coordinating, offering technical advice and implementing the laws" on environmental improvement. He visualizes his role as positive, rather than negative, preferring to emphasize the cleansing of the environment rather than the "punitive" combatting of existing pollution. "Environmental sanitation is better than talk of pollution control," he maintains.

Primarily, the technical focus of the sub-secretariat will be on providing fresh water and clean air throughout Mexico. Emphasis also will be placed on improved quality of the foods Mexicans eat—"not a system of simply inspecting restaurants or cafes, but going to the primary producer—the large-scale farmer—and reminding him that we want the highest quality," he explained. Mexico thus will be the first country in Latin America to have federal government supervision of the sanitary quality of foodstuffs, he said.

Two other ambitious programs now contemplated by the Mexican government involve an emergency ecological plan to designate the entire Valley of Mexico basin as a national enclave, and a tripartite commission to save Lake Chapala—measuring 850-square miles, Mexico's largest—from massive contamination.

Generally, designation of the valley as a national park would enable the federal government to coordinate steps needed to combat the ecological disequilibrium "that threatens to annul the region as a human settlement and as a great economic, political and social laboratory," said Hernan Perez Morosco, who is working with the Commission for the Ecological Regeneration of the Basin of the Valley of Mexico.

Through various multi-discipline programs, renewable and non-renewable resources of the area would be preserved and controlled, with emphasis in three general areas: hydraulic infrastructure for the control of waters; soil conservation through terracing, forestation and the opening of land to controlled grazing and cultivation; and a "drastic" control of the means of urban contamination, especially as created by industry and transport.

Aside from Chapala's culinary (whitefish) and avian attractions, the lake provides water for Guadalajara's 2.4 million population and powers a half dozen electricity-generating plants, plus servicing multiple irrigation projects.

Industries and municipalities ringing the lake have been guilty in the past of dumping wastes into it, but as of this August, he said, they will be required to process their waste through water treatment plants. Finally, he said the "principal preoccupation" of the government is the discharge of wastes by industries in five surrounding states into tributaries of the Rio Lerma—the principal river that flows into Lake Chapala.

Prior to his new assignment, Romero Alvarez had a proven track record in environmental affairs. He led Mexico's successful national drive from 1961 to 1964 to eradicate malaria, and subsequently became chief of water and sewage systems for Mexico City. He believes in giving praise where it is due, noting that the U.S. created the concept of public health studies and remains dominant in that field worldwide.

Besides its usual roles, Romero Alvarez sees his sub-secretariat invading the realms of "occupational hygiene," job safety, and cleanliness, peripheral but important areas that have not been given due weight in Mexico on a national governmental level.

Thus far, the new sub-secretary has carte blanche. Although he reports to the federal Secretary of Health and Public Assistance, he has received no direct orders from his superior other than to do his job. "If I do it well, I stay," he said. "If I do not do well, then I leave. It is that simple. I am very excited about this environmental work. I think we will do well." KATHERINE HATCH

Maurice Strong Elected Bureau Chairman and D-G of IUCN

GENEVA—At its first meeting after the close of the 13th General Assembly, the Council of the International Union for Conservation of Nature and Natural Resources (IUCN) unanimously elected Maurice Strong of Canada as Chairman of the Bureau. The organization is headquartered in Morges.

Both the Council and the Bureau are new bodies created under revised statutes which came into force last April. In essence the Council is a bigger and more professional executive board and the Bureau is a strengthened and more active executive committee.

In taking up his new appointment as Chairman of the Bureau, Strong stressed the unique character of IUCN as the "nerve center of the world conservation movement." While still remaining Chairman of Petro-Canada, Calgary, he will henceforth be devoting a great deal of his energies to the Union's affairs.

Secretary-General of the 1972 Stockholm Conference on the Human Environment and then, for the next three years, Executive Director of UNEP, Strong has an excellent conservation background. His immediate aims are to generate greater support for IUCN by governments, aid agencies and the world of business, and to seek closer liaison with decision-making bodies.

At the General Assembly's conclusion, President Donald Kuenen explained that Strong will also be temporarily assuming the functions of Director General as he directs the search for the right person for this post which has now been vacant for over a year.

Colombia's Severe Drought Forces Electrical and Water Rationing

BOGOTA—Widespread pollution, plus massive destruction of forests and other ecological disasters have severely reduced Colombia's fresh water supply, according to a recent survey by the Agricultural Society of Colombia (SAC).

Forty-one per cent of the country's 25 million people have been affected by a prolonged drought, not quite but nearly as severe as Haiti's (*WER*, April 11, p.5), which has hurt agricultural production and forced electrical and water rationing in all the major cities. To date, fifty per cent of the rural municipalities queried in the survey have reported severe water shortages.

According to SAC, the drought has sorely aggravated an already grave river pollution problem throughout the country. More than 55 per cent of the municipalities stated that their rivers were a "permanent" loss—choked by garbage, chemical waste, and other pollutants, and now completely dried up.

Municipal officials were unanimous in blaming the destruction of forests for their water problems. Half the

municipalities surveyed reported major forest fires in the past year alone, many of which could not be controlled because of a lack of fire-fighting equipment. Moreover, the SAC report said, reforestation programs sponsored by such government agencies as the wildlife service INDERENA and local development corporations are "merely a drop of water in the desert" compared to the country's needs. One major recommendation is that all future loans to municipalities include an obligatory percentage to be spent on the planting and conservation of trees.

PENNY LERNOUX

Wildlife Reduction in Britain Traced to Farming Methods

LONDON—"All the factual evidence suggests that Britain faces a serious reduction in wildlife if present trends continue," according to a report, "Nature Conservation and Agriculture," published recently by the Nature Conservancy Council (NCC).

As described by this government-funded but otherwise independent body, the dangers consist of increasing specialization, mechanization, and sophistication in the use of chemicals for farming. Since agriculture is by far the largest land-user, and the Government has stated it aims to expand agricultural production by two-and-a-half per cent each year to improve the country's balance of payments, the result, the NCC report argues, is likely to be the intensification of produce in the lowlands and the extension of modern agricultural technology into the uplands.

Local and national nature reserves of all kinds take up 0.8 per cent of the total land surface of Great Britain. Even with a potential increase to 4.1 per cent, such additional sites, the report said, would be "quite inadequate to conserve our existing flora and fauna."

The NCC therefore concluded that it is in the mass of lowlands under cultivation that precautionary measures are most needed, for it estimates that if all farms were totally modernized "about 80 per cent of the bird and about 95 per cent of the butterfly species would be lost from the farmed landscape."

Foremost among the report's 14 recommendations is a plea for the Government to promote an overall strategy for rural land use which would recognize that "wildlife is a vital part of the real capital wealth and heritage of the nation." This, it was felt, would encourage farmers to increase productivity on existing crop lands as opposed to offering them fiscal incentives to reclaim land whose value was greater as habitats for wildlife.

The NCC's chief aim, said Director Robert Boote, is the protection of endangered wild genetic stock, vital in the evolution of improved crop species. If its program fails, Britain could, within five years, inherit a countryside of "pest, pollution, and people," he cautioned.

BARBARA MASSAM

In Brief . . .

UNEP Establishes Satellite Link-Up For IRS With Geneva

During the annual Governing Council session in May at UN Environment Programme (UNEP) headquarters in Nairobi, a satellite link-up was established between UNEP headquarters and the computer at UNEP's Geneva office which contains the data bank of the International Referral System (IRS).

The 24-hour-a-day teleprinter terminal was initially established in Nairobi's Kenyatta Conference Center for the use of delegates at the Governing Council, and subsequently transferred to UNEP headquarters at Gigiri, on the city's outskirts. Annual cost of the satellite circuit between Nairobi and Geneva is \$20,000.

The IRS, which only provides sources of environmental information, rather than detailed data, is a fundamental part of Earthwatch, UNEP's program for the critical assessment of the global environment.

Currently IRS has roughly 3,000 references in store, and another 1,000 being processed for inclusion in the data bank. By year's end, the number of references will likely reach 10,000.

ECE Will Coordinate Plans For Trans-European Highway

The United Nations Economic Commission for Europe (ECE) has announced in Geneva that a special office will be opened shortly in Warsaw this year to coordinate plans for a trans-European motorway to be completed by 1990.

The superhighway is conceived as a uniformly planned and designed system of high capacity roads with Gdansk on the Baltic coast of Poland as its northern terminal and points on the Iranian and Syrian frontiers of Turkey as its southeastern terminals. It will traverse Austria, Bulgaria, Czechoslovakia, Greece, Hungary,

Italy, Poland, Romania, Turkey and Yugoslavia. Southern terminals are projected for Udine, Italy; Rijeka and Ploce in Yugoslavia; Athens and Igoumenitsa in Greece; and Constanta in Romania.

Participating countries are expected to contribute up to a total of one million dollars to the project in the first three years. The United Nations Development Program (UNDP) will contribute \$350,000.

Czechs Say Danube Contains 700,000 Coli Bacteria Types

The river Danube, no longer the blue Danube Strauss celebrated in his famous waltz, now contains, on the average, 700,000 coli type of bacteria and countless numbers of pathogenic bacteria, especially of the salmonella type, Bratislava researchers have reported. In addition, the surface is polluted by oil and the fish cannot be consumed.

Vienna, with its two million population, lying upstream from Bratislava, the capital of Slovakia, is producing seven square meters of city wastage and twenty-five square meters of industrial wastage per second. Christmas carp stored in the Danube were so infected with salmonella that a prohibition of sale was considered.

Self-cleansing of the Danube within Czechoslovak territory represents about 70 per cent, but even so, the river, as it flows out of the country, is still not suitable for swimming.

Czechoslovakia presently contributes 37 per cent to the pollution of the river, of which 68 per cent is caused by four major polluters: Bratislava Slovnaft plant; the Bratislava city wastage plant; a large farming cooperative; and the paper and pulp plant in Sturovo. However, more cleaning stations are planned, in addition to the one in Sturovo.

The next step is the cleansing of all Danube tributaries on Czechoslovak territory. This is imperative if underground reservoirs of drinking water fed by the Danube are not to be endangered.

Pakistan Issues Gold Coins For Environmental Protection

A limited number of commemorative gold and silver coins has been issued by the Pakistan government to highlight the need to promote rational management of the earth's resources and halt destruction of the natural environment. Another goal is to help finance projects aimed at protecting wilderness areas and conserving wildlife and plants in their natural habitat.

The gold issue comes in 3,000-rupee denominations (US \$300) and depicts an astor markhor (a wild goat native to Pakistan) standing on a rock crag. Two denominations of silver coins are available, one of 150 rupees, the other 100 (US \$15 and \$10). The former depicts a crocodile in a marsh swamp, the later a tragopan pheasant perched on a branch.

Five Lat-Am Nations Urged By WWF to Save Rain Forests

The World Wildlife Fund (WWF) has urged Bolivia, Brazil, Colombia, Peru, and Venezuela to safeguard viable representative samples of the rain forests of the Amazonian basin.

Sir Peter Scott, WWF Chairman, has forwarded to the presidents of the five countries the resolutions of the Fourth International Congress which pointed out that the genetic diversity of the rain forests was not at present being safeguarded.

The resolutions recognized the need to make productive use of the Amazonian area and the conservation efforts already made by Peru and Venezuela. They urged the countries involved to assign the necessary administrative and financial resources for proper management and to establish and implement sound ecological development, integrating agriculture, animal husbandry, forestry, wildlife and fisheries management, oil and mineral exploitation, tourism and recreation in such a way as to make optimal use of the natural renewable resources.

Iranian Prince Creates Furor Over Bear Hunting in Peru

The Shah of Iran's brother, Prince Abdorreza Pahlavi, recently left Peru amidst an international furor which arose over his right to hunt an almost extinct species of bear.

He had arrived in Peru for a brief hunting trip in the southern region around Cuzco. However, while in Lima, it was discovered that the government had issued him a special permit to kill one Spectacled bear and one Taruca, an Andean deer.

The bear is listed in Volume I of the "Red Data Book," June 1969, while the Taruca, too, is a protected animal in Peru.

As his plans became known, outraged Peruvian conservationists accused him of being irresponsible. Meanwhile, Peru's President, General Francisco Morales Bermudez, received a cable from the World Wildlife Fund, signed by Director General Fritz Vollmer, asking him to withdraw the permit.

Nevertheless, the determined prince continued with his plans and led an expedition, which included two taxidermists, to the Cuzco area where he soon bagged a Taruca. It was immediately stuffed and sent to Teheran's Natural History Museum.

Some days later, Prince Abdorreza left the country, saying that he had only seen small examples of the Spectacled bear which were of no interest to him.

Bavarian Airplanes Monitor Impact of Sulphur Dioxide

The Bavarian Environmental Protection Ministry announced here recently that it has "scrambled" planes over the Nuremberg-Furth-Erlangen area to monitor sulphur dioxide and other air pollutants at different altitudes over a two-week period. The results, the ministry explained, will provide a basis for "emission prognosis and air anti-pollution measures."

This, however, will not be a one-

shot effort. Further flights will be carried out—in both winter and summer—to permit experts to measure the impact of home heating emissions.

The measurements will cover an area of about 500 square miles at altitudes of 300, 900, and 1,500 feet. In addition, a balloon truck will move about the same area collecting data on vertical temperature distribution, humidity, and direction and velocity of the wind.

Ireland's Fabled Lakes Threatened by Eutrophication

A national conference in Killarney recently examined the condition of a number of Irish lakes suffering heavily from eutrophication. It found that among the victims are Lough Ennell in County Westmeath and the famous Lakes of Killarney.

Eutrophication is now a serious problem in Ireland. Scientists have warned that failure to treat important lakes will adversely affect tourism and significantly increase costs of water purification for industrial and public consumption.

The General Manager of the Irish Inland Fisheries Trust, Sean Mc-Morrow, told the conference that efforts to control eutrophication must be closely linked to development of health and sanitary facilities.

Environmentalists, however, are unhappy with a Pollution Control Bill now moving through the Irish Parliament which allows a considerable free hand to local authorities, regarded in many quarters as among the worst polluters.

One bright spot at the conference was the report of a new cost-cutting method of removing phosphorus from town sewage which has dramatically lowered phosphorus levels in the Lower Lake of Killarney since last July. According to researchers, the process involves the use, in Killarney's sewage treatment plant, of industrial wastes brought in from a nearby nuts and bolts factory.

Buenos Aires Uses Garbage To Create Recreation Sites

Officials in Buenos Aires have announced plans to use garbage to develop park and recreational lands in the greater metropolitan area. The plans call for using sanitary fill to raise lowlands along the River Plate, allowing them to be used as recreation sites.

About 40,000 acres of unusable lowlands bordering Buenos Aires can be reclaimed this way over a number of years, according to provincial and local officials. They say the 5,232,000 cubic yards of garbage produced annually in the city can be used to elevate about 500 acres of riverfront land a year by six-and-a-half feet.

Plans include planting up to 10 million new trees. Besides providing recreational lands, the reclaimed area will also help prevent floods.

French Will Construct Water Treatment Plant for Colombia

Colombia's state oil enterprise Ecopetrol has contracted for the construction of an \$11 million water treatment plant to the French firm De Gremont in the city of Barrancabermeja, Ecopetrol's refinery headquarters.

To be completed next year, the plant will treat 14,000 gallons per minute of oil-polluted water from the Magdalena River, Colombia's most important waterway.

FAO Opens Permanent Headquarters in Bogota

General Director Edouard Saouma, of the Food and Agriculture Organization (FAO), recently opened a permanent Latin American office in Bogota. Colombia was selected as FAO headquarters because it is one of the most important agricultural producers in Latin America, according to Saouma.

Noiseless Electric Trains Slated for Osaka Suburb

Noiseless two-car electric trains running on rubber tires along a special 7.2 km track will begin service between the subway terminal and Osaka's new port city in the spring of 1980.

It is estimated that 72,000 passengers will use the service daily along the eight-station line that is to connect a port development now being built to house some 57,000 people on reclaimed land in the suburbs of Osaka.

The novel trains, carrying up to 75 passengers in each of its two cars, were first demonstrated at Okinawa International Oceans Exposition of 1975. The system will be run by computers and will cost an estimated \$78 million to install.

UNEP Offers Help to Solve Mexico City's Air Pollution

Mexico has been offered help by the UN Environment Programme (UNEP) to end the air pollution which plagues Mexico City. In a recent visit, Dr. Mostafa K. Tolba, UNEP's Executive Director, told Mexican President Jose Lopez Portillo that Mexico can and should benefit from procedures successfully used in London, Los Angeles, and Pittsburgh—cities he described as "almost dead from smog," before they were cleaned.

Bangkok Liquor Distillery Polluting Major River System

Deputy Secretary-General of the National Environment Committee in Thailand, Kasem Snidwong na Ayutthaya, has disclosed that industrial wastes from liquor distilleries lacking proper waste treatment systems are the major pollutants of Bangkok's principal river, the Chao Phya.

The finding emerges from the first analytical study under the four-year Lower Chao Phya Environmental Study Program. Pollutants discharged into the river at the end of this year will increase to 80,000 kilograms per day, Kasem said, and unless there is proper control on industrial plants, especially liquor distilleries, the Chao Phya will continue to deteriorate.

Environment Protection Unit Established in Philippines

A National Environmental Protection Council was recently established by President Ferdinand Marcos of the Philippines to carry out the government's environmental programs. The new agency's job will be to curb pollution sources identified by the Inter-Agency Committee on Environmental Protection (IACEP).

According to the IACEP, charged with investigating the country's environmental problems, extraction and utilization of natural resources ranks ahead of industry as the major source of pollution in the Philippines.

The IACEP has found that those responsible for the destruction of forest resources are itinerant cultivators and illegal loggers. Of the 17 million hectares of forest land within the country, 5.1 million hectares are considered "open, mismanaged, denuded and unproductive," and 1.4 million hectares are held to be in "critical condition."

Moreover, the Committee says mining operations have led to the discharge of about 100,000 tons of mine tailings per day in eight major river systems in the country, affecting an estimated 130,000 hectares of agricultural land. Beach mining has also damaged potential tourist spots and upset the ecology of the area, while illegal fishing and the unregulated gathering of marine resources in some areas have led to the degradation and disappearance of certain species of marine life.

Great Britain Prohibits All Waste Disposal on Land

Beginning this month, it will be an offense to deposit waste on land in England and Wales without a license under the 1974 Control of Pollution Act, which has now come into full effect. The provisions apply to facilities at commercial establishments and factories as well as to waste disposal sites and treatment plants operated by waste disposal contractors.

Persons failing to seek or to obey the appropriate license regulation for their disposal activities from the local Waste Disposal Authority are liable on conviction to a fine up to \$675 or imprisonment of up to two years, or both. Imprisonment of up to five years can be given where poisonous, noxious, or polluting waste is likely to create an environmental hazard.

Japan Promotes Solar Homes Through Low-Interest Loans

The Japanese Ministry of International Trade and Industry (MITI) is expected to begin full-fledged promotion of solar houses by providing loans to designers. The Japan Development Bank is expected to offer loans with low interest rates of 8 per cent to entrepreneurs planning to build a large number of solar houses.

Since research on solar house development began expanding around 1955, about 30 solar-heated houses have been constructed. The roof and walls of a solar house are covered with a specially processed heat-collecting board. Water boiled to 70-100 degrees C. by solar heat can be used for hot-water supply and heating.

Although solar house development in Japan is still in the experimental stage, basic technological studies have been completed and such makers as Sekisui Chemical Co. and Yazaki Corp. are about to go on line. Meanwhile, MITI also intends to form a semi-governmental research department composed of manufacturers and scientists.



World Environment Report

20 JUN 1977

VOL. 3, NO. 12

Copyright © 1977, Center for International Environment Information.

JUNE 6, 1977

EEC Commission Seeks Authority To Sign Baltic Pollution Pact

BRUSSELS—The European Common Market Commission has asked the nine member states to give it approval to sign the 1974 Helsinki treaty to combat pollution in the Baltic Sea (*WER*, April 25, p. 6).

The executive Commission of the European Economic Community (EEC) is seeking the authority to sign the pact on behalf of the nine members not only to clear up a legal issue but also to better coordinate anti-pollution activities of the EEC countries. As a result of previous EEC joint decisions on international treaties and on water pollution standards, the Commission feels it should be empowered—as it has been on past occasions—to represent the entire group instead of having the states signing on an individual basis.

The governments of Denmark and West Germany were the only EEC countries who were signatories of the Helsinki convention signed in March 1974 along with Finland, East Germany, Poland, Sweden, and the Soviet Union. All border on the Baltic, which is virtually a landlocked sea in Northeast Europe.

The treaty they negotiated controls the introduction of a specific list of dangerous or polluting substances from land or by ship into the Baltic. The EEC countries have previously adopted a number of similar controls on discharges into fresh and sea water. The EEC Council of Ministers would normally be expected to give its approval for the Commission to negotiate and sign such treaties but some countries may be reluctant to yield their own signatory powers.

DAVID FOUQUET

Unprecedented Rules Adopted for Windscale Nuclear Hearings

LONDON—“For the first time, so far as I am aware, the arguments and evidence of both proponents and opponents on nuclear power issues will be tested by cross-examination in public. This will be of immense value in the assessment of the weight of the respective viewpoints,” said Mr. Justice Parker at an informal preliminary meeting held on May 17th to discuss procedure for the Windscale inquiry (*WER*, Dec. 20th, p. 1 and Feb. 14th, p. 1). British Nuclear Fuels Limited (BNFL) has now re-submitted its controversial application for an

oxide reprocessing plant.

Mr. Justice Parker has been appointed by the British government to hold the inquiry, with the assistance of two highly qualified assessors, Sir Edward Pochlin, C.B.E., M.A., M.D., F.R.C.P. and Professor Sir Frederick Warner, F.R.S.

The inquiry will begin on June 14th and could last until autumn. More than 60 witnesses are to be called and will be cross-examined. In a unique addition to normal public inquiry procedure, all parties, and not just the applicants, will be permitted to make brief opening statements and closing submissions.

Mr. Justice Parker considered that the issues to be investigated “may affect not only those already alive and residing in the immediate neighborhood, but also those who live far away and who will not be born for many, many years ahead.” Implications for the safety of the public, he thought, would include investigation of “the transport and storage of spent fuel prior to reprocessing and any hazards involved in these operations.”

He spoke of the fears of the opponents to the application that the inquiry would be unduly limited, and hoped that his statement would allay these fears.

“Because the issues are grave and because they arouse strong feelings, the temptation to resort to polemics may well be great, but I hope that it will be resisted,” he said. To this end there will be no distraction from sound, TV or film facilities in any part of the inquiry, though seats will be reserved for all media representatives.

Those opposing BNFL's application, which include several environmental groups, the Town and Country Planning Association and the Manx government (Windscale discharges into the Irish Sea which surrounds the Isle of Man) have launched a public appeal for \$170,000 for legal expenses. They have also petitioned Energy Minister Tony Benn for financial support, pointing out that BNFL will be receiving public money for the presentation of its case.

BARBARA MASSAM

In This Issue

Settlements Foundation	2
Swedish Herbicide Ban	2
Pan American Ecology Center	3
War Remnants in Environment	4
Athens Pollution Crackdown	4
Tree Sound Barrier	5
Latin American Traffic	5
In Brief	6

Advisory Group Voices Concern Over Progress of UN Settlements Unit

NAIROBI—Concern about the slow progress achieved in implementing the decisions taken at the Vancouver Habitat conference was expressed here by Dr. Margaret Mead, the American scientist and anthropologist. She is chairman of an advisory group of human settlements experts who met here at the end of April, a few days after the first meeting of the advisory board of the United Nations Habitat and Human Settlements Foundation (UNHHSF).

The Foundation, the only human settlements financial institution in the UN system, has a mandate to extend financial assistance for housing in developing countries, including seed capital and technical assistance related to housing finance.

Dr. Robert Gardiner, former head of the UN Economic Commission for Africa, and now Commissioner of Economic Planning in Ghana; Maurice Strong, the first UN Environment Programme (UNEP) executive director and now Chairman of Petro-Canada; and other experts attended the advisory board meeting.

Subsequently, Dr. Mead chaired an advisory workshop of experts. She declared afterwards: "The winds of change are blowing up to hurricane strength while the governments of the world delay and delay in implementing the resolutions they have taken and the promises they have made."

Governments, she said, were letting the U.N. take the blame because nothing had been done. "After all this time there is still no final plan for the organization and location of the various parts of the human settlements system. The UNHHSF is left with totally inadequate resources and staff."

The workshop of experts included individuals from India, Europe, America and Africa.

A UNHHSF spokesman said the Foundation became operational in late 1975. So far it has received requests from 40 countries; "a few projects" are underway. Seventeen countries have pledged contributions totalling \$1.3 million, but less than \$300,000 has been paid.

The UNEP Governing Council is proposing a target of \$50 million to fund UNHHSF projects over the next four years.

CHARLES HARRISON

Sweden Bans Herbicide Used in Forest Spraying

STOCKHOLM—The Swedish government is banning a weed and undergrowth killing chemical used especially in the aerial spraying of this country's forests.

Minister of Agriculture Anders Dahlgren recently announced that the current prohibition applied only to herbicides containing chlorinated phenoxy acid 2,4,5-T,

a substance which has been claimed to contain minute amounts of the poison dioxin.

The reason for the ban, he said, was that great numbers of Swedes were alarmed about possible genetic and environmental effects. The decision, which some charged was more political than scientific, immediately came under fire from various scientists and the forest industry.

Conceding that an almost solid phalanx of experts thinks that the health risks of preparations with chlorinated phenoxy acids could not be proved, Dahlgren told newsmen: "However, we politicians cannot leave it entirely to the experts to judge this type of question. The technique of spraying from the air gives many people a feeling of helplessness. That increases their distrust. Studies of chlorinated phenoxy acids are continuing. As long as uncertainty about the risks exists, we should allow safety to come first."

The director of Sweden's Bureau of Chemicals, E. Brandt, criticized Dahlgren's decision, saying "by his action he undermines confidence not only in legislation on products dangerous to health and the environment but also the administrative authority, the Bureau for Products Control," which is associated with the National Environment Protection Board.

Brandt also said the ban was a ministerial directive which would pave the way for all kinds of environmental action groups to agitate "on non-factual and unscientific grounds."

The decision also took the forest industry by surprise. Managing Director Lennart Schotte of the Southern Forest Owners Association said that care of the forests would suffer and become more costly.

The forest industry also is worried about the effect the decision will have on its application for permission to use DDT, now totally banned, to halt major damage now being caused by parasitic attacks on pine trees.

SPECIAL DISPATCH TO WER

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$125 per year. \$15 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Ann C. Werner
Correspondents covering more than 60 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in WER, which in no way represents the official view of UNEP.

SPECIAL REPORT: Pan American Center for Human Ecology and Health Deals with Latin America's Environmental Problems

MEXICO CITY—Human ecology in the developing nations of Latin America and the Caribbean is the special interest of a relatively new international office in this Mexican capital, the Pan American Center for Human Ecology and Health. Since it opened in August, 1975, in spare, simple offices across the street from the Mexican Health Secretariat, its director and single professional staff member have been "scrambling" to help hemispheric countries achieve their desired development without a deterioration in the health of their people.

"There has been a realization on the part of the ministers of health of the Americas as they have been watching economic development occur that, even though they are advancing, their environmental health programs are falling behind," explained Dr. Stephen W. Bennett, a U.S. epidemiologist who heads the office.

"The concept behind our creation was to establish a multi-disciplinary center concerned with the impact on human beings of the large-scale changes in their environment that are brought on by the development process."

It was almost by accident that Dr. Bennett became the first director of the center. In fact, the job went looking for him. In October, 1971, the directing council of the Pan American Health Organization decided to explore the possibilities of establishing a center on human ecology and health to work with the developing Latin American and Caribbean countries. By May, 1974, the resolution had become a firm proposal.

Experts in various fields including physicians and engineers from a dozen countries were called to Mexico City in January, 1975, to make firm recommendations on the center's role and organization.

Dr. Bennett, who had "retired" in Watsonville, California, as a consultant, was among those experts invited to the meeting, which he recalls as "the best one of its kind I ever attended. Everyone there was interested and involved. They were the top people in the field—all professionals." Dr. Bennett was asked to become the center's director and "couldn't refuse."

Another of those attending was Dr. Dale Jenkins, formerly ecologist for the Smithsonian Institution in Washington, who is now the center's other staff professional. Since the center opened, the work has been "fun, interesting, confusing, challenging," Dr. Bennett observed.

"We are a technical resource center, available to governments and international organizations if they need us," he said in an interview with *World Environment Report*. "We are not a basic research institution, but if we see an area in which research is needed, we will encourage it."

The center hopes to use the experiences and mistakes of highly industrialized nations to help lesser-developed nations avoid health hazards caused by their industrial growth. Since most smaller, poorer nations have few resources—either human or financial—to conduct the necessary investigations to guard the human ecology, the center provides the necessary technical aid.

Projects on which its assistance has been requested thus far include a copper mine in Chiriqui, Panama; a hydroelectric dam being built by Argentina and Uruguay and four dams in Mexico—one of them 20 years old, another not yet completed.

"There are few courses to train the kind of people who are needed in these countries," Dr. Bennett said. Besides active technical assistance, the center plans to help governments set up short courses in human ecology to train their own professionals. It also will act as an area clearing-house for information on human ecology and health, and may publish manuals on the dangers to human ecology in the construction of dams, geothermal power plants, heavy industry and nuclear power plants, and how to avoid these dangers.

In the next three years, the center hopes to grow to a staff of eight to 10 professionals, trained in specialized skills such as socio-cultural anthropology and environmental toxicology. The director said his own background provided good training for his present post: Medical school graduate with a master's degree in public health and tropical medicine and a doctorate in epidemiology; Professor at Cali, Colombia, and the Schools of Public Health at the University of Texas and Tulane University; five years with the World Health Organization working out of Geneva and finally, supposedly "retired" as an international consultant on epidemics.

"The most interesting aspect of the job" said Dr. Bennett, "is the fact that governments are interested in someone who calls himself a human ecologist, a health person. They are all glad to see us, and we can walk in and help them develop their own needed inter-relationships—for example, introduce the minister of agriculture to the head of nutrition—and then we leave and that very important relationship continues."

Dr. Bennett praised the Mexican government for its support of the center, noting that a "leading force" behind its creation was Dr. Jorge Jimenez Cantu, immediate past Secretary of Health and now governor of the adjoining state of Mexico. Mexico makes an annual contribution to the center, provides office space and has promised land and a new building within the next three years.

KATHERINE HATCH

UNEP Committee Proposes Limiting Environmental Effects of Weapons

NAIROBI—An expert committee of the United Nations Environment Programme (UNEP), set up to study the problem of material remnants of wars—particularly mines—and their effect on the environment, has recommended a global convention to limit the use of weapons which have a significant and lasting destructive effect on the environment.

UNEP's executive director, Mostafa K. Tolba, presented the committee's recommendations to UNEP's Fifth Governing Council, which met in Nairobi last month. The committee proposed that, under an international convention, all future land mines, sea mines, booby traps, grenades and bombs be fitted with self-destructive or neutralizing mechanisms, which will automatically render them harmless after a predetermined time.

While war remnants of many different kinds can affect the environment, the responses of governments to UNEP's inquiry were concerned mainly with mines from the Second World War. Up until March this year, 44 governments had responded to requests for information; of these, 13 said there were World War II remnants in their countries.

One government reported the war had left 84 million pieces of ordnance, of which 14 million had been cleared, all of them land mines. The clearance of additional mines was continuing at the rate of 300,000 to 400,000 a year. It stated that war remnants had killed 3,834 civilians and had injured 8,384. Between 30 and 40 people had been killed and 50 to 80 wounded each year for the last five years.

Another government reported that 1.7 million land mines had been left in its territory, most of which had not been cleared; clearance of the remainder was costing \$50,000 to \$55,000 a year. In addition, barbed wire, trenches, bunkers and other materiel littered the country, and were a danger to humans and animals.

Several maritime states reported that war remnants interfered with fishing operations, while wrecked ships containing ammunition remained in positions near busy ports.

The problems of systematic disposal of war material are formidable, according to the committee. The material must first be located, and then it may have to be destroyed or otherwise rendered harmless.

The committee has made several tentative recommendations. One is that states which have been responsible for the remnants of war should provide information to rehabilitate the environment. This means revealing the location of minefields, the specification of mines used, and information on how to neutralize or destroy them.

The committee also suggested use of UNEP's International Referral System (IRS) to facilitate access to sources of information on these problems. Also, governments could seek information from UNEP in preparing

programs for the elimination of mines.

"The successful joint operation for the clearance of the Suez Canal of remnants of war may be adopted as a model for future joint clearance schemes," the report adds.

Further studies should be carried out on the environmental effects of certain types of weapons, it concludes.

CHARLES HARRISON

Athens Industries Face Anti-Pollution Crackdown

ATHENS—Legal proceedings have been instituted against 250 industries and factories in the Athens region for environmental pollution, according to the Greek Justice Ministry.

Seven cases have already gone to court with factory owners sentenced to up to three months in prison. They were, however, allowed to buy off their terms and were set free.

The proceedings were the result of a special order given to all police stations last September by the Athens Public Prosecutor to investigate whether industries and factories in their area were taking the necessary measures to prevent noise and atmospheric pollution.

Prosecutor Spyros Kaninias had also requested a special file to be compiled and submitted to him on each local factory and industry in order to determine its conditions of operation.

Concurrently with the proceedings, however, Kaninias is now studying a special report by one of his aides regarding the present effectiveness of anti-pollution legislation.

The report ascertained that the laws are very old, some of them going back to 1912. It said the legislation had been perfect at the time, "but completely insufficient to face the explosive situation we are facing today."

The report also found that there was a great shortage of specialized technical and scientific equipment to measure noise and atmospheric pollution.

It further suggested that new legislation be drawn up immediately because "further delay would have catastrophic results for the country."

In a parallel development, effective July 1, a special police unit will start operating in the Athens region for the protection of the city's environment.

In announcing the government's decision, Minister of Industry Constantine Konofagos said the measure is part of a plan aimed at fighting environmental pollution from various sources, particularly industry.

The unit, specially trained for the purpose, will periodically check whether industries, factories and vehicles in and around the capital are abiding by environmental protection regulations. It will also advise on measures to prevent environmental pollution. But the unit will also have authority to refer to court persons not abiding by its suggestions.

KYRIACOS CONDOULIS

Madras Study Shows Noise Pollution Can Be Cut by Trees and Shrubs

NEW DELHI—Trees and shrubs can check noise pollution, according to a study conducted by the Institute of Otorhinolaryngology at the Medical College of Madras.

A team of physicians and technicians investigated the effect of noise pollution on wayside and railway platform workers in four cities of South India. It discovered that the exposure of these persons to traffic noise resulted in considerable hearing loss. It also found that the hearing capacity of aged *todas* (tribals) in Nilgris was remarkably similar to the hearing ability of young people. It attributed this to the abundance of nearby woodlands which absorbed much of the noise.

During the survey, the scientists pitched a tent in a casuarina grove near Madras and measured the effect of the trees and transmitted sound. To their surprise, they found the sound level attenuated by as much as six decibels. Subsequently, noise as it passed through clusters of neem, tamarind, and banyan trees was recorded at different localities and the result showed a remarkable absorption of sound. But they also discovered that eucalyptus trees intensified the sound, and that the fancy vines and trees like bougainvillea, ashoka and thorny bushes commonly found on roadsides had little or no effect on noise pollution.

The team has therefore recommended planting of neem, tamarind, and banyan trees near libraries, railway stations, industries, and high-traffic zones to curtail noise pollution. As Dr. S. Kameswaran, director of the Institute, puts it: "The volume of sound cannot be completely eliminated, but it can be sharply reduced."

R. MURALI MANOHAR

Latin American Capitals Vexed by Growing Traffic Congestion

Penny Lernoux, World Environment Report's correspondent in Colombia, recently made a brief swing around Latin America. Among other things, she observed the traffic situation. Her report follows.

BOGOTA—A sleepy Andean city less than two decades ago, Bogota is experiencing all the growing pains of an industrial metropolis, including the traffic jam. Motorists who used to be able to drive from downtown to suburb in 10 minutes now spend upwards of an hour fighting the two-mile-long crawl.

Due to massive rural migration during Colombia's 1948-62 civil war, or "La Violencia," Bogota's population has nearly quintupled over the past 25 years, from 715,000 in 1952 to 3.5 million today, and it will double again by 1985.

Although municipal authorities have done a reasonably competent job in expanding other services, such as electricity, water, and telephones, the city has never come to grips with the traffic explosion.

All manner of stop-gap measures have been attempted, including rerouting traffic and closing off streets to vehicles, to no avail. Despite enough feasibility studies to cover several miles of subway track, no coherent mass transit program has ever been developed for the capital, and so Bogota continues its disorderly sprawl across the once-pastoral Andean savannahs.

Nevertheless, this is nothing compared to Caracas, where the Los Angeles-style freeways are crowded bumper-to-bumper virtually round the clock. Flower offerings to the statue of Maria Leonza, a naked Indian princess of Amazonian proportions who is the goddess of the Caracas freeways, have not noticeably altered the traffic which creeps along at a mile an hour during the morning and afternoon rush periods. Astride a tapir along the freeway's dividing line, Maria Leonza seems to emerge from the petrol haze with a self-satisfied smile.

According to Venezuelan doctors, Caracas' nerve-racking traffic conditions have contributed to a sharp rise in the number of heart attacks in recent years. And although Caracas—and Rio de Janeiro—are building subways to cope with downtown bottlenecks, neither has yet devised an adequate system to transport the millions of workers who live in outlying slums to the city's commercial and industrial centers.

Meanwhile in Santiago, which looks as if it has been bombed, a decade-old subway project is still uncompleted because of the stop-start policies of three different governments. Traffic is diverted around the pits dug for the subway, which will not be completed before the end of the century at the current rate of construction.

Bogota has been spared similar disfigurement only because the municipal authorities cannot decide on transport priorities.

Three years ago, for example, municipal transit authorities here were convinced that a subway was the only solution to downtown traffic snarls. But the project came to naught when a new mayor was appointed. He immediately announced that the city could not possibly afford to pay \$45 million per mile for a subway and that the obvious solution was an electric trolley system.

On the strength of a promised loan of \$165 million from six Arab nations, Bogota's Institute of Urban Development opened bidding for yet another feasibility study costing \$371,000 for an electric trolley system. No more has been heard of the Arab pledge, however, and the Institute has run out of money.

In January, it was forced to cancel a \$10 million contract with the Soviet Union for 200 trolleys due to lack of funds. "Plan Trole" is therefore paralyzed. Meanwhile, 80 buses destined for Bogota are rotting in Colombia's Pacific port at Buenaventura because the Institute does not have sufficient funds to pay the customs duty.

PENNY LERNOUX

In Brief . . .

Karachi Vehicles Creating Serious Health Hazards

Faulty vehicles emitting poisonous exhausts are creating a serious health hazard in Karachi, Pakistan's largest city. According to official estimates, over 60 per cent of the city's buses, including Government-owned vehicles and auto-rickshaws, emit dangerously poisonous fumes.

Police sources say many of the polluting vehicles are in need of repair, but the absence of government repair shops forces car owners to rely on the growing number of roadside workshops which have sprung up all over the city. These shops provide substandard work which ruins the vehicle's engine, according to an auto engineer. This, in turn, leads to the dangerous emissions, he added.

Experts say the problem can only be remedied if the Regional Transport Authority takes drastic action against the owners of polluting vehicles. Such action, however, would require a change in the current anti-emissions law.

Swiss Tighten Rules On Vehicle Noise and Exhaust

Switzerland's ordinance on the construction and equipment of motor vehicles has been amended to reduce noise and exhaust emissions and to increase vehicle safety. Major changes are:

- 1) In two-stroke engines, the oil admixture to fuel may not exceed two per cent (previously four per cent);
- 2) The carbon monoxide content of motorcycle exhaust gases is limited to 4.5 per cent by volume at idling (previously unregulated);
- 3) Smoke measurement requirements are changed for diesel engines so that no smoke will be visible under normal conditions;
- 4) Noise regulations are increased

in stringency;

5) Motorcycle construction standards are changed to decrease noise and make it practically impossible to increase speed capacity;

6) Light vehicles must have double-glazed safety windshields;

7) Agricultural tractors and trucks must include enumerated safety features.

Sweden Tightens Rules For Road Transport of Poisons

Sweden has tightened its regulations regarding road transport of poisonous or corrosive substances.

The new regulations, which became effective last April, are an extension of earlier rules about overland transport of explosives and inflammable goods.

The National Environment Protection Board, in announcing the new rules, emphasized that millions of tons of dangerous goods are transported each year over Swedish roads and each year damaging accidents occur.

In the future, each transport must be accompanied by written instructions in Swedish describing in what way the load is dangerous and what protective measures must be taken in case of an accident. Special signs must be attached to each trailer or truck as a warning. The dispatcher of the load is responsible for seeing that the instructions are aboard the vehicle and that the driver and any others responsible for the transport are fully informed.

Kenya Bans Big Game Hunting to Preserve Wildlife

The Kenya government has banned big game hunting in an attempt to preserve one of the last great herds of wildlife in East Africa.

The order, which went into effect at the end of May, was announced by Matthew Ogutu, Minister for Tourism and Wildlife.

The ruling was praised by conser-

vationists as a step in the right direction and denounced by safari organizers who will henceforth be obliged to use cameras instead of guns. The safari organizers charge that the ruling is irrelevant because the greatest depredations against wildlife are being made by poachers.

The Ministry has been under fire from conservationists for failure to take action to protect Kenya's wildlife which are the principal attraction for thousands of tourists and a source of hard currency for the economy (*WER*, Oct. 11, p. 4). The new ruling however, according to conservationists, fails to provide for measures against the numerous poachers who prey on the wildlife for skins and ivory. Some even use machine guns against elephants. In Tsavo National Park, the elephant population dropped from 35,000 in 1973 to 20,200 in 1976.

Czech Environmentalists Relocate Endangered Anthills

During a recent weekend, 40 young environmentally-minded volunteers helped to relocate large anthills—some measuring three feet in height—threatened by expanding mines in north Czechoslovakia. They were moved by trucks to two new sites, one 15 and the other 25 kilometers away.

The new sites were carefully chosen to provide necessary subsistence and building materials as well as underground water no deeper than six feet under the anthill.

The volunteers, all of whom got thoroughly bitten despite the protection of rubber boots and gloves, shoveled the ants into plastic-lined barrels topped with a mesh lid.

If the ants settle successfully in their new habitats, ecologists hope to be able to spread their colonies throughout the devastated forests of Bohemian Stredohori. They argue that the red ants—the "doctors" and scavengers of forests—are ecologically more suitable than chemical spraying.

Environmental Hotlines Spread in W. Germany

An environmental "hotline" started two years ago by the state government of Baden-Wuerttemberg in West Germany, has proved so effective that the concept is spreading to several other states.

Phoned-in citizen complaints about noise, garbage removal deficiencies and other environmental nuisances flow into the State Department of Agriculture and the Environment.

A survey released on the occasion of the 3,000th phone call showed that nearly 82 per cent of the complaints were finally disposed of. An analysis of the complaints yielded the following percentile breakdown: air pollution, 32; noise and vibrations, 29; garbage collection problems, 14; water pollution and sewage problems, 8; damage to nature and landscape, 6; traffic damage to environment, 4; radiation and other pollution problems, 7.

New Crushing Device Aids In Recycling Bottles and Cans

A new crushing machine which shatters beer and soft drink bottles and compresses empty cans into a flat shape may help to clean up the environment, especially outdoors. And, by compressing the bottles and cans in separate compartments, it is possible to collect them easily for recycling.

Produced by Intrafa Nederland B.V. of 's-Hertogenbosch, the Netherlands, the crushing machine has still another important feature in that it can be operated by electricity or by human footpower. In the latter case, a single foot movement on a floor pedal actuates the machine.

Thus, the crusher can be used practically anywhere in commercial restaurants, bars and grills, industrial and school lunchrooms, hospital and institutional kitchens, at beaches and pools, stadiums, summer camps, nature reserves and parks, highway parking areas, and

sanitation dumps. The Intrafa installation is now available for export to the United States and other countries.

Requiring a minimum of floor space—43.3 inches long by 17.3 inches wide—the machine will take all beer and soft drink bottles with a maximum capacity of a little less than one liquid quart, except Coca Cola bottles. The unit consists of a strong steel frame which can be anchored to the floor by a base plate. It stands 35.4 inches above floor level. On top of the frame, there is an opening for cans, while at the front, there is a large rectangular opening for bottles.

Chinese Treat Waste Water From Refinery Operation

A purifying installation to treat waste water discharged during oil refining operations is now in use at a refinery in Central China's Hunan Province. The installation, capable of treating 600 tons of waste water per hour, eliminates petroleum particles and other harmful matter in the water by absorption through sand-filtering and activated carbon after the separation, flotation and biochemical process. The resulting water is as pure as ground water, according to official Chinese sources.

Mexicans Seek Coffee Strain Resistant to 'Red Blight'

Researchers at one of Mexico's four coffee research centers have announced the production of 90 varieties of coffee resistant to different strains of the "red blight" which has attacked crops in Brazil and Nicaragua. But they are still seeking a single variety resistant to all strains of the blight, a spokesman at the Coffee Research Center in Jalapa, Veracruz, said. The blight is a fungus which attacks leaves, stems, branches and, finally, the trunk of the coffee plants.

Geothermal Energy to Heat Small Austrian Town

The Austrian government, anxious to develop all potential sources of geothermal heating in its Alpine region, has given the go-ahead to a plan to heat installations in Waltersdorf in the southeastern part of the country with hot spring water. Originating about 3,500 feet below the ground, the spring supplies water to the surface at a temperature of about 65° C. The two-year trial run to use the water to heat the town's public halls, schools, kindergarten and indoor swimming pool will cost the Federal Ministry of Science and Research and the provincial government of Styria about \$206,000.

According to Austrian authorities, the advantages of geothermal heating lie in the fact that, once initial expenses have been met, it is cheap and causes no air pollution.

Turks to Take Legal Action Against Seamen Who Pollute

The Organization of Town Councils of the Marmara Sea area in Turkey has announced that it will bring before judicial authorities captains of vessels polluting the sea.

The Organization, which is an official body, said it took this decision in view of increasing evidence that local and foreign vessels were dumping wastes into the Marmara Sea, which lies between the Turkish straits of Bosphorus and the Dardanelles.

The port of Istanbul is particularly affected by the dumping of waste by the numerous foreign vessels and tankers sailing through the Bosphorus.

Organization officials expressed their "determined stand" on this issue, but they admitted that the penalties provided by the laws against such offenses were "derisory." They expressed the hope that the new Turkish parliament, after the June elections, will pass new legislation to cope with the problem.

WWF Urges Nations Ratify Wildlife Protection Treaty

The World Wildlife Fund (WWF) is making a new drive to persuade governments that have not yet acceded to the Convention on International Trade in Endangered Species of Wild Fauna and Flora to do so as soon as possible. The Convention is considered a key to stopping the dangerous drain on threatened plants and animals caused by commercial activities.

A WWF spokesman says that "it is considered of crucial importance for all members of the European Economic Community and Japan to accept the Convention because they are major importers. In the European Community only Britain and West Germany have so far become parties."

An example of successful WWF efforts to save a threatened species is the vicuna of the High Andes of South America. The wildlife group reports the vicuna has increased fourfold in the past seven years thanks to an intensive conservation drive. According to figures received by WWF from vicuna specialists, there are now an estimated 60,000 vicuna compared with a maximum of 15,000 in 1970.

Conservation efforts included creation of reserves and establishment of trade controls. The United States and Britain have banned vicuna wool imports.

The WWF gave financial support for scientific studies that established good management of the surviving vicuna, provided equipment for reserves and guards, and joined in arranging training courses for reserve managers and guards.

Britain Makes Progress On Wave-to-Energy Devices

Progress in Britain's two-year feasibility study on wave energy research (*WER*, May 24, 1976, p. 7) has been so encouraging that the Government's Department of Energy

recently announced its intention of increasing its funding from \$1.7 million to \$4.25 million in 1977.

This will enable the original program to be expanded to include larger-scale model work on the four wave-to-energy conversion devices being studied. There will also be further studies on problems common to all the devices, such as suitable forms for transmitting wave energy to shore.

The program will now run until October, 1978, instead of April, 1978, as originally planned.

Sweden Investigates Spread Of Mercury Pollution

The National Environment Protection Board (NEPB) intends to map the spread of mercury throughout Sweden in its growing campaign against pollution.

Industries and products containing mercury are to be inspected to evaluate how much of the poison is emitted annually into Sweden's water and air.

"Mercury still is one of the major and most difficult environmental problems to master," said NEPB official Bengt Aplaner. "But we know far too little about the extent of the problem. Only after we know that can we give priority to further steps to combat the problem."

Andean Pact Nations Join To Exploit Lumber Reserves

The five member nations of the Andean Pact (Venezuela, Colombia, Ecuador, Peru, Bolivia) are exploring joint exploitation of the region's estimated 40 million cubic feet of lumber reserves. Technical studies are investigating the possible use of these reserves for low-cost housing, for the elaboration of forest maps, and a technical assistance program in forestry. According to Raul Romero, the Peruvian delegate to the Andean Pact, there are no definitive studies

of the region's enormous tropical forest reserves, although it is calculated that Peru alone has approximately 175 million acres of such marketable trees.

Study of Rain Forest Ecology Slated for Sarawak State

A full-scale study of rain forest ecology is expected to be carried out in the Gunong Mulu National Park in the East Malaysian state of Sarawak this coming July. The 14-month expedition, organized by the London-based Royal Geographic Society in cooperation with the Sarawak State government, will further form the basis for world-wide conservation of rain forests. This expedition has been made possible through the cooperation of universities, government grants, and the largest-ever grant given by the World Wildlife Fund for a scientific study.

An advance party of five members is expected to arrive in Sarawak in June to set up a base camp in the National Park, about 68 miles from Kuching. The rest of the 40 British and Malaysian scientists will begin work the following month. In the course of their study, the scientists are expected to survey the forest formation of the park to formulate a development and management plan and investigate the impact of hunting and tribal activities in the area.

Previously, another large-scale study of tropical rain forest use and preservation had been carried out over a two-year period in Venezuela. Published in 1976 by the Sierra Club, and written by the project director, Dr. Lawrence S. Hamilton of Cornell University, the Venezuelan research was carried out under contract with the UN Environment Programme (UNEP). Among its many recommendations, the study urged an extension of education concerning rain forests, "for knowledge of this natural resource is minimal." It also recommended "the establishment of Youth Conservation Corps" to work in rain forests on a continuing basis.

2 JUN 1977



World Environment Report

VOL.3, NO. 11

Copyright ©1977. Center for International Environment Information.

MAY 23, 1977

Environmental Technology Fair In Germany Draws 400 Exhibitors

DUSSELDORF—"Envitec '77," the environmental technology fair held here last month, offered a first-class display of the most advanced equipment and technologies for dealing with industrial and urban pollution problems. And a four-day Congress held in conjunction with it provided a clearinghouse for related ideas and scientific and technical innovations.

More than 400 exhibitors from 14 countries showed their products to some 26,000 potential buyers and, in many cases, competitors who came from 30 countries for the event. Exhibits were divided into five categories: air, water, noise, waste and scrap, and measuring and control equipment. Except for a similar but much smaller fair held in Dusseldorf in 1973, it was the first fair of its kind to cover so broad a field.

Growing concern throughout the world over environmental problems was indicated by the mix of exhibitors. One of the fair's directors who participated in the 1973 fair remarked, "Half of the firms exhibiting here were not even in business four years ago."

A second noteworthy development was the large number of processes or pieces of equipment designed primarily to protect the environment, but incorporating built-in devices or processes for turning the erstwhile pollutants into usable by-products.

Among the newcomers to the environmental field were a number of major industrial organizations which had solved serious pollution problems of their own and are now putting their experience on the market as consultants or plant designers. These included steel producers, electric utilities, mining concerns, and chemical manufacturers. They presented model layouts of plants in which environmental protection was integrated on an equal basis with productivity.

Thirty professional papers were presented at the Congress. They covered the field from town planning, through alternative sources of energy, effects of large-scale power generation on the climate, nuclear wastes and nuclear measuring technology, and the design of sewage treatment plants, to the social implications of industrialization. Each session of the Congress was followed by a panel discussion in which leading experts in a score of disciplines exchanged ideas and experiences.

Governmental and private research organizations participated with elaborate displays depicting their major

environmental activities. They covered such varying fields as forest planning and protection, coal mine safety, underground filtration of water, professional opportunities in the environmental field, and the aeration of river water by freight propellers. Twenty-nine such displays were offered.

J.M. BRADLEY

Vienna's Atomic Energy Commission Tests Solar Energy Unit for Heat

VIENNA—Concentrating on solar energy as a clean and effective source of heat and power, the Atomic Energy Commission's research center at Seibersdorf, some 15 miles from Vienna, is testing a heat generating unit based on the system of a continuous-flow heater. Instead of using gas, the unit operates on solar energy.

The trial unit is mounted on the roof of the research center and consists of six sun-ray collectors of sheet aluminum with a total surface of nearly 260 square feet which is coated with black varnish to ensure a high-rate conversion of irradiated solar energy into usable heat. The system works by transferring the heat produced to a coil filled with frost-resistant fluid. From this coil the heat is conveyed to a water tank holding about 264 gallons.

The tank, fitted with a double casing, serves as a heat exchanger: the liquid flowing through the outer shell of the tank warms the utility water in the inner shell where the temperature, even during winter, reaches an average minimum of 30 degrees C. To avoid cooling of the water in the inner tank when weather is cold for a long period the rotary pump circulating the heating fluid is switched off.

The new unit will be tested for at least one year to achieve maximum efficiency and economy in operation. Several technical improvements are already being considered.

E.B. BROOK

In This Issue

Dams vs. Wildlife	2
Sweden's Environment Chief	3
Cleanest Nuclear Plant	4
Water Shortage in Brazil	5
Green Belts	6
In Brief	7
Calendar	8

New Environment Zones in Argentina Will Ignore Political Boundaries

BUENOS AIRES—Private and official environmental groups from throughout Argentina have recommended creation of an interjurisdictional government agency to handle environmental problems.

Formation of the centralized agency should be part of a national environmental protection law establishing regulations for such activities, it was agreed here recently at a meeting organized by the government's Secretariat for Transportation and Public Works.

The meeting also recommended the creation of 32 environmental zones which would cut across current provincial (state) boundaries, thus uniting ecologic systems regardless of political geography. Such a network, it is hoped, would avoid the intra-provincial disputes which often delay environmental planning for regions with, for example, common river valleys passing through several provinces. Previously, each province has had to approve construction plans before any work could be started.

Under the new plan, the semi-arid Patagonia is considered as a single zone, even though it includes most of three provinces. The soil-rich Pampas area is divided into four zones, according to the agricultural product which predominates in each. Yet another zone is composed of the industrial belt along the Parana River and the mouth of the River Plate, including several major river ports and the federal capital of Buenos Aires.

AGOSTINO BONO

Malaysian Dams Imperil Wildlife; New Sanctuaries to be Created

HONG KONG—Completion of a dam across the Sungai Temengor River in Perak State in Malaysia and plans for another across the Sungai Tembeling River in Pahang State are causing concern among Malaysian environmentalists.

At present, there are an estimated 30,000 animals and 100,000 birds belonging to 188 recorded species living in the valley of the Temengor Dam. Creation of an artificial lake behind the dam will deprive the animals of their natural habitat. In addition, the proposed Tembeling Dam will also affect about 100 square miles of the country's 1,677-square-mile National Park.

Some of the animals in Malaysia facing extinction include the Sumatran rhinoceros, seladang, tiger, tapir, wild dog, clouded leopard, otter civet, orangutan, estuarine crocodile, false gaviol (fish eating crocodile), and leathery turtle.

Malaysian Minister of Science, Technology and Environment Tan Sri Ong Kee Hui has stated that there is no cause for alarm because the animals are in no real danger until filling of the lake begins later this year. Even

then, he said, the possibility of animals being drowned is unlikely because the water will be let into the lake slowly—over a period of 15 to 18 months.

Plans are already underway to replace the natural habitat that the animals will be deprived of. Tan has asked the Perak State government for 800 square miles of forest land to be used as a game reserve, and he said the Ministry is also working on a blueprint to designate areas for future development without destroying the forest home of the country's wildlife.

In Perak, a deer farm and breeding project is scheduled to be started later this year while work on the preservation of the river terrapins and enforcement on the protection of shorebirds will be stepped up.

In the states of Sabah and Sarawak, sanctuaries for the orangutans, estimated to number less than 5,000, will be built. And steps have also been undertaken to conserve the estuarine crocodile, the world's largest living reptile, found in the Klias peninsula off Sabah—perhaps the last refuge of this species.

The World Wildlife Fund (established in Malaysia in 1972) is co-sponsoring a program with the Trengganu Fisheries Department to hatch leathery turtles. Since the program's inception in 1961, about 300,000 young turtles have been released and in a concurrent program, adult female turtles were gagged.

One of the government's plans calls for the setting up of a wildlife management school in 1978 to train Game Department officers on wildlife management. An extension program to educate the public on wildlife will also be inaugurated. Moreover, scientists are undertaking a study of the Danum Valley in Sabah, reputed to be particularly rich in wildlife. "This 72,000-acre virgin forest is a promising area for the creation of a National Park which could be the finest in Southeast Asia," a WWF spokesman said.

ARTHUR MILLER

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$125 per year. \$15 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Ann C. Werner
Correspondents covering more than 60 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

SPECIAL REPORT: Interview With Sweden's Environment Chief

STOCKHOLM—What, one might ask, is a trained economist doing as Sweden's "Mr. Environment?"

"I'm often asked that question," replied 52-year-old Valfrid Paulsson, veteran director general of Sweden's National Environment Protection Board (NEPB). Money matters aside, "remember the NEPB has to follow up with industry. We have to be experts on the experts, teach how to tackle environmental questions and go through legislation to see that it's written properly from the economic viewpoint. We 'buy' knowledge from the scientist, then apply it through experts who translate it into practical language. We need to discuss the environment in the industrialist's or businessman's language, not the biologist's or chemist's."

That approach could be said to be an underlying factor behind the growing success of Sweden's fight against pollution and one that Paulsson has been following since he became the first head of NEPB at its formation by Parliament ten years ago this coming July.

Son of a forest worker, Paulsson grew up near the Vindelaelven, one of the four great rivers in the far north still protected against exploitation for water power. After obtaining his economics degree on a scholarship at Uppsala University, he worked in the early sixties as permanent undersecretary of state in the Ministry of Agriculture, where he made his first contact with pollution caused by DDT, mercury and other poisons, and also as undersecretary of state in the office of then Prime Minister Tage Erlander.

Over the last decade, the NEPB has developed into an organization of some 600 staffers dealing with questions ranging from nature conservancy to hunting and recreation facilities. As the central administrative authority in ecological matters under the wing of the Ministry of Agriculture, the NEPB is called upon to implement the decisions of Parliament and Cabinet, monitor trends, and propose changes as necessary.

Sweden Ahead—Paulsson feels that Sweden is ahead of most countries, taking the field of environment as a whole.

"We had a good starting point—a big country with a small population," he told *World Environment Report*. "We learned a lot from industrial countries such as the United States, Japan, England, and West Germany. On some environmental aspects they've done better than we have—the United States in tackling car exhaust, Japan in the steel industry—but over the whole field we appear to come out ahead."

"We have been particularly successful in combatting water and air pollution but that was an easy match because not much had been done before. Industry listened. Public opinion was behind us—and sometimes in front of us."

Sweden has reduced industrial air pollution by 50 per cent, and more than 60 per cent of the population uses

sanitary facilities connected to sewage purification plants using mechanical, biological, and chemical means to obtain a 95 to 98 per cent cleansing effect. The waters of Lake Malaren, which extend from the heart of the capital far to the west, now are back to their purity of the 1930s and beaches are being reopened to swimming just a few minutes run from downtown Stockholm.

Industry Complaints—But industry is beginning to complain that restrictions are too stiff and that the expenditures on improvements to combat the last pollution percentages are becoming so costly that it may be difficult to follow through in the future.

"Industry always says protection of the environment costs too much," commented Paulsson. "Actually the cost has been rather low. Sometimes industry gained more than it lost. Pollution results from raw material in the wrong place. If we stop pollution, industry gains by saving raw material for production. Recycling pays for itself and the cost will be lower than salaries." He cited some examples:

Mercury Waste—Before 1970, mercury simply was permitted to run off as waste into Sweden's lakes, streams, and the sea. Now that's forbidden. New processes have enabled industry to stop the spills and save mercury—a very expensive substance—and put it back into production.

The same was true of wood fibers in the pulp and paper industry. Before 1965, 50 per cent of the fiber went into paper, the rest went as waste into lakes and rivers. Today new processes enable 85 to 90 per cent of the fibers to go into paper.

Looking ahead, Paulsson said 10 years of work to stop further pollution and try to repair existing damage "have made me an optimist." One thing he learned was that putting restrictions on industry made it possible to find new techniques and live up to non-polluting standards.

The organization Sweden has built up for the protection of environment gives Paulsson good reason to be an optimist. In the Swedish concept, this is the concern of all sections of society. Consequently, in addition to the national structure, there also are regional and local bodies which take on specific environmental responsibilities.

Legislation—Three major pieces of legislation ensure an orderly ecological development with the powers or teeth to ban or control harmful discharges and punish violations. The Nature Conservancy Act is concerned mainly with the management of Sweden's natural resources and assets. The Environment Protection Act embraces environmental nuisances such as noise, air, and water pollution. The Act on Products Hazardous to Health and the Environment deals with the handling of articles such as poisons and insecticides. Offenses against

these acts are punishable by fines or even up to one year of imprisonment. In addition, there is a host of laws dealing with specific environment problems.

The work of the NEPB is directed by a board which includes Paulsson as chairman and government-appointed representatives of the Confederation of Trade Unions, the Federation of Swedish industries, agriculture, and the municipalities, plus a lawyer and two personnel representatives. Five departments operate under the board—natural resources, technical, administrative, research, and environmental hygiene.

Other Agencies—The NEPB covers a very wide field, but even so it does not encompass all matters relating to nature and the environment. There are other government agencies whose work interlocks with that of the NEPB and the latter works in association and consultation with them.

These include: the Franchise Board for Environment Protection which licenses the building or extensions of factories which could pollute the environment, the National Board of Occupational Safety and Health concerned with working conditions in factories and shops, the Swedish Forest Service, the National Board of Fisheries, the National Board of Urban Planning, the National Board of Health and Welfare, the National Institute of Radiation Protection involved with nuclear power stations, the National Road Administration, the Road Safety Board.

Armed with this formidable legislative, administrative, and operational apparatus, Sweden faces several major environmental problems which must be solved in the next few years. Paulsson put his finger on these: noise abatement; traffic; and pesticides and other chemicals.

Sweden's biggest source of noise is road traffic which has increased by 800 per cent in 20 years with noise levels in the larger cities going up about one decibel a year. Reducing noise ties in with the problem of bringing down air pollution from traffic.

Air Pollution—Paulsson said Sweden's automobile traffic now is responsible for more contamination of the air than Sweden's entire industry, where a 50 per cent cutback has been achieved. New regulations have reduced harmful car exhaust but on the other hand traffic density—and pollution—is growing as more and more cars take to the road. Where does he see solutions?

"Less use of the automobile. The introduction of cars which can run on lead-free fuel, but this would require international cooperation in Europe to do away with lead. And advanced city planning—new roads leading around towns, halting through-traffic by closing off streets, and parking areas outside town limits."

The banning of DDT has created a lot of problems for Sweden's farmers and loggers. So the immediate task ahead, said Paulsson, is to find new pesticides, new chemicals "which won't be harmful to workers or the environment and yet be beneficial for agriculture."

SPECIAL DISPATCH TO WER

Mexico's First Nuclear Plant Found 'Cleanest' Ever Built

MEXICO CITY—One of the most detailed environmental studies ever undertaken is underway at the site of Mexico's first nuclear energy plant, 200 miles southeast of here at Laguna Verde, Veracruz, on the shore of the Gulf of Mexico. Chemical engineers, marine biologists, ecologists, meteorologists, and nuclear physicists have been working there since 1969 to insure that the plant will live up to its advance billing as the "cleanest" and environmentally-safest nuclear energy facility ever constructed.

Felipe Colorado Hernandez, an aide to project manager Guillermo Robles Garibay in the Federal Electricity Commission, talked with *World Environment Report's* correspondent about the work already completed and in process. Target date for completion is 1981 when the first of two General Electric 650-megawatt units should be operational.

An engineer, Colorado said field work has been conducted at the site since 1971 when an inventory was begun of all plants, animals, and sea life. The next step was a "quantitative and qualitative analysis" of these species to determine their numbers and living conditions.

"The next phase was to determine, through experiments, the natural radioactive factors in the species—how much radiation they contain in a natural state whether from the sun, cosmic radiation, or from the effects of radiation explosions carried out in various parts of the world," he said.

"By knowing the levels of radiation now, long before the plant is operational, we will be able to determine later what effects—if any—the operation of the facility is having on these species."

The U.S. Atomic Energy Commission and the International Atomic Energy Commission are assisting on the project, Colorado said, observing that "Mexico has the benefit of all that has gone before us in this field." Specialists from Mexico's own National Institute of Nuclear Energy—formed 20 years ago—and the National Autonomous University of Mexico also are actively assisting in the project.

The power plant will use water from the Gulf of Mexico which will be monitored by the most sophisticated anti-contamination devices. The water will not come into direct contact with any contamination, Colorado said, but it will be re-cleaned, nonetheless, before being discharged into an adjacent lake about 500 meters in diameter. From it, water will return to the Gulf to eventually be recycled back through the nuclear plant.

Only one kind of fish—the "sierra"—appears to be "perturbed" by the plant-construction activity, Colorado said. And because the land near the nuclear site is used for farming and cattle-grazing, few wild animals have been dispossessed. However, he said that if it becomes necessary, sea creatures and land animals will be moved to another location.

KATHERINE HATCH

ECE Submits Technology Report On Future Energy Requirements

GENEVA—The Secretariat of the United Nations Economic Commission for Europe (ECE) submitted a report here last month to its Senior Advisors to Governments on Environmental Problems that examines eight technologies concerned with future energy requirements.

The new report states, in brief:

- 1) Battery storage of electricity will have wide potentialities in transport, the meeting of peak demand, and providing intermittent sources of energy such as solar and wind power. To make this possible, experimental batteries must be powerful and their cost brought down to \$20 per kilowatt hour. The use of batteries raises practically no environmental problem, except for disposing of some existing types which have components of a toxic nature.
- 2) Deep geothermal energy could supply considerable quantities of energy without unfavorable environmental consequences if operated as a closed-circuit system. Water injected into the geothermal field several thousand meters below the earth's surface and recovered in the form of superheated steam to drive turbines has an enormous theoretical potential in parts of Europe and North America.
- 3) A few installations to demonstrate the feasibility of converting solar energy into electricity by means of turbines have been built or are under construction in Europe and North America. With present technologies the cost of producing electricity from the sun is not competitive with conventional thermal methods. On the other hand, the sun as an energy source is inexhaustible and further research and development are very likely to bring costs into line with those for more traditional electric power stations.
- 4) Large-scale production of electricity from photoelectric cells is still not competitive with conventional and nuclear power stations. This method will, however, become more feasible as the prices of fossil fuels and uranium rise and as environmental standards become more stringent. The technology is attractive from the environmental point of view even though the amount of land required is considerable.
- 5) A futuristic variation on the above method would be the generation of power from photoelectric cells produced on artificial satellites which would either use the energy for their own industrial installations or transmit it to our planet by microwave.
- 6) Solar energy for water desalination is economically feasible and presents no serious environmental problem. The technology is at the advanced demonstration stage, and plants on a semi-industrial scale already exist in Australia, Greece, Israel, Mexico, Tunisia, and the Soviet Union. The largest installation is at Patmos, Greece.
- 7) The practical application of tidal power, although very limited and likely to remain so, is an attractive method of

energy conversion with virtually no impact on the environment. Two plants are now in operation, at La Rance (France) and Kislava Guba (Soviet Union). Major projects are being drawn up for the Bay of Fundy and Ungava Bay (Canada), the Bristol Channel (Britain), Cook Inlet (U.S.), and Mezen and the Sea of Okhotsk (Soviet Union).

8) Most countries in Europe and North America are doing research on wind power. The largest existing station is at Tvind, Denmark. The conversion of wind power into usable energy is basically efficient and could become competitive with conventional methods. The only environmental drawback is the disfigurement of sites by large-scale installations.

WILLIAM G. MAHONEY

Brazil Experiencing Acute Water Shortages; To Try Roof Catchment

RIO DE JANEIRO—Increasing concern over the quantity and quality of potable water is being manifested in various ways in many sections of Brazil.

In this city recently there were 482 complaints on a single day about deficient water supply. City officials say the problem right now lies mainly with the distribution network. However, they concede that the 23,000 liter-per-second generating capacity of the Rio Water Works will be insufficient within two years, and that \$750 million should be raised very soon to finance a new water works system with generating capacity of 40,000 liters per second. But with an annual water budget of only \$150 million and right now hard-pressed financially, Rio is unlikely to be able to meet the challenge of the 1980s.

In the nearby state of Sao Paulo some people are turning to supernatural powers for help in combating water pollution. Easter Week pilgrims to the traditional shrine of Bom Jesus de Pirapora this year carried signs asking Jesus to clear up the pollution of the Tiete River and bring back the fish. The Tiete, which flows through the town of the same name and the city of Sao Paulo—Brazil's largest and most industrialized city—is supersaturated with a constant layer of sudsy foam. No fish have been seen here for several years.

In Brazil's arid northeast, however, the temporal powers are planning to do something about the water problem. The region has long been known for its devastating cyclical droughts, but the day-to-day problem is that even sometimes abundant rainfall is unevenly distributed, both as to time and location.

Accordingly, authorities are planning to launch a massive campaign to encourage people to catch and store rain water falling on their roofs—an old but seldom used method of water supply. It is calculated that in many regions from 240 to 800 liters of rain water fall annually per square meter of roof, and if that water were stored it should be sufficient to tide most of the population over the dry season.

G. HAWRYLYSHYN

British Switching From Diet Of Refined Flour to Whole Wheat

LONDON—Increasing interest in the environment and nutritional values is influencing British diet towards a growing preference for whole wheat over refined flour. One wheel which this has helped to turn full circle is at Jordan's water mill near Biggleswade in the southern English county of Bedfordshire.

The Jordan family have been millers in this quiet rural area, using water from the River Ivel, since 1855, although a mill was described at the same spot in the eleventh century Domesday Book, drawn up by William the Conqueror.

Of the 400 mills that once existed in Bedfordshire, Jordan's is the only privately-owned water mill remaining, and this is why it has been able to return so easily to a production which, in the opinion of Mr. Bill Jordan, its present sales manager, is nearer to that of 1855 than 1955. Although a roller mill, the rollers, which were installed in 1896, work at 200 r.p.m. instead of the 500 r.p.m. of most modern, large scale mills. At 200 r.p.m., Jordan's claims, there is no heat generated to damage the starch enzymes and vitamin content of the flour.

The mill's second environmental advantage is in its non-polluting, renewable source of energy, for the water supply remained constant even during last year's unprecedented drought. As energy costs rise, mills such as this must become progressively more competitive.

Whole wheat flour has now risen to 12 per cent, or \$6.8 million, of the British flour market and is still rising. Jordan's uses as much organically grown wheat as it can obtain, and expects the supply to increase as its farming methods gain ground.

BARBARA MASSAM

Five North African Nations To Develop Transnational Green Belt

NAIROBI—Five North African countries have agreed to join in developing a transnational green belt north of the Sahara. A protocol on cooperation between Morocco, Algeria, Tunisia, Libya, and Egypt in the fight against desertification was evolved in Cairo in February, and is now in the process of formal ratification.

The protocol recognizes the dangers that desertification brings to these countries, and notes that each country already has its own programs aimed at halting desertification. It is now agreed that they will cooperate and coordinate their work.

A permanent joint committee of representatives of the five nations will be responsible for the coordination and for a joint action plan for the entire region. The countries concerned will fund the committee, which may also receive contributions from other national and international sources.

A spokesman for the UN Environment Programme

(UNEP) in Nairobi told *WER* that the green belt study was one of a series undertaken in advance of the U.N. Conference on Desertification, which is to take place in Nairobi in August. The Arab League Educational, Cultural and Scientific Organization cooperated in the study.

The report of the green belt study covers a variety of measures to counter desertification, including soil conservation, shelterbelts, windbreaks, range management, sand dune fixation, land reclamation, and irrigation.

Algeria, Tunisia, and Libya have begun the establishment of green barriers within their own countries; a large-scale afforestation program is under way in Morocco; while Egypt is expanding certain agricultural areas, mainly on the desert land adjoining the Nile Valley.

The project does not, however, mean that an unbroken line of trees will eventually span the African continent. "You can't just plant billions of trees," the UNEP spokesman pointed out. "The modern concept is of a 'mosaic,' involving not only belts of trees but areas of farmland and other forms of development.

Algeria, for example, already has its Green Barrier, about 1,000 miles long and between 12 and 25 miles wide. This is being developed through pilot areas, each of around 5,000 acres, through the establishment of pasture land cooperatives, irrigation schemes for cultivation, and the establishment of villages in forest and pasture lands.

Tunisia already annually produces 30 million seedlings of eucalyptus trees and pasture shrubs which are distributed at nominal prices.

In Libya, over eight million trees were planted in 1975/76, against just under six million in the previous year.

As the report puts it: "The green belt should not be conceived as a wall of trees grown perpendicular to the wind direction in order to reduce its velocity. It is a zone comprising a variety of devices for the prevention of further degradation of the ecosystem and the creation of improved habitat.

"Soil stabilization, moisture conservation, afforestation, range improvement, appropriate plant and animal husbandry, and dryland farming are among these devices. These need to be integrated within the green belt."

The proposal envisages an interconnected green belt across the five countries at the fringes of the areas where rainfall ranges from six to 10 inches a year. The width of the belt will vary considerably, and its exact location in each country will be decided after taking into consideration existing schemes.

Because of the size of the region, and the wide range of conditions, it is not possible to give a single figure for the cost of the project.

While the North African green belt is well advanced, plans for a Sahelian green belt, to the south of the Sahara, are also under way. Government experts from Chad, Mali, Mauritania, Niger, Senegal, Sudan, Upper Volta, the Gambia, and Cape Verde have met in Nairobi to review a feasibility study.

CHARLES HARRISON

In Brief . . .

Two Large Plants in Istanbul Install Water Purifiers

Two large government-owned plants on the Izmit Bay on the Sea of Marmara—65 miles east of Istanbul—have finally agreed to install modern water purifying systems. Both companies took the decision after a formal request from the regional office of the Health Protection Agency which had received complaints about a dangerous increase in air and water pollution.

SEKA, a newsprint plant, is to spend \$5 million on new equipment, and PETKIM, a petro-chemical enterprise, is to invest \$4 million.

Not only had the industrial wastes from these plants started to kill all indigenous fish and ruin the regional beaches, but the poisonous gas they emitted was threatening the health of nearby residents. Expert studies singled out two adverse substances: chloric gas and sulphuric acid.

The manager of the PETKIM Complex, Ismet Borekci, announced that the equipment which the plant is to install soon—and it is hoped will go into operation next fall—will also help partly to recycle some of the waste.

Other petroleum and chemical plants in the Izmit Bay area have been requested to take similar measures.

Japanese Publish Pollution Law Outline for Businessmen

With a view towards facilitating foreign trade and business in Japan, the Japan External Trade Organization has published a booklet called "The Environmental Control in Japan." It provides a comprehensive outline of the pollution laws and trends in Japan with which the prospective businessman must contend.

By way of introduction, the history of environmental administration in Japan is examined, centering around

the enactment of the 1967 basic law for environmental pollution control and the establishment of the environmental agency in 1971.

With a totally committed environmental organization, pollution abatement costs in Japan are the highest in the world—and this has led to a highly sophisticated pollution control technology.

There is also a strong public influence in environmental matters as exemplified by four case studies outlined in the booklet. Pollution control laws and organizations are listed, and air, water, and noise standards are tabulated. Certain foreign standards and expenditures are given for comparison.

Bavarian Law on Snail Taking Increases Output Sharply

The Bavarian Environmental Protection Ministry recently reported in Munich that collection of wild vineyard snails in this huge southern German state shot up dramatically in 1976 thanks to its 1974 directive declaring closed seasons on gathering.

The Ministry said that despite unfavorable weather conditions the snail collection in 1976 was 31 per cent higher than that of the previous permissible collection year. This, Ministry experts declared, could only be due to a legal directive that established a three-year cycle that banned snail taking for two years following every permissible collecting year. The intent of the directive, they said, was to prevent the "long term collapse of the snail population and to preserve its existence."

The Ministry announced that 320,000 pounds of snails were collected in 1976 during the short season of April 1 to June 15. The law also states that only snails over a certain shell diameter can be taken and that every hunter must carry a special ring for such measurement.

Violators face stiff fines. These can range from up to \$8,000 for simple violations, to \$20,000 for more serious infractions.

Mexico to Mine Lat-Am's Largest Coal Deposit

Mining of what has been described as the largest single coal deposit in Latin America will begin soon with a \$545 million investment by Mexico's Federal Electricity Commission in the project in the northern Mexican border state of Coahuila. The deposit is estimated at 185 million tons of coal which is suitable only for the generation of electricity, since it is not adequately heat-producing for use by the steel industry.

A thermoelectric plant with an ultimate capacity of 1,200,000 kilowatts will be constructed near the mine, resulting in an annual saving of some \$113 million worth of petroleum-generated energy, or 10 million barrels of petroleum.

Hugo Cervantes del Rio, director general of the Federal Electricity Commission, said the mine has a capacity to produce 16,000 tons of coal daily. Cost of the thermoelectric plant is included in the \$545 million investment estimate, he said.

Sri Lankan Tree Planters Shown New Implant Process

Tree planters in Sri Lanka have been given guidance on how to ensure that a young sapling remains well watered despite lack of rainfall or human neglect.

Before implanting the sapling, a planting hole big enough to take a large clay pot in addition to the young plant is dug. The narrow-necked pot is buried as close as possible to the plant with its neck emerging slightly above the soil surface.

Once plant and pot are in, the soil around the plant is well watered and the buried pot topped up with water. Its mouth is closed with a piece of polythene to reduce evaporation.

If the pot is new, the water level in it would drop rapidly during the first fortnight or so. But once it is seasoned, all the tree planter need do is top it up every two months or so. The porous texture of the clay pot

will ensure a steady outward percolation of the water in it, keeping the earth around the roots of the plant moist, allowing the young tree to establish itself.

Colombia and U.S. Renew Pact on Weather Station

The Colombian and U.S. Governments have signed an agreement to improve the functioning of a weather station located on the islands of San Andres to provide Colombia with information about hurricanes and other natural phenomena in the Caribbean. The Colombian islands are located off the coast of Nicaragua.

The two governments have jointly administered weather stations in Bogota and San Andres since 1956. Under the new agreement, the U.S. will continue to support the San Andres station until the end of 1979 when Colombia will assume all responsibility for its operation.

African Wildlife College In Tanzania Aided by UNEP

The College of African Wildlife Management at Mweka, Tanzania, has been able to avoid a 50 per cent increase in its tuition fees due to a \$120,000 grant from the United Nations Environment Programme (UNEP).

UNEP has made the grant to cover the 1976/77 and 1977/78 financial years, but has made it clear that it looks upon this funding as only an interim solution to the long-term needs of the College.

The only institution of its kind in Africa, the College strives for a balanced intake of students from many countries. But some of these countries have difficulty in raising the necessary funds for scholarships to the College.

Netherlands Proposes Dialog On Safe Nuclear Fuel

The Netherlands last month proposed an international dialogue on development of a safe nuclear fuel that could not be adapted to production of nuclear weapons.

The proposal was made at the 30-nation Geneva Disarmament Conference by Dutch State Secretary for Disarmament Pieter Kooijmans. Such a dialogue, he declared, would be necessary to bar further proliferation of nuclear weapons.

Suggestions for such a "safe" nuclear fuel have been under consideration in the United States for some time. Most involve setting up nuclear fuel cycles that do not contain plutonium or highly enriched uranium in a form that could be used directly for the manufacture of nuclear explosives.

"Building such fuel cycles could have enormous technical, political, and economic consequences for the peaceful nuclear program," the Dutch delegate told the conference.

Greeks Propose Prison Terms For Traffic Noise Polluters

The Athens Public Prosecutor has asked the government to promulgate severe laws against traffic noise pollution because otherwise "life in our big cities will become intolerable."

Spyros Kaninias said the government should be "merciless" in this respect, and proposed legislation to provide prison terms up to six months for infringers.

Kaninias, who had in the past utilized regular police to fight industrial pollution, made this suggestion as the government was formulating a new traffic code with special clauses for noise pollution.

Top on the list of traffic noise sources are motorbikes and scooters, with an estimated 200,000 circulating in the region of the capital alone, followed by cars with overloud exhausts.

Private environmental groups, which have in the past repeatedly urged the government to cope with traffic noise pollution, backed Kaninias in his proposal, saying that "lenient measures will never improve the situation."

Calendar . . .

May 23-July 8—Third UN Conference on the Law of the Sea. New York.

May 24—17th Inter-Secretariat Meeting on Water Pollution and Related Water Questions in Europe. Geneva. Auspices of ECE/UNEP.

May 25-27—Group of Experts on Aspects of Water Quality and Quantity (fifth session). Geneva. ECE.

June 1-3—First Session of the IHP Committees on the Influence of Man on the Hydrological Cycle. Paris. Under UNESCO auspices.

June 5—World Environment Day. Sponsored by UN Environment Programme (UNEP) and the Environment Liaison Center.

June 7-11—23rd Session of the Meeting of Heads of Water Management Organizations of Member countries of the Council for Mutual Economic Assistance (CMEA). Tbilisi. Auspices of CMEA.

June 20-27—Symposium on the Gas Industry and Environment. Minsk. ECE.

June 22-24—Experts on Productivity and Management Problems in the Coal Industry. Geneva. ECE.

July 4-9—Ikituuri Congress Center Housing Seminar. Turku, Finland. ECE.

July 10-15—International Congress on Environmental Mutagens. Edinburgh. UNEP.

July 25-30—Symposium on the Optimal Development and Management of Groundwater. Birmingham. Auspices of International Association of Hydrological Sciences and UNESCO.



World Environment Report

25 MAY 1977

VOL. 3, NO. 10

Copyright ©1977. Center for International Environment Information.

MAY 9, 1977

Swedish Reactors Forced to Meet 'Completely Safe' Criteria

STOCKHOLM—In the future, Swedish power companies must meet stiff conditions laid down by the non-socialist coalition government before they can put a nuclear power plant into operation.

Parliament recently enacted legislation requiring power companies to produce contracts for nuclear fuel reprocessing and also demonstrate that radioactive waste from new reactors can be handled and disposed of in a "completely safe" way. Only after the government has been satisfied on these scores may the companies load and use any new reactors.

Sweden now has five nuclear power reactors in operation. Barsebaeck II, privately owned by Southern Power, started up just after the present government took over from the Socialists. It must meet the first condition—a reprocessing contract—by October 1 or be shut down. The rest of the plants in a Social Democratic Party's program calling for 13 nuclear reactors by 1985 are still under construction or on the drawing board. The Swedish Nuclear Fuel Company presently is negotiating with the French company Cogema about a fuel reprocessing contract.

The new law represents a compromise within the coalition government over nuclear energy. The Center party, leading member of the coalition, is strongly anti-nuclear, while its partners, the Conservatives and Liberals, incline toward the previous government's nuclear stance.

After Barsebaeck, the next new plant that will have to meet the conditions for a starting license is Ringhals 3, which is owned by the State Power Board.

If the government hews to the tough Center party line at Ringhals later this year, it appears the reactor will not receive a start-up license, especially since there is no "completely safe" way as yet of handling and disposing of nuclear waste.

Should the other coalition partners decide not to go along wholeheartedly, a national referendum on the future of nuclear power in Sweden is in the offing. Such a "resolution" of the nuclear conflict actually has been forecast by the new government. Although the vote would be difficult to predict, it could signal that Sweden will abandon nuclear power within the next few years.

Meantime, a 15-man commission is at work to provide the basis for a decision on energy use in Sweden until

1990. It must report back to the government by July 1 next year, so that it can present its policy for parliamentary action that autumn.

Five teams of experts are working under the commission on specific energy areas such as nuclear safety and waste (including the environment), procurement and supply of energy, management and measures to save energy over the whole field of users, research and development, and administrative and tax measures.

SPECIAL DISPATCH TO *WER*

Underground Water in Punjab Found Polluted With Nitrites

NEW DELHI—Researchers at the Punjab University Department of Soils have now discovered that underground water—the main source of drinking water in Punjab villages—has become considerably polluted with excessive amounts of nitrogen fertilizers, and has led to urinary troubles, kidney malfunctioning, and jaundice.

Though nitrate itself is not toxic and harmful, it forms nitrites which convert the red blood cells to methemoglobin. As a result, the transport of oxygen from lungs to body tissues is adversely affected.

Punjab, which is agriculturally the most productive state in India, has, according to the survey, used the maximum quantity of fertilizers—more than actually is needed for greater crop production. In this state alone, the use of nitrogen fertilizers jumped from 2,920 to 232,950 tons during the 1961-76 period.

The researchers found that 30 to 60 per cent of nitrogen in fertilizer is absorbed by crops; 10 to 20 per cent goes into the atmosphere; and the rest is soaked up by soil and then settles in underground water, particularly during the rainy season.

R. MURALI MANOHAR

In This Issue

Organic Fertilizers	2
Asian Bio-Gas	3
Solar-Heated Factory	4
Desertification	4
Water Conference	5
Asbestos Controversy	6
In Brief	7

Coffee Planters in Brazil Turning To Use of Organic Fertilizers

RIO DE JANEIRO—One of the effects of the petroleum crisis on coffee planters in Brazil is that they are turning increasingly to organic fertilizers.

According to Claudio Kaphan, a coffee grower from Rolandia in the northern part of Parana state, "Until 1973, chemical fertilizers were so cheap that nobody even bothered with the time-consuming process of evolving organic or green fertilizers. But when the price of oil shot up and urea and other petroleum-derived fertilizers began doubling and tripling in price, people around here began remembering the value of green fertilizers and compost piles."

Because he has a medium-sized farm with some 350,000 coffee bushes, Kaphan said that making enough organic fertilizer was beyond his capabilities. But his problem has been solved by a chemical fertilizer plant in Londrina, the city in the north of Parana that claims the title of "World Coffee Capital." Reversing the usual procedure, the Quimorgan (chemical-organic) Co. builds and services compost piles right on farmers' properties.

Kaphan pointed to a big rectangular compost pile and said: "I've got 100 tons of excellent manure there. It cost me \$5,000 but even that's much cheaper than chemical fertilizer right now." Although Quimorgan does not divulge its exact compost formula, a viewer could perceive layers of cattle manure alternating with other layers of grass, chaffs, leaves, and sawdust.

G. HAWRYLYSHYN

Liberia to Adopt Strict Pollution Codes For Its Coastal Waters

MONROVIA—The Liberian government is in the process of adopting preventive measures to safeguard its air and waters from continuing pollution, especially of its coastal waters, which has posed a serious threat to the country's nearly two million population who subsist on large quantities of seafood.

In this connection, Liberian President William Tolbert has proposed to the National Legislature a strict environmental act containing severe penalties for polluters. In the interim, the Liberian Hydrological Service is continuing to monitor those mining and rubber companies that have aroused strong public resentment because of their contaminating activities.

Water contamination has been found in the St. John, one of the nation's major rivers, as well as in its tributaries. This pollution, often referred to by the Liberian-American-Swedish owned Lamco mining company as "pigmentation," constitutes a public hazard, according to Lands and Mines Minister Aaron Holmes.

The investigation of Lamco's mining area in Nimba, in

the northern part of Liberia, revealed three sources of contamination: a wash-off from mine dump (tailings) into the rivers by heavy rains; yellow clay material from the ore of lateritic origin in water washing down the mountainside and also from laterites; and run-off from hematite ore.

Inspection of Lamco Buchanan seaport area, about 100 miles from Monrovia, indicated the main source of coastal pollution to be the wash-off from the stockpiles which travels directly into the ocean.

Minister Holmes said it is desirable that waste disposals be treated before they flow into natural river courses, noting that one of the common methods of treatment is construction of waste water stabilizing ponds. He added that in certain cases, however, when the problem assumes serious proportions as at Lamco, it may be necessary to also include chemical treatment facilities.

The Mano River, which extends 236 miles from within the Republic of Guinea to Liberia and Sierra Leone, is also facing pollution problems. Diminution of the waste products reaching this important river continues to be a priority undertaking, according to Holmes.

Monrovia harbor also has a pollution problem. It was reported recently that during very heavy rains a certain amount of run-off from the ore stockpile area, although carrying very little solid material, tends to pigment the harbor's water. But at present there is no economic means of controlling this run-off because one inch of rain over the dock-leased area represents some 1.6 million gallons.

The American-owned Firestone Rubber Plantations Company, which has been operating in Liberia since 1926, has already constructed a pollution control plant, and according to official reports, has removed more than 1.7 million pounds of solids from the effluent prior to discharge.

J. BLAMO ROBINSON

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$125 per year. \$15 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Ann C. Werner
Correspondents covering more than 60 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

SPECIAL REPORT: Asia Turns to Bio-Gas For Cheap Fuel

HONG KONG—The lack of coal and oil resources in many parts of Asia has led to the exploitation of bio-gas—a cheap and versatile fuel—as an increasingly popular energy alternative.

Rapid development in the use of bio-gas as a fuel began two years ago when a report to the UN Economic and Social Commission for Asia and the Pacific (ESCAP) said that an integrated approach to bio-gas planning could produce real results in the energy-needy areas of Asia.

Chinese Experiment—To date, the governments of India, Pakistan, China, the Philippines, South Korea, Singapore, and Japan have initiated programs to produce bio-gas for rural use. But China was the first country in the region to experiment with large-scale production of bio-gas, and it did so on its own initiative and some time before ESCAP focused attention on the subject. The Chinese plants were set up in 1974, mainly in Szechuan province. In Miyang county, there were 100,000 digesters (for manufacturing bio-gas) at one stage providing fuel for more than 76 per cent of the local population. Bio-gas plants also sprang up in large numbers in the heavy agricultural centers of Honan, Hunan, Hopei, Kiangsu, and Fukien provinces.

At that time, a Chinese source estimated that each 10 cubic meter digester was capable of producing fuel equivalent to seven tons of coal per day, or a saving of several million tons of coal annually.

Philippine Program—Recently, the Philippine government has begun an ambitious program to generate enough bio-gas to completely replace liquefied petroleum gas (LPG). In fact, the country is now ready to reduce its LPG consumption by about 50 per cent.

Five pilot bio-gas plants, each capable of supplying gas for the cooking and lighting needs of five households, were completed last March. Cost of each plant was less than \$1,400. In addition to the five pilot plants at Solana, Cagayan, Cebu City, Zamboanga; Cagayan de Oro and Davao City, seven others are under construction at Sual, Pangasinan; Cabanatuan; Iba, Sambales; Camalig, Albay; Miag-as, Iloilo; Kananga, Leyte; and Nuling, Cotabato.

The Philippines Energy Development Board (EDB), which is sponsoring the program, hopes that at least one bio-gas plant will be built in each municipality to reduce rural consumption of LPG and kerosene.

Post Embargo—The Philippine government began planning the use of bio-gas after the Arab oil embargo in 1973. The first bio-gas plant was set up at the Liberty Flour Mills' Maya Farms. Today, it is capable of producing some 30,000 cubic feet per day.

Studies conducted by the EDB reveal that non-conventional energy resources, such as bio-gas, can

generate sufficient energy to replace substantial amounts of oil imports equivalent to some 47 million barrels by the year 2000.

Produced as a by-product of the decaying process of organic life, bio-gas is a mixture of 80 per cent methane and 20 per cent carbon dioxide and carbon monoxide. With a heating value ranging from 600 to 700 BTU per cubic foot at atmospheric pressure, it is best used for heating as in cooking and drying, and for cooling as in gas refrigeration. It can also be used to run internal combustion engines and electric generators, and to pump water.

Bio-Gas Advantages—Why, aside from its low cost, is bio-gas so popular? Primarily, because it is not as dangerous to handle as petroleum oil derivatives, it is odorless and sootless, and it is an effective way to control dwindling fossil fuel resources. Additionally, it is a source of disease-free organic fertilizer and it controls pollution by disposing of organic wastes such as animal manure, crop wastes, and garbage.

Basically, a bio-gas plant is made up of two parts: a digester and a gasholder. The digester consists of a waterproof and air-tight tank where the slurry—a combination of manure, crop wastes, and water—is placed. The slurry is fermented by anaerobic bacteria, and in the process, bio-gas is produced and stored in the gasholder pending its use. The sludge left behind is used as a bio-fertilizer.

Studies have shown that this fertilizer can save farmers about 75 per cent of normal fertilizer costs and increase yields by some 50 per cent.

Bio-Gas Problems—However, universal usage of bio-gas presents some problems.

First, farmers have to revamp their farming methods substantially. A deliberate and extensive system of collecting wastes must be created. This has long been practiced in China and some other countries, but is far from standard in the rest of Asia.

Second, to enable the gas digester to work properly, a maximum level of content and mixture must be maintained. This means diverting a supply of water to it. In addition, construction of the digester tank itself is far from simple. Of the 209,000 such tanks that China built in Szechuan in 1974, only 169,000 functioned properly.

Finally, the best material for building the tanks is cement, but this has proved expensive in many rural areas where cement is not readily available.

Ideal Energy—These difficulties notwithstanding, many Asian countries are concluding that bio-gas is an ideal energy source for developing nations with large rural populations. Once installed, the bio-gas system is largely self-perpetuating and only minimal maintenance is needed.

ARTHUR MILLER

Australian Scientists Create World's 1st Solar-Heated Factory

PERTH, Australia—A small team of CSIRO scientists in Melbourne, led by the organization's director of solar energy studies, Roger Morse, has installed equipment capable of keeping water at a constant temperature of 80 degrees centigrade at a large soft-drink factory in Queanbeyan, near Canberra. The water can also be kept at 60 degrees C. in specially-designed thermal storage tanks for up to two days.

CSIRO is the federally-run Commonwealth Scientific and Industrial Research Organization. The experiment will compare various types of energy costs in what is depicted as the world's first solar-powered heating industrial heating plant.

The hot water collected from equipment on the roof of the factory is used to heat cans of soft drink before packaging. Solar heating is expected to cut the factory's oil bill by 85 per cent in this part of the production process.

Diesel fuel, used widely in food processing and manufacturing industries, costs about \$100 a ton—inexpensive by current world standards. But the situation is expected to change over the next decade when Australian manufacturers will face a massive \$2,500 million bill at today's prices for oil imports.

If the CSIRO experiments prove out, solar power could ultimately replace traditional energy sources in manufacturing industries which currently absorb about 40 per cent of Australia's primary energy supplies.

The basic cost of installing the solar equipment at the Queanbeyan factory came to only \$12,320.

DON LIPSCOMBE

Final Draft Plans Firmed Up By UN Desertification Staff

NAIROBI—With the last of the regional preparatory meetings for the UN Conference on Desertification (UNCOD) having taken place in April in New Delhi, final plans are now in hand for the Conference itself, to be held in Nairobi from August 29 to September 9. The UN General Assembly's decision to hold UNCOD followed the great drought in the Sahel, south of the Sahara, between 1967 and 1973.

Speaking in Nairobi at the African regional preparatory meeting, Dr. Mostafa K. Tolba, executive director of the UN Environment Programme (UNEP) and Secretary-General of UNCOD, said the mere adoption of a plan of action against desertification would not, in itself, constitute a successful conference.

The vital issue was how achievable the plan is, and what political power the international community is prepared to put behind it. "As far as I can see, there is

definitely a great interest in the problem, and a greater understanding of the impact of the problem [of desertification] on everybody in the world," Dr. Tolba told *World Environment Report*.

Since the great Sahel drought, Dr. Tolba said, there had been drought in various parts of the world; last year, France and Britain experienced lengthy periods of drought, and this year there has been severe drought in the western United States.

Based on climatic data, arid and semi-arid lands make up 36 per cent of the earth's land surface, and are inhabited by 628 million people—16 per cent of the world's population. Man-made deserts increase the area to 43 per cent of the earth's land surface, and at least two-thirds of the world's nations are directly affected by desertification.

It is estimated that between 50,000 and 70,000 square kilometers of land are lost annually to desertification. If an arbitrary value of \$2,000 per hectare is applied, the annual economic loss exceeds \$10 billion.

Dr. Tolba said the North African countries had already agreed on a project to establish a green belt on the northern rim of the Sahara, and a feasibility study for a similar proposal is being considered for the southern margin of the Sahara.

The draft plan states that the immediate goal is to arrest the processes of desertification and, where possible, to reclaim desertified land for productive use. But, it warns, desertification is not susceptible to quick solutions; it calls for continuous assessment, planning and management, supported by international co-operation.

The draft plan goes on to suggest a series of recommendations. They include:

- Countries should adopt demographic policies that will support programs for improving land use, giving priority to the maintenance of an adequate rural labor force, and to the resettlement of those migrating from rural to urban areas so as to minimize economic and psycho-social distress.
- To improve degraded conditions in dryland pastures, improved systems of rangeland and livestock management should be introduced. Drought risks can be reduced by creating drought forage stocks, and drought grazing reserves; and by providing means for removing livestock from drought-affected areas.
- In irrigated lands, measures should be taken to prevent waterlogging, salinization and alkalization, by reclaiming deteriorated lands, and by modifying irrigation and farming techniques.
- Research should be vigorously pursued on the use of alternative or unconventional energy sources in the drylands, to yield simple, inexpensive and useful devices to serve the needs of dryland peoples.
- The UN's Environment Coordination Board should be responsible for following up implementation of a Plan of Action to Combat Desertification; and a Desertification Unit should be established within UNEP to co-ordinate implementation of the Plan.

CHARLES HARRISON

UN Water Conference: Four Countries Report on Improved Usage

The last issue of World Environment Report carried two articles on the UN Water Conference at Mar del Plata, Argentina. The first summed up the general recommendations of the Conference; the second was a special interview with the Conference Secretary-General, Yahia Abdel Mageed. Now, in this concluding dispatch, WER's Argentine correspondent, Agostino Bono, focuses on some of the specific activities concerned with improving water usage as reported by delegates from several countries.

MAR DEL PLATA, Argentina—Besides developing a worldwide plan for increasing water usage and efficiency, the UN Water Conference encouraged experts from 116 countries to share experiences in solving specific problems.

These experiences range from "breakthroughs" by Israel in water desalination and drip irrigation to a shared river water project between Argentina and Uruguay which could become a model for the rest of Latin America. A cross-section of activities follows:

Israel—"After five years of work we have made important breakthroughs in cutting the cost of water desalination and in the maximum development of agriculture under irrigation," said Saul Arlosoross, Israel's deputy water commissioner, in a *WER* interview.

Israel has developed a desalination process using nuclear power which can produce freshwater at a cost of 25-30 cents per cubic meter (1.308 cubic yards).

"Before this, there was no desalting process costing less than \$1.00 per cubic meter, thus making desalination too expensive," Arlosoross said.

By 1990, Israel hopes the process will increase its freshwater supply by 50 per cent, an important and crucial advance in this desert country which already has committed 95 per cent of its freshwater supply to satisfy growing needs.

The Israeli delegation made its new process public at the Conference. Currently, it said, one desalination plant is in operation, at the Red Sea port of Eilat, and produces one million gallons of freshwater a day. The nuclear power plant is also producing freshwater. Israel began experimenting with nuclear power in 1972 when the price of oil started to increase sharply.

Another dual purpose nuclear plant, to be located on the Mediterranean coast, will be producing about 157 million cubic yards of freshwater by 1990, according to the Israeli plan. Primary use of the desalinated water will be for agriculture. But some will also be used in industry, for drinking purposes, and for filling swimming pools and car radiators.

The major advance in irrigation arises from the development of disposable polyethylene hoses which can be used in an economical drip irrigation system for crops,

such as fruits and vegetables, not requiring extensive acreage, said Arlosoross.

Drip irrigation—where the water falls drop by drop directly on the plant from punctures in the hose—is considered the most efficient in terms of water use because it limits evaporation. However, the cost of the conducting tubes has made the system too expensive for field crops such as cotton, corn, sorghum, and sugar.

Normally, however, the tubing cannot be used for more than a year because it collects sediment. At the end of the harvest, the polyethylene hoses can be thrown away or plowed into the ground without harming the soil, according to Arlosoross.

"Experiments with drip irrigation show a 50 per cent cotton increase per unit of water in comparison to sprinkler irrigation and flooding," he said. "In April when the new cotton plantings begin, we will be using extensive drip irrigation for the first time. We don't know yet how much the cost will drop. We estimate that we can produce cotton at about 40 per cent of the current cost of \$500 per 2.5 acres," he added.

Nigeria—As with most African states, Nigeria's basic water problem is poor distribution and lack of development of existing water resources.

"In Africa, the potential of water resources is only now being exploited up to between two and three per cent of the total exploitable amount," said O. William Osisiogu, Nigerian commissioner for water resources.

Most of Nigeria's resources come from streams and rivers, especially the Niger and Benue Rivers. To improve the situation the government has developed a regional development policy coordinated at the national level for all water-related projects.

"Nigeria is divided into 11 River Basin Development Authority areas. Three of these authorities have been functioning for the past four years and the remaining eight will be effectively functioning by 1978," Osisiogu said.

Still other agencies have been created for storage of water resources and development of a network distribution system to channel water from abundant to sparse areas. So far the system is working satisfactorily," he said.

"At the end of British rule in 1960, less than one per cent of the Nigerian population had access to good water. In many places, people had to travel for many miles in search of water which when found was not usually of satisfactory quality.

"By the end of 1975, however, water supply had become available to 70 per cent of the urban dwellers and in 16 per cent of the rural areas, about 30 per cent of the total population," the water commissioner said.

River basin authorities are also carrying out irrigation plans through a system of dams and bore holes. Currently, 49,420 acres are under irrigation. Plans call for

one million irrigated acres by 1980.

Argentina—This South American country has a problem similar to that of Nigeria—an abundance of water concentrated in a fraction of the land mass. Moreover, much of Argentina's resources come from river waters shared by neighboring countries.

"Our water disposability represents, on the average, about 39,000 cubic yards per inhabitant. This is three times more than the world average," said Luis Jauregui, Argentine undersecretary for water resources and UN Water Conference president. "But two-thirds of our continental territory suffers from water deficiency," he added.

Argentina's answer to the problem is an attempt at increased international cooperation "to arrive at a progressive ordering of our relations in water matters with the countries sharing the resource," he said.

In cooperation with Uruguay, Argentina plans to complete by 1979 an ambitious hydro-electric project on the Uruguay River, which forms part of the border between the two countries. The project is located at the Salto Grande Falls about 300 miles from Buenos Aires.

The new project calls for electrical projection of 1,890 megawatts, a 193,000-acre artificial lake, extension of the river's navigability by almost 100 miles through a canal system, and minimum irrigation of 247,000 acres in each country.

This is the first such bi-national project in Latin America and is a "demonstration area" showing what can be done by international cooperation, said Carlos H. Echazarreta, member of the Argentine-Uruguayan Joint Technical Commission in charge of the Salto Grande project.

Although Argentina is providing most of the financing, decision-making is on an equal basis with the commission composed of four members from each country. Decisions are by majority rule with tie votes going to arbitration—which has not been needed since the project started in 1974.

West Germany—As with most developed countries, West Germany is plagued by the problem of water pollution from industrial wastes. To detect contaminating agents, West Germany has been using isotope tracers.

"The most important thing for the adequate detection of contaminating agents is to know the movement of underground and surface water currents. The use of isotopes is the adequate technique," said Herbert Moser, head of West Germany's Institute for Radio-hydro-metrics and Environmental Resources Investigation.

Two isotope methods are used. One method is to artificially introduce isotopes in the water because radioactivity reveals itself more subtly and more sensitively than conventional tracers, said Moser. The other method is to use natural isotopes already in the water.

"These isotopes differ according to whether the water comes from summer rain or winter rain, and whether the

water is from the mountains or the plains. This method has the advantage of being able to follow each type of water according to origin," he said. "But environmental isotopes appear in minimum quantity and require high precision instruments to detect them."

Through isotope tracers "it is possible to determine the origin of the liquid at each strata and its underground and surface connections. Thus we detect at all the physical levels necessary the origin of the pollution so that it can be stopped or diverted," Moser said.

Isotope tracers have been in such use in West Germany over the past decade, and are also used in the U.S., Canada, and France.

AGOSTINO BONO

Ireland Permits U.S. Firm to Use Asbestos For Making Brake Linings

CORK—An American firm has received final approval to use asbestos in County Cork, after a nationwide controversy which may lead the Common Market to draw up new regulations to control the substance.

Raybestos-Manhattan recently was given the go-ahead at a stormy meeting of the local government planning authority, Cork County Council. Nevertheless, residents who live near the factory have announced last-ditch legal efforts to try to stop the plant, plus an appeal to the EEC.

As reported previously in *World Environment Report*, (March 14, p. 4), the U.S. company wants to use asbestos in the manufacture of brake pads for the motor trade. The company promised 100 jobs in an area hit by economic depression. Although invited by the semi-official Irish Industrial Development Authority and given a financial grant to construct, their plan became the subject of a major dispute between residents, trade unionists, and industrial promotion agencies.

Planning permission for the factory itself was given despite opposition. It is located in a rural residential area five miles from Ireland's second largest city, Cork.

Local residents claimed that the emission of asbestos fibers from the factory filters would affect their health and the crops on nearby farms. All these claims were denied by the company, but then the residents circulated a document claiming that the Raybestos company had been in trouble in Passaic, New Jersey, where workers had filed a claim for alleged physical harm due to exposure to asbestos compounds. They produced clippings from the *New York Times* of May 7, 1975 to support their case.

Meanwhile, back at the Cork County Council, the matter moved to a climax when, with approval already cleared for the factory itself, the only requirement remaining was approval for a dump site to hold the asbestos waste. The public galleries were packed for the meeting. Experts on asbestos gave evidence and medical experts gave counterstatements. After four-and-one-half hours of continuous debate the Council voted 27 to 17 in favor of the dumping request.

TOM MACSWEENEY

In Brief...

Austria Develops New Process For Waste Water Purification

A new biodegradation process, developed in Austria, is claimed to achieve a substantial improvement in methods of biological waste water purification.

By means of a submersion reactor unit, a higher rate of efficiency is attained in waste water purification while also reducing energy consumption. The reactor unit's functional efficiency also eliminates the offensive odor which usually issues from the clearing basin as a result of its overload in conventional processes. Moreover, the new system's operation is almost silent because no noise-intensive compressors are used in the mechanism.

In this new process, oxygen as the life-supporting element for the microorganisms achieving the waste water's purification is channelled into the basin in the form of minute air bubbles which, through a counter-current effect, are retained in suspension for a long time. This insures that the rate of oxygen enrichment of the waste water is much higher than is usually achieved with the use of conventional processes based on the spray, circulation, or injection principle.

Cape Barren Goose Menaced By Hunters in Australia

Amid fears for the preservation of the species, a two-day shooting season has further depleted the Cape Barren goose on Flinders Island in Bass Strait between the Australian mainland and Tasmania.

Of the estimated 12,000 in the world, about half live on Flinders Island where they eat at one sitting their body weight in wheat and barley, ripping out vegetation, roots and all.

The hunt by 131 licensed shooters, who invaded the island in a fleet of

chartered aircraft, has been widely publicized on the front page of the national newspaper, the Australian. Nevertheless, the shooters went home with 780 birds, the farmers were appeased, and there have been few meaningful protests.

However, Derek Smith, an islander for the past 18 years, points out that the geese were attracted to the islands by farming. He is seeking funds to create a wildlife sanctuary on the windswept island, where farms are hard to create among the rocks and salty shrubs.

Workshop Tackles Salinity In Pakistan's Indus Basin

The soil of the alluvial plains of the Indus Basin has long had a great potential for producing enough food not only for the rapidly increasing population of Pakistan, but also for export to other food deficient countries. And indeed it has done so for the past half century. Now, however, because of poor drainage, the problem of salinity and waterlogging in the Indus Basin has recently become one of the worst in the world.

To cope with the worsening situation, a workshop was organized last January at the University of Agriculture, Lyallpur. Invited were specialists from such disciplines as crop production, forestry, livestock production, economics, sociology, water management, and hydrology. The workshop was jointly sponsored by the Pakistan Science Foundation, the Ford Foundation, and the University of Agriculture.

Various aspects of the complex problem were identified and the interaction of different human activities on the long term stability and productivity of the Indus Basin were discussed. It was then decided to produce a source book—based on reports concerning different aspects of Indus Basin productivity—which could be made available to planners and other specialists dealing with the problem. A follow-up seminar on the subject is now being planned for further detailed discussion.

CO Buildup Causes Concern In Birmingham, England

The build-up of carbon monoxide and lead in multi-story car parks is causing concern in the Midlands industrial city of Birmingham, England.

Management at the Gracechurch Car Park Center asked the Environmental Department of Birmingham City Council to investigate when their employees complained of headaches and nausea.

At the Saturday peak period the concentration of carbon monoxide was found to be more than ten times the recommended limit for working areas. The lead concentration was 100 times the city average, although this was only half the allowable level for working areas.

"The figures are certainly disturbing," said Mick Archer, the city's Environmental Officer. "We don't know enough about this subject or about the effects on people. It is one of the gaps in our environmental knowledge."

Mexico Sets Up Data Bank To Monitor Water Wells

Mexico is setting up a computerized data bank to monitor the nation's 80,000 water wells in an attempt to coordinate and improve the exploitation and distribution of water resources. Known as the National Geohydraulic Information Bank, the project is located in the old Secretariat of Hydraulic Resources, now part of the Agriculture Secretariat.

With the cooperation of the Agriculture and Health secretariats, as well as the National Rural Credit Bank and other executive commissions which deal in any way with geohydraulic resources, some 120 facts about each well will be determined and filed with the computer in Mexico City. These facts will include quality of water, depth of well, its proposed usage, and actual production. Most of Mexico's water wells exist in the central and north areas.

Severe Water Pollution Found in Central Hungary

Radio Budapest has reported two recent cases of severe water pollution in Central Hungary.

It said that more than 270 cubic feet of oil polluted the Tisza River near Szolnok and that the oil came from a tank belonging to a hospital in the nearby town of Cegled. Investigation proved that somebody had attempted to steal oil from the tank, became frightened and fled, leaving the tank tap open, the radio service reported.

The second pollution case occurred in a cooperative farm near the town of Nagykoros, where a flood saturated chemicals stored in the cooperative farm and, subsequently, this mix polluted the underground water.

Radio Budapest said that the Army pumped out the contaminated underground water, provisionally storing it in tank trucks of a nearby factory producing tomato juice. However, the tank trucks will remain poisoned, the report said, and can no longer be used by the factory. Authorities have ordered that all wells in Nagykoros be closed.

Colombian Soda Plant Guilty Of Polluting Cartagena Bay

Colombia's National Association of Industrialists (ANDI) and the electrical utility of Bolivar State have joined the growing clamor against pollution of the Bay of Cartagena on Colombia's Caribbean coast by the state-owned soda plant. The electrical utility maintains that its sea water pumps have been damaged by calcium carbonate dumped in the bay by the soda plant and that, as a result, its generating capacity has been halved from 35,000 kw to 17,500 kw.

Although it is Colombia's chief tourist resort, Cartagena suffers constant electrical cuts. The bay is not only polluted by oil and petrochemical wastes and city garbage. Tests made by the Environment Pro-

tection Committee of Cartagena show that the soda plant also is polluting the waters with mercury concentrates.

The soda plant has obtained a \$500,000 government loan to undertake a study of pollution controls, but in the meantime the city continues to suffer daily electrical and water cuts, and there is a serious health danger to the local populace from the consumption of mercury-polluted shellfish which can cause brain cell damage. Pollution also has caused a six-foot drop in the height of the bay's waters.

Medical Equipment Causes Disease, Says Argentinian

The introduction of highly advanced medical equipment here may be causing more diseases than it cures. This is the startling warning issued by Dr. Juan Carlos Chachques, an Argentine surgeon who is investigating the practice of clinical medicine.

The equipment is often beyond the economic means of the hospital to keep in good working order and beyond the knowledge of the personnel operating it, he said. The result is that the equipment becomes unsterile and causes infections, he added.

Most of the sophisticated equipment is used for patients in critical condition. Studies on patients in the critical ward show high incidences of infections. About 70 per cent of these infected patients were treated with mechanical respirators, said Dr. Chachques.

Other investigations showed that patients under intensive care were being infected by more virulent microbes than is normal.

Dr. Chachques said much of the problem lies in the lack of funds to replace spare parts and to purchase support equipment needed to keep the medical machinery sterile. He also charged that many medical students have not been properly taught how to use some of the new equipment.

Photosynthesis in Plants Affected by Air Pollution

Japan's National Institute of Environmental Pollution (NIEP) has recently reported that air pollution affects the basic physiological functions of plants. Tests conducted by NIEP proved, for example, that ordinary house and garden type plants do not grow normally if they are subjected to foul air for a long period.

A state research laboratory operated by NIEP plans to use this information to try to discover what specific plants can, in turn, be used to clean the air. In addition, the researchers intend to compile a table of indices correlating changes in the degree of air pollution with changes in the condition of the plants.

NIEP launched its study into the effects of air pollution on plants in April of 1976. It was found that even small amounts of polluted air in the vicinity of the plants upset the ability of the plants to conduct photosynthesis in an ordinary fashion.

The test plants were unable to adjust the water content in their leaves due to the paralysis of their stomata. It is the stomata which automatically open and close according to the prevailing environmental conditions to maintain an optimum water level.

Off-Key Singers in Mexico Attacked as Noise Polluters

Waiters in a Mexico City restaurant recently assaulted two customers because they were "singing poorly," the waiters told police. The customers had asked the mariachi band to play a particular number and then had joined in the singing. But their singing was so loud and bad that the musicians demanded a double payment for the piece and the waiters sent the customers to the hospital—apparently demonstrating that generalized noise pollution in a metropolitan area of more than 10 million is easier to bear than noise pollution in the same room.



World Environment Report

56 MAY 1977

VOL. 3, NO. 9

Copyright ©1977. Center for International Environment Information.

APRIL 25, 1977

Japan Will Offer Public Free Electric Powered Vehicles

TOKYO—In hopes of popularizing the use of electric-powered automobiles in Japan over the next few years, the Agency of Industrial Science Technology (AIST) plans to offer electric cars, trucks, and buses free of all charges under a public loan program.

It is expected that ordinary citizens, private organizations, and even companies in representative regions of Japan will submit applications for these pollution-free, low-noise (60 phons vs. 70-80 phons for gasoline engines) motor vehicles. AIST authorities said they would like the electric cars to be used for normal transportation and delivery operations.

"Our goal is to prove that these electric automobiles really are practical and to encourage people to demand that the car makers offer similar types in the future," an official of AIST disclosed. "If all goes well with our popularization strategy," he added, "we may at least see around 200,000 electric cars on Japanese highways by 1985."

AIST, which is attached to Japan's Ministry of International Trade and Industry (MITI), has been producing experimental electric automobiles under a development program funded at \$20 million in 1971. The first electric-powered vehicles came off the assembly lines in 1973.

In recent months, according to AIST officials, the project has developed four new models, including a small passenger car and a light truck. Several new models remain on the drawing boards and others are still in the minds of the engineers.

When AIST first began work on the electric cars, the engineers were using lead batteries. But it was found that the maximum distance that could be driven without recharging the batteries was only 105 miles (at 25 mph) for a small passenger car and no more than 136 miles for a small truck. Additionally, it was discovered that the maximum speed attainable averaged only 37 mph for all of the models.

Accordingly, Japanese engineers turned to a hybrid storage battery containing iron-plus-air cells and zinc-plus-air cells. With this type of battery, AIST reports, the electric cars now can achieve a maximum speed of 62 mph, and the light passenger car can travel 160 miles without charging. Larger passenger vehicles and trucks are somewhat slower, but get farther on a single battery charge.

"We are proud of the fact that the exterior appearance of our electric cars differs only slightly from that of conventional motor vehicles," one AIST technician said. "But I'll admit that you can tell there are large batteries installed beneath the bodies of our cars," because of the absence of exhaust pipes and the fiberglass bodies.

A.E. CULLISON

British Royal Commission Studies Pollution Impact on Agriculture

LONDON—The British Government's policy of continuing the expansion of home food production, which has been steadily increasing since the 1950s, is causing the Royal Commission on Environmental Pollution to take a hard look at the impact of pollution on agriculture.

Because Britain's farmland is shrinking yearly as house and road building encroach upon it, necessitating greater use of pesticides and fertilizers, the Commission will study the effect on public water supplies of the discharge of farm effluent, and the effect on lowland and underground rivers and waters of the leaching of nitrates from fertilizers and manures (*WER*, Dec. 20, 1976, p. 8).

The interaction of industrial and urban pollution on farm water supplies will also form part of the study, and will be linked with an inquiry into planning requirements for industrial and urban growth. The Commission's Fifth Report on air pollution, published last year, stressed the need for an integrated approach by the relevant authorities.

At present, the use of pesticides is largely under voluntary control. The Commission will examine trends in the use of pesticides and their environmental impact.

ALAN MASSAM

In This Issue

Chrome vs. Cancer	2
Environmental Appointments	3
UN Water Conference	4
Mageed Interview	5
UNEP's Finances	6
Baltic Sea Conference	6
In Brief	7

Mexico Shuts Down Chrome-Plating Plant Alleged to Cause Cancer

MEXICO CITY—A massive environmental problem that also became a touchy political problem has been solved, at least temporarily, with the government's closing of a factory which produces the ingredients used in chrome-plating for automobile bumpers and other hardware. The plant is in the adjacent state of Mexico.

Last year, residents of the town nearest the factory protested publicly that gases and dust from the factory had caused the deaths by cancer of no fewer than nine children and had seriously impaired the health of adults. The town water system was contaminated, they said, and chromatic acid waste was allowed to accumulate, as dust, in the streets and on houses.

Following the protests, teams of experts—doctors, public health workers, contamination specialists, and chemists—were dispatched to the area. The National Congress discussed modification of the federal Law on Prevention of Atmospheric Contamination to strengthen legal measures against a repetition of the contamination elsewhere in the country.

Although the Congress and health officials reacted vigorously, the then Sub-secretary of Environmental Improvement of Mexico, Francisco Vizcaino Murray, found the firm blameless. The problem, as many saw it, was in reaching a middle ground of clean air and water with industrial development and the jobs that development can generate. Vizcaino Murray, who remains president of the Governing Council of the UN Environment Programme, left office on December 1 when Jose Lopez Portillo assumed the Mexican presidency for a six-year term.

In mid-March, his successor, Humberto Romero Alvarez, a civil engineer with a master's degree in public health engineering, ordered the factory closed. It will remain closed until the firm buys and installs adequate anti-contamination equipment, his order said.

At the same time, it was disclosed that some wells in the town have been closed and the state of Mexico has built a new school for the town children some distance away from the factory. Earlier, the factory had said it would build the school.

KATHERINE HATCH

Venezuela Centralizes Pollution Controls Under Single Agency

CARACAS—On April 1st, Venezuela's Bureau of Environmental Research (BER) became the country's sole agency responsible for developing a national pollution investigative program.

According to the Bureau's chief, Gustavo Parra Pardi, several large studies begun in 1974 when President Perez created the pioneer DISCA (Department of Environ-

mental Contamination Research) have already reached the stage of recommending controls for polluting agents.

As a result of DISCA's Lake Maracaibo research, the plants composing the giant government petrochemical complex at El Tablazo on the lake's eastern coast are being required to pretreat their liquid effluents before these are accepted by the treatment facility opened in 1976. The nitrogen plant has been given a deadline, as has the sodium chloride (clorosoda) plant, to correct design faults.

"For the first time in Venezuela," says public health expert Parra, who for 13 years has studied fresh and salt water contamination, "we are also taking measures to evaluate and control the environmental impact of new industrial projects before these are approved," referring to Zulia State's planned steel mill and coal mines.

The Bureau in El Hatillo outside Caracas is headquarters for 78 scientists who form a research team supported by 60 lab assistants and 275 other employees. One field station operates in Maracaibo with 11 of the scientists in residence, and another has been opened in Valencia, employing two. "Our unit is growing as fast as we can get trained personnel," said Parra, whose budget increased from \$300,000 in 1975 to nearly \$3 million in 1977, when DISCA was incorporated in the new Ministry of Environment and moved from downtown Caracas to a converted citrus farm in the metropolitan green belt.

The Bureau's priority studies, following the Lake Maracaibo project, will concentrate on air pollution in Caracas and satellite cities, garbage disposal on Margarita Island, and the environmental impact of the petrochemical complexes in El Tablazo and Moron.

"Our job is to establish criteria on critical levels of pollution, and find the cheapest and most efficient way to meet the standards," said Parra.

HILARY BRANCH
LILI STEINHEIL

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$125 per year. \$15 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Ann C. Werner
Correspondents covering more than 60 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

UN Appoints Four to Senior Posts In its Environmental Divisions

UNITED NATIONS, New York—UN Secretary-General Kurt Waldheim announced last month appointments to four senior posts in the UN Environment Programme (UNEP), the Environment Fund, and the United Nations Habitat and Human Settlements Foundation.

- Peter S. Thacher, Director of the UNEP Regional and Liaison Office in Geneva, will become Deputy Executive Director of UNEP, reporting directly to Executive Director Mostafa K. Tolba. He will take up his new duties in Nairobi on September 1, replacing Bruce Stedman who is retiring on that date.

Thacher, 50, is a graduate of Dartmouth College and Yale University. He has been associated with UNEP ever since 1971, when the preparatory work for the Stockholm Conference was initiated. Prior to that he served as Counsellor for Science Technology and Environment with the United States Permanent Mission to the UN in New York.

- Horst-Peter Oltmanns has been appointed Assistant Executive Director for Fund and Management of UNEP, and will take up his new duties in Nairobi on June 1. Oltmanns, 54, is at present Head of the Department of Public Buildings in the Ministry of Regional Planning, Building Planning and Urban Development of the Federal Republic of Germany. He has served in various capacities with the Federal Ministry of Finance and the Federal Building Agency in the Federal Republic of Germany. He has also served as co-ordinator or head of mission for urban development projects in Liberia, Turkey, and Yugoslavia.

During a six-year period as architect-engineer and regional planner with the World Bank he acquired wide experience in the management of technical and financial problems related to building, urban development and environment, especially within the United Nations system.

- Sveneld Evteev, 45, has been named Assistant Executive Director for Program of UNEP, and will take up his new duties in Nairobi on June 1. Evteev is currently serving as Director of Policy Planning and has been with UNEP for a number of years.

Before joining the staff of UNEP, Evteev served as a program specialist in the United Nations Educational, Scientific and Cultural Organization (UNESCO) for seven years and before that was Executive Secretary of the Earth Science Section of the Academy of Science of the USSR and Assistant Vice-President for Environment. Evteev's field of specialization was in the area of geographical sciences—glaciology, pedology, and geomorphology.

- Cesar Quintana, 44, has been named Administrator of the United Nations Habitat and Human Settlements Foundation, and will take up his new duties in Nairobi on

June 1. The Foundation was established by resolution of the twenty-ninth General Assembly session in 1974 as an international institution for human habitat management and environmental design and improvement of human settlements. Among its objectives are the provision of seed capital and technical and financial assistance to permit effective mobilization of domestic resources for these purposes, particularly in developing countries.

Quintana is an agronomist and engineer by training who is at present Director of Malaria Control, Environment and Sanitation in the Venezuelan Ministry of Health. He was previously Director of Housing Programs and Water Supply in that same Department.

Zaire Bolsters Its Environment Program Despite Political Turmoil

KINSHASA, Zaire—This country, although sorely beset with external and internal political problems, is rapidly discovering the importance of environmental protection. A few years ago President Mobutu created the country's first Ministry of the Environment, Tourism and Conservation. Since that time its importance has been enhanced and its powers enlarged by gaining control of a broad range of activities formerly administered by the Ministry of Agriculture—forestry, hunting, fishing, public parks, plant nurseries, horticulture, green belts and public parks. Housing and city planning, sanitation and housing services—formerly run by the Ministry of Public Works—also have been moved to the new department.

Soon the new environmental division will take over from the departments of Industry, Health and Culture the direction of offices responsible for controlling industrial pollution, rural sanitation, protecting national monuments, and administering Mobutu National Park.

Heading this growing department is Ms. Lessendjina, whose impact on the country's quality of life already has been felt. In Kinshasa, she ordered a review of its sewage system aimed at bringing it up to modern hygienic standards. She has strengthened laws against poaching and has established new procedures for licensing animal hunters.

The population gets the news of these changes through Ministry-sponsored television programs. These broadcasts, focusing on the issue of increasing the country's agricultural production, use simple language to explain complicated questions such as the treatment of human effluents for use as fertilizers.

Zaire has also moved into broad participation in international meetings on environmental protection. In 1972, the Ministry of Environment was active at the Stockholm Conference organized by the UN to discuss global environmental matters, and last March, Ms. Lessendjina and members of her ministry participated in the UN Water Conference at Mar del Plata, Argentina.

NAWEZI M. KABANDA

UN Holds First Inter-Governmental Water Conference in Argentina

MAR DEL PLATA, Argentina—The first inter-governmental conference on world water resources approved a plan which delegates hope will greatly increase water usage and efficiency to meet growing demands. The key goals are to provide safe drinking water for the entire world population by 1990 and to increase the amount of irrigated land to meet the needs of an increasingly hungry population.

The plan formulated by the UN Water Conference which met here in March also favors environmental protection, hydro-electric power as a main energy source, improved disaster forecasting and control, shared use of international waters, and intensive public education.

Most of the recommendations were approved on a national level and therefore are not binding on the 116 countries which attended.

The delegates failed to resolve the key issue of how to arrange international financing, although there was general consensus that about \$130 billion will be needed to meet Conference goals. As most of the problems are in the developing world, this will require an increased flow of international aid to supplement locally generated funds.

The Conference asked for the "commitment of national governments to provide all people with water of safe quality and adequate quantity and basic sanitary facilities by 1990, according priority to the poor and less privileged." It recommended that 1980-90 be called the International Drinking Water Supply and Sanitation Decade.

Currently, only about 14 per cent of the world's population has access to public water supply, either piped into the home or pumped through a public spigot within reasonable walking distance. The problem is gravest in the developing nations where two-thirds of the population, about two billion people, are without safe drinking water.

Agricultural policies, which involve 80 per cent of all water use, should include improving and extending irrigation as the major element of increasing production, the delegates agreed. About one-sixth of the world's arable land is currently under irrigation and provides over 50 per cent of the world's food production.

To achieve the main goals, governments were urged to assess their water resources, particularly measurements of underground waters, formulate coordinated national policies, develop local technology, and conduct public information and training programs.

Nations were advised that a unitary water law defining "the rules of public ownership" may be desirable. The Conference, however, did not take a stand on public versus private ownership of water resources.

Because water is a finite resource which cannot be increased or diminished, the Conference stressed more efficient use and distribution. "In many areas of the world, water is wasted or used in excess of actual needs," it said, and efficiency requires strong public participation

and education, plus training of professionals in water management.

Because in many countries the problem is overabundance in some areas and scarcity in others, the Conference recommended improved technology for river basin water transfers and exploration of aquifers—natural underground water formations—as possible storage places for water supplies.

With regard to international funding, the delegates left open the question as to whether increased financing should be channelled through a new fund or through existing structures. The issue, which provoked heavy debate between developing and developed countries, was temporarily adjudicated by the proposal for a UN secretariat study "of the most effective and flexible mechanisms to increase the flow of financial resources."

Developing countries, led by 13 black African states, advocated a new fund exclusively for water development. They said this new fund would avoid the bureaucracy of setting up many parallel projects with separate developed countries and international agencies. Supporters added that the new fund should allow recipients to determine use of the money. Under existing structures, this is usually determined by the donors, they complained, and carry economic and political conditions.

Capitalist and communist developed countries, however, were united in opposition to such a measure, preferring bi-lateral and multi-lateral assistance and use of current international funding systems, and some even promised hefty increases in water development aid through existing structures.

For example, the \$361 million in bi-lateral water funds allotted by Canada over the next seven years "could be increased very substantially, perhaps doubled," said Senator Raymond Perrault, head of the Canadian delegation.

In other areas, the Conference made the following recommendations:

- **Environmental Protection:** The Conference warned that large-scale water development projects, such as hydro-electric dams and creation of artificial lakes, could adversely affect the environment by spreading diseases or destroying delicate ecological balances. Countries were asked "to evaluate the consequences which the various uses of water have on the environment, to support measures aimed at controlling water-related diseases, and to protect ecosystems." Wetlands housing wildlife should not be "indiscriminately destroyed."

"The discharge into the aquatic environment of dangerous substances that are toxic, persistent and bio-accumulative should be gradually eliminated," by applying pollution control laws and regulations. Governments should stress that "direct or indirect costs attributable to pollution should be borne by the polluter."

Special attention should be given to waste discharges from ships, including "severe penalties" for non-compliance with standards aimed at preventing oil spills.

Economic incentives were suggested for effective water use and for developing inexpensive means of recycling water.

• **Water Rights:** Countries sharing water resources should establish joint committees to cooperate on data collection, management, pollution control, disease prevention, and flood control.

In the absence of an agreement on shared water use, nations should "exchange information on which future management of these resources can be based."

Information exchange was opposed by Brazil which refuses to provide neighboring Argentina with facts on its hydro-electric plans upstream from Argentina. Argentina says it needs data to develop its downstream projects.

But Brazil said the resolution, which did not name any countries, was a violation of national sovereignty.

• **Technology Development:** Besides fostering technology transfers from developed countries to developing nations, technical cooperation among developing countries is encouraged because it is more often in keeping with their needs than higher priced, more complex technology. The Conference therefore proposed a pilot project sponsored by the UN Development Program. This UN agency already is sponsoring technical cooperation among developing countries in non-water projects and is providing assistance in water development in Latin America, Asia, and Africa.

AGOSTINO BONO

WER Interviews Conference Secretary General Mageed

MAR DEL PLATA, Argentina—"We can no longer take water for granted as an unlimited resource. Water is limited. There are areas with critical shortages. And there are areas where there is critical underdevelopment although the resources are there," said Yahia Abdel Mageed, Secretary General of the UN Water Conference.

In a special *World Environment Report* interview, Mageed outlined some of the key water problems facing the world. He expressed optimism that the Conference, with its stress on action-oriented programs, had created a "platform for awareness" which could keep water problems from reaching crisis levels in the future.

"Grave water problems do not differentiate between rich and poor. There are problems in developed and developing countries," said Mageed, former minister of irrigation and hydro-electric power in the Sudan.

"If we take the developed countries, we can cite the strain due to increased demands, especially water supply to the big cities. We know of pollution due to industrial development and the wastes we put into rivers and our water resources," he said.

"In developing countries today, the biggest percentage of the population is without good, safe water to drink. The portion is about two-thirds. We are talking about a figure of two billion people," emphasized Mageed.

Water conference planners decided to follow-up last year's Habitat conference goal of providing safe drinking water for the entire world population by 1990 and made this the key theme of discussion for action plans.

"I felt very encouraged and very confident that the governments are talking about this seriously and are taking measures in their action plans," Mageed said.

"The main work has to be done by the developing countries themselves. International aid should be a catalyst. Any socio-economic development cannot rely completely on financial assistance from abroad," he said, and developing countries are willing to accept the task. "The proof is there. In the last half dozen years investment for water supply has been over 85 per cent paid for

by the developing countries."

Another key need, Mageed emphasized, is to increase irrigation to meet the growing food needs. He estimated about 62 million new acres will have to be put under irrigation in the next 15-20 years and current irrigation facilities on another 111 million acres will have to be improved.

Regarding industrial pollution, Mageed warned that developing countries should learn from the mistakes of the developed world to avoid industrialization mistakes that increase pollution. "The lessons learned about the lack of legislation and precautions to be taken have given us the experience. We need legislation. We have the facilities in our hands today to treat industrial waste water and recycle it for other uses," he said.

"I don't think there is a physical shortage regarding the future population. There is always water in abundance in certain areas. But if we do not use it wisely, we will be faced with a very serious crisis," he warned, which will include rising costs in obtaining water.

The conference organizer also noted that greater distribution and use of water can involve thorny legal problems and political issues when a body of water such as a river or a lake is shared by several countries.

Mageed was chairman of the Arab League technical committee for the dispute between Syria and Iraq over the Euphrates River. From 1960-69 he was an executive member of the Permanent Joint Technical Commission for the Nile Waters. He is currently a member of the International Association of Water Law.

"The programs are immense, and will cost \$130 billion. We have a number of financial institutions. We have a great deal of bi-lateral and multi-lateral assistance. But all this alone with their present policies, with their present capacities will not be able to handle the requirements," he said. "We should try to increase the quantity of what we have. We need better coordination. New capacities have to be found. New institutions have to be found."

AGOSTINO BONO

UNEP Governing Council Gets Optimistic Financial Report

NAIROBI—In an introductory report to the 5th Governing Council of the UN Environment Programme (UNEP), to be held here from May 9 to 25, Dr. Mostafa K. Tolba, Executive Director, reports that the financial uncertainties which dominated last year's meeting—largely the result of the failure of the U.S. to make its pledged contribution to the Environment Fund—have now largely disappeared.

The Fund was set up with a target level of \$100 million for the five-year period ending December 31, 1977. It is now clear, Tolba says, that this target will have been approached, if not exceeded, by then.

It has already been agreed that the Fund shall continue. It is therefore now necessary for the Governing Council to decide on its future level.

Outlining his own proposals, Tolba says he envisages a Fund program that is "qualitatively different" from that in previous years, in that the proposed activities will be follow-ups to previous projects, parts of approved programs of action, or the result of joint programming with specialized agencies—rather than completely new individual projects.

In the field of human settlements, for example, the program includes major projects for improving marginal settlements in Asia and Latin America, as well as a training program starting in Latin America for human settlements managers. In the field of pest management systems, the program includes field activities, research and training for the control of schistosomiasis, malaria, and cotton pests which were developed through UNEP-supported preparatory activities.

Tolba suggests that voluntary contributions are needed on the following scale: 1978, \$36 million, rising in \$1 million increments each year through 1981. This is lower than the forecast for 1975 and 1976, and as a result the level of Fund program activities is also expected to drop from the \$35.7 million approved for 1977 to stabilize at between \$30-31 million a year.

He suggests the Council should authorize an allocation for Fund program activities of \$31.6 million in 1978 and \$30 million in 1979, and forward commitments of up to \$10 million in 1980 and \$4 million in 1981.

All governments, he added, should be urged to indicate their intentions to contribute to the Environment Fund at as early a date as possible—and not later than two months after the Governing Council ends, in order to permit the continuance of the Fund program.

A listing of the total pledges made by member states for the period 1973-77 shows that \$107,513,134 was pledged. Of this total, \$98,619,192 is estimated to be received within the period. The U.S., which is by far the largest contributor to the Fund, is the only state whose estimated actual contributions fall short of the pledge made. In the case of the U.S., \$40 million was pledged, and \$30 million

paid. The next biggest contributors were Japan and the Soviet Union, with \$10 million each.

The record shows that total contributions, in millions, received by UNEP have increased each year—1973, \$11.8; 1974, \$15.5; 1975, \$18.5; 1976, \$24.3; and 1977, \$28.5.

CHARLES HARRISON

Baltic Sea Conference Focuses On Chemical Data for Water Protection

KIEL, West Germany—All countries bordering on the Baltic Sea, including the Soviet Union, Poland, and East Germany, participated in an international conference here last month to exchange data about chemical methods to determine harmful substances in sea water. The conference was organized by Kiel University.

It is the first of what is expected to develop into a series of conferences at the specialist level, which will form part of an East-West effort to clean up the Baltic. This effort actually goes back to 1971 when a working group of scientists in Helsinki called for an urgent international protection program. Polish attempts to bring both sides together on a political level foundered on the rock of East German status until the basic treaty between the two German states eliminated this obstacle.

All the Baltic states signed the Gdansk Convention on protection of fisheries and biological resources in September 1973. The following March the world's first comprehensive treaty for the protection of marine environment was concluded in Helsinki. Thus the recent conference here was a sequel to Helsinki.

More than 140 million people live on the Baltic coasts of Sweden, Finland, the Soviet Union, Poland, East Germany, West Germany, and Denmark. They produce an estimated 15 per cent of the world's industrial goods and account for 22 per cent of total world trade. But 60 cities pump most of their sewage untreated into the Baltic and more than 200 rivers carry factory wastes and toxic agricultural chemicals into the sea.

It has been estimated that in 1970, 1,200,000 tons of industrial substances which restrict the oxygen content of the water were dumped into the Baltic. Estimates of phosphates from agricultural sources range between 14,000 and 27,000 tons a year. There is also concern about contamination through heavy metals and cyanide. Soviet biologists have found "sea deserts" where all marine life has already disappeared. One of these is in the Bay of Gdansk, where nothing survives below 180 feet.

Although the 1974 Helsinki Convention limits the quantities of pollutants that may flow into the Baltic, many experts feel the ceilings were set too high and controls too low. The permanent commission, which is based in Helsinki, has inspection powers only in international waters. Each state is responsible for policing its own territorial sea. However, no new binding legal instruments emerged from this latest conference.

SPECIAL DISPATCH TO WER

In Brief . . .

British Industrialists Form Energy Management Group

Forty industrialists, responsible in their own companies for emergency matters, have formed Britain's first energy management association. The Avon and Somerset Energy Managers Group, made up from companies in the southwest of the British Isles, hopes that it will be the first division of a national network which will spread ideas and expertise in energy conservation.

Present at the inaugural meeting was Charles Ryder, head of the Department of Energy's Technology of Energy Conservation Unit. He spoke of the group as an important extension of the Department's campaign to make industry more energy conscious (*WER*, Jan. 17, p. 8).

As a further step in its "Save It" campaign, the Department has published its eighth Fuel Efficiency Booklet, "The economic thickness of insulation for hot pipes." It describes methods of calculating this for steam and hot water pipes used in space heating and process applications. One example quotes savings of 86 per cent in the cost of heat loss by providing 1½" of insulation to a 100-meter length of uninsulated 50mm bore steam pipe operated continuously at 100 degrees Centigrade.

Brazil Takes to Motorbikes To Save Fuel, Parking Space

For the first time in history, Brazilians are buying motorbikes and motorcycles for serious transportation rather than for sport. Bike dealers in Rio say they are now sold out of the smaller economical models of up to 125cc. The development arises out of government measures to cut down on petroleum imports, plus the fact that the threatened prohibition on parking in the downtown areas of large Brazilian cities does not apply to two-wheelers.

Bicycle manufacturers feel they are next in line to experience the boom. Although production has been increasing by a steady ten per cent in the last few years and will be up to an estimated 1.5 million this year, the potential is much greater. Dealers say the recent increase in bike sales has been in the fancy and expensive racing bicycles bought by the middle class. That market is limited in Brazil and what manufacturers are waiting for is a boom in the demand for regular model "proletarian" bicycles.

WWF Espouses New Fishing Methods to Save Porpoises

The World Wildlife Fund (WWF), based in Morges, Switzerland, has called for increased efforts to save porpoises and dolphins, of which between five and seven million have died in the past 20 years when trapped in tuna nets.

The WWF urged the Inter-American Tropical Tuna Commission and the member Governments to "press forward vigorously" to devise new fishing techniques and equipment. It also appealed, in a mid-March message, to all nations using purse seine nets to enact legislation similar to the United States' Marine Mammal Protection Act, which sets a goal approaching zero mortality and injury rate for the porpoise and dolphin.

The U.S. Marine Mammal Protection Act sets quotas for the maximum number of porpoises and dolphins that can be killed in a year and in 1976 stopped fishing operations when the figure of 78,000 was reached. However, there is no regulation enforced for non-U.S. fishermen.

The Tropical Tuna Commission and a subsequent inter-governmental meeting agreed last year that all nations participating in fishing had a responsibility to solve the problem. The Commission will hold a special meeting on this subject this June. Members are: Canada, Costa Rica, France, Mexico, Panama, Japan, Nicaragua, and the United States.

Mexico City Strives For Better Garbage Collection

An inventory of Mexico City's trash has been called for as a first step to collecting, removing and where possible, recycling the refuse from this city of more than 10 million inhabitants. While the Mexican capital boasts of a modern subway system and skyscrapers, its trash collection system is "primitive," says Carlos Reyes Navarro, an architect and president of the Inter-Disciplinary Institute of Urban-Regional Planning.

"Clean-up campaigns should be terminated and replaced by a permanent, well-organized program of trash collection," he said. "Mexico has not yet thought of trash as an industrial problem, but now is the time," he said. The city must be divided into zones for purposes of trash collection, and citizens must be educated on separating the organic from inorganic trash so some of it may be recycled or used elsewhere, the architect said.

France Gives Goat Herd Job Of Creating Fire Barriers

Fifty goats have been given the job of creating fire barriers in the dry hills of the Maures massif above St. Tropez in France. The goats are to munch through a band 4.5 miles long and 55 yards wide in seven years—about 70 square feet per goat per day.

The band will be marked off by an electrified fence; trial zones will be studied to determine the speed and appetite of the goats, and the manpower needed to direct them.

The parched land north of the Riviera in France is particularly vulnerable to fire because of the fierce mistral wind that buffets it for days on end. If the goats help keep fires from spreading, they will have two advantages over mechanical clearing devices: they are quieter and their milk can be turned into goat cheese, among the noblest of French cheeses.

Danes Claim Bran Causes Cancer, Other Diseases

Researchers at the Danish Food Institute have come up with the surprising conclusion that bran can be as harmful for the body as it may be beneficial.

Heretofore it has been thought that bran was valuable because it enabled food to pass more easily through the alimentary canal. Now it is being claimed that ingestion of bran may also lead to cancer, arteriosclerosis, or phebolithiasis.

The danger is that bran contains phytin which, in contact with calcium, iron or zinc in food, has the effect of making it more difficult for the body to utilize these important minerals.

"Bran," says Dr. Willy Hjarde, "should not be utilized when heated, and special care should be taken when packing it and handling it."

If the description of contents on packets of crisp bread or cookies indicates that they contain more than 100 mg phytinphosphorous per 100 g. they should be avoided, he said.

Danish housewives are to be given special instructions when they bake their own bread using bran.

Nairobi Meeting Considers Beneficial Micro-Organisms

Twenty microbiologists from different countries met last month at the UN Environment Programme (UNEP) headquarters in Nairobi to discuss micro-organisms and their role in promoting man's economic well being and health. They are members of a panel which jointly advises UNEP, UNESCO, and the International Cell Research Organization (ICRO).

Opening the meeting, UNEP's deputy executive director, Bruce Stedman, said that by 1979 UNEP would have contributed \$1.4 million to the microbiology program.

The panel has completed arrangements for the fifth Global Impacts of Applied Microbiology conference (GIAM V), to be held at Bangkok,

Thailand, in November. A symposium on indigenous fermented foods will take place at the same time.

A network of Microbiological Resources Centers (MIRCENS) is being set up to make use of beneficial micro-organisms. Brazil, Egypt, Kenya and Thailand have already set up MIRCENS, and co-ordinating centers exist in Australia and Sweden.

The panel on microbiology was formed to develop and foster an international network of organizations for the preservation and exchange of cultures of micro-organisms, to explore their potentials as a natural resource, and to assist in the training of teachers, technologists, and researchers.

Australian Physicists Claim New Solar Heating Method

Four physicists at Sydney University in Australia claim to have made a major scientific breakthrough that could make solar energy more economical. According to Brian Window, head of the university's solar energy group, they have developed—after three years of research at a cost of about \$815,000—a unit that could produce temperatures of more than 300 degrees Centigrade and deliver heat energy from it at up to 250 degrees Centigrade. The basis of their breakthrough, he added, was a new method for collecting heat from the sun, although details of the new approach were not disclosed.

Conventional solar units at present can produce heat at about 100 degrees to 150 degrees Centigrade and have difficulty delivering heat at 100 degrees Centigrade. Therefore, the new process of producing solar energy is more efficient and cheaper than conventional technology and it also promises to deliver high energy heat for industrial and domestic purposes. Moreover, the ability to deliver heat at two-and-a-half times above boiling point means industry could use solar energy for steam generation.

USSR Switches on its First 1,000 Mw Power Plant

The Soviet Union has switched on the first 1,000-megawatt unit of a gigantic nuclear power station at Kursk, in central Russia, that eventually will become one of the world's largest such plants.

The Soviet news agency, Tass, said that the station, begun in 1968, will eventually be raised to a 4,000 Mw capacity which is larger than any similar installation now operating anywhere. Tass said that work is now pushing ahead on the second of four projected reactors. According to the report, the Seym River has been diverted through a five-mile canal and an artificial lake has been created to supply water to the station. The new plant will provide power for the mines and ore-processing complexes in the Kursk iron deposits area.

The Soviet Union is building still other 4,000 Mw stations near Smolensk, Western Russia, at Chernobyl north of Kiev, and near Kalinin on the Upper Volga. Furthermore, the 1976-80 five-year plans foresee nuclear stations with 13,000 to 15,000 Mw capacity.

Argentina to Spend \$20B On Energy Production

Argentina is planning to spend \$19.95 billion on energy production during the next 10 years, according to a recent government statement. About half of this is destined to increase oil production.

With proven oil reserves of about 2.5 billion barrels, Argentina is planning a yearly production of 230 million barrels by 1985. Production last year was 144 million barrels, and current imports are running about 20 per cent of total oil needs.

The remaining budget will be spent as follows: electricity, \$8.2 billion; natural gas, \$1.8 billion; and coal, \$450 million.

Despite these expenditures, Argentina will nevertheless face a difficult period from 1979 to 1980 as consumption catches up to capacity.



World Environment Report

20 APR 1977

VOL. 3, NO. 8

Copyright ©1977. Center for International Environment Information.

APRIL 11, 1977

Informal Law of Sea Conference In Geneva Makes Progress

GENEVA—Two weeks of informal discussions held here in late February and early March aimed at overcoming a major obstacle to progress in the stalled Law of the Sea Conference have raised hopes that a plenary session in New York in May may achieve a compromise.

Both the chairman of these two-week, closed-door talks, UN Undersecretary-General Bernardo Zuleta of Colombia, and chief U.S. representative Elliot Richardson expressed guarded optimism that the sixth session of the Law of the Sea Conference in May will be successful, thanks to the discussions here.

Although Richardson said that he does not expect a final treaty to be concluded in New York, "on the whole I feel encouraged," he told the press. He added that he believes that if at least broad agreement can be reached on the major issues in New York, it would probably take only one more year to achieve a final treaty.

The informal talks here were called by the so-called Evensen committee, named after Norway's Minister for the Law of the Sea, Jens Evensen. This group has often brought together interested states to thrash out difficult points informally. This time representatives of 83 nations participated. Altogether, there are 158 delegations taking part in the plenary Law of the Sea Conference.

The issue here was: who should be permitted to exploit the mineral wealth of the seabed—and how. Although the talks were private, some participants have leaked the outline of a possible solution. This calls for a transitional arrangement designed to satisfy those states favoring mining carried out by private enterprise, and those that want the seabed exploitation limited to states, including those that are landlocked—such as Switzerland—that want to profit from any agreement because they consider the richness of the seabeds a common heritage of all mankind.

The transitional arrangement would cover a period of from 25 to 30 years and would permit "parallel" exploitation by private and public corporations. Following their findings, part of the area they explored would be set aside for them and part held for later disposal by an international enterprise charged with the supervision of a Law of the Sea agreement.

In essence, this means that an American private firm, for example, might be able to mine half of any mineral-rich area it explored, but that the other part would be

held in reserve for a later decision on use. Richardson declared that the U.S. "fully supports the concept that the seabed riches are a common heritage of mankind."

High on the list of retrievable minerals from the seabed are: manganese nodules, nickel, copper, and cobalt.

WILLIAM G. MAHONEY

Mexico Resumes Work on New Dam For Largest Irrigation Project

OAXACA, Mexico—Creation of the largest irrigation district in Mexico, covering more than 477 million acres, has been given the go-ahead with resumption of work on the Cerro de Oro dam in this southern Pacific Coast Mexican state. The dam, with a capacity of 3,510 million cubic meters, will protect more than 741,000 acres against flooding and will bring into cultivation another 321,000 acres, according to Francisco Merino Rabago, federal Secretary of Agriculture and Water Resources.

More than \$318 million will be needed to complete the project by the target date of 1981, with roughly 41 per cent of the financing coming from the World Bank, and the balance from the Mexican government. Work was stopped a year ago because of a lack of funds.

Benefiting from the project will be some two million persons in the Papaloapan River Basin which spreads for 28,200 square miles through the states of Oaxaca, Veracruz, and Puebla.

Presently, there are 348,295 acres under cultivation in the district. With the dam's completion, that figure will be dramatically increased to 477,170,000 acres.

KATHERINE HATCH

In This Issue

Solar Energy	2
Japanese Pollution	3
Lake Liming	4
Nuclear Violence	4
Haitian Drought	5
In Brief	6
Calendar	8

Switzerland To Erect 40 High Alpine Solar Energy Stations

BERN—The Swiss Government is studying a plan for setting up high Alpine solar energy stations that could reduce this landlocked country's dependence upon oil imports. The proposal would establish 40 solar stations—fields of mirrors—that experts believe could generate enough electric power to eventually meet about 10 per cent of the country's total energy needs.

In the tradition of Swiss democracy, the committee in charge has made the proposal public to spur debate and to evoke reaction from industry, various economic sectors, environmental groups, and trade organizations. But according to the international research institute, Battelle—which has been commissioned by the Swiss government to look into the project—any decisions will have to await the results of experiments now under way in the United States.

The mirror stations would be mounted upon high supports to prevent snow damage and would be strong enough to resist winds up to 94 miles per hour. These mirrors would direct the sun's rays onto a boiler, which would create steam and conduct it to a turbine driving an electric power generator.

The stations would be located in the high Alps because the lowlands are often fog-bound and thus shielded from the sun's rays. The 40 proposed stations would provide a total yield of 6.4 billion kilowatt hours a year or about 23 per cent of that now generated by Switzerland's hydroelectric power stations. Total energy consumption in 1975 was 33 billion kilowatt hours. It is expected to double by the end of the century.

The planners acknowledge that construction of only one such station could take a decade and would cost from \$102 to \$122 million. But, based on these figures, the planners claim the project is already competitive with the cost of energy generated from hydroelectric and thermal stations.

SPECIAL DISPATCH TO *WER*

UNEP's Governing Council to Plan Desertification Meeting

NAIROBI—The annual meeting of the Governing Council of the UN Environment Programme (UNEP) will be held in Nairobi from May 9 to 25.

In addition to reviewing UNEP's activities in the past year, and approving a program for 1977-78, this meeting will also act as the intergovernmental preparatory body for the U.N. Conference on Desertification, to be held in Nairobi from August 29 to September 9.

Dr. Mostafa K. Tolba, Executive Director of UNEP, is proposing that the Governing Council hold four plenary meetings on the Desertification Conference, immediately following the Council's deliberations.

The meeting will also receive a progress report on draft principles of conduct for the conservation and harmonious exploitation of natural resources shared by two or more states. An expert working group had previously failed to agree on most of the issues under consideration (*WER*, Feb. 28, p. 1).

Dr. Tolba has suggested that the Governing Council should either (1) attempt itself to finish the work at its Nairobi meeting; (2) reconvene the working group; or (3) transmit the existing report to the UN General Assembly for final disposition—perhaps by the International Law Commission. Dr. Tolba inclines toward the third alternative.

In his report to the Governing Council on the state of the environment, Dr. Tolba will concentrate this year on four subjects—the ozone layer, environmental carcinogens, soil loss, and firewood. He says action to combat the "growing scourge" of environmental cancer must be taken at every level. But he warns that government-sponsored campaigns against such dangers as cigarette smoking and excessive alcohol consumption, and the control of chemical pollution by strict industrial and environmental regulations, can never be entirely successful.

A degree of personal involvement is essential, he insists. "The evidence suggests that in the developed world a man who lives outside urban areas, does not smoke, eats and drinks with moderation, and reduces his exposure to sunlight, may reduce his risk of cancer by at least 30 to 40 per cent. The figure for women is somewhat less."

On the subject of land and soil loss, Dr. Tolba says if adequate food for all the world's expanding population is to be produced, the present rates of loss or degradation of agricultural land cannot be continued.

CHARLES HARRISON

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$125 per year. \$15 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Ann C. Werner
Correspondents covering more than 60 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

Japanese Survey Finds No Improvement in Water Pollution

TOKYO—A survey conducted by the Japanese Environment Agency (JEA) over the past two years and released only recently has disclosed no major improvements in the amounts of pollution of the nation's lakes, rivers, and nearby seas. And in some of the country's lakes and adjacent seas, according to the Agency's report, pollution has actually worsened.

Agency authorities revealed that the pollution stems mainly from release of raw sewage and unprocessed industrial wastes in what appears to be increasingly serious volumes, especially in the vicinity of large residential districts.

The JEA report, which emphasized that it is extremely important for Japan to renew efforts to improve sewerage systems and to step up enforcement of industrial waste processing regulations, noted that the survey basically covered the existence of toxic substances—cyanide, lead and hexavalent chromium, cadmium and arsenide—as well as BOD (biochemical oxygen demand) and COD (chemical oxygen demand).

Measurement samples were taken at more than 5,000 monitoring stations from one end of Japan to the other between April 1975 and March 1976. Since then, the Agency said, the time has been used to examine the test results and to draw up conclusions and recommendations.

A considerable amount of work was involved. For example, 200,413 samples were collected in attempts to locate and measure toxic substances in the lakes, rivers and surrounding seas. In some cases it was found that pollution was above the government's tolerance levels.

In general, it was discovered that Japanese rivers were slightly improved in their pollution levels but that contamination of lakes and offshore seas was increasing. The report noted that, although the Japanese Government had listed 1,453 areas of the country as those regions which should at least meet the bare minimums of the newly established environmental standards by the end of March 1976, only 71.1 per cent of the so-designated rivers, 55 per cent of the lakes, and 77 per cent of the seas passed these tests.

As a consequence, the JEA has instructed local municipalities to impose much stricter controls on household and industrial waste water discharge and to launch new programs to improve the present drainage systems. Such improvements are considered imperative in the nation's famous Inland Sea region where the density of pollutants appears considerably higher than Government-set standards.

Shigesada Marumo, director general of the JEA, believes that the matter is serious and that countermeasures should be applied to the Inland Sea districts on "something of a priority basis." Meanwhile, his Agency is busy devising new restrictions and tight controls to be incorporated in a new law which will replace the current provisional legislation designed to preserve the Inland

Sea. The old law is due to expire in November 1978, and Agency authorities hope the new law will not only work to protect the quality of the water in the Inland Sea but also preserve the scenery and the habitats of local fauna.

An advisory body of the JEA has proposed that the new law should also require each region of Japan to meet "minimum requirements." As a result, the new law may require industrial companies to develop equipment for eliminating nitric and phosphoric pollutants from discharge water.

In addition, the new law may include provisions requiring local governments to protect greenery on the islands of the Inland Sea and to preserve existing natural coasts from further attack and deterioration. One of the steps which doubtless will be recommended to regional governing bodies will be measures to restrict cutting of forest trees and collection of coastal gravel and sand.

Officials of the Tokyo Metropolitan Government, meanwhile, have decided not to wait for the agency to enforce new measures to improve the quality of the nation's waters. Tokyo is expected to introduce a new water pollution control law of its own by spring which would restrict pollution not only by density but also by volume.

Such a move, according to Tokyo officials, may result in reducing pollution in the Greater Tokyo area to its mid-1950's level. The city's goal is to reduce BOD measurements of discharges from most factories and waste disposal facilities down to 10 ppm by the 1980s.

In addition to these density controls, large industrial plants will be restricted to tolerable volumes of pollutants in their discharge of waste water. It is expected that these tolerable discharge volumes will be gradually reduced as the density restrictions are themselves tightened.

Under the Tokyo Government's current program, a total of 125 factories which discharge more than 500 tons of wastes each day will be given tolerable pollutant discharge amounts. Another 2,765 plants will be allocated increasingly stricter density control criteria in each stage. If this plan is fulfilled, officials estimate that pollutants discharged from factories in the metropolitan area will be slashed by 33 per cent, going from the current 42 tons daily to only 28 tons per day on the average.

Nevertheless, Tokyo authorities admit that pollutants from the city's industrial plants now account for only about 13 per cent of a total daily pollutant discharge of around 330 tons. Household waste accounts for most of the remaining waste.

Next on the JEA's agenda, beginning April 1, is a computer study to analyze pollution data from lake water. The scientists report they will be looking for information which will allow them to reduce COD in those lakes where eutrophication is rapidly progressing. They hope that the computer will single out the specific processes by which Japanese lakes are most seriously affected.

A. E. CULLISON

Sweden Limes Lakes to Combat High Acid Sulphur Fallout

STOCKHOLM—Sweden is being forced to spend more than \$4 million a year liming lakes which risk total degradation because of high acid content caused by sulphur fallout from the atmosphere.

"We don't know any better method of neutralizing sulphuric acid than by liming," commented Harald Alander, an advisor to the five-year experimental project. The Department of Crown Lands will spread out 70,000 tons of lime a year, not only in the lakes themselves but also in the streams and their contiguous land.

A pilot liming project at a lake between Gothenburg and Boras has proved successful in freshening the water and revitalizing fish life.

The unusually heavy cover of snow this winter in south and central Sweden has increased Swedish concern about the health of the lakes. As the snow, mixed with sulphur, melts, the acid condition of the lakes has grown even more acute, analysis of the water in 10 lakes by the National Environment Protection Board has shown.

The Department of Crown Lands estimates that 370,000 tons of sulphur settle over Sweden each year. Some 120,000 tons of that is emitted within Sweden itself from heating oils as well as the metallurgical and forest-based industries.

Sulphur emissions there, the Swedes claim, are carried by southwesterly winds over the highlands of Sweden and Norway where rain and snow washes the sulphur out as acid into lakes and streams, turning the waters sour and affecting fish life.

Sweden recently proposed at a meeting of the environment committee of the European Economic Commission in Geneva that all European countries take common measures to reduce the emission of sulphur and other impurities carried by air over great distances.

Recently, Sweden has been able to reduce the sulphur content of heating oil by importing natural low-sulphur oil, but that type of oil is said to be growing scarcer. An alternative for Sweden would be to desulphurize oil in the refining processes. But such manufacturing gains have been counterbalanced because extensions to plant capacity have involved greater usage of oil and sulphur-containing chemicals.

SPECIAL DISPATCH TO WER

Violence Erupts Again in Germany Over Nuclear Plant Construction

BONN—On March 19, an estimated 5,000 violent demonstrators engaged 4,000 police at a nuclear plant construction site at Grohnde, near the Pied Piper German city of Hamelin. Over 300 persons were injured in the clash, some 70 of them seriously. An additional 10,000 opponents of nuclear power demonstrated a few

miles from the building site without serious incident.

The Grohnde demonstration was the fourth to be held in West Germany in the past four months. Two, involving over 20,000 protestors, were held in December and February at a nuclear plant site at Brokdorf near Hamburg, and a third was held at a site at Wyhl, a Rhine village south of Strasbourg, in early March. In all of them, Communist and leftist groups were conspicuous in the clashes with police. And in all cases the violent groups were well equipped with gas masks, helmets, and a variety of improvised but dangerous weapons, which they employed with considerable skill. They used grappling hooks to pull down fences and, at Brokdorf, timbers from a farmer's barn to bridge a moat.

These incidents involved more people and were more violent than the student demonstrations which shook German complacency in the 1960s. A police official likened the Grohnde demonstration to "civil war character." The question arises: What do they accomplish?

The answer seems to be that they accomplish nothing that can't be accomplished far more readily by peaceful means. The Wyhl case is one in point. Its history goes back to 1974, when responsible authorities authorized the construction of a 1,300 Mw nuclear plant on the site. Demonstrations were launched immediately, and, following small-scale clashes with police, demonstrators occupied the site in early 1975, and have continued to camp there in scattered groups ever since.

But independent of the protestors, a citizens' initiative filed with a regional civil court, objecting to the plant on the grounds of potential radiation dangers, resulted in a ban on construction while the claim was being considered. After two years of consideration, the court ruled in the second week of March that the plant design did not employ the most up-to-date technology to prevent radiation leaks. It accordingly prolonged the construction ban until appropriate safeguards were adopted. State authorities have appealed the decision to a higher court, which may cause another two years' delay.

The same pattern prevailed at Brokdorf. Following the first demonstration there, which produced some 250 casualties, ground preparation work got started under police protection. Shortly before the second demonstration took place, a law-abiding environmental protection group filed its citizens' initiative protesting the building of the plant. The court ordered a stoppage of work while the plant's potential dangers were investigated, again independent of the demonstrators.

Because of these court orders curtailing nuclear construction, West Germany appears headed for an electric power shortage between 1980 and 1985. A government energy policy promulgated in 1974 set a target of 45,000 Mw of nuclear generating capacity by 1975. Delays encountered since then make attainment of that objective impossible. The best that can be hoped for, following the last two court decisions, is about 18,000 Mw, leaving a shortfall of 27,000 Mw, equal to almost half of the country's installed capacity in 1976.

J.M. BRADLEY

Major Drought in Haiti Strains Nation's Only Hydroelectric Dam

PORT-AU-PRINCE—Perhaps one of the world's greatest droughts is taking place in this Haitian capital. So little water remains in the country's only hydroelectric dam—which supplies 99 per cent of Haiti's entire energy needs—that the capital and surrounding areas are being systematically and routinely blacked out for periods of half a day each day. With a total power failure imminent, the government late last month appealed to the United States for emergency disaster aid. An evaluation team was promptly dispatched to this city of 500,000.

But a prolonged lack of rainfall was not the only cause. Much of the current crisis can be traced to failure to heed the warning issued by the dam's builders, during the reign of the late Francois Duvalier, that under no circumstances should the trees and ground covering vegetation be cut from the surrounding mountains. This warning was ignored by the peasants who have systematically denuded the nearby slopes for cooking fuel. The result has been heavy silting and the disappearance of the watershed's natural water table.

At last report, the Peligre dam's water level was getting dangerously close to the critical point of 118 meters, as opposed to the standard level of 172 meters. Meanwhile, the government has ordered 10 Mw of emergency diesel generating equipment from Austin, Texas, and electronic specialists flown in from San Juan have finally restored overseas telex and telegraph communications in and out of Haiti. Even the American Embassy here spent several days without internal telephone facilities, and candlelight dinners are wearing a bit thin for tourists at the leading hotels.

ARTHUR CANDELL

Mexico Intensifies Its Program on Smoke Pollution From Autos

MEXICO CITY—Immediate and long-range plans have been announced by Mexico's new sub-secretary for environmental improvement, Humberto Romero Alvarez, an engineer. He was appointed to head the office by President Jose Lopez Portillo, who assumed the presidency Dec. 1, 1976.

Intensification of the existing program against smoke pollution by automobiles was disclosed by the new environmental chief, while he noted that the overall work of the sub-secretariat will be "reprogrammed" and "restructured" to give attention to specific problems in Mexico.

Women officers working in teams of two, with one member from the Mexico City traffic police and the other from the sub-secretariat, have begun flagging down vehicles with excessive smoke emissions and sending them to a government-operated diagnostic center where

emission problems are corrected at a minimal fee.

Romero Alvarez hopes to extend this vigilance to the dozens of bus stations operating in the city. Many of the worst air pollution offenders are inter-urban and urban buses. The sub-secretary cited four causes of the smoke and dust pollution that plagues the capital of Mexico: automobiles; the city's location in a mountain-ringed plain; population density—estimated at 10-12 million persons; and prevailing winds and cloud cover that trap the air.

Within the sub-secretariat, specific problems will be attacked by specialists in the relevant fields, he said. For example, if the problem is the destruction of trash and garbage, a team of specialists will be assigned to the problem, including civil engineers, bacteriologists, sociologists, and botanists.

KATHERINE HATCH

France Goes Onstream With Its First Pressurized Water Reactor

PARIS—Eight years after abandoning its national graphite-gas technology in favor of light-water nuclear reactors, France last month brought onstream the first of these new plants. Amid bitter protests and demonstrations from anti-nuclear lobbies, Electricite de France (EDF) pulled out the rods at its 888 Mw Fessenheim number one plant in Upper Alsace, thereby starting the first of its new generation of pressurized water reactors (PWR) which are aimed at satisfying 25 per cent of the country's electrical needs in 1985. The plant should be working at full capacity by June.

Ever since the French government decided to build its first full-sized PWR reactor at Fessenheim, the project has been the subject of violent opposition from anti-nuclear groups. From 1972 onwards, regular demonstrations were held against the project and in 1975 part of the plant was sabotaged. During the last few months the protests at Fessenheim have taken second place to the more violent demonstrations that have occurred on the other side of the Rhine. Even within France, the attention of the anti-nuclear lobby has switched to the fast-breeder project Super-Phoenix which is due to be realized at Creys-Malville near Grenoble.

The start-up of the Fessenheim plant took place 22 months behind schedule. Six months of the delay was due to changes in the fuel element, three to welding faults in the primary circuits, six to faults in bends in the piping, and the remaining period to a succession of minor hitches. Similar delays will affect the next three plants which are being built.

Although the EDF has slowed down its construction program from 6,000 Mw a year to some 5,000 Mw as a result of lower electricity demand growth, there are no signs of the French government dropping its ambitious nuclear program—be it of the classical or fast-breeder type.

MICHAEL PARROTT

In Brief...

Southeast Asian Nations Sign Navigation Safety Agreement

A 12-point agreement was signed recently by the foreign ministers of Malaysia, Singapore, and Indonesia at a foreign ministers meeting of the Association of Southeast Asian Nations (ASEAN) setting out a series of measures to improve the safety of navigation through the Malacca Strait in order to avoid accidents and pollution in the area.

Among the recommendations were that vessels must maintain a single under-keel clearance of at least 11.5 feet at all times during their passage and take all other necessary precautions. In addition, three critical areas were specified for a traffic separation plan in the one-fathom bank area. They were the Main Street, Philip Channel, and off the Horsburgh Lighthouse.

Necessary funds for the implementation of the agreement, which includes improvement of navigational aid and facilities, will be sought from the users, which include such major sea-going countries as Japan, Britain, the Soviet Union, and the United States.

The agreement also has made provision that a joint policy must be formulated to deal with marine pollution and that all tankers and large vessels navigating the Straits must have adequate insurance and compensation cover. Under the agreement, deep draught vessels of 50 feet or more will now have to pass through a designated deep water route in the Strait of Singapore up to Buffalo Rock and are recommended to continue their passage as far as the Batu Berhanti area. Other vessels are asked not to enter this route except in an emergency.

Moreover, deep draught vessels are advised to travel at no more than 12 knots in the critical areas and overtaking in the deep water route is banned. Meanwhile, according to Mr. S. Toyofuku of the Japanese

Maritime Safety Agency, an electronic navigational system, costing about \$22 million, to regulate sea traffic along the Straits of Malacca and Singapore, is likely to be operational in three years. The proposed safety system will include monitoring of traffic by visual and radio communication. In addition, nine to 12 sub-stations are to be set up along the Straits with probably the main station in Singapore. Japan and the three countries are expected to set up a central coordinating body to operate the navigational system.

Ankara to Cut Pollution With Free Chimney Filters

The Ministry of Industry in Ankara announced recently that it will distribute filters, free of charge, for all the chimneys in the capital's most congested quarters. The Ministry also reported that a special laboratory has been constructed to check the quality of all the coal and fuel-oil coming into Ankara.

Austria Slows Nuclear Plans In Fear of Radiation Risk

Although Austria needs to spend huge sums on importing oil, natural gas, and coal to supply its industrial and home requirements, it is being extremely cautious about the use of nuclear energy within its borders.

The Federal Chancellor, Dr. Bruno Kreisky, and his ministers of health and environment protection have all emphasized in recent statements to the Chamber of Deputies that top priority in promotion of research into economic utilization projects involving nuclear energy will be given to protecting the population and future generations of Austrians from the risk of radiation. Meanwhile, final preparation of a large nuclear plant in the Danubian Dachau valley is being slowed.

Hong Kong Steps Up Control Of Harbor Oil Pollution

The Pollution Control Unit of the Marine Department of Hong Kong has stepped up its efforts to collect refuse and control oil pollution in the harbor. In the past one-and-a-half years, the unit was called upon on 42 occasions to disperse oil spills. Refuse collected from the harbor in 1976 totalled more than 360 tons, compared with 315 tons in 1975. According to Tony Mason, the officer in charge of the unit, the increase was due to the use of more scavenging boats (from the original 31 to 41 in 1976). Mason also pointed out that the allocation for the refuse collection fleet this financial year amounted to \$292,000. This amount is expected to increase to \$400,000 by next financial year.

Ireland Intensifies Its Water Quality Programs

The Irish Republic has launched a major program of water quality and pollution abatement, amid increasing worry over big fish kills in various rivers, particularly in the south of the country.

A new laboratory, the first in the country designed exclusively for water quality and pollution abatement activities, has been set up at Shannon in County Clare, at the heart of the Midwest's major industrial development center. It provides 5,000 square feet of laboratory research space with facilities for analysis of surface waters and trade wastes as well as filtered air laboratories for bacteriological work and analysis of micro-pollutants.

Specially designed laboratories for toxicological work with marine and freshwater organisms are included. These areas are supplied with a full range of environmental control equipment to allow precise regulation of air and water temperatures and lighting conditions.

Spreading African Coffee Blight Threatens Mexico

A coffee blight which traveled from Africa to Brazil six years ago has now reached Nicaragua and threatens to jump to the rich coffee-growing state of Chiapas in Mexico, the Mexican director of Plant Health in the Secretariat of Agriculture and Livestock has warned. Joining in the official statement was the Mexican Coffee Institute, which pointed out that 29 coffee-producing regions of the world have now experienced the coffee blight.

Ecological conditions necessary for the growing of coffee also favor the growth of the mushrooms that attack coffee plants, forcing them to lose their leaves until the plants die.

Transmission of the blight from one country or one continent to another apparently is from blight spores which cling to the clothing of scientists, buyers, or other visitors to the infected plantations. Insecticides are being used in southern Mexico in an effort to prevent further spread of the blight.

Haiti to Build Low-Cost Dwellings in Capital

A National Five Year Program to build 13,000 new dwellings to alleviate a severe housing shortage in and about Port-au-Prince has been announced by President Duvalier.

The announcement said that 10,000 low-cost units are to be constructed in northern areas of the capital for the use of minimum-income groups; 2,000 units for average wage earners and 1,000 units for families with incomes exceeding \$200 a month.

A construction contract has been awarded to Prominvest, S.A., a Venezuelan company active in low-cost construction in that country. A local newspaper report said homes constructed by Prominvest here would be, "much more modern."

Aggravating the housing problem in the capital area is a large influx of foreign residents connected with diplomatic and aid missions which has caused severe inflation in home rental costs, as well as significant numbers of workers arriving from rural areas to take industrial and assembly jobs in new factories.

Infra-Red Aerial Photos in Brazil Locate Lumber Wealth

The infra-red aerial photography project for the Brazilian Amazon, known as RADAM, recently published its tenth volume revealing the locations of great concentrations of lumber wealth, along with indications of many minerals, 13 potential sites for hydropower plants, and a proposal for the creation of two jungle parks.

The photos showed a concentration of great stands of commercial lumber, with a calculated value of \$27 billion, between the Amazon cities of Manaus and Santarem. They also showed a widespread presence of bauxite, along with smaller quantities of gypsum, limestone, rock salt, iron, copper, manganese, and gold.

In an effort to protect regional ecology, the RADAM project also proposed the creation of two parks: the Piratinins Park with an area of 750 square miles containing an abundance and variety of land and water fauna, including the sea cow or manatee; and a park for the Lago das Piranhas (Piranha Lake) area.

British Try to Save Water With Variable Toilet Flushes

What Melksham does today, the British nation may be doing tomorrow, for 150 householders in this small Wiltshire town in the west of England have been asked by their Wessex Water Authority to take part in an experiment to save water

through more discriminate use of their lavatory flushes.

About half the houses will be fitted with dual flushes, where either one or two gallons of water can be used. The other half will have variable flushes, where the amount of water used will depend on how long the handle is depressed.

The experiment will cost the Wessex Water Authority only about \$6,800, but they estimate that its potential saving per year if used over the whole of their region could equal the cost of a large new reservoir—around \$34 million. The experiment could therefore help decide a future policy of building new reservoirs or of water conservation.

Melksham was chosen as likely to give a fairer result than other towns in the area which were more affected by last year's drought and could therefore have developed more conservationist habits.

New South Wales Subsidizes Solar Power for Farmers

Australia's New South Wales State government is planning to subsidize farmers who switch to solar power. Additionally, all new government offices built in that region's far northwest will have to incorporate solar energy units as the main power source.

Domestic solar units will be developed for isolated homesteads. Similar solar programs are to be developed for islands off the NSW coast.

The program, the first of its kind, was announced by NSW Mines Minister Patrick D. Hills who has asked the Energy Authority to develop the program as a matter of urgency.

"It seems obvious to us that our future is going to rely on coal, solar energy, and natural gas as the major sources of energy," Hills says.

The Government had already ordered the authority to investigate coal liquefaction as an alternative to oil, and now it is moving strongly on solar energy.

Pakistan Bans Export of Leather From Wild Animals

The Pakistani Government has banned the export of fully tanned leather made of skins of wild animals, it was announced recently. Moreover, exports of raw hides and skins of certain wild animals have also been banned for the preservation of rare species.

Israeli Company Forced to Substitute Oil for Coal

Environmental groups in Hadera have forced the Israel Electricity Company to change its plans and make preparations to temporarily operate the first of four power units under construction on oil instead of coal. This procedure will obtain until appropriate arrangements for clean transfer of coal from the port, in Haifa, to the unit can be guaranteed. Fortunately, the electricity station was designed to operate either on coal or oil. One of the alternatives for transportation of coal is to unload it on a dock built about two miles offshore near Hadera instead of transferring it by train from Haifa port.

Bangladesh Charges India Diverts Ganges River Flow

Bangladesh Chief Martial Law Administrator Maj. Gen. Ziaur Rahman has charged that the diversion of water from the Ganges River by India is causing environmental damage in southwestern Bangladesh. According to him, the diversion poses serious threats to the extensive mangrove in the area, where the Royal Bengal tigers live.

The Ganges, which flows from the Himalayan heights of Tibet, passes through the territories of both India and Bangladesh. Its importance to the two countries is tremendous. In Bangladesh, the waterways formed by the tributaries of the Ganges provide the only link to the different districts. India occupies the upper banks of the river system and Bangladesh the lower banks. Therefore, India has constructed a dam called the Farakka barrage at a cost of \$210 million in the state of West Bengal bordering Bangladesh. The dam was to divert the Ganges water to flush India's major port at Calcutta. However Bangladesh has charged that the Farakka dam ruined its economy by causing severe drought conditions throughout its western half.

India, however, claims that more than 90 per cent of the Ganges water flows through its territory and that as

many as 250 million or 40 per cent of the population depend on the Ganges. Therefore, the country should have the larger claim over the Ganges. India also claims that the Farakka dam helps Bangladesh, a country perennially plagued by floods, to control the problem.

Denuded Upland Areas In Philippines Upset Ecosystem

The Philippines is reported to have 12.35 million acres of critical upland areas. These areas are either denuded or degraded lands stripped of their original vegetation.

Dr. Percy E. Sajise, an ecologist at the University of the Philippines in Los Banos (UPLB) has commented that the critical upland areas are now expanding. In addition, he pointed out that large scale denudation of upland areas has already caused disruptions in the natural balance of the soil-plant-water-people components of the ecosystem. Reforestation work has been carried out by the government but it could not keep up with the rate of denudation.

The country's average reforestation rate is reported to be about 44,460 acres per year.

Calendar...

April 13-22—UN Scientific Committee of the Effects of Atomic Radiation. Vienna

April 19-21—Extraordinary General Assembly of the International Union for Conservation of Nature and Natural Resources. Geneva.

April 21-28—Panel of Experts on Integrated Pest Control. Rome FAO

April 25-29—Symposium on Erosion and Sedimentation. Algiers. UNESCO/FAO.

April 25-30—Tenth Session of CMEA Council on Environmental Protection. Romania. Under Auspices of CMEA (Council for Mutual Economic Assistance).

May 2-13—International Conference on Nuclear Power and its Fuel Cycle. Salzburg. Auspices of International Atomic Energy Agency (IAEA).

May 23-June (7-8 weeks)—Third UN Conference on the Law of the Sea. New York.

May 24—17th Inter-Secretariat Meeting on Water Pollution and Related Water Questions in Europe. Geneva. Auspices of ECE/UNEP.

May 25-27—Group of Experts on Aspects of Water Quality and Quantity (fifth session). Geneva. ECE.

June 1-3—First Session of the IHP Committees on the Influence of Man on the Hydrological Cycle. Paris. Under UNESCO auspices.

June 7-11—23rd Session of the Meeting on Heads of Water Management Organizations of Member countries of the Council for Mutual Economic Assistance (CMEA). Tbilissi. Auspices of CMEA.

June 20-27—Symposium on the Gas Industry and Environment. Minsk. ECE.



World Environment Report

14 APR 1977

VOL. 3, NO. 7

Copyright ©1977. Center for International Environment Information.

MARCH 28, 1977

New, Mobile System for Removing Asbestos Dust Devised in Britain

LONDON—A new, mobile system for the removal of asbestos and toxic dusts has been developed by Envirocor Ltd., a leading British industrial cleaning concern, which claims that it is unequalled in Europe and possibly the rest of the world.

The vacuum plant system, which costs \$70,000, is operated by a team of up to eight men. First, the area of hazard is sealed with heavy-duty polythene sheeting. If necessary this can form a total external cover to a building. Then the operatives, wearing protective clothing and respirators, enter and leave through an attached air-lock system where they can remove contaminated clothing before proceeding to a decontamination unit.

Once inside the sealed area, the team uses whichever removal method is appropriate. Small quantities of dust are either sealed by spraying or are placed in sealed bags and taken to certified waste disposal sites. Where larger amounts are involved or total removal is necessary, the dust is collected in sealed vacuum separation containers where it is mixed with water to form a disposable slurry.

The system, which took two-and-a-half years to develop, has an on-the-road cost for plant and manpower team of \$24,500. Its filtered air discharge and waste removal methods are said to conform to all known environmental legislation.

BARBARA MASSAM

CEQ Claims Drive for More Food Reduces Land's Productivity

WASHINGTON—The President's Council on Environmental Quality (CEQ) has released a report which maintains that the drive to provide food for the world's increasing population is reducing the land's capacity to produce. The special report, titled "The Food-People Problem: Can the Land's Capacity to Produce Food be Sustained," was prepared by Paul Bente of CEQ on request from the State Department. It was submitted to the UN Conferences on Water and Desertification, the first of which opened March 14 at Mar del Plata, Argentina.

Material for the report came from a variety of sources, including an informal survey of erosion and desert-

ification conducted in 1976 by U.S. Government posts in 69 developing countries. There are also frequent references to dispatches originally published in *World Environment Report*, as well as citations from the World Watch Institute's *Losing Ground*, prepared with the cooperation of the UN Environment Programme (UNEP).

In the race to provide food for the expanding world population, "improper farming practices—including overly intensive cultivation, too heavy a reliance on marginally productive semi-arid lands, and inadequate conservation measures—are increasing the erosion and depleting the nutrients of topsoils." This results, the report said, in reduced fertility of the land.

"In many parts of the world, hillsides are being deforested to make way for more farms and to provide fuel for cooking. The rains no longer soak into the ground but run off in the form of uncontrollable torrents which tear away the soil under cultivation, flood the low-lying cropland, and clog reservoirs and irrigation canals with silt. Left behind are barren slopes that later become abandoned."

Among the ominous statistics are these:

- Overgrazing and overcropping, which result in heavy loss of soil by erosion, are serious problems in 43 countries with 1.4 billion people.
- Serious irrigation problems were recorded in eight arid countries attempting to increase food production.
- Heavy loss of forests has occurred in at least 24 developing countries. Principal reason for converting forest to cropland and grazing fields is to meet the demand for food.
- Critical water shortages resulting from deforestation have appeared in 16 countries. Ten countries experienced increased flooding.

In This Issue

CEQ Report	2
Technology Fair	2
Geothermal Heating	3
European Pollution Laws	3
Environmental Spending	4
In Brief	6
Calendar	8

Charge French Industry Fails To Meet Energy Conservation Goals

PARIS—Energy conservation investments by French industry are falling far short of national goals, according to a government-appointed study group composed of representatives from industry, finance, and the administration.

France's energy plan calls for 16 million tons of oil equivalent to be saved by 1985, bringing projected consumption down to 82 million tons. The study group reported that investments thus far made, as of last October, were only a third, possibly a half, of what they should have been if the long-range goal is to be met.

"This is all the more disturbing because the investments that remain are without a doubt less profitable than those that have been made," the report said.

The group, chaired by Jean Couture, president of the French Institute of Fuel and Energy, blamed the investment failure on the economic slump and on the low priority given to energy conservation both by the government and by industry.

The government promotes energy conservation by subsidies and penalties—it has, for example, slapped a hefty tax (\$30 a ton) on fuel oil above a certain quota.

But the report said that the government does less to promote conservation than it does to promote exports, another defense against the effects of oil dependency on the balance of payments.

Industry has not given conservation a high priority, the report said, both because of hard times and because it has followed the government's lead. Industry has been playing a waiting game—some companies optimistically waiting for the energy crisis to blow over, others waiting for the government to increase its incentives, or for conservation material to become cheaper.

The report also said that industry has bad energy habits. Since those who choose materials rarely deal with their operation, they tend to choose cheaper material even if it consumes more energy. Moreover, few businessmen make a complete accounting of possibilities for conservation—determining, for example, whether heat needs can be met by another part of the factory or by a neighboring industry, or, conversely, whether waste heat can be used.

But even those companies that want to invest in clearly profitable conservation techniques are often too strapped for funds, the report said.

The study group recommended:

- Expansion of the information campaign.
- Government insurance to cover risks of conservation investments.
- A market study of conservation products.
- Standardization, where possible, of conservation products, to cut costs.
- Government aid to makers of conservation products.
- Greater financial aid to industry, including cheaper loans.

BARBARA BURKE

UNEP Holds International Meeting On Ozone and Fluorocarbons

WASHINGTON—An international conference to discuss risks to the ozone layer was convened here in early March by the United Nations Environment Programme (UNEP). It was attended by 32 nations, including most of the major producers and consumers of fluorocarbons—Japan was a notable absentee—plus international and non-governmental organizations having a special interest in the environment with particular reference to atmospheric pollution.

The main thrust of the seven-day meeting was to exchange data on research and monitoring facilities with regard to ultra-violet radiation as a result of ozone depletion caused by fluorocarbons, aircraft emissions, refrigeration, and nitrogen fertilizers. Additionally, there was consideration of an adverse economic impact on developing countries should their crop production and storage be curtailed by prohibiting the use of certain chemical fertilizers and refrigerants.

Altogether, the conference achieved its announced purposes of providing a forum for this still controversial subject, and of setting the stage for an April 26-28 ozone meeting at the U.S. Department of State to be hosted by the Environmental Protection Agency (EPA), the Food and Drug Administration, and the Consumer Product Safety Commission. It is expected that at this meeting the EPA will reveal its formulation for regulating fluorocarbon use in the United States.

Thus far, informal acceptances to the April meeting have been received from the United Kingdom, France, Canada, Sweden, Norway, and The Netherlands.

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$125 per year. \$15 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
 Editor-in-Chief Albert Wall
 Circulation Manager Ann C. Werner
 Correspondents covering more than 60 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

Geothermal Heating Takes Giant Leap Forward Throughout Iceland

REYKJAVIK, Iceland—Steeply rising oil prices and the prospect of world-wide shortages have forced Iceland to give more attention to domestic resources, hydropower generation, and particularly to geothermal heating, according to Minister of Industry Gunnar Thoroddsen.

He recently told *World Environment Report* that, from an environmental point of view, geothermal energy has the important advantage of being completely non-polluting, as is evident in Reykjavik, the capital, which is called "the smokeless city" because it has been heated with geothermal waters for four decades.

The largest geothermal heating service in the country by far is in Reykjavik, which began exploiting geothermal energy within the city itself in 1930. As technology significantly improved, a major expansion took place in 1970. The new technology involves deep drilling (5,000-6,500 feet) into highly permeable rocks and hydraulic cracking of the rock in the walls of drill holes, which further increases the permeability and therefore the yield from the holes.

The thermal water from these deep drill holes provides not only all of Reykjavik with geothermal water but all the neighboring towns and villages as well. With construction of distribution pipelines to the neighboring

communities now almost completed, the towns of Kópavogur, Gardahreppur, and Hafnarfjörður have now been added to the roster of smokeless towns. Before 1980, it is estimated, close to 65 per cent of the whole population will be using geothermal water for house heating, which accounts for roughly 40 per cent of the total annual energy consumption in Iceland.

Most geothermal waters in Iceland are low in dissolved solids compared with the compositional range of such waters observed in geothermal fields elsewhere in the world. This includes major as well as trace elements. The total dissolved solids content is typically in the range of 300 to 1,500 ppm, of which silica amounts to some 25-50 per cent. The dominating ions are sodium chloride and sulphate.

Although the use of geothermal energy for heating is widely spread in Iceland, this type of installation rates special attention as the first harnessing of high temperature areas for such a purpose. And since the water emerging from the ground (at 235 degrees Celsius) is loaded with dissolved minerals, including salt, a heat exchanger must be employed to insure odor-free water.

The overall cost of the peninsula hot-water project is estimated at over \$27 million, but foreign exchange expenditures for machinery and materials will have been completely offset by 1981 through savings from reduced oil imports.

ELIN PALMADOTTIR

Pollution Control Law and Practice in Nine Volumes

World Environment Report has recently received a set of books, in English, the contents of which should be of interest to many of our readers, both here and abroad. Published by Graham & Trotman Ltd., London, at the invitation of the Commission of the European Communities, the nine-volume series carries the overall title of "The Law and Practice Relating to Pollution Control in the Member States of the European Communities."

The main volume provides an overview which compares the situation throughout the member nations; seven other volumes individually cover the member states—Italy, France, Ireland, Federal Republic of Germany, United Kingdom, Denmark, the Netherlands—while Belgium and Luxembourg share a single book. Four of the volumes (Italy, France, Germany, Belgium-Luxembourg) are also available in their original language.

Each of the volumes has its separate author(s), for the most part university lawyers with expertise in their country's environmental laws and practices. Research was provided by Environmental Resources Ltd. (Lon-

don), and the work as a whole was supervised by James McLoughlin of Manchester University, an ERL associate.

With nine main section headings (and sub-headings) standardized numerically for each book, cross referencing between the volumes is simple. The headings are:

- The Member States' Authorities and Pollution Controls
- Air
- Inland Waters
- Coastal Waters
- Seas
- Deposits of Wastes on Land
- Noise and Vibration
- Nuclear Energy
- Control Over Products

Cost of each individual volume is \$16; cost of the set of nine in English is \$130 (postage extra). For further information write Graham & Trotman Ltd., 20 Foubert's Place, Regent Street, London W1V 1HH, England.

A.W.

SPECIAL REPORT: Status of Environmental Spending in Europe

World Environment Report has asked its correspondents in key countries to secure the most significant figures involving monies spent for environmental purposes, both by government and, where attainable, by industry. In Part 1 of this series, we lead off with the status of environmental spending in Europe for 1977.

Great Britain—Like much else here, the environment in 1977 will have to bear its share of the general freeze in Government spending. One result will be a further year without implementation of those parts of the comprehensive 1974 Control of Pollution Act which would involve local authorities and national water authorities in particular in additional expenditure (*WER*, Sept. 1, 1975, p. 3).

When pressed, the Department of the Environment (DOE) suggested to *WER* an overall figure of \$1,700 million. However, it did not consider this a very meaningful figure, for no less than fourteen government departments or agencies have responsibility for some part of the environment incorporated into their function. At the local level, environmental spending is part of the general rates, for Britain works on the principles of local implementation and of making the polluter pay.

Faced with inflation and an effective drop in their rate support grant from the central government which they cannot hope to recoup entirely from protesting rate-payers, local authorities have some painful economies to make. Subsidized transport and the maintenance of minor roads will continue to suffer in rural areas. Urban areas are more likely to abandon any plans they may have to renew sewage plant or to progress towards becoming a smokeless zone. Other areas are pruning waste removal services to a bare minimum.

The Government has, however, announced its intention of halting the decay of inner city areas, following a study of three major British industrial towns. Approximately \$225 million is to be spent on housing improvements to the center of the northern Irish city of Belfast.

Under the policy of the polluter pays, reputable and sizeable firms include environmental spending in their capital costs. A spokesman for Imperial Chemical Industries (ICI), Britain's largest industrial concern, told *WER* that they would therefore expect this to be a declining proportion of their costs as old plant was renewed. Firms of this size expect to market some of the pollution control devices researched for them and the Pollution Control Systems division of ICI has an expanding market of its own (*WER*, Nov. 22, 1976, p. 6).

West Germany—The latest national figures on incurred and estimated costs for environmental protection measures show that between 1970 and 1974, investment in

plant and equipment came to \$10.8 billion, of which industry's share was \$5.25 billion and the government's was \$5.55 billion. Operating costs on industry's side were \$10.7 billion and on the public's side \$6.95 billion, a total of \$17.65 billion.

Looking forward to 1979, it is estimated that investments in the intervening years will come to \$14.8 billion, divided almost equally between private and public sectors. It is apparent that operating costs will take a big jump over the earlier period, with industry paying out \$20.2 billion and governmental divisions \$11.9 billion, or \$32.1 billion in all. This is equal to two per cent of the estimated gross national product.

During the 1970-1974 period, environmental protection costs between five and six per cent of all industrial investments. For the 1975 to 1979 period this is expected to rise to between eight and nine per cent.

Investment in equipment will be highest in the chemical industry (\$3.86 billion), followed by the iron and steel industry (\$2.09 billion). For the chemical industry, operating costs will come to \$8.2 billion and for the iron and steel industry, \$5.3 billion. Thus these two giant industries alone will pay roughly 60 per cent of all industrial equipment and operating costs over the five year period.

By functions, equipment expenditures break down as follows: sewage, \$2.5 billion; air, \$3.23 billion; waste and scrap, \$0.52 billion; and noise abatement, \$0.6 billion.

Of public authorities' total costs of \$19.65 billion, \$7.65 billion will be for plant and equipment and \$12 billion for operating costs. Plant investment breaks down to \$6.9 billion for water works and \$0.825 billion for sewers and sewage treatment. The \$11.93 billion in operating costs is made up of \$8.85 billion for water-works operation and \$3.08 billion for sewage.

No public expenditures were included in the study for noise reduction or air cleansing.

France—This year, the Government is planning to spend \$266 million protecting nature and the environment compared to \$296 million last year.

French industry as a whole spent \$266 million on anti-pollution equipment in 1975, or only about one-fifth that of West Germany in the same year.

During the period 1976-80, France is expected to spend \$5.2 billion on anti-pollution measures, of which \$718 million will be paid by the federal government, \$3.6 billion by local authorities, and \$89 million by industry. Of the grand total, \$4.4 billion will go for water pollution projects, leaving slightly less than \$1 billion for air and noise pollution.

Italy—Environmental spending by Italian industry in 1977 is difficult to evaluate, as the last published statistics refer to four years ago. Moreover, the strong inflationary

trend and economic recession make business budgets unreliable. Private industries spend about 10 per cent of their investments on environmental factors and this year their spending will certainly exceed \$120 million, of which 56 per cent will go for treating liquid effluents, 40 per cent for gas emissions, and four per cent for solid wastes. Although no general figures are available from state-owned or mixed-capital industries, a source of the Italian Industries Federation crudely estimates a figure of \$600 million for total environmental spending of private plus State industries for this year.

Environmental industries here plan to sell anti-pollution equipment and services for \$75 million in 1977. Of this, \$29 million will come from water-treatment systems, an expanding sector; clean-air equipment is now less promising than in previous years, but may yield \$30 million (larger incomes are expected in the future, as many heating systems have to be overhauled to save oil); and solid waste disposal systems are expected to fetch \$16 million.

The Netherlands—This government's environmental budget for 1977 totals \$175 million, and provides \$50 million for environmental hygiene and air pollution, and \$125 million for cleaning surface waters.

Although no exact figures are available for industry spending on the environment, the secretariat for environmental hygiene of the Council of Industry Federations estimated that some 10 per cent of the industry's capital investments are generally applied to environment protection. If this percentage is adhered to through the end of 1977, such spending will come to \$262 million.

In 1973 the government's Central Planning Bureau released a report on the economic consequences of fighting environmental pollution. The report said that during the period 1973-85, a total of \$4.8 billion in investment was needed to make the country "clean," plus annual operating costs thereafter of \$1 billion.

Denmark—This country's Environmental Ministry's budget for 1977 is \$41 million, or 0.6 per cent of the federal budget. Among the main items are: environmental protection, \$8.5 million; fish laboratory research, \$1 million; chemicals control, \$.5 million; preservation of buildings and historic monuments, \$7 million; and state food institute, \$5 million.

Director E. Hartig of the Federation of Danish Industries said: "It is impossible to give any overall figures for Danish industry investment in anti-pollution or environmental affairs for 1977. First, there will soon be a new government. Second, the Environmental Protection Act is up for amendment. Industry does not yet know how much it will be forced to accede to new requirements for keeping the country clean."

Director Lund Hansen of Moller & Jochumsen, at Horsen, estimated that about \$82 million would be expended this year on waste water treatment for municipa-

lities throughout Denmark.

Sweden—This government plans to spend nearly \$78 million on its environmental program during 1977. Of this sum, the largest single amount, some \$34 million, will be allotted to municipal sewage treatment plants to fight water pollution.

Swedish industry estimates it will spend \$714 million on environment over the five-year period 1976-1980, according to the Swedish Industry Association, but the Association was unable to say at what rate in any given year this sum would be spent. The government-operated Iron Works (NJA) in Lulea, for example, recently announced it would be spending \$357,143 to reduce air and water pollution caused by its coke works and another \$238,000 to dampen noise from the iron works.

Critics in the Department of Natural Resources expressed disappointment that only \$600,000 was ticketed for environmental research purposes.

European Communities—Although environmental cost estimates in the European Common Market countries are fragmentary and hard to come by, European Economic Community (EEC) officials feel that the trend in environmental spending by industry is still upward bound because of new legislation and the application of the "polluter pays" principle.

Expenditure by governments, however, these experts feel, may level off in coming years. "The trend is up for industry because it is still catching up with pollution legislative requirements and this probably will go on for at least five years," said one EEC official.

This is an educated guess which cannot be verified by official statistics since the EEC and its national governments and industries have kept only partial accounting figures and are just beginning to develop a methodology to determine cleanup costs. "We've been so busy looking at specific infrastructure proposals that we haven't looked at the costs," the official noted. Perhaps the best way to approach the subject of environmental spending is industrial sectors, the authorities feel, but thus far only West Germany (see above) and The Netherlands have evolved cost calculations based on a national economic model. In the latter, for example, it was expected that the country's program set in 1973 would cost about \$4.5 billion to implement by 1985 and annual operating costs would come to nearly \$1 billion. These figures would represent two per cent of the gross national product by that date and also account for five per cent of all investment.

BARBARA MASSAM, J.M. BRADLEY
MICHAEL PARROTT, VITTORIO PESCIALLO
H.G. KERSTING, CONSTANCE CORK
DAVID FOUQUET

(Part II—environmental spending in the Middle East and Asia—and Part III—figures for Latin America—will appear in forthcoming issues.)

In Brief . . .

Farming Compost Produced From Vienna's Garbage

Vienna, like many cities in the Germanic areas of Europe, collects its household garbage neatly in strong metal dustbins supplied, for a fee, by the municipality. Their use is obligatory and they are emptied weekly by the city's dustmen.

Now, the refuse, instead of being burned, will serve a practical purpose by a process of conversion into valuable compost for experimental farming projects.

The project is being handled by a company which for more than a year has been producing compost for experimental fields in the Lobau and Essling regions to the east and southeast of the Austrian capital. Tests on an experimental area of 57 acres have verified the possibility of large-scale farming on the basis of ecological principles without the application of chemical plant protectives or commercial fertilizers.

The importance of this new approach to agriculture is twofold: by disposing of household garbage without burning in pits or ovens on the city outskirts the environment will be protected; and public health will benefit by production of cereal and root crops which have received no chemical additives during growth.

Sri Lanka Hires Australian Environmental Expert

Mr. Jack Beale, former Australian Minister and an internationally known expert on environment, has been commissioned to submit a report to the Sri Lanka Government on how to prevent further deterioration of the country's environment. The Beale mission is financed by the United Nations Environment Programme.

Beale is working in collaboration with the Sri Lanka Ministry of

Planning and Economic Affairs and his report to the Prime Minister will outline what "initiatives could be considered by the Government to strengthen its efforts to prevent further environmental degradation, to control pollution, and to manage the natural resources of the country."

During his two recent visits to Colombo, Beale met with a wide range of people representing the government, academia, voluntary associations such as the Wildlife and Nature Protection Society, and industry.

Smoking in All Theaters And Buses Banned in Malta

The Maltese Government has passed legislation prohibiting smoking at cinemas, theaters, and on buses. This move follows stricter legislation to combat pollution by levying heavy fines on owners of vehicles that emit diesel fumes.

Czechs Say Bratislava Top Polluted European City

The Slovak Trade Union daily, *Praca*, has charged that Bratislava, the capital of Slovakia, is the most polluted city in Europe.

Radio Prague quoted the paper as reporting that the petrochemical combine Slovnaft alone was pouring 35,000 tons of smoke particles into the atmosphere over Bratislava.

The paper reported that in 1965 Czechoslovak power plants had polluted the country's environment with 500,000 tons of sulphuric oxide. The paper projected that by 1980 these plants would emit more than three million tons of sulphuric oxide.

Praca also reported that Czechoslovakia had 600 communities that could not incinerate their solid garbage and waste and were obliged to dispose of it in other ways, with obvious adverse effects on the environment.

Swedish Furriers Ban Greenland Baby Seal Imports

Members of the Swedish fur association, on the recommendation of its central committee, recently decided to halt the purchase and import of Greenland baby seal skins.

"We contacted the International World Nature Fund several years ago and now cooperate with the fund," Ebba Franke, a member of the furriers' central committee, was quoted as saying. "All furs manufactured in Sweden are made of skins from animals which are not threatened with extermination or animals raised on farms."

The Swedish section of the World Nature Fund lately has received many protests about the annual baby seal hunt beginning in March on the ice off Canada's Labrador coast.

The import of baby seal skins into Sweden in recent years was said to be very modest but ready-made furs from abroad are on sale.

70 Nations Attend Congress For Technology Transfer

Developing nations of Africa, Asia and Latin America participated last month in the first World Congress for Technology Transfer to Developing Nations, under the auspices of the UN Industrial Development Organization (UNIDO) and Dr. Dvorkovitz & Associates. Held in Chicago, the Congress coincided and coordinated with the 1977 World Fair for Technology Exchange.

More than 70 nations from six continents were represented at the fair where licensees and licensors from governmental agencies, universities, and private firms gathered to offer and seek the latest in technology. They viewed some 10,000 new and established items of technology spread over 500 exhibits, and heard 30 speakers who provided case histories and commentaries on technological needs in many areas of the world.

New Legislation to Protect Bats Devised in Bavaria

The Bavarian State Environmental Ministry has just ordered a study of the living habits, areas, and types of bats that will serve as the basis for new protective legislation.

The study will be conducted for two years at an estimated cost of about \$47,200. The ministry pointed out that the biological facts and habits of Europe's only flying mammal are still largely unknown. Thus far scientific interest has focused upon the bat's skeletal frame and on its ability to orient itself in space with ultra-sound, the ministry stated.

The ministry said that about 21 different types of bats are believed to exist in Bavaria. Since 1935, all species have been placed under natural protection. Nevertheless the bat population has shown a serious decrease, a ministry official said, chiefly because of loss of breeding areas and winter shelter. He noted that old buildings with cavities and eaves that afforded bats breeding and nesting space have been torn down and that a fall-off in the large insect population had deprived the bats of a major source of nutrition.

Factory Emissions From Texas Damaging Health of Mexicans

Atmospheric emissions from factories across the border in El Paso, Texas, are damaging the health of thousands of Mexican children in Ciudad Juarez, Mexico, a team of Mexican scientific investigators has alleged. Lead, zinc, cadmium, and arsenic are spread through the air more than six miles beyond the three factories where they originate, the investigators said.

Dr. Blanca Raquel Ordonez, president of the technical council of the Environmental Improvement Sub-secretariat, and co-workers Dr. Lidia Ruiz Romero and Refugio Mora, an engineer, used data from the U.S.

National Communicable Disease Center, Atlanta, Georgia, in relating their field work findings here to health standards. Their results showed more than 10,000 Mexican children were adversely affected by the factory emissions—and only children from ages 1 to 8 were tested.

The investigators related El Paso County statistics showing that in a three-year period, the following amounts of wastes were released into the atmosphere: 1,116 tons of lead; 560 tons of zinc; 12 tons of cadmium; and 1.2 tons of arsenic. According to U.S. test standards, the maximum tolerable dose of these contaminants for an average man is 30 micrograms per 2.2 pounds of weight.

Mexican investigators established five zones around the factories and took blood samples of children up to eight years of age. In the zone nearest the factories, 53 per cent of the children showed quantities in excess of 39 micrograms. The team said it expects that the level is higher in older children.

No immediate action was taken on the findings of the investigators, but it is expected that the Mexican Government will follow up with negotiations, either by correspondence or personal visits, to alleviate and, eventually, eliminate the presence of the contaminants.

World Bank Loan Aids Pakistan Flood Program

Pakistan will get a loan of \$40 million from the International Development Association, an affiliate of the World Bank, for its flood rehabilitation program, officials announced in Islamabad recently.

The \$100 million rehabilitation program is aimed at restoring the damage caused by monsoon floods to irrigation systems and highways and roads in all the four provinces.

The soft-term IDA credit is designed to finance the import of spare parts for road-building machinery and new equipment.

Kenya Appoints Ms. Kenyatta Representative to UNEP

Miss Margaret Kenyatta, daughter of Kenya's President Jomo Kenyatta, has been appointed Kenya's permanent representative to the United Nations Environment Programme, which has its headquarters in the Kenyan capital of Nairobi.

She was formerly Mayor of Nairobi for several years. Presenting her credentials to UNEP Executive Director Dr. Mostafa K. Tolba, she said her appointment illustrated Kenya's concern for close relations with UNEP.

Rampant Sugar Cane Disease Identified in the Caribbean

A sugar cane disease of devastating potential called "smut" has been positively identified in various parts of the Caribbean, according to the Jamaica Sugar Industry Research Institute (SIRI).

Carried great distances by the wind, the microscopic spores have reached the Caribbean from Africa, probably by trans-Atlantic jet stream wind currents, reports SIRI.

First reported in Guyana in 1975, it was later detected in Martinique and Trinidad and reportedly has been found in Cuba within the past few months, although Cuba has issued no official comment.

The disease is now in Jamaica but has been confined to two sugar estates, Innswood and Bernard Lodge. The disease is so contagious that cane workers have been warned not to enter an uncontaminated region after being in a field where smut has been identified—the spores carried in their clothing can spread the disease to other areas.

Thus far, neither the Dominican Republic, which is the second largest sugar producing nation in the world after the Philippines, nor Haiti have reported the smut infestation through their agricultural ministries.

Japanese Fishermen Protest Pollution by Soviet Fleets

Japanese fishermen in Chiba prefecture recently have strongly protested against the behavior of Soviet fishing fleets in polluting Japanese coastal fishing grounds. According to local fishery cooperative circles, many Soviet trawlers have been operating in nearby seas since last autumn. They are accused of discharging large quantities of empty cans, iron wire, and other waste. This has gravely affected Japanese fishermen's operations and reduced their fish haul by 20 per cent.

Czechs Claim Development Of Cheap Anti-Hail Rocket

The Military Academy in Brno, Czechoslovakia, has developed a cheap and pollution-free anti-hail rocket which might also possibly be used in desert reclamation ventures, a Slovak daily claimed.

Silver iodide, generally used in hail-prevention rockets, costs 150 dollars for 2.2 pounds. The Czech reagent, whose characteristics are not specified in the report, costs only about half a dollar.

Nimbus-G Satellite to Gather Coastal Water Pollution Data

In a very brief time artificial satellites have become invaluable to world research by allowing scientists to observe our planet from a rather unusual angle. This is why the European Commission is particularly interested in plans for cooperation between NASA, the U.S. space agency, and the European Community in connection with the Nimbus-G satellite, which NASA is to put into orbit around the earth in 1978.

Nimbus-G will be able to detect oil slicks at sea and industrial waste in estuaries—a particularly useful service. It will help to measure quantities of phytoplankton (to measure changes in the fertility of the sea in polluted areas) and add to knowledge of how sediments are carried by coastal currents.

American and European research workers met in Brussels late last year to examine the EURASEP project (European Association of Scientists for Experiments on Pollution). This pilot experiment will organize Community-wide collaboration between scientists from national institutes to ensure that the best possible use is made of any data on coastal water pollution observed by Nimbus-G. NASA gave the project its blessing at

the end of 1975; it is now up to the Community's Council of Ministers to give the final go-ahead.

Nimbus-G can render enormous service but scientists may have difficulty in learning to use it properly. During the prelaunching period a Mystere 20 jet with a simulator aboard will fly over a test area to allow for final tuning of the instruments and calculation programs. Ships will record marine parameters which will be compared with calculations to check the validity of the methods used and assess instrument performance.

Seoul's Population Growth Cut by Relocating Industry

The South Korean government plans to relocate 3,570 of a total of 5,988 industrial companies in the capital area to provincial districts within 10 years as a means of controlling population growth and decentralizing firms. Under the long-range program, 1,089 firms will be relocated outside Seoul by 1980, 1,700 by 1985 and the rest thereafter. The government is also expected to employ other steps to restrict the Seoul population to eight million.

Calendar . . .

- | | | |
|---|--|---|
| <p>March 29-April 1—Environmental Conservation in the Petroleum Industry. Paris. UNEP.</p> | <p>April 21-28—Panel of Experts on Integrated Pest Control. Rome. FAO</p> | <p>May 24—17th Inter-Secretariat Meeting on Water Pollution and Related Water Questions in Europe. Geneva. Auspices of ECE/UNEP.</p> |
| <p>April 13-22—UN Scientific Committee on the Effects of Atomic Radiation. Vienna</p> | <p>April 25-29—Symposium on Erosion and Sedimentation. Algiers. UNESCO/FAO.</p> | <p>May 25-27—Group of Experts on Aspects of Water Quality and Quantity (fifth session). Geneva. ECE.</p> |
| <p>April 19-21—Extraordinary General Assembly of the International Union for Conservation of Nature and Natural Resources. Geneva.</p> | <p>April 25-30—Tenth Session of CMEA Council on Environmental Protection. Romania. Under Auspices of CMEA (Council for Mutual Economic Assistance).</p> | <p>June 1-3—First Session of the IHP Committees on the Influence of Man on the Hydrological Cycle. Paris. Under UNESCO auspices.</p> |
| | <p>May 2-13—International Conference on Nuclear Power and its Fuel Cycle. Salzburg. Auspices of International Atomic Energy Agency (IAEA).</p> | <p>June 7-11—23rd Session of the Meeting on Heads of Water Management Organizations of Member countries of the Council for Mutual Economic Assistance (CMEA). Tbilisi. Auspices of CMEA.</p> |
| | <p>May 23-June (7-8 weeks)—Third UN Conference on the Law of the Sea. New York.</p> | <p>June 20-27—Symposium on the Gas Industry and Environment. Minsk. ECE.</p> |



World Environment Report

24 MAR 1977

VOL. 3, NO. 6

Copyright ©1977. Center for International Environment Information.

MARCH 14, 1977

International Environment Forum To Hold First Meeting on March 21

NEW YORK—International Environment Forum (IEF), a new program of the Center for International Environment Information, will hold its inaugural meeting on March 21, 1977, according to an announcement by its Director, Dr. Whitman Bassow.

The all-day meeting will feature Michel Carpentier, Director, Environment & Consumer Protection Service, Commission of the European Communities, Brussels. Gerald M. Hansler, Administrator, Region II, U.S. Environmental Protection Agency and W.C. Krumrei, Senior Director for Research and Development, the Procter & Gamble Company, will be the discussants.

Miles O. Colwell, M. D., Vice President, Health-Environment, Aluminum Company of America, will preside.

IEF—which meets five times annually—brings together business executives and senior environmental officials from around the world to examine international environmental issues. Membership is open to trade associations, and to business and industrial corporations with international operations. Charter members include: Alcoa, AMAX, Inc., Edison Electric Institute, Exxon, IBM, ITT, Petro-Canada, Procter & Gamble, Texaco, Union Carbide, Westvaco, the 3M Company and Atlantic Richfield.

UNEP Holds Followup Conference In Athens on Mediterranean Pollution

ATHENS—Hard on the heels of the UN Environment Programme (UNEP) conference on the Mediterranean held in Split, Yugoslavia (*WER*, Feb. 28, p. 2) came a followup UNEP conference here on land-based sources of pollution in the Mediterranean. It was attended by legal and technical experts from 16 of the basin's 18 nations—Syria and Albania did not take part—all of whom agreed to take appropriate measures to prevent and combat pollution in their territories.

Peter S. Thacher, who heads UNEP's Geneva liaison office and who at the meeting represented Dr. Mostafa K. Tolba, UNEP's executive director, expressed his satisfaction with the results. "The conference ended in great success," he said. "The delegates agreed on principles

which will be converted into an international agreement."

He said that pollution from land-based sources—municipal sewage, industrial waste, and agriculture pesticides—was the major problem facing the Mediterranean. "This is the result of human activities in industry, agriculture, transportation, and other fields," he added.

Thacher said that the 17 principles agreed upon by Algeria, Cyprus, Egypt, France, Israel, Italy, Lebanon, Libya, Tunisia, Turkey, Yugoslavia, Greece, Malta, Spain, Monaco, and Morocco will be included in a draft protocol to be discussed at another meeting of experts in Venice in October. The Venice meeting will then be followed by one of government officials in Monaco in November.

"The Monaco meeting will be the first opportunity for Mediterranean governments to review the status of all of the activities that have been taken as a result of their decision in Barcelona last year to launch a comprehensive action plan to protect the future of the entire Mediterranean region," he said.

Thacher added that there were good chances for the Monaco meeting to agree on a final treaty on the land-based sources of pollution, but doubted whether the signing could take place within 1977 because of complicated technical processes.

The 17 principles include agreement to act locally and inter-regionally to face threats from new industrial installations, to cooperate in exchanging scientific and technological information, to monitor pollutants and inform interested parties accordingly, to draw up a detailed list of pollutants and their dangers, and to elaborate details of action to be taken with drainage, sewage, and waste disposal.

Thacher said, however, that some disagreement remains. For example, the less industrialized countries participating wanted to proceed at a much quicker and radical pace in combatting the pollutants, while the more advanced countries preferred a slower pace because of the heavy cost involved. KYRIACOS CONDOULIS

In This Issue

Motor Vehicle Seminar	2
Urban Planning	3
Radioactive Waste	4
Asbestos Dust Removal	4
Rubbish Into Fuel	5
In Brief	6
Calendar	8

UNEP Issues Final Report on Its Paris-held Motor Vehicle Seminar

PARIS—The Motor Vehicle Seminar held here last October under the auspices of the UN Environment Programme (UNEP) produced an interim report on all aspects of the environmental impacts of the motor vehicle (*WER*, Oct. 25, 1976, p. 3). Now, a final report of that draft document has finally appeared, having been circulated in the intervening time to the senior member of each of the 139 delegations. Of these, 115 approved the revised text, and 24 made substantive comments—some of them disagreeing sharply with various provisions of the main draft.

The major points of disagreement, as evidenced by comments appended in Annex I to the report, came from some of the major car producing nations and from certain industry representatives. Chiefly these concerned the following provisions: standards for exhaust emission controls; lead emission as a health hazard; noise levels for various vehicle categories; diesel engine efficiency vs. gasoline engine performance; fuel economy standards; and the design of vehicles with recyclability as a criterion.

Annex II of the report contains a World Health Organization Expert Committee statement on guidelines and criteria in relation to air pollution, which supplements the WHO Technical Report, Series No. 506, issued in Geneva in 1972. Annex III contains a statement by the International Labor Organization on relevant activities in relation to environmental problems and the motor vehicle. This section deals mainly with auto factory working time, accidents, occupational diseases, and occupational safety.

According to Leon de Rosen, Director of the Industry Program for UNEP, "As agreed, while dealing with technical corrections and suggested editorial and minor comments, we did not attempt to reconcile divergent opinions, but we reflected the different points of view. We believe that this final report as it now stands gives an objective and comprehensive view of the overall environmental problems of motor vehicle manufacturing and use, and outlines possible solutions."

SPECIAL DISPATCH TO *WER*

Wide-Ranging Environment Code Produced by Polish Experts

WARSAW—Polish legal and environment experts are designing a wide-ranging set of rules to protect the environment from infringements by private citizens and organizations. Under the country's special Environment Code these regulations will encompass protection of all elements of the environment: water, air, ground and earth resources, flora and fauna.

The main conflict lies between industry and the

environment. In the past, in such a collision of interests, nature was the loser. The new code, however, will force industrial plants to establish protective procedures and treatment of wastes. No longer will it be necessary for a director of a major plant to fear moonlit nights when everyone nearby could see what came out of his works' stacks and chimneys.

The Ministry of Administration and Environment will control all operations under inspectors who will be independent of industry and responsible only to their own authorities.

Every machine that goes into operation must henceforth be built according to the protective code. In particular, it must not produce harmful vibrations, excessive noise, pollution of air, or radiation.

The code also requires all organizations and persons who have infringed the rules to "restore the environment to its former state."

It also has a penal section which says anyone "who drastically violates the code thus creating danger for human life or major harm to living conditions in the area, or causes destruction of biological life on a large area may be punished by jail terms from two to eight years."

Major infringements of lesser rules of the codes, such as emission of toxic fumes and polluting river water (but not permanently) will be punished by three months imprisonment plus a \$325 fine. But repeated offenses call for jail sentences up to three years and fines without a pre-set upper limit.

The Polish weekly *Prawo i Zycie* (Law and Life) commented: "The draft of the code is terrifying draftsmen, producers, technicians. But the matter of environment protection becomes gradually paramount for the development of our country: it will safeguard man, it will safeguard the whole community." GEORGE BRODZKI

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$125 per year. \$15 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Ann C. Werner
Correspondents covering more than 60 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of the international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

Denmark's First Environment Minister Sums Up His Experience

COPENHAGEN—Denmark's first Minister of the Environment, Helge Nielsen, has just resigned after heading the Ministry since its inception in 1973.

In a wide-ranging interview for *World Environment Report* with Constance Cork, he summed up his experiences.

Nielsen, 58, also held the onerous and often controversial post of Housing Minister.

He is leaving politics to head a slum clearance project. A Social Democrat, he entered the Folketing—Parliament—through the trade union movement.

A new Minister will be appointed after the Danish general elections which were held on February 15.

Danish Environment Minister Helge Nielsen leaves his office after four years feeling that environmental protection in his country is well established as a national policy.

The Ministry—which was established in 1973—in the opinion of Nielsen “is functioning well and has the possibilities for an efficient abatement of pollution.”

“But the protection of the environment is a very difficult act of balancing,” Nielsen states, “You must give weight to society's interest in abatement of pollution, but keep a watch on industry. This is expressed in the introduction to the Act of the Environment. It means that in some cases I am faced with criticism from some environmental group that we are not going far enough, in other cases there is criticism from industry for going too far.”

“The most difficult situation so far has been food additives and we have not yet got through it all. Coloring is being discussed all over the world and we think in Denmark our decision that, for instance, coca-cola coloring should be reduced is a good solution.”

“Another thorny problem is what firms can discharge into the water. We have had greater problems with foreign countries than with the Danish industry. The Danes accept the regulations put forward by the Ministry but this is not always so with foreign industry.”

“You must look at Denmark's geographical position when you discuss pollution. Denmark is flat, with a lot of winds, and it is surrounded by seas so we can let out a lot more polluting material than can be permitted industries in other countries, where you have only lakes and rivers. That does enter into international negotiations sometimes when we cannot accept the very strict restrictions put to us.”

“I have had to face some criticism from Swedish authorities because we emit too much sulphur in the atmosphere and it is the same problem with central German industries, which emit so much. It blows past Denmark and goes into Sweden. In Denmark too, conditions of the earth are better for the reception of the sulphur than it is in Sweden where it goes into lakes and rivers and where the earth is very acid. That means you

have a greater effect in Sweden than in Denmark.”

“This shows how very important it is for global solutions. Every country can do something but the solution is a global one.”

The world-wide economic recession has slowed down but not halted Denmark's environmental programs, according to Nielsen. “We have gone forward to give people employment and given subsidies to industry so that it could better carry out the demands for pollution abatement. As a consequence of decreasing production we have seen a slower growth of pollution.

Looking ahead, Nielsen is concerned about potentially toxic chemicals. “It is necessary to have better control of products, to protect human beings especially against the consequence of new chemical products,” he says. “I think it is very necessary to have very strict controls such as have been introduced in USA where a new law passed requires the producers to tell the authorities what new products they are going to market and their effects.

“A Minister of the Environment,” he observed, “constantly follows the development of new technology in pollution abatement, but the minister himself does not engage in the technology of this abatement. We get new ideas from the Institute of Technology and in some cases we finance new projects. As an example I can mention that the Ministry at present is very interested in the development of small scale sewage plants and the result of the investigation may lead us to use such plants in vacation areas. Then, too, the Ministry is closely cooperating in the use of heating boilers using surplus straw and animal excreta to heat private houses.”

As he leaves office, Nielsen is pleased with his country's environmental performance. He feels that Denmark has reached a high level on both the administrative and technical sides of pollution abatement. He is further pleased with the number of foreigners who visit Denmark to see and learn from the Danish experience.

“Visitors,” he concludes, “are always welcome.”

CONSTANCE CORK

Urban Planning in Mexico Will Stress Community Organization

MEXICO CITY—Without proper preparation, moving families from urban peripheral shanty-towns (*WER*, Jan. 3, p. 7) into public housing is simply “to transport the misery from one side to the other—physically and culturally,” says the head of Mexico City's General Department of Public Housing. Jose Parcero Lopez, an architect, said public housing residents must have a sense of “community organization,” or else they might destroy their new living quarters—something that did happen in one capital project.

With some 12 million inhabitants, Mexico City currently runs a deficit of 100,000 housing units per year, he said. In the last six years, 37,000 units have been

built—a figure far below the need but higher than many thought possible. Speculation in urban land has produced “grave consequences” in some instances, Parceró Lopez said, making land available for public use too expensive to buy.

Under the Mexico City public housing law, persons in unplanned urban settlements on the fringes of the city—settlements, generally, without any services—are visited and interviewed by social workers.

“The most serious social problem of these people is family disintegration,” Parceró Lopez said. “In many cases, the mother is alone to raise the children and the children are on their own. We visit these people to explain what a move into public housing would mean, to try to make them understand that the change will be beneficial.” In six years, 100,000 families have been interviewed and registered as eligible for public housing.

The minimum offer made by the Public Housing department is a bare lot. The maximum offer is a small, one-bedroom house. Parceró Lopez said none of the offers is free—“The people pay what they can. We offer technical advice and building materials below cost. With regulated growth plans, we avoid the duplication of carton and packing crate houses in new public housing areas.” Provision is also made for enlargement of an original structure; thus, a one-floor small house may be made large enough for two families with the addition of a second floor.

Unlike the unplanned settlements, public housing areas have green spaces, city services, shops and stores, schools, social centers, and recreation areas. Residents are encouraged to form their own community organizations. Helping the new tenants adjust to their changed surroundings are teams of lawyers, psychologists, and sociologists.

KATHERINE HATCH

Swedes Develop High-Pressure Method to Store Radioactive Waste

STOCKHOLM—Sweden is developing a new method of handling and storing environmentally dangerous radioactive waste from nuclear power plants.

Dr. Curt Nicolin, chairman of ASEA, makers of heavy electrical equipment, turbines, and nuclear power plants, recently announced that the company still was developing the system at its high-pressure experimental laboratory outside Umeå.

Briefly, the method makes use of a high-pressure technique that involves sealing the dangerous nuclear waste, including burnt-out rods from nuclear power stations, inside a block of aluminum oxide which becomes very hard—only diamonds are said to be harder—and very resistant to chemicals. The capsule then is sheathed in a thick steel casing before being deposited deep inside a mountain.

Success in developing this system of disposing of

nuclear energy's radioactive wastes could affect political decisions about the future of nuclear power in Sweden.

The Center party, one of the three partners in Sweden's new coalition government, campaigned heavily on the nuclear issue and for a halt to further development of nuclear energy. When it took office, the government laid down strict conditions which the nuclear industry would have to meet before the government would approve activating any further reactors. One of these conditions was that the nuclear industry must show that it can handle the radioactive waste problem in a safe way by next autumn.

SPECIAL DISPATCH TO WER

Use of Asbestos by American Firm Fought by Residents in Ireland

CORK—A major controversy over Irish industrial development plans—which lay heavy stress on encouraging foreign industrialists to invest in Ireland—has broken out over an American firm which wants to use asbestos in manufacturing auto brake linings.

Raybestos—Manhattan was recently given full planning approval by the local government authority for the establishment of a \$6 million factory at Ovens, near Cork, which would employ 100 people.

Local residents, who have objected to the use of asbestos, have forced the factory to abandon its plans to dump asbestos waste in the area, thus stalling completion of the plant itself. The residents say they will not tolerate emission of asbestos fibers into the atmosphere because recent surveys show that asbestos fibers can cause lung cancer, including mesothelioma (a rare type of the disease), and asbestosis.

The Irish State Industrial Development Authority (IDA) has warned that if the opposition causes the firm to pull out, it will affect the nation's entire foreign investment strategy, and could have major damaging effects on future employment prospects in a nation with a rapidly increasing population and a major unemployment problem—110,000 out of work in a total population of 3.5 million.

The semi-official Institute for Industrial Research and Standards (IIRS), which analyzes industrial proposals and is the environmental protector, has approved the Raybestos-Manhattan company's proposal. Institute Director Dr. Tom McManus recently told a news conference in Cork that the plant would have exceptionally modern safeguards, including a “most advanced” dust collection system of 99.95 per cent efficiency. Some asbestos fibers would escape, he admitted, but their number would be so minuscule as to prevent any fiber buildup.

“It is the absolute contention of this Institute,” he told reporters, “that this factory will not cause any danger to health even over a long period. We are going to monitor the air in the area and the results will be available to the

public. Transmission of asbestos from the port of Cork, where it will arrive in sealed containers, to the factory will be absolutely safe and so will the waste disposal.

"This company will also have a world's 'first' in the way it bags asbestos waste by remote control; it will have automatic de-bagging and incineration. There is no danger and if, by any chance, a buildup of fibers occurs—which we do not think will happen—the factory can be shut down."

Also attending the IDA's news conference was Prof. Corbett McDonald, one of the world's leading experts in asbestos-related diseases. He is head of the British Trades Union Council Centenary Institute of Occupational Health at London University and a member of the Advisory Committee on Asbestos Cancers to the Director of the International Agency for Research on Cancer.

Professor McDonald said the factory would be using chrysolite or white asbestos, not the crocidolite or blue asbestos which carries a far greater danger. Having visited the factory site and met with residents, he said he understood their fears, but pointed out that this factory had plans for the most modern precautions of any he had seen. Workers would even have to go through shower treatment before getting back in to their own clothes after using special work clothing in the factory.

Professor McDonald said he was not stating that chrysolite asbestos could not cause mesothelioma, nor would it be accurate to say there would be absolutely no danger from the new plant, but he wanted to make it quite clear that he had no hesitation in saying that there was no measurable health hazard involved.

But all these assurances have not satisfied the local residents. Nearly three hundred of them gathered for a public meeting in a local hall the day after the Cork news conference and decided to set up a committee to further investigate the entire situation.

Meanwhile, the company still has to find an acceptable dumping site for the asbestos waste. The IIRS contends this is not a problem since there are two asbestos dumps in other parts of the country—at Drogheda and Athy—and no problems have been found there. A former asbestos dump is now being farmed, says the IIRS, and there is regular dumping of asbestos waste from the asbestos-cement industry in the country. This totals between five and seven thousand tons a year. The Raybestos-Manhattan factory would dump between five and 700 tons.

WER's correspondent visited the partially finished factory, where the General Manager is an American, Ted Deane. He said the company would not comment.

One interesting sidelight to emerge from the Cork news conference was that the IIRS has rejected 15 major industrial applications for Ireland in the past few years because they were considered to be "dirty" industries. One of the industries involved sought permission to produce herbicides similar to those involved in the disaster at Seveso in Italy. In all cases, the IDA accepted the IIRS findings.

TOM MACSWEENEY

Dublin To Convert Rubbish Into Powdered Fuel for Electricity

DUBLIN—A multi-million dollar plan for the conversion of rubbish into a powdered fuel for electricity has been proposed in Dublin.

The proposal is to construct a \$17 million plant near the Irish State Electricity Supply Board's new power station at Poolbeg in Ringsend, to convert the rubbish. An Irish businessman, Mr. Austin Gormley, told environmental reporters that financial support for the project had been promised by the huge German Veba group, if Irish investors did not put up sufficient money. He felt the project would be a commercial success.

He said the plant would not involve environmental problems. The rubbish would all be from the Irish capital area. It would be brought in from city areas and surrounding suburbs, such as Dun Laoghaire, Bray and other areas. First, items such as metals would be removed and then the refuse pulverized and reduced to a crystalline powder with the use of chemicals.

The powder, called "eco-fuel," would keep indefinitely and would have burning characteristics somewhere between turf and coal. A ton of rubbish would make half a ton of fuel. In addition to being used for generation, the fuel could be compacted similar to turf briquettes and sold as a household fuel.

Gormley said his group had already had talks with the local authorities, the Electricity Supply Board and other interested bodies. A 10-acre site would be sought from the Dublin Port and Docks Board adjacent to the Poolbeg Station.

The fuel has been developed in the United States and it was claimed that refuse from a million people would save a million barrels of heavy fuel oil a year. If the plant was in operation today, it would produce about 350,000 tons of fuel a year—the equivalent of about 750,000 barrels of imported oil or 350,000 tons of coal.

While the proposal was being made, the Irish Minister for Local Government, Mr. James Tully, who controls local county and city authorities, accused these authorities of being responsible for some of the worst cases of dumping rubbish.

Such claims have been repeatedly made by environmental pressure groups and underlined in recent cases of pollution of Irish waters (*World Environment Report*, May 24, 1976, p. 3).

Tully said there was no excuse for the local authorities being in such a situation. "A dump will never be a thing of beauty while it is being worked, but it does not have to be the horror that some dumps are. Good standards can be applied and met," he said.

Tully also announced that legislation on collection and disposal of refuse was being updated and extended, but he warned that practical problems caused by the shortage of suitable dump sites and the increasing volume of waste would remain.

TOM MACSWEENEY

In Brief...

Czechs See No Alternative To Nuclear Power Industry

Czechoslovak Fuel and Power Deputy Minister Milan Rusnak said last month that the only alternative for solving the country's fuel and energy balance was the development of the nuclear power industry.

Rusnak was one of the speakers in a Radio Prague panel discussing listeners' questions about the electric power situation. He said that it was no secret that Czechoslovak coal resources were limited. Apart from those power stations that were now being built, coal reserves permit some 2,000 to 2,500 additional megawatts of performance in the next few years, he said.

This posed the problem of how the country could solve its electric energy needs, the official said.

The beginning of the "nuclear stage" in Czechoslovak power industry development involves, apart "from our own structural changes," a further "deepening of the socialist economic integration," Rusnak stated.

He said that without the assistance of other socialist states, in particular the Soviet Union, a "large structural change in the power industry" could not be realized.

Residual Heat of Icelandic Lava Harnessed for Energy

An innovative program—believed to be the first attempt of its kind—to harness residual heat of the lava from the 1973 volcanic eruption of Westmann Islands, south of Iceland, seems well on its way to success. It is estimated that this unusual energy source might last for decades as a furnace for municipal hot-water installation.

The general technology consists of metallic conduits that are buried in the still-hot lava field. Water circu-

lated through a grid of such pipes receives heat, from emerging steam and radiation, before being pumped into the central heating systems of 20 dwellings. A pilot installation already shows that a temperature of 152 degrees Celsius in the ground will deliver water of 85-90 degrees C. to the users.

A more ambitious experimental application is planned for the Westmann Islands hospital, and if everything works well, it will be followed by a municipal heating system for the whole town.

Hong Kong Winning Its Fight Against Harbor Pollution

Hong Kong's fight against harbor pollution is beginning to have a noticeable effect. In fiscal 1976/1977, \$292,000 has been allocated to the Marine Department's anti-pollution unit. This has enabled the unit to add 10 more vessels to the original fleet of 31 scavenging sampans and motorized boats. In 1976, 3,645 tons of refuse were collected from the harbor, compared to 3,262 tons in the previous year.

Only 32% in Mexico City Have Adequate Housing

Mexico City housing authorities have declared that only 32 per cent of the Mexican capital's residents have adequate housing as to health, safety, and size requirements. Demographic growth of the capital, now estimated at around 10-11 million inhabitants, serves to counteract the effects of an adequate housing program, a spokesman in the housing department said.

While the program's target is 5.5 persons per dwelling, the actual average is more like 5.8. There is a shortage of 130,000 dwellings, besides the inadequacies cited, they said. Only two-thirds of the city's dwellings have running water.

Methanol-Petrol Mixture Fuels Polish Fiat

The Polish daily, *Glos Pracy*, reported recently that a refinery and petrochemical plant in Plock carried out tests to fuel the "Polski Fiat" (a Fiat model assembled in Poland) with a mixture of petrol and methanol.

The tests demonstrated a higher engine efficiency with decreased fuel consumption and air pollution, the paper reported.

During the tests two kinds of mixtures were used: a summer mixture with 20 per cent methanol and 80 per cent of 78-octane gasoline; and a winter mixture of 15 per cent methanol, three per cent isobutane and 82 per cent of 78-octane gasoline.

In both cases engine efficiency was increased by 8 per cent while the carbon monoxide in combustion decreased by 65 per cent.

Canada and Norway Urged To Halt Seal Slaying

The World Wildlife Fund, headquartered at Morges, Switzerland, has urged the governments of Canada and Norway to consider a moratorium on the annual commercial hunt of Harp seal (*Phoca groenlandica*).

Prime Ministers Pierre Trudeau and Odvar Nordli have been sent copies of a resolution passed at the recent International Congress of the WWF in San Francisco, pointing out that studies by scientists of the University of Guelph, Ontario, Canada, had shown that the Balrador Front Harp seal herds were in danger if the annual hunt continued.

The resolution said the annual harvest was based on conflicting population data. In 1976 the set quota of 128,000 was exceeded by 41,000. Thus 169,000 seals were taken out of an estimated total of less than 200,000 annual births. The rest of the young seals were subject to other factors of mortality, it said.

India Launches Ambitious Water-Saving Experiment

The National Chemical Laboratory in the Western State of Maharashtra, India, has launched an ambitious experiment to save 30 per cent of the country's water from evaporation.

The 20-year research program, the authorities hope, will yield encouraging results. Laboratory scientists have shown that alkoxy ethanol derivatives of certain fatty alcohols prevent water evaporation by 60 per cent. By saving 30 per cent of the water from evaporation in open fields, the authorities hope they can provide water during scarcity periods for drinking, farm and fisheries.

This step has now been found essential because of the recent warning by a noted Indian economist, A. D. Moddie, that India "will be a water-thirsty nation by 1990." He is certain that 48 per cent of the country's water potential is wasted in transportation.

"If 350 million people in India in 1950 were in a poverty trap, then 600 million people going on to 900 million will be in a poverty cum ecology trap beyond 1976." He blamed deforestation and population growth for "ecological degradation."

Elephant Population In Uganda Declines Sharply

Aerial counts carried out in Uganda's two main National Parks have shown that the elephant population has fallen in three years from about 17,000 to just over 3,000.

The figures confirm numerous unofficial reports from Uganda that large-scale poaching of elephants has taken place there, stimulated by high world prices for ivory (over \$10 a pound) and by the lack of effective anti-poaching measures.

In 1973, aerial observation indicated counts of 14,000 elephants in the Kabalega National Park and 2,700 in the Ruwenzori Park. The latest count shows 2,448 elephants in

Kabalega, and 704 in Ruwenzori. The figures were obtained with the help of two British experts, Dr. Keith Eltringham, of Cambridge University, England, and his assistant, Bob Malpas.

The survey also turned up large numbers of dead elephants (with their tusks removed), and several poachers' camps were sighted from the air.

Uganda National Park officials say they are hampered in their anti-poaching efforts by transport shortages and by the aggressiveness of poachers, who are usually better armed than the park staff.

Although Uganda imposed strict legal restrictions on elephant hunting last year, and President Amin has threatened that elephant hunters will be shot if they are caught, the poaching continues, with most of the ivory being smuggled into neighboring Zaire, documented there, and then exported to Hong Kong.

Italy Bans Killing of Threatened Wolf Packs

The World Wildlife Fund (WWF), in Morges, Switzerland, has announced that Italy's surviving wolves have a more secure future following a countrywide ban on killing them.

According to the organization, a decree, signed by Minister of Agriculture and Forestry Giovanni Macora, gives full protection to the wolf for an indefinite period. The decree refers to representations from the Italian branch of the WWF for the extension of temporary bans in force since 1967.

Furthermore, it said, the Ministry has also responded to a request for a ban on the control of predators by poisoned baits, which resulted in many other mammals and birds dying.

The decree declared that the bans were based on scientific advice on maintaining the balance of nature because of the reduction of the wolf's natural habitat by various factors.

Quake-Proof Heater Sells Widely in Japan

A small metal ball has helped Vulcan Australia, Ltd. capture a big slice of the Japanese home heating market. It is part of a device invented by the Melbourne-based manufacturer to shut down a heater in the event of an earthquake.

The device makes Vulcan heaters conform to Japan's safety standards. In meeting the standards, Vulcan reportedly did something many foreign space heater suppliers were unable to do.

The earthquake sensing device was perfected in earthquake-free Melbourne using a simulated earthquake machine of Vulcan's own design and manufacture.

The device works this way: A tremor will dislodge the ball from its mounting, and, in turn, cause the heater to cut off all fuel, drain fuel from the burner, extinguish the flame, flush the fuel system with water, and finally close all electrical contacts—all in 10 seconds.

The device is simply reset once the tremor has passed.

Taiwan Experiments With Inexpensive Electric Car

The San Fu Motor Co. of Taiwan has manufactured 20 experimental electric cars to see if they might be widely used on the island. These cars, the first of their kind, were developed by the National Tsinghua University. According to the company, the 1,584-pound electric car will have a maximum speed of 46.5 mph. It is powered by an 18 horsepower engine which is good for 74.4 miles per six-hour battery charge.

More than 300 vehicles of this kind are expected to be completed by the end of this year and will be used by the Government's Directorate General of Telecommunications. The company hopes to reduce the price for the car from the present \$3,160 to \$2,473.

Liberia Extends Territorial Sea to 200 Nautical Miles

Along with many other countries in Europe and North America, Liberia has extended its territorial sea area from 12 to 200 nautical miles from the base line of this small West African republic. An Executive Order issued by Liberian President William Tolbert said this extension is necessary because it will provide adequate protection for the coastline of the country and preserve the interest of the Liberian people over an extended area of the adjacent sea.

Argentina Attempts to Cure Leather Without Toxic Waste

Government investigation centers throughout Argentina have decided to intensify experiments aimed at reducing contamination from industrial wastes produced in the processing of leather, fruits, and vegetables.

Leather experiments will try to eliminate the toxic waste caused by the oxidation of soda sulfide, the process used to remove the hair from the hide. Possible substitutions include oxidizing treatments using enzymes or manganese sulfate.

Fruit and vegetable experiments will try to reduce the amount of suspended solid wastes present in water discharges.

Bulgaria Acts to Upgrade Cement Plant Air Quality

The Bulgarian government has approved a program to protect the purity of air in areas near cement plants, according to Radio Sofia.

A broadcast recently reported that the program provides for the modernization and use of special equipment in cement plants and will be carried out over the next four years.

The broadcast said that the state would make a similar effort to purify river waters. In the coming years, it stated, the waters of the Maritsa, Iskar and other rivers would be cleaned up on a step-by-step basis. It predicted that through this program, fish would once more appear in the rivers and people would once again be able to use the rivers for recreation.

Buenos Aires Substitutes Compactors for Incinerators

A recent municipal ordinance banning trash incineration in Buenos Aires is stimulating development of a garbage compactor industry. When the ordinance was passed in January, only four factories were producing compactors. A month later, seven other companies had already sought municipal permission to produce them.

The ordinance requires that a com-

pector company have a repair center within a 31-mile radius of the city and answer repair calls within 48 hours, including holidays. Compactors are required to reduce garbage volume by at least one-third. The municipality plans to use the compressed garbage in landfills.

Bavarian Environment Ministry To 'Fingerprint' Plant Fumes

The Bavarian State Ministry for the Protection of the Environment has announced here that it plans to start "fingerprinting" emissions from factories.

The Ministry said it would have all emissions from plants analyzed and the substances in these registered. Such emissions, it explained, are as characteristic as fingerprints for man. Studying and controlling such emissions through regular measurements will show relevant changes in production or in means of production, the Ministry explained. This, in turn, will permit tighter control over plants' compliance with environmental regulations.

Under the West German Federal emission protection law, special permission is required for the establishment and/or operation or changes in operation of any plant which could cause noxious environmental effects or which could endanger the public or neighborhood.

Calendar...

March 14-25—United Nations Water Conference. Mar Del Plata, Argentina.

March 29-April 1—Environmental Conservation in the Petroleum Industry. Paris. UNEP.

April 13-22—UN Scientific Committee on the Effects of Atomic Radiation. Vienna.

April 19-21—Extraordinary General Assembly of the International Union for Conservation of Nature and Natural Resource. Geneva.

April 21-28—Panel of Experts on Integrated Pest Control. Rome. FAO.

April 25-29—Symposium on Erosion and Sedimentation. Algiers. UNESCO/FAO.

April 25-30—Tenth Session of CMEA Council on Environmental Protection. Romania. Under Auspices of CMEA (Council for Mutual Economic Assistance).

May 2-13—International Conference on Nuclear Power and its Fuel Cycle. Salzburg. Auspices of International Atomic Energy Agency (IAEA).

May 23-June (7-8 weeks)—Third UN Conference on the Law of the Sea. New York.

May 24—17th Inter-Secretariat Meeting on Water Pollution and Related Water Questions in Europe. Geneva. Auspices of ECE/UNEP.

May 25-27—Group of Experts on Aspects of Water Quality and Quantity (fifth session). Geneva. ECE.



World Environment Report

MAR 1977

VOL. 3, NO. 5

Copyright ©1977. Center for International Environment Information.

FEBRUARY 28, 1977

UNEP Meeting in Nairobi Makes Little Headway on Shared Resources

NAIROBI—The world's nations are having difficulty in agreeing on guidelines for cooperation in environmental matters affecting natural resources shared by two or more states. Experts from 15 countries who met here late in January agreed on five guidelines, but failed to agree on another ten.

The meeting continued the work begun earlier in Nairobi and in Geneva (*WER*, Jan. 3, 1977). No further meetings are planned before the UN Environmental Programme (UNEP) holds its annual Governing Council here in May, when the results of the three meetings will be discussed before being submitted to the UN General Assembly, which has the final decision.

The Nairobi session, organized by UNEP, reached provisional agreement on guidelines setting out the duty of states to cooperate, systems of agreement and other arrangements, interstate cooperation, environmental assessment, and development potential.

But the meeting failed to achieve a consensus on the exchange of information and consultation; notification and supply of additional information; scientific studies; good faith and good neighborliness; emergency action; services of UNEP or other international organizations; settlement of disputes; responsibility and liability; non-discrimination; and equal right of access.

A UNEP spokesman in Nairobi said most delegates considered there was insufficient time at the 11-day meeting to agree on the entire list of subjects. Another factor was that a number of the representatives taking part in Nairobi had not attended the earlier sessions—and this made it impossible to achieve a consensus in many areas.

Representatives were present from Argentina, Brazil, Canada, France, India, Iraq, Kenya, Mexico, Netherlands, Philippines, Poland, Romania, Sweden, USSR, and U.S. There were also observers present from Greece, Japan, Turkey, and Yugoslavia. Several international organizations also had representatives present.

UNEP had hoped that the delegations would be able to reach a final accord on all the legal guidelines in time to forward them to the UNEP Governing Council this year. The Council will now receive a report on the limited progress achieved, and will have to decide in what form it is forwarded to the UN General Assembly.

CHARLES HARRISON

New Figures Show Mexico City Now World's Third Most Populated

MEXICO CITY—Urgent pleas that some of Mexico's federal offices be moved out of this capital have been made as the United Nations' newest urban population figures were released showing Mexico City the third most heavily-populated city in the world. The figures, made public January 31, showed Shanghai the world's biggest city, with 10,820,000 inhabitants; Tokyo second with 8,640,000, and Mexico City in a close third place with 8,591,750.

Dr. Gregorio Valner, federal sub-secretary for Human Settlements, said it is urgent that government agencies leave the crowded federal district "to collaborate in reducing the future excessive human concentration." Mexico City's growth rate has been estimated as high as 1,000 persons per day, with slightly more than half of them new births and slightly less than half of them immigrants from the countryside and small towns.

Although the call to move offices out of the capital has been made frequently in recent years, an economist has named neighboring states in which some of the agencies will be re-located, thus giving credence to current interest. The state of Hidalgo on the north and Tlaxcala, east of Mexico City, will be chosen because of their present "critical economic situation," said Roberto Villa Martinez, an officer of the National College of Economists.

De-concentration of the capital must be undertaken with a "socio-economic viewpoint," he said. Agencies should be moved to existing population centers which already have services, communications and infrastructure, he said, overruling the possibility of the creation of a new Brasilia-type national capital.

KATHERINE HATCH

In This Issue

Marine Pollution	2
Noise Pollution	3
Agricultural Waste	3
Coastal Environment	5
Heavy-Water Reactors	5
Toxic Levels	6
In Brief	7

Mediterranean Nations Agree To Counter Marine Pollution in Area

SPLIT, Yugoslavia—Fifteen Mediterranean countries agreed here in early February on a two-stage program to counter marine pollution in the world's seventh largest sea, and to improve the resources of the region.

The plan was adopted unanimously at a five-day conference held in this Adriatic resort. It was the third Mediterranean conference sponsored by the UN Environment Programme (UNEP). As in the previous two, delegates from Israel and the Arab countries sat and worked together on the common cause—environment. Participating states included: Spain, France, Monaco, Italy, Malta, Yugoslavia, Greece, Cyprus, Turkey, Israel, Egypt, Libya, Tunisia, Algeria, and Morocco. Only three Mediterranean states were absent: Syria, Lebanon, and Albania.

As priority fields for action, the conference listed measures to prevent coastal erosion, the development of solar energy, conservation of water resources, expansion of fish-breeding, and better planning of tourism and settlements.

It also approved a longer term "Blue Plan" for social and economic development based on environmental protection. Two centers are to be established by UNEP within the next year to coordinate actions. One will be located at Split, the other on the French Riviera. Financing the "Blue Plan" will cost an estimated \$1.5 million over the next two years.

The 2,500-mile-long Mediterranean, with little tidal movement and an opening only 12 miles wide to the Atlantic at the Straits of Gibraltar, is the most heavily polluted sea in the world, with untreated raw sewage estimated at 90 per cent of the wastes flushed from bordering states.

More than 100 million people live along its coasts and another 100 million tourists visit it annually. The main sources of pollution aside from untreated sewage are industrial waste and oil flushed out by ships.

At a news conference, Dr. Mostafa K. Tolba, Executive Director of UNEP, declared that the Split meeting sought "to provide the governments of the Mediterranean countries with a comprehensive picture of the actual situation in the Mediterranean eco-region and of the close inter-dependence of all its elements."

He further declared that UNEP was studying pollution caused by big power naval fleets in the Mediterranean, including nuclear pollution, and would make the data available to all interested governments.

Dr. Stjepan Keckes, 44, a Yugoslav marine scientist who coordinates the WHO/UNEP coastal water quality control project and other pollution research and monitoring projects, declared that "the present situation constitutes a significant health hazard in many places. Typhoid, dysentery, viral hepatitis, and poliomyelitis have all been endemic in the Mediterranean area and

during recent years there have been a number of cholera outbreaks."

Scientists working under the "Blue Plan" are assessing the level of pollution in the coastal waters, on the beaches and in the shellfish, and its effect on human health. To date 17 laboratories have been established in eight countries and UNEP estimates that by 1978 it should have a better idea of just how badly the sparkling blue Mediterranean is polluted.

Once the present two-year project is completed, Dr. Keckes said, the information it produces will be presented to the governments of the region and then it will be up to them to remedy the situation.

Dr. Keckes said he hopes to have the first statistics, covering the winter of 1976-77, ready for a mid-term review in May. More vital data will come later from the summer monitoring period—a time when beaches and bathing waters become more polluted. These figures, he said, should be ready for the WHO/UNEP's next major Mediterranean intergovernmental meeting in Monaco next fall.

One special topic discussed at Split, in what delegates called "a permanent continuing dialogue on cooperative activities," was the establishment of work priorities to give about a half-dozen projects "immediate action" rank. Falling in this priority area are: protection of the seabeds and development of sea resources, aquaculture, tourism, solar energy, and sanitary measures.

"We took a big step at Split to protect the future of the Mediterranean," said Peter S. Thacher, European director of UNEP. "Every country approved and was happy with the final report. This is quite remarkable when you consider how different the economic systems of the 18 Mediterranean countries are."

SPECIAL DISPATCH TO *WER*

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$125 per year. \$15 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Ann C. Werner
Correspondents covering more than 60 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

SPECIAL REPORT: Japanese Railways to Alleviate Noise Pollution

TOKYO—The state-operated Japan National Railways (JNR) has set itself the unprecedented task of spending approximately \$445.2 million over the next three years to provide more than 18,000 households and scores of schools and hospitals located within 98 feet of the tracks with materials and equipment plus financial assistance to alleviate noise and vibrations created by the speedy passage of "bullet" super-express trains, the Shinkansen. The trains run at 125 miles per hour.

Where no materials and equipment can be counted upon to meaningfully relieve the unpleasant situation, according to officials of the JNR, the buildings themselves will be moved. The program, based upon a series of guidelines and regulations issued by the JNR to protect victims of excessive noise and vibrations, is in line with a noise prevention law promulgated in July 1975 and a Japanese Government-approved plan announced around the same time.

Financial aid in the installation of noise prevention and soundproofing is to be provided to any owners of buildings along the tracks where passage of Shinkansen trains causes noise exceeding 80 phons. However, buildings constructed after March 9, 1976 are not eligible for such assistance. But in the case of hospitals and schools, the JNR program will apply to those where tests have shown train noise tops 70 phons.

Also eligible for such aid from the JNR are all houses, hospitals and schools where testing equipment has shown that vibrations caused by passing Shinkansen trains register 70 decibels or more. Under the plan, the JNR reports, financial assistance will be provided to all owners wanting to move to avoid noise exceeding 85 phons.

Although the JNR has promised the Japanese Environment Agency (JEA) to complete the program within three years, the officials given the task of carrying out the plan are inclined to feel that such a period might prove too short. Hisashi Yoshimura, director of the JNR's environment protection division, for example, has his doubts.

"At the moment we have set the target at three years for completion of the measures covering all houses, schools and hospitals," he told *World Environment Report*. "However, the work has only just begun. We are seeking the assistance of local governments in performing the administrative work related to these projects."

He explained that in the future JNR executives expect many difficulties stemming from the need to meet individual requirements and tastes, not only in installation of double windows and soundproof boarding inside the homes, but also where the persons and administrators involved have their own ideas about what types of structures they want when actual movement of the buildings is required.

"We may not be able to finish all this work in three years," Mr. Yoshimura added. "Yet with the mutual goodwill and cooperation which we expect between the

residents and the JNR, we hope everything will progress smoothly."

Despite the refusal of JEA officials to comment on the JNR program, it was learned that the entire operation should be completed in 10 years. The agency's lenient attitude is based upon the realization that the JNR has accumulated massive deficits over the years and is not really in a position to improve the situation to any great degree.

Agency authorities also realize that the JNR clearly will experience considerable difficulty in obtaining necessary land to which buildings eventually designated for elimination would be moved. In many cases, according to the agency, permission will have to be obtained to erect new buildings on land which is now being farmed.

Under current planning, the work also will require extensive use of aluminum-sash windows, soundproof boarding and insulated double walls. Mr. Yoshimura explained that much will depend upon the type of protective work required for each separate building. Apparently the JNR already has spent about \$4.1 million in making 130 homes more soundproof and less liable to vibrations, providing some experience in this area.

It was reported that the actual number of rooms which are to be soundproofed in each private home depends mainly upon the number of persons who live in the structure. The general rule, the JNR said, is that each individual is entitled to one soundproof room.

According to the understanding of the JNR, the work to relieve those areas where noise and vibration conditions are most unacceptable should be completed in three years. Those next worse should be improved under seven years and the final program wrapped up inside a 10-year period. In addition, all new lines of the Shinkansen type now under construction must meet the minimum standards at start of service, the medium standards within three years of start of service, and the highest standards in five years after beginning of operations.

JNR engineers already have developed a steel hood for use at both ends of Shinkansen tunnels to cut down the "sonic" boom created by the super-express trains as they enter and leave the underpasses. The device reportedly reduces the intensity of the noise to about a quarter of the previous level registered when trains are running at about 125 miles per hour. The hood was developed following a series of tests at the JNR's Railway Technology Research Institute.

The Central Council for the Control of Environmental Pollution (Chukoshin) has not laid down exactly what the JNR should do to improve the living conditions of those persons inhabiting buildings which are subject to intolerable vibrations by the passing Shinkansen trains mainly because the council members admit that much depends on the type of structure involved. However, it was noted that some facilities will require the sinking of new foundations or supports for old foundations, while

others will only need the erection of some type of baffle separating the structure from the railway.

Commented one council official, "The JNR will have to meet the requirements on a case-by-case basis. But it also should take into account our recommendation that, on a technological basis, the JNR should develop rails and wheels with smoother surface and promote the supplemental utilization of long skirts attached to the cars themselves instead of just installing noise and vibration-proof fences along the tracks."

If after expenditure of the huge fund already included in the JNR's program and the tremendous amount of work involved the railway still cannot achieve standards which meet the requirements of the agency, it will most probably be the responsibility of the railroad to develop low-noise trains and quieter tracks.

Yet should this prove impossible in the years immediately following 1985, according to the council, "then the JNR should be required by the Japanese Government to slow down the speed of the Shinkansen and reduce the number of runs along the lines." The present Shinkansen operates super-express trains along a 664-mile stretch between Tokyo and Hakata City in Kyushu.

Some Japanese railway specialists have been expressing pessimism concerning the demands of the environmentalists and the hopes of the JNR officials. These circles believe that it will prove impossible to reduce the noise and vibration levels of the Shinkansen operations to the standards which have been set for 1985 even if the super-expresses are required to operate at half their current speeds. And they point out that to move all the 130,000 houses and other buildings along the tracks between Tokyo and Hakata would finally bring about the financial collapse of the railways. Evidently the present program is something of a compromise solution designed to satisfy everyone and no one, but at least it is bound to spur further improvements of a progressive nature in JNR lines now under construction and those to be built in the future.

A. E. CULLISON

UNEP and FAO Join Forces To Wage War on Agricultural Waste

ROME—Two agencies of the UN system are joining forces to wage war on waste in agriculture and related fields of industry.

The UN Environment Programme (UNEP) and the Food and Agriculture Organization of the United Nations (FAO) jointly held a seminar on the utilization and management of agricultural and agro-industry wastes last week in Rome.

About 200 experts in waste management from public institutions, nongovernmental organizations, industry, and government officials, agreed on action to reduce the immense quantity of agro-industrial residues. In many cases these are simply burned or dumped somewhere, mainly because the producers do not know how to recycle.

The FAO/UNEP seminar in Rome produced a first draft of a new compendium of selected technologies for recycling residues of agriculture, fisheries, forestry and agro-industry. Leon de Rosen, Director of the UNEP Industry Program, told *World Environment Report* that the new Compendium of Residue Technologies will be a sort of clearinghouse among industrialized and developing countries for dissemination of the know-how for sound residue utilization.

"This is not a duplication of existing sources in this field, but rather a tool for coordinating such sources," he said. "The people concerned with not squandering vital resources will have ready-at-hand, now, the necessary tool for wise action."

The seminar debated for four days the consequences of considering unwanted by-products of agriculture and agro-industry as "valuable resources, rather than as wastes to be discarded with pollution of streams, lakes, air and soil," de Rosen said.

"With proper technology, these residues can give an additional output of food, fertilizer, feed, fiber, building material or fuel, thus helping to limit pollution and at the same time to preserve the endowment of nature for the coming generations."

In a note of caution, de Rosen warned that not all technologies that will find a place in the FAO/UNEP Compendium could be put to work anywhere, anytime. "A particular technology can be economically and socially viable in a certain situation and not in others," he said. "In many countries, however, new anti-pollution legislation is being enforced that reverses old situations, thus making advisable today what was not acceptable yesterday. Businessmen used to follow a strict profit policy. Public decision makers are now urging them to integrate social and environmental cost in their production strategy. Residue utilization makes a breakthrough when such costs come up as inferior to the costs of pollution abatement."

An FAO official told *World Environment Report* that a supplement to the Compendium could be found in the Worldwide List of Institutions dealing with Agricultural By-Products and Wastes. Mr. Willem H. Barreveld, chairman of the FAO Waste Management Group who compiled both volumes, announced publication of a new edition of the World List, first published in 1973.

The FAO/UNEP seminar also recommended the establishment of national centers for dissemination of sound residue utilization approaches. National centers in similarly oriented ecological zones should cooperate in a network for the purpose of the joint organization of training courses, pre-investment feasibility studies, research and demonstration projects, marketing opportunities surveys and an information exchange system.

The opening session of the seminar was addressed by the two leading UN agency officials responsible for it: FAO Director General Dr. Edouard Saouma, and UNEP Executive Director Dr. Mostafa K. Tolba.

VITTORIO PESCIALLO

Middle Eastern Nations Confer On Coastal Environment Protection

HAWALLI, Kuwait—Experts from eight countries—Bahrain, Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates—recently convened here at the invitation of the government, and under UN Environment Programme auspices, to review coastal areas development and the protection of the marine environment.

The meeting was opened by Dr. Abdul Rahman Al Awadi, Minister of Public Health and Acting Minister of Planning. In his opening remarks, the Minister said it was universally acknowledged today that the majority of environmental problems were associated with increasing economic and social activities, and thus it was important to strike a careful balance between development planning and strategies and protection and preservation of the marine environment. Dr. Al Awadi added that he hoped the meeting would lay the foundation for the draft action plan to be formulated by UNEP, in consultation with other UN bodies and agencies, for submission to an intergovernmental meeting later this year.

Speaking on behalf of the participating UN bodies and specialized agencies, Dr. David Munro, Special Adviser to the Executive Director of UNEP, stated that the meeting should concentrate on the outline and basic components of an action plan for the development and protection of the coastal areas and marine environment of the region, rather than on purely national concerns like fresh water resources, studies on urban ecology, major trends in industrial and urban development, and on the principal types of industrial air pollution and land waste disposal methods.

It was suggested in the working sessions that activities where regional management policies should be formulated include: coastal area development projects; rational exploitation of fishery resources and development of aquaculture; contingency planning for combating pollution of the marine environment by accidents; adoption of pollution emission standards; and adoption of water quality standards.

It was recognized that some coordinated regional planning, such as maritime and land transport, may be most beneficial. In these cases, however, most of the delegates felt that the benefits must be weighed carefully against national concerns. The meeting also noted that joint planning of the exploration of fisheries had begun and should be strengthened and continued to ensure rational exploitation on a sustainable basis.

Another proposal advocated the establishment of a regional coordinated plan for natural facilities for treatment of oily and ballast waters. Finally, it was stressed that the proposal to set up a secretariat mechanism is accepted in principle but its composition, functions, and relationship to the UN system and the governments of the region should be further examined.

MUSA DAJANY

New British Report Gives Pros And Cons on Heavy Water Reactors

LONDON—Britain's debate on nuclear reactors for future electricity generation should be resolved quickly, suggests a report on the steam generating heavy water reactor (SGHWR) program from the Select Committee on Science and Technology. Otherwise there is a "disturbing possibility" that renewed arguments might be used as a device "for indefinitely delaying or even abandoning the nuclear power programme."

There has been continuing controversy over the Government's 1974 decision to opt for the SGHWR. This report summarizes the cases for and against its continued use, and also investigates the four alternatives which it sees as possible.

These are a withdrawal from the nuclear power business in favor of energy conservation and development of renewable sources, the eventual development of the fast breeder reactor (FBR), the substitution for the SGHWR of the advanced gas-cooled reactor (AGR), or finally, the adoption of the Westinghouse or some other pressurized light water reactor (PWR).

Chief opponents of the SGHWR are the Central Electricity Generating Board and the United Kingdom Atomic Energy Authority (UKAEA), the former on the grounds that it is technically obsolete, the latter that it is less attractive commercially. In contrast the South of Scotland Generating Board claims that the high cost of the SGHWR has been exaggerated and that the advantages of other reactor systems in terms of export potential were not proven. Secretary of State Tony Benn is currently engaged in a major review of nuclear reactor policy, and is expected to announce his decision in the spring.

The Committee makes some acid comments on the lack of information available on cost, efficiency and safety of either the SGHWR or its possible alternatives although there have been seven years of extensive public and private debate since the last nuclear station was ordered. "A sad reflection on our decision-making machinery, and on the quality of the expert advice given to successive governments," it says.

In spite of the fact that two-and-a-half years have elapsed since the SGHWR system was adopted, the report points out that "the reactor has neither been designed to agreed parameters nor accurately costed, and, in consequence, neither the opponents nor the supporters can argue their case with the ability to carry conviction in the minds of others."

The Committee concludes that Mr. Benn should decide to cancel the SGHWR only if it seems certain to be more expensive than other reactors meeting the same safety standards and if there is clear evidence that other reactor types have greater export potential. In the meantime, it says, preparations should continue for the building of two SGHWR power stations in Suffolk and Scotland.

ALAN MASSAM

ILO to Prepare Listing of Toxic Levels for 1,200 Substances

GENEVA—The International Labor Organization (ILO), spurred by the recent Seveso chemical plant disaster in Italy, is preparing a list of admitted or prescribed levels for toxic materials in a score of countries.

The publication at the end of this year, including comparable tables, is expected to be of fundamental importance for national services planning to draw up tables of permissible limits.

The survey, covering about 1,200 substances, points up the divergences which exist between the levels permitted in different states and shows agreement on certain substances.

One of the authors of the ILO publication, Dr. Alberto Annoni of Italy, commented in an article in "ILO Information" that "starting from different premises, countries have reached similar conclusions on the permitted concentrations, for example, of bromoforme, dinitrobenzene, sulphuric acid, diphenyl chloride, vanadium fumes and others."

The document is expected to provide a scientific basis for the discussion at a tripartite (i.e., labor, industry and government) meeting of experts to be called later this year by the ILO to examine measures needed in factories to prevent exposure to toxic substances and how to coordinate this action at the national level.

Citing the Seveso disaster on July 10, 1976, Dr. Annoni commented that the problem was not new. "After a long period of euphoria over the benefits of industrialization and technological progress, people are becoming aware of the risks which the working environment poses for their health, particularly because of toxic substances," he wrote.

Some examples: in the shoe, machine and printing industries, regulations have become stricter aimed at lowering the exposure levels for workers to benzene and benzene solvents. The object is to prevent severe anemia and leukemia—both usually fatal.

In the plastics industry, the permissible level of vinyl chloride in the air has been reduced to three milligrams per cubic meter to lessen the risk of liver cancer.

In thermal insulation processes, especially in shipyards, high level exposure to asbestos has been cut from 175 to 2 fibers per cubic centimeter over a period of 20 years. X-ray controls of workers have been increased.

Dr. Annoni posed the question: what can be done? The obvious answer, he wrote, would be to replace toxic substances by harmless ones. This, unfortunately, is not always possible, he commented.

The second best choice would be to limit the concentration of toxic substances to such a low level that exposure would not endanger health or life, he said, calling this "a realistic approach practiced in all countries."

But this raises the question: Just how much exposure is too much? How can agreed maxima be controlled and enforced?

The only answer, he argued, is an effort at coordination and alignment upon an international scale. The new ILO publication will be a step in this direction.

WILLIAM G. MAHONEY

Air Pollution in Ankara Reported To Have Reached Acute Stage

ISTANBUL—A report recently published by the Association of Doctors and Chemists in Ankara and widely reported in the Turkish press warned that unless urgent measures are taken to fight air pollution in the capital, the result will be "mass deaths."

According to the report, the air pollution in Ankara, one of the world's worst, has now reached "an acute point." The sulphur dioxide has reached 2252/UG/cubic meters, which is 37.5 times higher than the limit of 60/UG/cubic meters suggested by the World Health Organization for major cities.

Hospitals in Ankara reported an increasing number of patients suffering from bronchitis, cough, and various lung diseases, miscarriages and premature births, due to the acute pollution problem. The degree of pollution in the capital, which is located on a flat area surrounded by hills, is not only smelled or felt, but is also clearly visible in the shape of a thick black cloud of lingering smoke.

The problem has gotten so bad that the United States and other embassies have advised their nationals living in the Turkish capital to send their children away. A report issued by the American embassy also suggests that the U.S. Government pay a "danger premium" to all personnel stationed in Ankara. It demands the immediate transfer from the capital of all diplomats and other personnel suffering from asthma, bronchitis, and other lung diseases. The report further says that if the pollution gets any worse, the U.S. Government should consider moving some personnel away from the center of the city.

Although constant appeals have been made for appropriate measures, nothing concrete has yet emerged. However, a plant is being constructed at Seyitomer in central Turkey to produce "clean" coal, but it will take at least another year to become operational. Meanwhile, plans have been approved to build a central heating system for Ankara, with the technical assistance of Romania, at a cost of \$1.8 billion. It would consist of two thermal power plants of 900 MGW capacity each in two sections of the capital, plus an underground pipeline system for hot water. The two stations will provide the same energy that Ankara currently gets from its use of 900,000 tons of coal, mainly lignite.

The Soviet Union and Czechoslovakia, both of which have expressed interest in this central heating system, may eventually provide credits, construction material, and technical aid for the huge project. SAM COHEN

In Brief...

Poland to Construct Its First Nuclear Power Plant

Poland has announced plans to construct the country's first nuclear power plant.

Both the Polish News Agency PAP and Radio Warsaw recently announced that the Central Research and Design Office "Energoprojekt" has completed preliminary work for the plant that will be located on Lake Zarnowiec.

Construction will begin in early 1979 and is scheduled to be completed within five years. The plant will run on uranium dioxide and its starting capacity will be 880 megawatts. The basic machinery and other installations will be delivered by the Soviet Union, the reports said.

The Zarnowiec plant is the first project carried out under a government program drawn up in 1975 calling for development of the Polish power capacity. The program provides for erection of several nuclear power plants in the country by 1990 that will have a joint capacity of 8.5 thousand megawatts.

PAP noted that such nuclear plants were imported for several reasons: first of all the lower cost of nuclear fuel as compared to coal and crude oil; and the fact that after 1985 Poland's coal production will fall short of the increasing demand of the power industry.

Major Waterworks Proposed To Solve S. Korean Shortages

The development of water service in South Korea was recently reported to be slow and scanty. At present, the combined daily production capacity of all waterworks stands at 3,470,000 tons. That equates to 48 gallons of running water per capita per day, which is below the average of economically advanced countries.

Moreover, many medium and small cities in South Korea are without any water system at all or have an insufficient supply.

The South Korean government plans to create "wide-zone" waterworks using major waterways in an attempt to provide a solution to the water supply problem for medium and small cities. In the meantime, for cities and towns which cannot be incorporated into wide-zone waterworks because of their distance from the watercourses, the government will develop individual water systems.

The first wide-zone waterworks project, launched in 1973, is due for completion by 1978. This project is designed to provide water mainly to Seoul and its three surrounding cities, utilizing one water source at Paldang Dam northeast of Seoul. Some 80 per cent of the nation's medium and small cities will receive running water (compared with the present rate of 38 per cent) when the plan is completed.

Crackdown Urged on Use of VCM Gas in Packaging

Common Market authorities in Brussels are seeking authority from the member states to crack down on the use of vinyl chloride monomer (VCM) in products that come in contact with foodstuffs.

Limits have already been applied on the amount of VCM that workers in the plastic industry may be exposed to in the nine-member European Community. VCM is a colorless gas, used as a basic substance in packaging, which has been found to be carcinogenic. The substance is used in bottles and other packaging forms.

The proposals set limits for the VCM content in these products, and recommended techniques for such standards. The measure will now be considered for at least several months by the Community decision-making Council of Ministers.

Sharp Rise in Respiratory Disorders Found in Piraeus

Private environmental groups here are charging that respiratory disorders and heart ailments have increased by 17 per cent in the city of Piraeus, Greece's major port city, due to atmospheric pollution.

The environmentalists' repeated charges have forced local authorities to examine the situation. Their committee's observations revealed that smog in the area was 35 per cent higher than that in many other industrial cities, and its content in sulphur dioxide higher than the internationally permissible limits.

The special committee, which includes the Mayor of Piraeus, the Chief of Police, a District Attorney, and the Chairman of the Piraeus Medical Association, also found that the average monthly percentage of sulphur dioxide in the city's atmosphere was 382 micrograms, while recently it had reached the 593 microgram mark. According to World Health Organization standards, the maximum permissible content of sulphur dioxide in the atmosphere is 365 micrograms.

The committee also ascertained that the situation is still worse in Piraeus' environs, Greece's most concentrated industrial zone. It gave industries there a two-month deadline to take all necessary precautionary measures against pollution.

In addition, the government plans to ban the use of mazout (heavy fuel oil) in central heating and replace it by a low-sulphur diesel oil. The new type of oil will contain only 0.5 per cent of sulphur instead of the 3.5 per cent it has now.

450 Lbs. of Sodium Cyanide Escape From Czech Screw Mill

Eighty gallons of galvanizing bath containing about 450 pounds of pure sodium cyanide escaped from a Turnov, north Czechoslovakia, screw mill, ran into a creek and then

into the Jizera River where it poisoned many fish. The accident also made it necessary to close down for 36 hours the water treatment plant in Karane, one of Prague's water-supply plants.

The failure was caused by damage to the bath lining and was regarded as deplorable not only because of endangering drinking water for Prague but also because special efforts had been made to clean up the Jizera River which is today cleaner than it was fifty years ago—a feat regarded as unique in Europe if not in the world.

Radioactive Steam Escapes From German Nuclear Plant

West German officials reported in Munich recently that radioactive steam had escaped from a nuclear power plant in the town of Gundremmingen but that a safety container had minimized the leak.

There were no injuries, officials said, adding that the safety controls had functioned perfectly, preventing any radiation contamination in the area. The leak, they said, had been caused by a power failure following a break in the land line.

In late 1975 two men had been killed by a similar leak at the same plant.

Colombian Ecologists Protest Government Purchase of DDT

The Colombian Society of Ecology is protesting the Ministry of Health's recent call for international bids for the purchase of 270 tons of DDT. According to the society, the Ministry is violating the country's three-year-old ecological code as well as its own mandate as "guardian of the country's health."

Committee member Jesus Maria Idrobo, a consultant to the Colombian wildlife service Inderena, main-

tained that "since DDT has been banned in the industrialized world, stocks are being sold to the less developed countries." Idrobo called for an intensification of biological controls of insect plagues instead of "continuing use of insecticides that cause grave damage to man, animals and the environment."

Pakistan to Formulate National Science Policy

Prime Minister Zulfikar Ali Bhutto of Pakistan has directed the Federal Education Ministry to formulate a national science and technology policy to ensure maximum development of various sectors of the economy.

At a UN seminar on remote sensing applications held at the Space and Atmospheric Research Center of the Pakistan Space and Upper Atmosphere Research Committee (SUPARCO), Education Minister Abdul Hafeez Pirzada said the developing countries were looking to science and technology to play a part in the reconstruction of their societies and in developing their resources to feed the large and growing populations.

The Minister said the fundamental role that science and technology could play in various sectors of the national economy was recognized by the Prime Minister, who soon after assuming office decided to set up a separate ministry of science and technology, and assigned it the task of developing the much needed base of modern science and technology in the country.

Pirzada said the satellite remote sensing technology could make a valuable contribution towards some of the critical and compelling economic problems of Pakistan. These problems related to agriculture and food resources, management of water resources through timely availability of data on snow and rainfall in the catchment areas of the rivers of the Indus basin, and the possible

mitigation of suffering and losses due to natural calamities like food shortages and earthquakes.

ECE: Open-Pit Mining Can Benefit From Eco-Technology

The UN's Economic Commission for Europe (ECE) announced here recently that more than 140 experts from 18 countries have agreed that the continuous and rapid development of the coal industry could be enhanced by the technological development of means to protect the environment. This, it said, was the major conclusion of a symposium held last October at the Central Mining Institute in Katowice, Poland.

The symposium first discussed regeneration of land after open-cast mining. It recommended that a study be made of materials for filling that are suitable for recultivation in situations where high capacity mining equipment is used for large-scale, continuous stripping operations. The participants emphasized the need, in open-cast filling, for the creation of stable, cultivable slopes that resist erosion, and suggested a study of rotational methods of cultivation.

The participants proposed that studies should be made of the harmful aspects of slag heaps and of the uses of materials they contain in industrial processes. Techniques of afforestation of slag heaps could be improved, the investigators found. They said that work was needed on methods of removing slag heaps as well as upon fire prevention problems.

Further studies were proposed on various methods of treating water pumped from mines as well as water used in coking plants. Ways of reducing quantities of water requiring treatment also should be investigated, the seminar agreed. Participants also recommended the exchange of experience on the desulphurization of coal and combustion gases, and on the combustion of coal by the fluidized bed method.



World Environment Report

VOL. 3, NO. 4

Copyright ©1977. Center for International Environment Information.

FEBRUARY 14, 1977

Protests Halt Construction Of British Oxide Reprocessing Plant

LONDON—No oxide reprocessing plant will be built at Britain's Windscale nuclear station without a full public inquiry, Environment Minister Peter Shore recently announced. His decision was unanimously welcomed by environmental groups, who fear Britain is becoming a "Nuclear dustbin" (*WER*, Dec. 20, p. 1).

In reply to questions in the House of Commons, Shore asserted that his decision had not been unduly influenced by "less authoritative voices which have been casting doubts on the development of nuclear energy." Nevertheless, environmentalists seem to have achieved a significant victory in alerting the public sufficiently for the matter to be treated as a national rather than as a local issue.

The entire question of environmental hazards from nuclear energy has also been kept to the fore by the disclosure, last December, that radioactive water had been leaking into the soil at Windscale. Although there had been no danger to workers there, the leakage had been known two months prior to disclosure to the public. Following criticism in the House of Commons, Secretary for Energy, Tony Benn, subsequently gave orders that all future leaks, however small, must be reported to him immediately.

Meanwhile, all those urging the expansion of Britain's nuclear program (and this includes use of the fast-breeder reactor—still very much under public discussion) are pressuring the Government for some commitment to the future.

Last month, for example, British Nuclear Fuels Limited (BNFL), which runs Windscale, announced that it was in the process of taking Shore's advice to resubmit quickly the non-controversial parts of its expansion plans to the local Cumbria County Council. These relate to improvements in the handling of Magnox fuel and to the development of the vitrification process for storing nuclear waste.

However, BNFL is not willing to make another application for the oxide reprocessing plant until it is known how much delay a public inquiry would cause and its effect on present customers. Nor does it feel able to negotiate with potential customers until the Government's commitment to the future of nuclear reprocessing is made clear.

The frustrations of those likely to benefit from this

potentially lucrative market are obvious. The British power plant industry needs new orders; reprocessing will create new jobs. BNFL's import license for unprocessed fuels is due for annual renewal by the Government at the end of February, and this may force the issue.

BARBARA MASSAM

UNEP To Devise Action Plan For Protection of Persian Gulf

NAIROBI—The UN Environment Programme (UNEP) is preparing an action plan to assist governments in developing and protecting the marine environment of the Persian Gulf. It will be considered soon by an inter-governmental meeting of the states concerned, a UNEP spokesman in Nairobi said recently.

During its annual session in Nairobi last April, the UNEP Governing Council noted that the governments of Bahrain, Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates had a mutual interest in protecting the Gulf from pollution, and agreed to hold a regional conference for this purpose.

A field mission of UN agencies recently visited the area, and confirmed that the potential pollution from activities offshore and onshore was very high.

The mission's findings were considered by a meeting of marine sciences and economic development planning experts, held in Kuwait in December. This meeting produced recommendations to UNEP for the proposed action plan. One of the components of the plan will be a legal convention to protect the marine environment of the coastal areas. Experts met in Bahrain late in January to prepare the legal component of the action plan.

CHARLES HARRISON

In This Issue

Endangered Birds	2
Solar Energy	2
Venezuelan Report	3
Fungus Disease	3
Coal Mining	4
Bavaria's Wildlife	5
In Brief	6

One-Quarter of Bavaria's Wildlife Threatened With Extinction

MUNICH—About 25 per cent of the 35,000 animal types native to Bavaria are threatened with extinction, according to the Ministry of Environment of that huge southern German Alpine state.

This figure emerged from statistics recently published by the Ministry as a "Red List of Endangered Species," and contains statistics on Bavaria's endangered birds, mammals, reptiles, amphibians, and fish. It noted that 18 species are already extinct. The list differentiates between "extremely endangered" and "in danger."

It shows that reptiles are in greatest danger: 70 per cent of all reptiles are listed as endangered; 65 per cent of amphibians; 54 per cent of birds; and 50 per cent of fishes.

The Ministry said that without new protective regulations some 470 species would face a bleak future. It noted that among the mammals, Bavarians have made three extinct during the last century—brown bear, mink, and wolf. It commented that beaver and lynx have now been reintroduced into the state for several years. It said that 21 of 75 mammal types in Bavaria would fall under the classifications "died out" or "extremely endangered." It cited the examples of shrews and bats in noting that more than half of all mammals are threatened.

Of the 354 bird species in Bavaria, 12 have already died out, including cranes, sea eagles, fish eagles, and rock sparrows. Among the 96 endangered bird species are the auerhahn (wood grouse), river and lake swallows, moorhen, small and eagle owls.

The report said that re-stocking practices throughout the state had given a false picture of the fish situation. It commented that such well-known fish as lake trout, river trout, pike, and perch can no longer multiply without human aid. Some 27 per cent of all fish species are either extinct or "extremely endangered," it said. Water pollution, the Ministry said, was the major cause.

The Ministry said that from 1971 through 1976 it has invested about \$1,04 million in purchasing "protection-worthy terrain."

SPECIAL DISPATCH TO WER

World's Experts on Solar Energy Exchange Data at Geneva Meeting

GENEVA—The world's leading experts on the use of solar energy exchanged data on progress and feasibility in a seminar held here recently under the auspices of the World Meteorological Organization (WMO) and UNESCO. Some 135 meteorologists, solar scientists, and engineers from 55 countries and more than 10 international organizations participated.

The goal of the symposium was to establish guidelines for future international action and cooperation in utilization of solar energy.

Broadly, utilization methods fall into three groupings: thermal conversion; photovoltaic methods (solar cells) or through the intermediary of thermal processes; and conversion and storage of solar energy in trees and plants by photosynthesis.

Under the first heading—thermal conversion—the experts discussed a wide range of devices. Emphasis was given to rural needs, especially those in the tropics. Such needs, they found, had given rise to designs for water pumping, water heating (including small sterilizers for remote hospitals), space cooling, food cooking, refrigeration, drying, distillation, and small electric generators. In these fields the experts found that solar utilization provided an economically competitive method of providing energy and in many areas it was able to provide the only viable source of energy.

For places outside tropical and rural areas, thermal conversion was able to contribute economically to domestic water and space heating, particularly in hybrid systems where it is used to relieve conventional systems during suitable weather.

The environmental point was made that solar energy was not only clean and non-polluting but that its use would enable conservation of present fossil fuels for use in the chemical industry.

Experts found that the second system (photovoltaic), although technically well proven in space satellites, is not now generally economically competitive.

The experts made no projections for the future use of the third system—conversion and storage of solar energy in trees and plants by photosynthesis. Under this system large amounts of energy could be converted and stored for use in a variety of ways at a later stage.

WILLIAM G. MAHONEY

World Environment Report is published every other Monday by the Center for International Environment Information, 300 East 42nd Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$125 per year. \$15 additional for over-seas. Airmail Rate: \$125 per year. \$15 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
 Editor-in-Chief Albert Wall
 Circulation Manager Ann C. Werner
 Correspondents covering more than 60 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in WER, which in no way represents the official view of UNEP.

SPECIAL REPORT: Interview With Venezuela's Environment Chief

CARACAS—Venezuela's Environment Ministry, which became operative the first of this year with an initial budget of \$200 million, will be an organization "unique in the Third World" according to Arnoldo Jose Gabaldon, who for the last year has worked tirelessly on restructuring the Public Works Ministry. Formerly its chief, he has created out of it three new government branches, all charged with the development and physical reorientation of the country. They are the ministries of Urban Development, Communications, and Transport. He was sworn in as Environment Minister by President Carlos Andres Perez the second week in January.

A Stamford University graduate (M.S., Hydraulic Engineering, 1961), this energetic, 39-year old engineer who was named Public Works Minister in 1974 has long been immersed in planning. National problems were routinely discussed along with breakfast cereal during the many years his father, Dr. Arnoldo Gabaldon, was Minister of Health—a position that deeply involved him in problems of rural housing and sanitation.

Young Gabaldon recently told *World Environment Report* that among the significant powers granted his new Ministry will be the sole authority to control and administer the nation's water resources, to dictate and enforce an urban land use policy, and to authorize permits for public land use.

The new Ministry's mandate includes "coordination of the Public Administration's activities relative to the environment and natural resources, in particular those relating to the processes of urbanization and industrialization, economic decentralization, agricultural development, and territorial planning," in cooperation with other ministries concerned.

More specifically, the Ministry led by Gabaldon has been given the power to prohibit the use of "fixed or movable polluting agents...biocides, fertilizers and other contaminating chemical products" such as DDT. Ironically, it was his father, Dr. Gabaldon, who introduced the massive use of DDT in his famous all-out attack on the *Anopheles* mosquito during the late 1940s and early 1950s, nearly eradicating malaria in Venezuela.

Minister Gabaldon entered public service when he was only 19, working first on the Caroni electrification program and later on various dam projects. He enters the conservation battlefield as a champion of clean water (his new Ministry's United Nations-like logo represents a figure of a man, arms outstretched, enclosed by a drop of water).

Gabaldon warns Venezuelans about "the paradox that even though there may be an abundance of water, it may be unfit for human consumption and agricultural use, due to high volume of contamination, the product of industrial activity.

"I believe that water pollution in rivers and lakes constitutes one of our most serious problems," he said, underlining that one of our most effective ways to combat

environmental deterioration in Venezuela is by waste water treatment and control of industrial effluents and urban sewage. Gabaldon is also the vice-president of the United Nations Water Conference, to be held this March in Mar del Plata, Argentina.

Water systems are foremost on the list of the Environment Ministry's first work schedule: to gather basic territorial information on watersheds, soils and forests, and to plan and control their use. He listed as priority areas the basin of Lake Valencia (north-central Venezuela, the country's largest industrial zone located some 100 miles west of Caracas); the Tuy River (water supplier for Caracas and main discharge for sewage); the eastern shores of Lake Maracaibo; the Barcelona-Cumana (eastern Venezuela); and Puerto Cabello-Barquisimeto (western region). Land reclamation, dams, reservoirs, dikes, power plants, flood control—all come under the purview of the Environment Ministry.

In addition, all National Parks, forest and animal reserves, natural monuments and green zones come under the wing of the Environment Ministry, which is also responsible for preventing environmental deterioration of air, water, earth, climate, landscape, flora and fauna. "My work as hydraulics engineer brought me more and more in contact with the geography of my country and the problems of Venezuela in general," he said. "In Venezuela, only 0.6 per cent of the land is in urban use. Therefore we aim to prevent the rest—or almost the rest—of the territory from being taken over by man's various economic activities, or those which degrade the physical space." Town councils will set the local policy under the supervision of the Ministry and with the advice of English and French experts. Pacts have been signed with Great Britain and the United States.

Gabaldon gives the United Nations credit for his Ministry's far reaching goals, citing the 1972 conference in Stockholm and its offspring, the UN Environment Programme. He has already sent fact-finders to the U.S. Environmental Protection Agency, and to the ministries of the environment in Great Britain, France, and Italy.

"We will need the advice of many technical advisers to help our program get underway," Gabaldon acknowledged. The legal foundation for the new Ministry's sweeping powers is the 1976 Environment Law which provides for land use planning, control of urban and industrial growth, decentralization of economic activities and overcrowded cities; the rational use of energy, land and marine natural resources, the creation and conservation of national parks, forest reserves, hydrographical basins, recreational parks and green zones.

As the spectre of new Presidential elections in 1978 looms large, many here wonder whether this new environmental program is overly ambitious, in the light of Venezuela's political tradition of musical chairs.

For example, just the first step of the Ministry's declared program encompasses a mammoth task which

may take years to complete: a complete inventory of Venezuela's natural resources, centralizing all physical territorial information relating to cartography, the biosphere, geology, hydrology, meteorology, seismology, and edaphology (the study of the quality of the soil).

Most political observers here predict that the new Ministry's ambitious goals will come into conflict with the country's commitment to the relocation of many industries. For example, the industrial deconcentration program, launched two years ago, grants tax privileges to factories to encourage their moving to predetermined areas, thus freeing cities such as Caracas of the nuisance they create. But, at the same time that they bring jobs and prosperity to economically depressed zones, they also create new environmental problems.

One such planned zone is the steel center of Ciudad Guayana, founded in 1960 at the confluence of the Orinoco and Caroni Rivers, gateway to Venezuela's uninhabited Guayana jungles. Ciudad Guayana has turned into Venezuela's fastest growing city, the population having soared from 5,000 in 1956 to nearly 300,000 at present, and consequently the new metropolis has experienced many unforeseen problems.

The two projects mainly responsible for the city's startling growth are the Government-owned steel mill and hydroelectric power plants. For "economy reasons" they installed filters to control their effluents only quite recently. Moreover, other newly established industries in the area have been free to dispose of their wastes as they think best. "The Environment Ministry," said Arnoldo Gabaldon, "will approach the Orinoco River conservation needs by making surveys to establish the maximum levels of pollution acceptable by the volume of water."

HILARY BRANCH
LILI STEINHEIL

Dieback Fungus Disease Destroying Western Australia's Forests

PERTH—Some of Australia's richest and most beautiful forest country is being devastated by a fungus disease related to the potato blight that caused the great Irish famine in the 1840s.

The dieback fungus, *Phytophthora Cinnamoni*, has already destroyed more than 160,000 acres in Gippsland's silvertop and stringybark forests near the south-east coast. In Western Australia's great jarrah forests it has already destroyed 115,000 acres and is spreading across more than 8,000 acres a year.

"Dieback is unquestionably the most destructive plant pathogen ever recorded in native vegetation," according to Dr. Philip Keane, a La Trobe University botanist, who maintains that woodchipping interests are playing down the significance of one of the country's great environmental problems.

"The Forestry Commission's recent public statements on dieback have completely contradicted their published

scientific data and played down the threat it poses in Victoria," he said.

The first recorded outbreak of eucalypt dieback in Victoria was in 1952, and there is strong evidence the disease invaded Australia within the past 50 years.

The fungus lives in soil and kills plants by rotting their feeder roots. It forms microscopic thread-like growths as well as swimming spores which move through wet soil. The swimming spores are attracted to the roots of host plants and form the filaments which invade the plant's roots. The fungus also forms thick-walled "survival spores" which are often carried into healthy forest areas in dirt sticking to forestry and roadmaking vehicles.

DON LIPSCOMBE

Conservationists Fight Coal Mining In Virgin Forest of Ruhr District

BONN—In mid-December Germany's Ruhr District administrative authority, SVR, sold 45 acres of land, with mining rights, to Ruhrkohle AG, the country's biggest coal mining enterprise. This was not just another odd piece of mining property, but three separate plots in a 1,300-acre unspoiled forest on the northern edge of the Ruhr District, known as the Haard. It is one of the District's most valuable recreation areas, abutting on a much larger, though less primitive, forest, the Hohe Mark.

In response to protests from conservationists and nature lovers, Ruhrkohle assured them that damage to the forest would be held to the minimum. No coal would be brought directly to the surface in the Haard itself, but rather through the existing shaft of an old mine a short distance to the south. Five shafts to be sunk in the forest would be used only for ventilation and for lowering and raising miners and equipment into and out of the pits, and their related surface structures would be made as inconspicuous as possible. The entire development would take about 12 years to complete.

Critics of the project replied with a Ruhr proverb: "Give the miners a finger and they'll take the hand." The five shafts were the least of the problem. Access roads to them would spoil more of the forest. And what would happen if Ruhrkohle decided to mine more coal than could be raised through the one, old shaft? Ruhrkohle said it had no intention of increasing production that much.

Three weeks later, with his eye on radiation from nuclear power plant waste products, the Minister President (governor) of the State of North Rhine Westphalia, in whose territory the Ruhr District lies, announced a radical change in policy governing the authorization of power plant construction. In the future, no authorizations will be issued for nuclear plants until Germany has its own facilities for disposal of radioactive wastes or a plant for reprocessing them. These are now sent either to France or the United States, but neither country will

accept them after 1985. Providing suitable facilities in Germany will take at least five years. So, adding eight years' construction time to that, it will be at least 13 years before a new nuclear plant will start generating power in Germany's most power-hungry state.

But electric power demand is expected to increase at a rate of seven per cent a year over the next 10-15 years, a load which existing capacity will not be able to handle. Oil- and gas-fired plants are ruled out by the federal government to reduce the country's dependence on foreign energy sources, which leaves the ball in coal's court.

Production from older mines could be boosted by about 10 per cent in the next five years; to go beyond that, new mines will have to be developed. The Haard project is not one designed to increase total output, but rather to hold it steady as old mines become worked out. Therefore, any appreciable higher demand for coal-generated electric power can only be met through an increase in total coal output. And for that, the Haard and Hohe Mark, with over 550 million tons of recoverable coal in place, are the ideal and logical sources.

J. M. BRADLEY

Regional Experts from 13 Countries Study Pollution in the Caribbean

NAIROBI—A scientific workshop to study pollution in the Caribbean area, held recently in Trinidad, has been described as the first step towards a more comprehensive inter-governmental action in this region.

Convened jointly by the UN Environment Programme (UNEP), the Food and Agriculture Organization and the Inter-Governmental Oceanographic Commission, the workshop was attended by 15 regional experts from 13 countries.

They were invited to review marine pollution problems and to identify priority research and monitoring areas in the Caribbean, the Gulf of Mexico, and adjacent waters.

The workshop identified seven main problems requiring urgent attention: petroleum pollution; sanitary quality of coastal waters; transport of pollutants in lagoons and estuaries; effects of medium-scale eddies; effects of pollutants on economically important tropical ecosystems; baseline studies and monitoring of persistent chemicals; and effects of pollutants on tropical marine organisms.

CHARLES HARRISON

EEC Proposes Measures to Protect Birds in Nine Member States

BRUSSELS—Reacting primarily to public opinion, the European Common Market has begun pressing its members to accept a number of measures for the protection of wildlife.

As part of this new drive the authorities of the

European Economic Community (EEC) in Brussels last month proposed legislative measures to protect birds within the nine member states and urged full EEC participation in the Washington Convention on international trade in endangered species of flora and fauna.

Although the issue was not high on their original priority list, EEC environment officials acknowledge privately that they have moved in this direction mainly because of public interest. This pressure came from members of the European Parliament and from petitions and letters from some 50,000 persons throughout Europe. In the past the EEC left much of the work in the field of wildlife protection to the Council of Europe, a 19 member advisory body based in Strasbourg, France, while it concentrated on economic-environment issues. But because of this display of public concern, the EEC is acting under authority it has to improve living conditions and to regulate economic and trade matters within EEC borders.

The new legislative proposal on birds came after studies carried out on behalf of the EEC Commission by Professor Bernhard Grzimek of the Frankfurt Zoological Association. The results showed that out of 408 bird species that have their natural habitat in the EEC countries, 221 were declining in number every year and 58 species were faced with extinction. Among the species experiencing a decline were common herons, white storks, ospreys, goshawks, and small songbirds such as redstarts, shrikes, and warblers.

EEC Commission experts in their recent report observed that "the chain reactions which result from such trends are difficult to forecast accurately and it is not easy to find satisfactory ways of combating them permanently." They noted that as a consequence of the decline of vermin-killing birds, more artificial, chemical means of controlling pests were being used "which could have serious side effects not only on wildlife species not deliberately attacked by pest control methods but also on human health."

The proposed EEC legislation would seek to prohibit the killing or capture of animals by protecting their habitat and by applying strict limits on trade. Stronger protection is also foreseen for the habitat of endangered or migratory species.

The EEC Commission also noted that seven EEC countries had either hunting or protective systems for birds and that the remaining two, France and Italy, were drawing up regulations. However, the Commission said there was a need to have EEC-wide and stringent measures.

DAVID FOUQUET

CIEI Moves to New Quarters

The Center for International Environment Information, along with its chief publication, *World Environment Report*, has moved to larger quarters at 300 East 42nd Street, New York, N.Y. Its telephone number remains the same: (212) 697-3232.

In Brief...

Hong Kong Reported to Have Most Serious Noise Pollution

Hong Kong is reported to have the most serious noise pollution problem in the world and the government is now in the process of hiring a noise pollution specialist for its environment protection unit.

According to Dr. N.M.W. Ko of the University of Hong Kong's Department of Mechanical Engineering, the continual din of construction and the noise from vehicles in the colony are having negative effects on people. Excessive noise can cause hearing and sleep loss and can increase the level of tension among workers. These, in turn, can adversely affect productivity levels. The Medical and Health Department confirms Dr. Ko's observations and says that prolonged exposure to high levels of noise may cause gradual hearing impairment after a number of years.

Already several noise abatement measures have been put into effect: a ban on all disturbing noise between 11 P.M. and 6 A.M.; restrictions on the use of loudspeakers in public places; a halt to pile-driving between 8 P.M. and 6 A.M. on weeknights and all day long on Sundays and public holidays; a requirement that all vehicles install proper mufflers; and a cutback in night flying.

Sweden Refuses Permits For Strip Mining of Slate

The Swedish government has promised environmental groups and local authorities, after their long campaign, that it will refuse permits for strip mining of mineral-rich slate deposits in the Naerke area of southern Sweden.

Mining companies such as Boliden and LKAB have coveted the area for

a long time and have requested government permission to quarry the slate or at least to carry out tests. The deposits lie just under the topsoil, ideal for strip mining exploitation.

The slate at Naerke is said to contain oil, uranium, vanadium, molybdenum, cobalt, aluminum, calcium, sulphur, and phosphorus, all important raw materials for Swedish industry.

Minister of Industry Nils G. Aasling, who gave the assurances, also told the environmental groups that his department was surveying all slate deposits in the country to determine whether any could be exploited without damaging the environment.

Buenos Aires Sells Land To Aid Industrial Forestry

The government of the Buenos Aires province (state) is hoping to stimulate industrial forestry development by selling some 85,000 acres of currently unused province land to large, private forestry companies.

The unused land is located along the Parana River delta just outside the city. In the past, provincial land in this area has been sold in 150-acre lots, mostly to individual colonists. Provincial officials say, however, that this practice is inadequate for commercial forestry development.

Officials are also thinking of incorporating a return clause in future sales contracts which would require the owner to begin industrial forestation projects within a given period of time. Failure to comply would mean return of the land to the province.

Because Argentina is heavily deficient in forestry products, it must import about 40 per cent of its lumber needs and much of its newsprint, cellulose, and paper.

Although about 150 million acres, or 21 per cent of the national territory, is covered with forests, only 93.4 million acres have commercial value.

Industrial Waste Recycling Made Compulsory in Japan

The Japanese Ministry of International Trade and Industry is drafting a bill to make the recycling of wastes compulsory for all mining and manufacturing industries as well as the entire community. This is the government's latest anti-pollution step aimed at conserving vital and costly natural resources and diminishing the environmental disruption that has spread with the rapid economic growth of the last two decades.

However, the ministry faces some complicated problems in the enforcement of the law. These include the production cost of recycled products that is higher than the cost of factory goods manufactured from virgin materials and the problems of making regained resources and products marketable. To overcome these difficulties, the ministry plans to grant subsidies to the recycling industry.

All Christmas Tree Cutting Banned Throughout Greece

Christmas trees in Greece were saved from the axe last December following a government order banning the chopping down of fir trees. As a consequence, all Christmas trees had to be imported.

The government-launched tree-planting campaign began in November, when the first one was planted by Premier Constantine Caramanlis in Athens, where eventually some 11,000,000 trees will be planted on 28,000 acres in and around the capital. Of the total area, 840 acres will be converted to parks and woods.

The plan will cost \$30 million and be completed in five years, increasing the city's greenery from the present 2.5 per cent to 10 per cent.

Philippines Issues Strong Marine Pollution Decree

A new Marine Pollution Decree, signed recently by President Ferdinand Marcos of the Philippines, makes it illegal for any person to: 1) Discharge or dump oil, noxious gaseous, liquid, and other harmful substances from any floating craft or any man-made structure, by any method, into the country's navigable waters. 2) Discharge refuse of any kind from anywhere (ship, factory, mill) into any navigable water or its tributary. Refuse includes garbage, waste, wood residues, sand, lime cinders ashes, offal, nightsoil, tar, dyestuffs, acids, chemicals, and substances other than sewage and industrial wastes that may cause pollution. 3) Deposit on the bank of any navigable water or its tributary any kind of material which could be washed away by tides, storms, or floods, which could cause navigation to be impeded or increase pollution.

Under the decree, violators will be fined not less than \$27 nor more than \$1,350, or suffer imprisonment of not less than 30 days nor more than one year, or both, for each offense. Any vessel from which oil or other harmful substances are discharged will be liable to the same fine as stipulated above, and clearance for such vessel from a Philippines port may be withheld pending payment of the fine.

Colombia Announces Plan To Create 20 National Parks

The Colombian government has announced a \$5.3 million plan to protect existing national parks and create 20 new ones.

Over \$1.5 million will be spent on five parks considered pilot projects by the government—the Purace Park, Amacayucu in the Amazon jungles, and the Tayrona, Salamanca, and Los Nevados Parks on the Caribbean coast. The National Fed-

eration of Coffee Growers will contribute funds to build a series of tourist sites in Los Nevados Park.

Creation of the new parks will bring the total to 31 covering 7.4 million acres. Six will be destined exclusively for protection of the headwaters of the Magdalena and Cauca Rivers, Colombia's two most important waterways. They will be located in the Hermosas paramos, the Pichacos Mountains and areas near the Nevado range and the existing parks of Purace, Guacharos, and Munchique in southwestern Colombia, near the Ecuadorian border.

Four additional parks will be created to protect the headwaters of the Meta, Guaviare, and Vichada Rivers.

The ten remaining parks will be classified as wildlife sanctuaries and will be located in the departments of Magdalena, Valle, Boyaca, Atlantico, Arauca, and the Islands of Rosario.

Mexican Engineer Suggests Harnessing Local Wind Power

Strong constant winds across Mexico's Isthmus of Tehuantepec should be harnessed for electrical power, engineer Carlos Miramontes Roja has suggested to a national meeting of civil engineers recently held in Mexico City. The isthmus is the narrowest part of Mexico, lying in the southeast where the national territory loops north into the Yucatan peninsula and the land mass continues south into Central America.

The "concentrated, large and permanent" winds crossing the isthmus from the Bay of Campeche in the Gulf of Mexico to the Gulf of Tehuantepec in the Pacific Ocean roar through a canyon almost 19 miles wide at velocities up to 65 miles per hour. The energy only needs to be put to work producing electricity for the southeast of Mexico, Miramontes Roja said.

Buenos Aires to Switch From Incinerators to Compressors

Residential buildings in Buenos Aires using incinerators to dispose of garbage have from two to three years to switch to garbage compressors, according to a new municipal pollution control ordinance. The regulation is aimed at reducing the heavy amount of soot in the air. The compressed garbage will be used in landfills.

World's Largest Oil Drilling Vessel at Work in Haiti

The world's largest oil drilling vessel, the "J. H. Bates," which arrived in Haitian waters from Malta last week, has already sunk its drill into the sea bottom 15 miles off Port-au-Prince.

The "Bates," with its 80-man crew, is drilling in a likely spot after a seismic survey by the oil prospecting company Crux, Ltd. of Denver disclosed subsurface geological structures indicative of oil. A Crux spokesman, asked about the possibilities of finding oil, replied, "oil is where you find it."

Despite his remark, possibilities must be good, because Crux is spending millions of dollars in its exploration and drilling in offshore Haitian waters in a joint speculative venture with the Haitian Government.

Crux, according to a spokesman, will go down about 13,000 feet at their present site, which will take about four months. Several other areas in the vicinity are marked by white nautical buoys as possible drill sites and these, too, will be explored.

Thus the poorest nation in the hemisphere hopes it will become the "Arab Emirate" of the Caribbean. The chances are slim, but a large and well financed company is gambling millions, along with Haiti, that the dream may become an actuality.

Israeli Electricity Company Accidentally Aids Environment

It isn't very often that an electricity company is credited for protecting the environment rather than polluting it. However, the Israel Electricity Company which has been dumping sea water into the Yarkon River in Tel Aviv has been asked to continue its practice.

The Yarkon River had almost turned into a sewage canal because industrial waste was dumped into it at the same time its fresh water was being diverted for agricultural purposes into the Negev Desert in the south of the country. The Israel Electricity Co., which has a power plant near the river, has been using sea water to cool its equipment. That salt water then is dumped into the river to return to the Mediterranean.

Although environmentalists protested, there didn't seem to be an alternative for disposing of the sea water. However, what appeared to be an ecological disaster in fact turned into a solution to the pollution problem of the Yarkon. The sea water cleansed it of its sewage, and fish and other forms of water life returned to the river. Now the Electricity Co. has been asked to greatly increase the amount of sea water it pumps into the river.

Network of Suburban Trains Planned for Mexico City

Detailed studies are now completed and financing is available for the proposed network of suburban railroads to serve Mexico's capital. With 10-12 million inhabitants, Mexico City desperately needs a public transportation system to augment the metropolitan subway, which carries two million riders a day, and the 7,000 urban buses—plus a near-equal number of buses which bring workers in from outlying areas.

Emilio Mujica Montoya, new sec-

retary of communications and transport, said recently that while the plans and financing arrangements may be changed by President Jose Lopez Portillo, everything else is ready to proceed. Working with Mujica Montoya have been the secretary of public works and human settlements, the mayor-regent of Mexico City and the governor of the neighboring state of Mexico, through which some of the proposed rail lines will run.

Plans call for six short lines to serve the most populous fringes of the metropolitan area as well as industrial districts where most of the jobs are. Participating in the studies have been specialists from the U.S., Japan, France, Italy and the Federal Republic of Germany, from whose countries equipment and financing also are expected.

Although the network would have to become self-sufficient, authorities said, an attempt will be made to keep fares at 15 cents, as compared with the current bus rate of 35 cents.

New Use For Old Tires Developed in Australia

A Czech-born engineer, Mel Tucek, who sold his house and lived in a shanty to develop his process for disposing of old tires has opened a plant in Perth, Western Australia which has been hailed for its environmental impact.

His Safety Surfaces Pty. Ltd. recycles old tires to produce a rubber safety surface material suitable for industry, sports, and buildings, including homes. The Tucek method involves freezing and mashing the tires into rubber crumbs, which are then joined by a chemical to make a flat, springy surface covering.

The result is a flexible, long-wearing covering for floors, race and athletic tracks, or patios. It is inexpensive and light enough for anyone to lay down in large squares.

Pakistan Tests Hot Springs For Cheap Geothermal Energy

Water samples from the hot springs in the Karakoram Range in the northern areas of Pakistan are being analyzed to find out the potential for the production of inexpensive geothermal energy.

If the samples are found suitable for quantity production, the services of UN Development Program experts will be sought to exploit the hot springs.

At present, China, the U.S., USSR, Italy, New Zealand, Japan, Iceland, and Mexico are producing power for geothermal energy. Italy is in the lead with 405 Mw capacity, followed by the U.S. with 396 Mw.

EEC Conducts Research Into Disposal of Sewage Sludge

A consolidation of the research being conducted into disposal of sewage sludge throughout Europe has been proposed by the Commission of the European Economic Community in Brussels.

The Commission's environmental experts noted that diverse research projects were being pursued in many different countries into the treatment of the approximately 1,540 pounds of sludge per inhabitant generated each year in the EEC. The experts proposed that they coordinate and manage these various activities and invite other, non-member, countries to participate in the joint program. Certain other pan-European research operations have been undertaken in the past.

Possible solutions to the sewage sludge problem include recycling into fertilizer and the eventual disposal or storage of non-recoverable portions.



World Environment Report

3 MAR 1977

VOL. 3, NO. 3

Copyright ©1977. Center for International Environment Information.

JANUARY 31, 1977

ECE Meeting in Geneva Recommends Lead Reduction in Exhaust Gases

GENEVA—The United Nations Economic Commission for Europe (ECE) warned here last month that although lead in the exhaust gases of motor vehicles is not alarming at present, the amount should be reduced gradually since the effects are not yet thoroughly understood.

The summation was contained in a report prepared by the ECE Secretariat for the Senior Advisers to ECE Governments on Environmental Problems. It found that gas-driven vehicles in Europe discharge some 25,000 tons of lead into the atmosphere in the course of a year.

But motor fuel additives are not the only, and perhaps not the biggest, source of lead discharged into the atmosphere, it said. Industries and the burning of urban wastes and coal may bear a greater responsibility, "not to mention the persistent doses that smokers give themselves," a spokesman added.

When it comes to distribution, however, the report continued, engine exhaust gases contaminate much larger areas. After combustion, about 60 per cent of the lead in gasoline is emitted with the exhaust gases; the remainder stays in the engine and exhaust system. The ECE calculated that at least 3.85 ounces of lead are deposited daily on roads carrying 3,000 vehicles an hour for 10 hours a day. A test made close to the Berne-Zurich main highway in Switzerland showed 143 parts per million (ppm) of lead in the straw of spring wheat. In a traffic-free zone, Gurten, the ratio was only 8.5 ppm. Under normal conditions, it said, the amount of lead found on plants 100 yards from the highway is about the same as in uncontaminated areas.

The general effects of lead on animal and human organisms are now fairly well known, according to the report, but there remain a number of "unknowns." These include the significance of the relative distribution of lead among the organs of the body; the reason why exposure to less than toxic doses of lead has chronic health effects; the impact on groups with a particular sensitivity; and the combined effect with other pollutants on a healthy person.

The report noted that it probably would not be possible to simply eliminate or sharply reduce the amount of lead. Most European refineries would have to undergo extensive, costly, and time-consuming modifications to deliver leadless fuel, with a consequent drop in production, the ECE said.

The Report said that lead traps—simple devices fitted to the exhaust systems of autos—show promise of being particularly effective in built-up areas. Additionally, promotion of diesel engines would provide a long-term answer to a number of problems, including lead. The report noted that lower taxes on diesel fuel are already an incentive to its use in many ECE countries. It said diesel is less than half the price of regular gasoline in Norway, Denmark, Italy, Greece, and Portugal.

WILLIAM G. MAHONEY

Nairobi Probable Site For UN Desertification Conference

NAIROBI—The United Nations Conference on Desertification—called for by a General Assembly resolution in 1974—is scheduled to take place from August 29 to September 9. Although no site for the conference has been decided upon, the most likely venue is Nairobi, headquarters of the U.N. Environment Programme (UNEP) which has been entrusted with the responsibility of convening the conference. Vienna, however, remains another possibility.

Despite this uncertainty, planning is already well advanced—a secretariat at UNEP headquarters, an ad hoc inter-agency task force to coordinate action, and an international panel of consultant scientists.

Heading the secretariat is Ralph Townley, a Briton who has been a high-ranking U.N. official for the past 25 years, and who was deputy secretary-general of the World Population Conference held in Bucharest, Romania, in 1974.

Interviewed here by *World Environment Report*, Townley said the main task was to acquire a more profound knowledge of the processes by which deserts

In This Issue

Sulphur Dioxide Pollution	2
ICIE's Chief Executive	3
Taming the Gin Ganga	4
ECE's Five-Year Program	4
Cleansing the Danube	5
In Brief	6
Calendar	8

spread, and then to prepare a global plan of action to combat desertification.

"So far we have carried out four global reviews—on climate, ecological change, the relationship of deserts to population and society, and on desert technology," he said. Backing up these large-scale studies are many smaller ones: studies of waterlogging and salinization of irrigation systems in southern Tunisia and northern Chile (which have cold-season rainfall), and in Rajasthan, India and in central Niger (with hot-season rainfall).

Other studies, in China, the Soviet Union, Israel, Iran, Australia and the U.S., are almost complete.

Preparations are well under way for regional meetings to precede the general conference. The first, for the Americas, will be held in late February in Santiago, Chile. The others will be in Addis Ababa (for sub-Saharan Africa), Portugal (for the Mediterranean), and New Delhi (for Asia and the Pacific).

"I think we have done much better than we thought we could in our preparations," Townley stated.

One reason for the dearth of information on deserts, he explained, is that they are in comparatively remote areas, with scattered, subsistence-dependent, populations.

Among conclusions already reached is the one that desertification is severely subject to population increase. Ironically, however, a decrease in population also contributes to desertification, because of the migration of young people who leave to live in towns.

CHARLES HARRISON

Czechs Claim Revolutionary Method Reduces Sulphur Dioxide Pollution

PRAGUE—A Czechoslovak Academy of Sciences team, led by Dr. Emerich Erdos, claims it has discovered a revolutionary method for curbing sulphur dioxide air pollution.

The process involves a new type of solid form sodium carbonate which reacts rapidly and effectively to sulphur dioxide at the 248-302 F. temperature range—the usual temperature of smoke waste gases. Sulphur dioxide retention, the inventors maintain, can be higher than 99 per cent, with active soda absorption capacity up to 95 per cent. Thus it is nearly twice as effective as other materials, such as limestone used in Japan, where only about 50 per cent absorption capacity is gained.

The new method, patented under the trademark Akso, is a by-product of basic research on the problems of equilibrium and speed of heterogeneous reactions. In the course of the project, which began 15 years ago, a new variant of soda was discovered. Given the name of active soda, the new form reacts to oxides a thousand times faster than ordinary NaCO₃, the inventors say. More sophisticated methods of study are to be applied to active soda in Czech and Soviet institutes than those available to the team until now, the preliminary hypothesis being

that the speeding up of reaction is the result of a structural re-alignment.

IVA DRAPALOVA

Only 1 of 50 Western Cities Found To Have Increased Air Pollution

BRUSSELS—An air pollution monitoring survey conducted in some 50 major Western cities over the past year has revealed only one case of increased levels of air pollution.

The study, which focused on cities with more than 600,000 population, plus Oslo, Reykjavik, and Luxembourg with fewer residents, in 15 North Atlantic Treaty Organization (NATO) member countries, was discussed by an American Environmental Protection Agency official here recently. Robert D. Bauman, the chief of the agency's energy strategies branch, was addressing a gathering of the NATO Committee on the Challenges of Modern Society, a body created in 1969 to coordinate health, environmental, and other activities in the member nations.

The latest follow-up report indicated that most countries and cities have adopted such procedures and that the Turkish capital of Ankara was the only city showing an increase in the levels of particulate matter in its air. However, up to 25 of those cities reporting indicated that the levels for such pollutants as TSP, SO₂, and CO, were still above normal standards, although only the Turkish capital disclosed a worsening.

The cities involved ranged from major metropolitan areas such as Paris, Naples, and Los Angeles to St. Louis, Vancouver, and Lisbon.

DAVID FOUQUET

World Environment Report is published every other Monday by the Center for International Environment Information, 345 East 46th Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$125 per year. \$15 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director..... Dr. Whitman Bassow
Editor-in-Chief..... Albert Wall
Circulation Manager..... Ann C. Werner
Correspondents covering more than 60 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

SPECIAL REPORT: An Interview With ICIE's Chief Executive

PARIS—Charles A. Cochrane is a go-between. Also something of a barometer. As chief executive of the three-year-old International Center for Industry and the Environment (ICIE), his job is to promote communication between international industry and intergovernmental organization (*WER*, Jan. 17, p. 2), and to alert ICIE members to important international developments in environmental problems, in close association with the UN Environment Programme (UNEP).

A British scientist and engineer who spent 12 years as an Organization for Economic Cooperation and Development (OECD) division head before joining the ICIE in July, 1975, he works out of his modern apartment in St. Germain-en-Laye, a quick train ride from Paris—an arrangement which saves him commuting time, but which means, he said, that “the job is there 24 hours a day.”

He told *World Environment Report* that the most important achievement of the ICIE so far has been in alerting industry to the “potential influence and significance of international activity.”

Intergovernmental organizations, he said, not only “provide an umbrella under which governments can move more easily toward international treaties or firm agreements,” but also make possible a more objective assessment of problems. “The reality of a problem is no longer dependent on highly emotional, casual reporting by interested parties.

“Industry should not be ashamed to learn from government,” he said. And he believes that the converse is also true. Part of ICIE’s goal, he pointed out, is to see that “industry’s expertise is better understood and used. We hope that this will bring a degree of pragmatism to the formative stages of intergovernmental actions.”

The organization with which Cochrane works most closely is UNEP, although he also has ties with the UN’s Economic Commission for Europe, the World Health Organization, the World Meteorological Organization, the Commission of European Communities, and the OECD. The ICIE is both independent of, and dependent on, these organizations.

“We don’t get a penny from UNEP or any other international organization; all our money comes from industry,” Cochrane said. “But our success is dependent on intergovernmental organizations; without them, the expense would be colossal.”

In fact, he attributes ICIE’s slow start—it only really got off the ground in the last year or so, he said—largely to the slow start of UNEP, which was formed in 1973, but “started talking specifics only about 1975.”

One change that should make the ICIE more effective, he said, is the recent establishment of an “associate” category to which individual corporations, companies, or associations can belong. Previously there were only full members—national federations broadly representative of industry, or international federations of specific

industries. The addition of associates, Cochrane thinks, will permit more direct communication with industry.

Among the current membership are: the German Federation of Industry; the Swedish Federation of Industry; the International Chamber of Commerce; The Conference Board; the International Iron & Steel Institute; the International Lead/Zinc Research Organization; the International Primary Aluminum Institute; and the International Petroleum Industry Environmental Conservation Association.

Negotiations for associate membership have been completed for DuPont, AMAX, and the American Paper Institute, he said. In addition, three of the present 17 full members will become associates, and negotiations are “well under way” for another dozen potential associates, one of which is from a developing country. Cochrane wishes to expand the ICIE beyond the North Atlantic countries, and is particularly interested in Latin America, India, and Australia. The ICIE statutes do not exclude centrally-controlled economies or government-owned industries, he said, but he doesn’t expect the USSR, China, or the eastern European countries to take part soon.

“The ICIE must have its neutral character well established before you can expect these countries to accept that it is not a political instrument,” he said.

The more international the ICIE becomes, the greater the diversity of attitudes there will be towards socio-economic issues—which Cochrane says cannot be omitted from a discussion of environmental problems.

But he says that’s not really a problem. “The ICIE does not exist to resolve those questions, but to make a forum available for debating them. As a non-policy organization, the ICIE transmits contributions from its members and associates, and attributes them to their source. We don’t endorse particular views.”

In addition, when Cochran transmits to a meeting a contribution from a member or associate, he also submits it to the other members and associates, so that if they disagree they can make their views known as well.

Four or five times a year Cochrane sends members and associates “ICIE Notes.” Recent copies have included speeches by Dr. Mostafa Talba, executive director of UNEP. The “ICIE Notes” are always full-length papers. “Today too many people judge things by *précis*,” Cochrane said.

Ten or twelve times a year he also sends out one- or two-page reports to members and associates, alerting them to meetings and developments, and asking them if they want to attend or if they have views they wish to express. They can then ask Cochrane for more details. (He will try, he says, to answer any questions.)

Meetings include those of the members and associates themselves; informal consultation with intergovernmental officials; and intergovernmental meetings which the ICIE is allowed to attend, either as observer or

participant. There is also a series of UNEP Industry Seminars, of which three have been held (Pulp and Paper, Primary Aluminum, and Automobile), and five more are planned (Agro-Industry, Petroleum, Chemicals, Iron and Steel, and Lead/Zinc).

Response from the intergovernmental organizations has been good, Cochrane said. "There is a dislike of being exposed to industry's polemics...to threats that industry will cease to exist if certain things are done," he said. "But there's no closing of minds to benefitting from industry's experience."

Industry's chief contribution, he said, is in helping intergovernmental organizations decide "what is feasible and in what time scale it is feasible."

Cochrane stresses the flexibility and selectivity of his approach. "It's not clear yet just what priorities these various procedures, meetings, and publications will have," he said. He makes no claim to provide inclusive coverage of all intergovernmental action or debate on the environment.

This is both a matter of choice and of necessity. Even if he had unlimited funds, he said, "the return for the money spent in trying to cover the total field wouldn't be justifiable."

"I was in charge of a division at OECD for 12 years, and there's not a great deal of significance in this field that I don't know about," he said. "I'm living to some extent on my capital." BARBARA BURKE

Sri Lanka Acts to Tame Periodic Flooding of Mighty Gin River

COLOMBO—Sri Lanka Prime Minister Sirimavo Bandaranaike has inaugurated work on a \$25 million project to tame the waters of the Gin Ganga ("ganga" means river in Sinhalese) in the south of the island. The periodic flooding of that river plagues the lives of some 33,000 people.

The People's Republic of China (PRC), whose engineers devised the flood protection program, is financing its total cost with a 30-year loan including a 10-year grace period. China will also provide engineering and technical assistance (200 Chinese will be on the job during peak construction) plus construction machinery, control gates, hoists, pumps, and material for transmission lines.

The Chinese experts considered two alternatives for controlling the river. The first of these involved the building of storage reservoirs upriver; the second possibility was the construction of flood control dams along the lower reaches of the river. They decided that flood control dams along the 14-mile lower course of the river, supported by 10 pumping stations, would be the best solution. The pumps will suck out accumulations of water behind the dams during the wet season and pump it back to the river. MANIK DE SILVA

Environment Ministers of EEC Agree on New Five-Year Program

BRUSSELS—Environment ministers of the nine European Common Market countries agreed last month on a new five-year program that foresees an expansion of joint regulations and activities into many new areas, including the requirement of an environmental impact statement for major projects.

Meeting at the headquarters of the European Economic Community (EEC), the officials also agreed to have the group ratify the Rhine and Mediterranean anti-pollution treaties and undertake a systematic study of the lead intake into the bloodstream of the EEC population. But the ministers managed only to begin difficult negotiations on legislation to curtail pollution from titanium dioxide and paper pulp industries and on water standards.

The new five-year program that will guide EEC environmental action from 1977 to 1981 was publicly introduced in March by the EEC Commission officials who drafted it (*WER*, April 26, p. 3). Although a continuation of the previous EEC activities that concentrated on water pollution, it now incorporates new or enlarged plans in a variety of new sectors. These include proposals to combat noise, air and waste problems, environmental issues in developing countries, land use, and the institution of a European environmental impact statement. The special problems of urbanization and agricultural modernization will also be studied and acted upon.

Although the new five-year program sets out ambitious steps for the EEC to take in the future, the December meeting of ministers also demonstrated how spotty and difficult the actual negotiations were. These officials were able to actually enact only one of several other pending proposals and pave the way for virtually automatic adoption of another later. Accepted or nearly certain to be adopted later were EEC participation in the international treaties for the cleanup of the Rhine River and the Mediterranean. A final accord on the latter pact signed in Barcelona was put off pending a decision by the British delegation which had to await the outcome of a debate in Parliament on the issue.

Also accepted was a directive proposed by the EEC executive Commission that would require testing in the nine member countries to gauge the amount of lead in the blood of the population. The measure, adopted after little debate, provides for two screening campaigns to be conducted over a period of four years of at least 50 persons per every one million inhabitants in each country. The samples would be compared to pre-established normal amounts of lead in blood in various conditions, and the EEC would submit corrective measures should the blood-lead content of a population in a particular region be above the norm.

As anticipated before the meeting, the ministers were not able to decide on Commission proposals on titanium

dioxide, paper pulp pollution, or drinking water standards. The titanium dioxide or "red mud" pollution problem had been a major public issue within the EEC countries for several years following heavy discharges by the Montedison chemical firm into the Gulf of Corsica and by a French counterpart. The case on the Montedison pollution dragged through Italian courts for years while nearby fishermen, local inhabitants, and the world press attacked the company. Considerable industry pressure was directed against the EEC proposals considered in the December meeting.

There was also similar industrial concern about the measures sought by the EEC authorities to control pollution stemming from paper mills. The meeting became deadlocked on these two measures over the usual division about whether to adopt quality objectives or emission standards to control the pollution. As in past instances in EEC debates, Britain insisted against the application of the proposed emission standards, arguing that "pollution from the titanium and pulp industries should be controlled by means of the quality objectives approach which is established Community policy." In fact, the EEC in the past has generally favored controlling emissions at their point of origin rather than measuring the amount of pollution before acting on the sources of pollution.

The ministers also failed to agree on proposed standards for the quality of water destined for human use. One problem was Dutch insistence on tight standards because of that country's growing concern about the increased pollution of the Rhine River, which serves as Holland's main source of drinking water. Other countries served primarily by underground drinking water supplies were opposed.

As a result of these divergences, the three proposed measures were referred back to experts to seek a possible compromise by the time the ministers gather again before June.

DAVID FOUQUET

Yugoslav Concern Over Danube Pollution Echoed by Austrians

VIENNA—Anxiety about the quality of Danube water and the long-term prospects for the Danube basin is not confined to Yugoslavia (*WER*, Dec. 20, p. 7). The article in Belgrade's "Politika" calling for an all-round reduction of pollution of the Danube is echoed anxiously both in Austria and in Hungary. Romania, while so far non-committal on the subject, has cause for even greater concern since it is the end-recipient of all water from the Danube basin's waterways, although it adds not a little pollution of its own before the Danube sluggishly empties into the Black Sea through the steamy, reedy Danube delta.

Although the Danube rises in mountainous country

and has the picturesque Alps to the south of it in its earlier stages, it is essentially a plains river. Even before it reaches the major Austrian industrial town of Linz, more than 250 miles west of Vienna, it has fallen fairly sharply to plains level and there it remains, with a picturesque cut through the Carpathians in north-central Yugoslavia, a relatively slow-flowing plains river carrying much dirt from Austria into Hungary, and then moving on into Yugoslavia with considerable additives from industries and populations along the way.

By the time it reaches "Politika's" Belgrade it is a highly polluted stretch of water which Yugoslavia is unwilling to cleanse since its waters soon move on into Romania. Yugoslavia, of course, adds some pollution of its own, although not as yet of the nuclear waste variety.

Both the first polluter, the Federal Republic of Germany, and Austria, spill some quantity of waste materials from nuclear plants, although outfall and all forms of waste from the Austrian installations are carefully monitored and, as far as possible, controlled. When the Danube enters Hungary its chief pollutants are not yet atomic infections but pollution from ceramic factories along the Austrian river banks and only partly treated sewage, especially from Vienna. However, in some three years time this sewage should be considerably reduced as Vienna will then have its large sewage treatment plant in full operation. Since the only other large town along the Austrian stretch of the Danube, Linz, already has such a system in operation and since the Voest steel works recycle all their waste fluids, this improvement will probably meet current Hungarian objections.

The principal source of complaint from Yugoslavia about water reaching it from Austria is not the Danube water but that of the river Mur which, despite efficient measures to recycle factory waste fluids, is becoming increasingly foul as the paper and cellulose industries along the Mur's banks in hilly country become busier and more prosperous. The only real saving feature of the Mur is the cleaning its waters receive from the many hill tributaries which flow into it from southern North Tyrol and Carinthia.

Anxieties, such as those expressed by "Politika," about the growth of hydro-electric power systems in the Danube watershed area and its coming links with the notoriously dirty Rhine and the Main are mounting from the Black Sea coast to at least as far west as the Austro-German frontier. There have been too many accidents, as in England and Germany, resulting in nuclear leaks, too many faulty nuclear plant constructions, as in France, for either governments or people to feel reassurance.

Austria, for one, has had experience of factories, fortunately mostly the smaller ones, playing loosely with precautions. To ensure sufficient power for industry the country needs more nuclear power plants; to remain competitive it needs more factories; but it looks with distrust on the increasing use of its relatively pure mountain stream waters once they run into the ever-more polluted Danube.

E. B. BROOK

In Brief...

W. Germany Scales Down Its Power From Nuclear Plants

The Federal Republic of Germany is scaling down its program for generating electric power in nuclear plants, but denies that this is linked to recent protests and demonstrations.

A spokesman for the Economics Ministry told a press conference in Bonn recently that the country plans a nuclear-fueled electric power capacity of 37,000 megawatts by 1985, although the original goal had been 45,000. He said that the number of nuclear power plants would increase from the present seven to 20 or 25 by 1985.

The spokesman said that the cut-back was linked to new estimates of total energy needs and was in no way connected with demonstrations such as those held recently in Germany's Brokdorf construction site on the Elbe River near Hamburg (*WER*, Dec. 20, p. 5). There both demonstrators and police were injured when a crowd of thousands stormed the heavily guarded nuclear plant site.

New British Method Reclaims Oil-Soaked Sea Birds

A promising new technique for treating oil-soaked sea birds can return them to the sea in three or four weeks, according to research at the University of Newcastle in the northeast of England.

The treatment requires such specialized facilities as outdoor pens and clean ponds. These are now available at Britain's only rehabilitation center for oiled sea birds run by the Royal Society for the Prevention of Cruelty to Animals (RSPCA) near Taunton in the county of Somerset.

Previously, it had been the policy of the Royal Society for the Protection of Birds (RSPB) and other

animal welfare societies to humanely destroy afflicted birds because standard resuscitation efforts had proved unsuccessful.

The RSPCA and the RSPB have now jointly agreed that the center will be opened for treatment when large numbers of oiled birds come ashore. Unless they are of a rare or threatened species, small groups will continue to be humanely destroyed, as will large groups from such far away points as the coasts of Ireland and Scotland because of the transport and feeding difficulties involved.

The RSPB will undertake transport to the center of treatable birds. Successful treatment depends more on whether the birds are recovered with healthy body weights than on the amount of oiling they have suffered.

Mexico Increases Outlays To End River Contamination

In his first direct statement on environmental pollution, Mexico's new president, Jose Lopez Portillo, has come out strongly for spending the money necessary to end contamination of Mexico's major rivers. "We've tried to save money in certain areas of environmental pollution campaigns," he said, "whereas, in reality, we should have spent more."

The Mexican president, who began his six-year term last December, blamed pollution of the rivers on "the lack of proper planning in federal and state budgets." His comments came as he concluded a four-state work tour of the Lerma River Basin in the states of Mexico, Guanajuato, Jalisco, and Michoacan.

Separate agreements with the four states will be worked out by the federal government in river-cleaning projects, Lopez Portillo said. At the same time, a special commission will be named by the president to deal with alleviation of the contamination of Lake Chapaapala, Mexico's largest inland body of water.

Tropical Ecology Center Established in Venezuela

An agreement with the UN Educational, Scientific and Cultural Organization (UNESCO) was ratified last month by the Venezuelan Congress establishing Venezuela as the seat of the International Center of Tropical Ecology.

The Center is headquartered in the Venezuelan Institute of Scientific Research. Administrative and operating costs will be underwritten by Venezuela, which also will contribute an annual sum for scientific meetings, seminars, and lectures on the subject.

At the service of member states and associates of UNESCO in the tropics, the Center's functions will be to: promote investigation and teaching, especially on a post-graduate level, in tropical ecology; exchange cooperation and promotion of these activities in the tropics; make available research and teaching facilities; organize courses, seminars, and scientific meetings.

Since the initial agreement between Venezuela and UNESCO was signed last February, the Center has been completely organized and fully operational.

Levy May Be Imposed on Oil Tankers in Malacca Strait

The Malaysian Communications Minister, Tan Sri Manickavasagam, has disclosed that the government is looking into the possibility of imposing a levy on oil tankers using the Strait of Malacca as a form of compensation for damage caused by oil spilled from these vessels. This is only one of the various methods of compensation being considered, he said, for damage caused to the West Malaysian coast which shares the straits with Indonesia and Singapore.

Seoul Proposes Stricter Auto Emission Controls

The Seoul metropolitan government has proposed stricter control on automobile emissions. The government has asked for legal grounds to implement these controls and proposed tax-free import of devices that can be attached to automobiles to reduce exhaust emissions. At present, the metropolitan authorities check on the excessive emissions without strong legal backing.

Officials in Seoul point out that the automobiles causing air pollution should be made a target of control in the provisions of the Pollution Control law in view of the deterioration of the capital's living environment. The tax-free import of automobile devices to reduce gas exhaust emissions will also help to keep the air clean.

The government also is looking into the use of better quality gasoline as another way to combat Seoul's air pollution problem.

Commerce Endangers Giant Green Turtles in Pakistan

The giant green turtles, *Chelonia Mydas*, still found along the 200-mile-long Arabian sea coast of Pakistan, from Karachi to Mekran, are being destroyed for commerce despite an international appeal to protect the endangered species, and an official ban on their netting or killing. Recently, Pakistani officials tracked down several hundred costly skins of this rare reptile readied for export as "frog skins."

The Pakistani sea coast, especially along the Hawkesbay, Sandspit, Clifton and Buleji beaches, has been one of the natural nurseries of the species which visit there on moonlit nights in September and October for laying eggs.

Green turtles are in great demand in Europe, America, and Far East markets. Every part of the 600-1,000

pound species is considered precious. Its shell—over 4 feet in length—is used for making fashionable, status-symbol ornaments. Its fat is used in the preparation of cosmetics and high quality polish for expensive cars. Moreover, green turtle soup is a delicacy reserved for the wealthy in exclusive hotels throughout the world.

Green turtles have completely disappeared from some parts of the world. However, some countries, including Malaysia, Madagascar, and Australia, have now enacted laws for their protection.

Enlarged Natural Gas Supply Brings Clean Heat to Bavaria

The Bavarian Environmental Ministry announced recently that it had spent about \$6.5 million in 1976 for programs aimed at bringing "clean heat" to nine different communities in the state.

According to Minister Max Streibl, about \$3.6 million was invested in enlarging the natural gas supply network and about \$2.7 million for pipelines.

The announcement said that since 1971 the Ministry has spent nearly \$25 million in measures to reduce air pollution.

Bulgaria Moves to Protect Black Sea Environment

The Bulgarian State Council has approved basic guidelines on the protection and improvement of natural environment in the Black Sea and Danube River areas, Radio Sofia announced recently.

It said that existing power generation complexes would be modernized and new complexes would be built, including the Bulgarian-Romanian hydro-electric complex Nikopol-Turnu Magurele.

Athens Embarks on Massive Tree Planting Program

The Greek government recently announced an ambitious program to increase the capital's woodland and ameliorate its dangerously polluted environment.

According to the plan, approved after a three-day session presided over by Premier Constantine Caramanlis, a total of 11,000,000 trees, mostly pine and cypress, will be planted to reforest an area of 28,000 acres of hillocks around Athens. In addition, a total surface of 500 acres in the capital will be turned over to parks and woods, increasing the city's greenery from its present 2.5 per cent to 10 per cent. Total cost will be \$30 million.

The announcement said the project is calculated to make Athens comparable in this regard to other major European cities, raising it significantly from its present low level.

Polluters' Fines in Colombia Will Finance Water Treatment

Colombia's Autonomous Regional Corporation of the Bogota Savanna (CAR) will establish a series of tariffs to be paid by industries polluting the Bogota River. These funds will finance the construction of water treatment plants in Zipaquirá, Cajica, Chia, Cota, and other towns surrounding the capital in order to reduce contamination of the river. CAR engineers predict the destruction of the Magdalena River, Colombia's most important waterway, unless pollution from the Bogota River, a major Magdalena artery, is reduced. The Bogota, unless checked, will empty 28 cubic meters of sewage per second into the Magdalena by 1990.

CAR is empowered to levy fines and tariffs on industries located in the savanna under the country's two-year-old ecological code.

China Making Advances In Sea-Water Desalination

China is reported to have made significant achievements in sea-water desalination research since 1966. At present the country is making various kinds of electro dialysis desalination units, including ones with a daily output ranging from five tons to 16,800 tons. These units have a long operating cycle, are compact and easy to handle, while the consumption of electricity is low. They facilitate exploration of seabed resources and development of marine production.

UN Symposium in Bucharest Extolls Horticultural Bark

A United Nations symposium held in Bucharest recently was informed by researchers that humble bark, often considered as forest waste, has been developed into a new and valuable asset for horticulturists.

A paper prepared by Jack Aaron of the British Forestry Commission for the Symposium on Extending the Use of Wood Residues—a meeting sponsored by the UN's Economic Commission for Europe (ECE)—noted that in Britain, where no major use for bark had been found until 1972, there are now eight units

processing it for horticultural applications. These plants are capable of producing about 50,000 tons of horticultural bark a year or some eight per cent of the total yield of the country's coniferous woodlands.

The British paper showed that the simplest use of bark is for mulching. In pieces averaging about three inches in length, bark is in demand because it adds to the ornamental effect and retains moisture around the roots of plants. Mulching tiles using pulverized bark and animal glue have been developed. It is cheaper to lay tiles than to apply loose bark and the high nitrogen content of the glue ensures that the bark does not deplete the soil of this nutrient. Tiles are now being test-laid in Britain around trees planted along new motorways.

Furthermore, the paper noted that bark spread over clean ground holds back the germination of weeds and reduces weeding costs dramatically. In landscaping, bark is being used to fill hollows, cover unsightly tracks and muddy patches. Pulverized bark works well as a moisture-retaining medium in the display areas of nurseries and garden centers. It is free-draining, long-lasting, discourages pests and fungi, traps the sun's rays and provides a pleasant color contrast with the foliage.

Bark and peat should be seen as complementary materials in horticulture, Mr. Aaron stated. "In the years to come the supply of peat is likely to become more difficult as the nation's reserves are exhausted.

H.K. Study Finds Nuclear Power Plants Uneconomic

Hong Kong should not further pursue construction of a nuclear power plant unless costs are reduced, a group of government and power company representatives has recommended. According to the experts, it would be technically feasible to introduce nuclear power in Hong Kong and adequate safety standards could be ensured. However, the estimated benefits of nuclear generation show only limited economic advantages over conventional generation. The capital cost of a nuclear plant, at \$800 per kilowatt (1975 prices), is three to four times the cost of a conventional plant.

New Colony in Middle East Formed From Irish Sika Deer

Fifty Irish Sika deer are being used to set up a new colony of deer in the Middle East. The male and female Sika are being flown in a private jet to Dubai in the Trucial States.

This is a partial sequel to a story reported earlier, (*WER*, Dec. 6, p. 7), when it had been decided that the Japanese Sika introduced to Ireland in 1860 would have to be culled in Killarney.

Calendar...

February 7-11—World Congress for Technology Transfer to Developing Nations. Chicago. Under auspices of the United Nations Industrial Development Organization (UNIDO) and Dr. Dvorkovitz & Associates.

February 21-25—Fifth Session of Senior Advisors to ECE Governments on Environmental Problems. Geneva. ECE.

February 24-25—Second Session of Working Group on Assessment of Quantitative Changes in the Hydrological Regime Due to Human Activities. Paris. UNESCO.

March 1-9—Ozone Layer Conference. Washington, D.C. Hosted by U.S. Government under auspices of UNEP.

March 14-25—United Nations Water Conference. Mar Del Plata, Argentina.

March 29-April 1—Environmental Conservation in the Petroleum Industry. Paris. UNEP.

April 19-21—Extraordinary General Assembly of the International Union for Conservation of Nature and Natural Resources. Geneva.

April 21-28—Panel of Experts on Integrated Pest Control. Rome. FAO.

April 25-29—Symposium on Erosion and Sedimentation. Algiers. UNESCO/FAO.

April 25-30—Tenth Session of CMEA Council on Environmental Protection. Romania. Under Auspices of CMEA (Council for Mutual Economic Assistance).



World Environment Report

28 JAN 1977

VOL. 3, NO. 2

Copyright ©1977. Center for International Environment Information.

JANUARY 17, 1977

Five Nations and EEC Sign Rhine River Anti-Pollution Agreement

BONN—Representatives of The Federal Republic of Germany, France, The Netherlands, Switzerland, and Luxembourg signed a three-part Rhine River anti-pollution agreement last month. The first clause calls for a reduction of the volume of chloride salts being dumped into the Rhine by France. Under the second, a list of other chemicals, to be drawn up by the International Rhine Protection Commission, will show which may be dumped and in what, if any, quantities. The third clause accepts the European Economic Community (EEC) as a member of the Rhine Commission.

Although the signatories to the agreement called it a step in the right direction, the West German Association for the Protection of Rivers and a group of five waterworks associations said it was inadequate, and nothing more than an attempt by the governments concerned to cover up the gravity of the Rhine's pollution.

France currently is dumping chloride salts into the Rhine at a rate of 132 pounds per second. Under the terms of the agreement this will be cut back by 44 pounds by 1979 and by an additional 88 pounds by 1981. Instead of using the Rhine as a free sewer, the French will force the polluting wastes into deep underground strata, at points distant enough from the Rhine so they will not seep back into it.

The cost of this operation will come to \$26 million, towards which France and West Germany will each contribute 30 per cent. Holland will pay 34 per cent, Switzerland four per cent, and Luxembourg two per cent. Holland has objected that the planned rate of reduction is too slow and that her share of the cost is too high. But since Holland is at the mouth of the Rhine and depends on it for the greater part of her water supply, she apparently had little choice but to accept a slow rate of improvement in water quality as better than none at all.

France's Alsatian phosphate mines are responsible for 36.9 per cent of all wastes dumped into the Rhine. Other French and Swiss industries contribute 11.9 per cent. Twelve per cent comes from natural sources, 2.85 per cent from household wastes, and 36.4 per cent from German industries, divided roughly evenly between coal mining, the soda industry, and other miscellaneous industries. The entire load comes to 750 pounds per second, more than twice what it was in 1950.

Compiling the list of barred chemicals will be a

formidable project. It is estimated that some 2,000 different chemical compounds regularly find their way into the Rhine, but the nature, source, and exact composition of many of them are unknown. Their weight comes to 90,000 long tons a day.

J.M. BRADLEY

Peru Inaugurates Pilot Project To Reclaim Large Desert Acreage

LIMA—Peru is attempting to bring 18,000 acres of desert land into cultivation by 1980 in an ambitious pilot project to test the feasibility of tapping the country's numerous Andean rivers as sources of irrigation. The pilot project is located in La Joya near the southern border with Chile.

Since colonization began in April 1975, a total of 7,200 acres have been brought into production by 431 state-selected families (small farmers and dairymen) given ownership of the land.

Results thus far have been positive enough for Peru to plan a 136,800-acre irrigation project in the nearby Majes region. The Majes project is scheduled to start in 1980, with a gradual settling of 10,000 farm families at the rate of about 500 a year.

Successful tapping of Andean rivers for massive irrigation is particularly important in Peru because most of its 1,240-mile-long coast is a desert, dotted with fertile valleys along the banks where the rivers provide easy irrigation. However, only about 25 per cent of the 50 billion cubic yards of river water discharged into the Pacific Ocean yearly is used.

The dams and their companion reservoirs are located in three strategically separate areas along the river. Each dam controls the flow of water to the dam below it. Total storage capacity is about 400,000 cubic yards.

AGOSTINO BONO

In This Issue

Sulphuric Downpour	2
Israel's Environment Chief	3
Harmful Foodstuffs	3
Non-Waste Technology	4
Best Petroleum Port	6
In Brief	7

Norway's Air Institute Records Massive Sulphuric Downpour

OSLO—Norway, which for years has been the target of waves of acid rains and snows, recently recorded a record rate of sulphuric downpour.

Shortly after the Norwegian Institute for Air Research released its statistics, reports of dying trout in Norwegian streams appeared and one of the British sources of the pollutants began defending itself.

This Nordic nation has for years sought to get its neighbors to help reduce the amount of sulphur used in power stations and other industries that drift from England and the North of the European Continent to contaminate Norway's rivers and forests. Because Norway's rock and soil contains so little chalk, acid precipitation is extremely damaging.

During the recent heavy rains and snows, it was reported that a ton of sulphuric acid per .38 square miles fell in southeast Norway. The amount was estimated as a record and one-third of the annual total. The precipitation containing sulphuric acid sometimes is heavy enough to form a film on the water and kill fish and some vegetation. A major international conference on the phenomenon hosted by Norwegian authorities in 1976 helped focus on the issue.

Following the recent outcries in Norway as a result of the record fall, Britain's Central Electricity Generating Board issued a lengthy defense of its activities, which are frequently cited as a main source of the Norwegian acid rain. The Board noted that the proof of the damage allegedly caused by sulphur dioxide emissions was still being sought. It also stated that its plants only produced an estimated 10 per cent of the total sulphur in question and that most of the released pollutants originated in Norway itself. Cleanup costs would amount to an estimated \$700 million a year. And it criticized British environment authorities for not challenging Norwegian statements about the facts surrounding the pollution.

SPECIAL DISPATCH TO WER

Japan's Environment Agency Plans 10-Fold Increase in Virgin Acreage

TOKYO—Before the end of March, Japan's Environment Agency is scheduled to complete a long range plan for expanding conservation of the country's natural environment. The new program, which sets 1985 as the target year for achieving a number of important goals, is expected to include provisions for a ten-fold increase in the acreage of virgin woods, marshes, lakes, and beaches protected by the government.

Currently, only about 210,000 acres are contemplated as protected areas. Although Japanese environmentalists concede that this goal is worthy, they complain it is still

inadequate, and emphasize that even 210,000 protected acres are only 1.6 per cent of Japan's total land area.

However, under the new program, the country's national parks are to be expanded from the present 13 million acres to a total of 14 million acres. This would mean that a full 15 per cent of Japan's national land area eventually will be set aside as national parks. It is expected that the new plan also will establish a goal of 40 to 50 per cent greenery for the country's urban regions, an exceptionally high and perhaps unobtainable ratio.

It definitely is too early to say whether the new program will include provisions for clearing Japan's inland waters and coastal waterways of the heavy pollution caused by passing ships, but a number of the nation's environmentalists have been pressing for such inclusion. They base their arguments on recent reports issued by the Maritime Safety Agency (Japanese Coast Guard) which claim that the country's waters are becoming ever more polluted by discharges of all types.

In a survey conducted by the Maritime Safety Agency between July 1975 and June 1976 it was discovered that waste oil and other damaging pollutants coming from Japanese and foreign vessels are washing ashore in ever increasing volumes from Hokkaido in the north to Okinawa in the south. The survey, carried out in response to a request of the International Global Ocean Surveillance System (IGOSS), revealed that 15 major sea routes in the vicinity of Japan are badly contaminated and that the situation is worsening.

Another type of pollution which should but is unlikely to be included in the new plan is the contamination of Japanese farmland by such heavy metals as cadmium, copper, and arsenic.

A. E. CULLISON

World Environment Report is published every other Monday by the Center for International Environment Information, 345 East 46th Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$125 per year. \$15 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-in-Chief Albert Wall
Circulation Manager Ann C. Werner
Correspondents covering more than 60 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

Special Report: An Interview With Israel's Environment Chief

JERUSALEM—Preoccupied as it has been for the last quarter of a century in the absorption of immigrants into its new country—not to mention a few brief but bitter wars—Israel did not get around to establishing an environmental agency until March of 1973, when the Environmental Protection Service (EPS) was formed in the Prime Minister's office. Its first—and still—director: Dr. Uri Marinov, a graduate of the University of Jerusalem in Agricultural Sciences who also holds a doctorate in Veterinary Medicine from Iowa State University.

As initially created, the EPS was an advisory and coordinating service which would deal with the various environmental sections already existing within various governmental ministries. However, it gradually became apparent to Dr. Marinov and his staff that their new service lacked the ability to maximize its effectiveness because it was at too great a remove from the long range planning stages.

Accordingly, in January of 1976, the EPS gave up its staff unit status to move to the Ministry of the Interior—which has decision making powers. The move gave the EPS new duties for, besides remaining coordinating and advisory body, it then was enabled to use the Ministry's legal framework for the protection of the environment.

This framework includes such diversified subjects as physical planning, prevention of noise and olfactory pollution (together with the Ministry of Health), approving local authority sewage plans, regulating the design of roadside signs, declaring areas for national parks, nature reserves and historical sites. To monitor these projects, Dr. Marinov has a permanent staff of 13 professionals, plus 15 part-time advisors. The EPS also employs 30 students in research and special projects.

In explaining the specific environmental problems of Israel, Dr. Marinov says "there are very quick environmental changes due to rapid increases in population, agricultural and industrial production, rapid increase in the standard of living, in energy consumption, solid waste production and fast urbanization. Israel's climatic conditions are very varied and the result is that plant and animal life are also most diversified.

"Human population shows a similar multifaced spectrum—from the desert dweller or peasant working with primitive methods to the farmer carrying out a most modern intensive agriculture, to the city population with its industries, commerce, and universities. The population density is another diversifying factor, with the coastal zone being densely populated and most of the industry and agriculture centered there, whereas the southern region, the Negev, is almost an empty region with the exception of a few agricultural settlements."

Dr. Marinov sees Israel's most pressing environmental problem to be the rational use and reuse of fresh water, the prevention of its pollution, and the search for new sources of fresh water in a country which is already

exploiting more than 95 per cent of its estimated potential water resources.

The director said that it is of utmost importance to create public awareness of environmental problems. Recently the EPS held a conference on environmental education in which ways of introducing methods and new materials for teaching environmental protection were discussed.

On the whole, Dr. Marinov is generally optimistic because, he says, there are conditions in Israel which make for effective preventive policy. These conditions include central control over resources (general and financial), existence of physical planning agency, concentration of industry in governmental and public hands, and substantial government housing projects which control population distribution. "Therefore," says Dr. Marinov, "a policy of economic growth can be continued without further deterioration in environmental quality. The future is not all that gloomy, if only the problems will be given enough thought and attention." HESICARMEL

Environmental Group in Denmark Pinpoints Harmful Foodstuffs

COPENHAGEN—A demonstration against harmful foodstuffs in cooperative supermarkets throughout Denmark (*WER*, Dec. 6, p. 2) was carried out last December by the NOAH environmentalist group, whose members affixed adhesive warning labels on some 40 varieties of food containing added taste stimulants, sulphur dioxide, colorings, nitrate, and fat.

Goods on which the labels were stuck included potato powder, Spanish white wine, asparagus soup in cans, raspberry cream cake, dried apricots, sausages, Russian salad, toffes, eucalyptus pastilles, and salami.

The labels listed precise amounts of those additives, colorings, or fat that had been added to the foods in question. Palanca Spanish wine, for example, was shown to contain 250 mgs sulphur dioxide per liter (1.057 quarts)—double the quantity accepted in France. The World Health Organization's Codex Alimentarius cautions that a person weighing 132 pounds should not consume more than 21 mgs sulphur dioxide a day, or, in this instance, no more than a half-glass of Palanca white wine a day.

As a result of the NOAH action, the co-ops immediately launched a national advertising campaign costing \$43,000. They started off by saying "We love NOAH, too [NOAH had said it was because they loved the co-ops and their customers that their attention was directed to them] and have already been campaigning against unnecessary additives, aromas, and colorings."

Some of the co-ops reported reduced sales of some of the goods stigmatized by NOAH. CONSTANCE CORK

ECE Seminar in Paris Focuses On Non-Waste Technology

PARIS—One hundred-forty-six representatives from 29 countries and nine international organizations met for six days in Paris recently to discuss how man can best honor the maxim, "waste not, want not."

Although the saying is old, the ecological concept is new: rather than treating wastes and pollutants after they are produced, try not to produce them in the first place. Or, more realistically, minimize their production and try to produce them in the least harmful form.

The meeting was held by the Economic Commission for Europe (which includes the United States and Canada), Nov. 29 to Dec. 4; its title was the Seminar on the Principles and Creation of Non-Waste Technology. Besides 126 delegates from ECE countries, participants included representatives from Egypt, Kenya, Mexico, New Zealand, the Philippines, Thailand, and several international organizations, including the UN Environment Programme, UNESCO, WHO, the OECD, and the International Center for Industry and the Environment (ICIE).

According to Charles A. Cochrane, chief executive of the ICIE, the meeting was characterized both by an unusually high degree of interest and by an unexpected degree of pragmatism.

"This has been to my knowledge the most enthusiastically supported ECE seminar on the environment," he said. "The discussion was also less theoretical than might have been anticipated. There was more engineering and less economic and scientific debate."

Draft recommendations made at the end of the seminar (to be submitted in February to the Senior Advisers to ECE Governments on Environmental Problems) included specific recommendations for the four industries which had been considered as case studies.

For iron and steel, the seminar recommended work on closed-circuit systems and on scrap recycling; and consideration of energy conservation and yield as well as pollution control.

For pulp and paper, it recommended work on separation and recycling of waste paper; increasing the yield to 75 to 80 per cent; use of new solvents which are easily recoverable; and obtaining by-products of cellulose "in a state which would permit their use."

For packaging, it recommended a study of the resources consumed by packaging, and the pollution produced.

For the tire industry, it recommended testing and development of techniques for tire re-use; and dissemination of research results of ECE countries.

In papers submitted for discussion, some delegates suggested radical changes in our attitudes towards material goods. Dr. Schmitt-Tegge of West Germany urged a shift away from short-lived products and planned obsolescence, citing a German finding that use of better materials to double the lifetime of a car would increase

costs by only 30 per cent.

Hussein Saleh, from Canada, said we should also question the very need for some products. "We must be able to shift from our traditional approach of satisfying our needs in terms of *products* to the more basic approach of *functions*," he said.

"The family car provides a good example of a wasteful technology. . . ." he went on. "If we want to minimize the wastage of fossil fuels while meeting objectives for moving from one place to another, then our thinking should go well beyond the car. We would move closer to a non-waste technology by promoting transportation and communication systems where less energy is required, or where renewable energy sources could provide the motive power. But we should not stop there. If people can provide for their needs and wants without having to move so far, so frequently, that would surely reduce the consumption of energy and resources. . . . Is the telephone non-waste technology? Certainly it is closer to the definition than pollution control devices on the automobile exhaust."

Although the meeting was intergovernmental, two industrial contributions were made through the ICIE. Dr. Joseph T. Ling, vice-president of Environmental Engineering and Pollution Control of the 3M Company, St. Paul, Minn., which has introduced its "Pollution Prevention Pays" or "3P" Program into its manufacturing operations in 15 countries, said that some countries now discourage "non-waste technology."

The United States, he said, has done this by setting short compliance deadlines; by granting tax incentives for pollutant treatment but not for non-waste techniques; and by limiting the concentration of pollutants that can be released into the environment, rather than their quantity. (By recycling, he said, one might be able to cut the quantity of pollutants in half, while increasing their concentration.)

Dr. Ling also said that calculations of the costs and benefits of pollutant treatment usually neglect the waste that occurs in the production of energy or of products needed to treat the pollutants.

The other paper submitted through the ICIE described the Nordic Organization for Waste Exchange, set up by the Federations of Industries in Denmark, Finland, Norway, and Sweden in 1973 to help bring together producers and potential users of wastes. It deals with lesser-known wastes; best results have been with inorganic chemicals, where 45 per cent of notices have resulted in waste exchanges.

Other papers submitted by national delegates related the experience of specific companies. The Isorel company in France, which has a hardwood and fiberboard plant in Casteljaloux, has reduced pollution per ton of board from 220 pounds to less than 2 pounds, by "integral recycling," or suspending fibers in a liquid to be recycled.

Other techniques reported on included: the use of solvents in place of water, "hollow" glass, and the recovery of iron in the form of magnetite.

MICHAEL PARROTT

New Delhi To Combat Air Pollution With New Smokeless Home Fuel

NEW DELHI—This Indian capital, with the highest background "dust" in the world—700 millionth of a gram per 1.31 cubic yards—24 times more than found any place else in India, will soon mount a major cleanliness drive.

The air pollution problem is caused by vehicles, thermal plants, industrial chimneys, and domestic fuels, and is aggravated by a phenomenal population increase from half a million in 1947 to over 5 million now. Recent statistics show a dramatic increase in the daily emission of poisonous gases caused by a proliferation in the number of motor vehicles from 19,300 in 1950 to nearly half a million in 1976. The domestic fuel—coal and firewood—used by 30 per cent of Delhi's inhabitants contributes heavily to the air pollution. Holy Yamuna River, the city's main source of water, is contaminated by the remains of dead persons.

Dr. S. Padmavathi, a famous cardiologist, has warned: "Indian women should stop using cow dung and firewood in their homes; otherwise they will soon become victims of Cor pulmonale—a serious heart condition second only to heart attack."

Early last December, K. C. Pant, India's Energy Minister, announced that India's first smokeless domestic fuel known as "Jwala" will be released for commercial sale from the first of the year. The smoke pellets will cost only \$1.50 for 88 pounds.

One of the thermal plants in Delhi is already utilizing a nearly fool-proof mechanism to store ash with the help of electrostatic precipitators. Nearly 95 per cent of ash that would otherwise escape through the chimney is now absorbed by the highly energized electrodes fitted into the precipitators. The detained ash mixes with water and the resultant slurry is pumped out to the low-lying wasteland nearby, thereby helping to reclaim about 400 acres of marsh.

Finally, the Directorate of Transport in Delhi has already launched a drive to "eliminate all un-roadworthy vehicles which emit smoke." R. MURALIMANOHAR

Irish Scientists Claim Progress In Fight on Major Tree Disease

DUBLIN—Irish scientists believe they have found an answer to a worldwide tree disease which has caused losses in plantations in many countries.

The disease is caused by a fungus called "conifer heart rot" and is widespread. It can attack all conifer trees and particularly the spruces and pines that are the main money earners in forest plantations. In Denmark, profits from timber have been reduced by 32 per cent and in Germany the loss has been 10 to 12 per cent.

Irish Republic losses have been about five per cent per

annum, but because Irish forests are relatively new they have escaped the worst ravages of the disease. Even so, the Irish consider the disease much more serious from an economic viewpoint—because of the value of the timber involved—than the Dutch Elm Disease which has struck Ireland in a big way now.

Modern forestry methods provide ideal conditions for the disease to spread. It thrives under situations of neat line-planting of the same species. The thinning of trees provides freshly cut stumps for the air-borne spores—which can be carried for more than 100 miles—to land on and grow.

In their attack on the disease, Irish scientists have been treating stumps left after thinning with special fungicides. In addition, a type of biological warfare has developed between the scientists and the disease. Another fungus, called "candle-wax" has been found to counteract conifer heart rot infection on some pine species and is now being tested on others.

The Forestry Service is also testing resistant species of trees and are using new electronic methods of detecting the fungus. Young seedlings may also be inoculated in the nurseries with a beneficial fungus that forms a protective mantle around their roots. Thus far, these methods are showing conclusive and positive results.

TOM MACSWEENEY

Kenya's Parliament to Investigate 'Scandal' in Wildlife Ministry

NAIROBI—As a direct result of an aroused public opinion over the depredation of this country's wildlife reserves (*WER*, Oct. 11, p. 4), Kenya's parliament has agreed to establish a Parliamentary Select Committee to investigate what some of its members are calling a "scandal" in the Ministry of Tourism and Wildlife.

The call for a parliamentary inquiry was made by a backbench member, George Anyona, who said there was increasing public concern about reports of widespread poaching of wild animals in Kenya's National Parks and game reserves. He expressed fears that wildlife in Kenya could become almost totally extinct in another five years if urgent steps were not taken to conserve it.

The Minister of Tourism and Wildlife, Matthew Ogutu, denied allegations that his ministry was failing to deal with the situation, and accused Anyona of merely repeating unsubstantiated allegations which had already been published in the Kenyan press. In opposing the move to establish a Parliamentary inquiry, Ogutu noted that the World Bank had provided a loan of \$17 million to Kenya to preserve and develop the country's wildlife and tourism resources, and said that some of this money would be used specifically to counter wildlife poaching.

As an indication of the intense public interest aroused by the issue, the parliamentary debate was splashed over the front pages of local newspapers under headlines such as: "Wildlife Minister Told to Quit: M.P.s in Uproar Over Poaching."

CHARLES HARRISON

Rio's New Petroleum Port May Be Ecologically Best in World

RIO DE JANEIRO—Brazilians think they have the best—ecologically speaking—petroleum port in the world. Even the decision to build the new oil port was based on ecological factors.

The new port is the \$200 million Terminal Maritimo da Bahia da Ilha Grande, or TEBIG for short, and is situated near the town of Angra dos Reis, about 93 miles south of Rio de Janeiro. Still under construction is a pipeline to connect the new terminal with the nearby refineries. The completely computerized port, which became operative late last year, can handle supertankers of up to 500,000 tons and in the first stage of completion will be able to store almost 30 million barrels of oil.

Previously, Rio and the central-eastern section of Brazil had received all their supplies of imported oil from unloading terminals in Guanabara Bay, which is highly polluted by the raw sewage from some 10 million persons and hundreds of industrial plants, plus small but frequent oil spills. Although Petrobras (Brazil's oil monopoly) officials have denied any plans for moving all the unloading terminals outside the Bay, they have promised not to expand facilities inside the Bay and to re-route much of the increased oil imports to the new port.

Because Angra dos Reis is one of Brazil's prime sea resort areas and a skin-diver's paradise because of its clear waters, Petrobras is very sensitive to environmental hazards at its new port. The company has already spent \$3 million in direct environmental preservation measures.

Eduardo Loch, construction supervisor of the TEBIG terminal, told *World Environment Report*: "We are just as concerned with the environment as anyone else and we are well aware of the general environmental concern."

But then why build an oil port in such a tropical paradise in the first place?

"There was no way out," Loch said. "We need the oil and Angra dos Reis was the nearest available suitable location to Rio."

Standing at the end of the nearly mile-long pier, he pointed to the series of pipes and tubes leading ashore and to the oil storage area 6.8 miles away and then explained that all the oil, ballast water, water for cleaning the empty tanks as well as drinking water refuse, diesel and other fuel will be piped in and out of the ships. Theoretically, not a drop of it should be lost along the pier or from the pipelines.

"The big problem is water from the ships' tanks, which is always contaminated with some oil, being dumped into the sea," Loch said. "Well, we will provide the cleaning water for the ship and then pipe it back onshore for processing."

Situated near the various storage tanks will be two plants, one for water-oil separation, the other for water treatment. The oil separation technique is not only good ecology but also good economics because eventually it is

expected to pay for itself with the oil recovered. The separation plant will handle the water from the tankers as well as the water washed down by rain and hosing on the auxiliary grounds. There is also a 37-mile network of sewers with water draining manholes which will prevent the oil and other impurities washed away on the land from ending up in the sea.

Once the oil is separated the water then goes to a three-stage chemical and physical treatment plant of which Loch is very proud: "The international standards for waste purification call for 50 particles per meter (PPM) of water while we have it down to five PPM."

When asked if the construction of the huge piers didn't disturb marine life, Loch walked along the edge of the pier until he spotted fish next to one of the pillars. "You see," he said, "the fish actually like the pier because it provides a shade in the water."

The most visible ecological disruption right now is the scar cut on the mountainsides for the 76-mile pipeline extending from the terminal to the refineries in Rio. But once the pipeline is completed late in 1977, the scar will be grassed over, leaving only a narrow service road.

With that final touch Petrobras hopes to leave the area as close to its natural state as the demands of a modern industrial country will allow. G. HAWRYLYSHYN

ECE Approves Recommendations For World Water Conference in Argentina

GENEVA—The United Nations Economic Commission for Europe (ECE) has approved a set of draft recommendations for national, regional, and international action that will be submitted in March to the World Water Conference in Mar del Plata, Argentina.

The ECE Committee on Water Problems particularly emphasized recommendations on safe water supply and hygienic waste disposal which had been made by the UN Conference on Human Settlements (Habitat) held last summer in Vancouver.

The Committee also adopted a study on the protection of inland waters against accidental pollution by oil and oil products and accepted a proposal of the UN Educational, Scientific and Cultural Organization (UNESCO) and the World Meteorological Organization (WMO) to cooperate with the ECE in organizing a second meeting on hydrological problems in Europe.

The ECE paper that will be presented to the World Conference proposes seven basic moves against pollution: better waste water treatment; industrial processes that consume less water; use of less hazardous chemicals; measuring and reduction of air pollutants that are deposited in water; prevention of pollution from excessive use of chemicals in agriculture and forestry; adoption of uniform criteria and methods to determine water quality; and preparation of a list of water pollutants and the harmonization of terminology.

WILLIAM G. MAHONEY

In Brief...

Cooperation on Mediterranean Sea Proposed at Malta Forum

At the recent 22-nation Europa Forum held in Malta recently, a special commission unanimously adopted the proposal by Past International Lions President George Friedrichs that there should be an intensive cooperation between all cities surrounding the Mediterranean Sea. He also appealed to the delegates to help the United Nations achieve its goals against pollution. Collaboration with the Council of Europe on the Environment was also urged.

More than 1,800 delegates from 26 countries attended—some from as far away as the Cayman Islands and Zaire. The Forum is a yearly convention organized by the International Lions Federation, the philanthropic organization founded in America in 1917 with the aim of serving the community. Its membership today exceeds one million.

UN African Commission Urges Use of New Energy Sources

At a two-week meeting in Accra, Ghana, representatives of African states and of UN organizations operating in Africa have agreed that African countries must do more to find new and less conventional energy sources to replace and supplement the oil and wood now used.

The meeting, organized by the U.N. Economic Commission for Africa (ECA), analyzed trends in resources, supplies, marketing, and the development of indigenous energy sources at all levels, with the aim of assisting African states to formulate common energy policies.

Dr. Robert Gardiner, Ghana's Commissioner for Economic Planning, and ECA executive secretary

from 1963 to 1975, opened the meeting by saying that present sources of hydraulic and thermal energy, and fossil fuels used in Africa were not limitless. There was no alternative, he said, but to look to sources such as solar, geothermal, wind, and tidal energy—which are plentiful—to meet Africa's future requirements.

The ECA deputy executive secretary, David C. Ganao, said the discovery of abundant oil reserves in African sedimentary basins was the most important event in the economic development of Africa in the last 20 years, but that those resources would eventually be exhausted. Meanwhile, technical recommendations from the Accra meeting are being studied by the African states involved.

Industrial Pollution Threatens S. Korean Farming, Fishing

Both farming and fishing production in South Korea have been seriously threatened by pollution from factories and oil slicks. A report from the Agriculture-Fishery Ministry shows that smoke and water pollution from factories had damaged two and a half times as much Korean farmland so far this year as in 1975 and affected a total of 6,100 acres. Factory smoke and exhausts are at the top of the crop ravagers, affecting over 3,600 acres, followed by industrial pollution (1,600 acres) and dust (900 acres).

As a result of this, compensation paid to farmers suffering such crop damage has increased tremendously, reaching \$156,000 so far this year which is 7.7 times greater than that for all of last year. In addition, wastes discharged from industrial plants and oil spills from disabled tankers have caused about \$3.01 million (1.45 billion won) worth of damage to oysters, clams, laver and seaweed and other marine products in the 10 months through last July.

Bavaria Beefs Up Its Air Pollution Control System

The Bavarian Environment Protection Ministry announced in Munich last month that it will increase its fully automatic air pollution control system by adding 12 new satellites to the existing 22 control centers.

The satellites, it said, relay continual data to the control centers from where the coordinated information is fed via telephone lines to the Ministry's control headquarters.

The measuring stations maintain a continual monitoring of such noxious concentrations as sulphur dioxide, carbon monoxide, and carbon hydrogen, as well as nitrogen oxide, ozone, and dust.

The fully automatic system was begun in 1974, when it was hailed as the first and most modern in Europe. When the entire network is completed—target date is 1979—there will be 80 measuring stations and the entire project will have cost about \$8 million.

This fixed network is aided by supplementary information fed in by moving measuring trucks covering 240 specific sites throughout the large southern German state. The Ministry spokesman added that so-called "bio-indicators"—plant monitors—are also used.

Denmark's Trees Monitored From Air on Infra-Red Film

Copenhagen's roadside trees—maple, oak, basswood, and chestnut—are being saved from the effects of pollution by a system developed in the Netherlands. The trees are photographed from the air on infra-red film, which shows precisely how much evaporation they are exuding. A high rate of evaporation shows a tree to be healthy. Too little evaporation is a warning that the tree is on the way to dying.

Gardeners say that this method

alerts them two to three years in advance if a tree is sick, whereas spot visual observation does not. Thus treatment—removal of the earth from the roots and use of organic manure instead of artificial manure—can be started much earlier.

The infra-red airphotos have also shown that the city's trees have not suffered as much as expected from the salt spread on the roads in winter and the very dry summers of this year and last.

Balkan Countries Interconnect Their Electric Power Systems

Five Balkan countries—Bulgaria, Greece, Romania, Turkey, and Yugoslavia—have created a coordinating committee to develop the interconnection of their electric power transmission systems.

The Committee on Electric Power of the UN's Economic Commission for Europe (ECE), meeting recently in Geneva, heard reports on the work done by the Balkan group. The Committee stressed the importance of such power connections in Central Europe and accepted an offer by Czechoslovakia to report on the technical and financial problems involved.

The Committee asked the ECE Secretariat to investigate the prospects of the electric power industry in Europe and North America for the period 1985-1990. This report will be considered at expert meetings and at the Committee's session next year.

The Committee also asked Czechoslovakia, France, and Norway to convene a meeting to decide how to tackle the problem of long-distance pollution arising from conventional thermal power stations. In addition, experts from Belgium, France, Italy, and Sweden were asked to prepare a report on the effects at the consumer level of the gradual substitution of nuclear for fossil fuels in electricity generation.

Noise Pollution at U.S. Base In Japan Arouses Local Ire

For the first time, a major dispute has developed between Japanese and American airbase officials over noise pollution. In the western suburbs of Tokyo, 40 Japanese residents near the U.S. Yokota airbase have demanded the government pay them \$19,000 each in damages for the noise created by U. S. military jet aircraft. They also are seeking a government ban on night flights at the airbase between 9 P.M. and 7 A.M.

The plaintiffs cite a clause in the U.S.-Japan security treaty which provides that public safety should be given consideration and that the government should compensate for the damage resulting from operations of U.S. bases in Japan. However, an attorney for the government told the first court session that suspension of the flights was a matter requiring revision of the security treaty—a matter subject to Parliamentary approval.

Colombian Plant Denounced For Mercury Pollution

Local environment agencies and the Colombian Ministry of Health have denounced a government-owned alkali plant for dumping large quantities of mercury into the bay of Cartagena, Bogota's most important tourist resort. Health Ministry analyses of 48 samples showed mercury content of 60 parts per million in the bay's mud sediment. In another test, the Cartagena Committee for the Environment's Protection obtained 20 pounds of mercury from bay waters within a one-hour period. Scientists consider half a pound of mercury sufficient to contaminate 10 million pounds of fish.

The alkali plant, which ironically produces chlorine for the country's water systems, has been polluting the bay for the past four years despite a Ministry of Agriculture ban on all

mercury-based insecticides.

While mercury is not particularly harmful to man, its conversion to methyl mercury in contaminated fish is highly toxic, causing blindness, paralysis, and birth defects.

Cartagena Mayor Fidel Borge Escovar is demanding "an immediate solution to the problem."

Brazil Opposes Construction Of Salt and Chlorine Plant

The chemical plant catastrophe in the Italian city of Seveso (*WER*, Aug. 30, p.1) has aroused opposition to the construction of a large rock salt and chlorine plant in the Brazilian northeastern city of Maceio. State deputy Walter Figueiredo cited the case of Seveso as a warning of what could happen in Maceio. He announced that a secret study by the rock salt company, Salgema Industrias Quimicas, revealed there was a possibility of chlorine gases escaping, and added that these could cause respiratory problems as well as skin and eye burns. The deputy wants the plant moved at least 18 miles out of the city.

Britain Will Pay Fees For Private Energy Consultations

A subsidy of 50 per cent, up to a maximum of \$50, towards the fees of an energy consultant, will be paid by the British Government to help non-domestic energy users.

The project, called the Energy Survey Scheme, was announced in Parliament last month by Dr. John Cunningham, Parliamentary Under Secretary of State for Energy. It is designed to encourage small firms to employ consultants for one day visits to report on ways of saving energy through both short and long term measures.



World Environment Report

25 JAN 1977

VOL. 3, NO. 1

Copyright ©1977. Center for International Environment Information.

JANUARY 3, 1977

Mexico's New President Speaks Out Strongly on the Environment

MEXICO CITY—In his first speech as Mexico's new president, Jose Lopez Portillo spoke out strongly for the protection of the environment and conservation of natural resources, even as he acknowledged that his country has serious economic and social problems that demand immediate attention. His inaugural address, delivered last month, lasted nearly two hours—supposedly the longest of his career—and included several references to environmental needs.

"We must make rational but intensive use of all our resources, particularly of our natural resources," he said, observing that Mexico has "generous reserves of the earth which man must use intelligently in order to enjoy their benefits in just measure, without interfering with the balance of nature—which has its limits—as has happened on occasion in the past . . ."

In the area of human environment, the new president outlined his six-year-term's goals "in the field of health—which we view not only as the absence of disease but also as a biological and psychological balance with the environment, with the world and our time and with our fellow men, including promotion of family planning programs, dietary education, environmental hygiene . . ."

He assigned the Public Works Secretariat "the specific task of attending to matters related to human settlements," and called for a "more rational distribution of the population throughout our country, rapid and well-adjusted regional development," and a restoration of balance between rural and urban areas.

Lopez Portillo, a 56-year-old lawyer, economist, university professor, and author, announced continued interest by Mexico in "the effective establishment of a new, just, social and economic order for the utilization of the world's resources," a theme frequently sounded by his predecessor, Luis Echeverria.

Although Lopez Portillo's pronouncements on the environment sounded optimistic, it is impossible to predict how strongly his government will act in this field. He has, however, selected two dynamic men to lead the Secretariat of Health—under which environment improvement is enacted. The first is regent (mayor) of Mexico City, Carlos Hank Gonzalez. The second is Dr. Emilio Martinez Manautou, a 57-year-old surgeon and former Congressman and Senator, who becomes the new health secretary.

KATHERINE HATCH

UNEP's Tolba Elected to Full Term as Executive Director

UNITED NATIONS, N.Y.—Shortly after Kurt Waldheim was re-elected last December to his second five-year term as Secretary-General of the United Nations, he nominated Dr. Mostafa K. Tolba to succeed himself as Executive Director of the UN Environment Programme (UNEP). The General Assembly elected him without opposition.

Dr. Tolba, who formerly had been Deputy Executive Director under Maurice F. Strong, UNEP's first Executive Director, had succeeded to that post on Strong's resignation at the close of 1975. Headquartered in Nairobi, Kenya, UNEP is the UN's permanent institutional environment arm, and consists of a Governing Council, a Secretariat, and a Fund to finance projects in cooperation with UN agencies and Member Governments. UNEP has its origins in the UN Conference on the Human Environment held in Stockholm in June 1972.

In a telephone interview, Dr. Tolba told *World Environment Report* that he foresaw three major problems facing UNEP in the next four years: The development of appropriate technology; the proper extension of the Global Environmental Monitoring System (GEMS); and the translation of the principle guiding the utilization of natural resources shared by two or more states into actual legislation.

Dr. Tolba also said he hoped that three or four more regional seas activities could be launched along lines similar to the historic Mediterranean Convention, in which 12 nations pledged "to prevent and abate pollution" in their common sea (*WER*, March 1, 1976, p. 1). He specifically mentioned the Caribbean, the Persian Gulf, the West Coast of Africa, and the Strait of Malacca.

A microbiologist, Dr. Tolba was formerly President of the Egyptian Academy of Scientific Research and Technology and headed his country's delegation to the Stockholm Conference.

A.W.

In This Issue

Resources Sharing	2
Nitrogen Oxide Exhausts	2
Fluorocarbon Survey	3
Tree Planting	5
Rutgers Seminar	6
In Brief	7

UNEP-Backed Geneva Meeting Copes With Sharing of Natural Resources

GENEVA—Environmental experts from 18 countries who met here recently have reported some progress in their efforts to reach agreements on guidelines covering cooperation in environmental matters pertaining to natural resources shared by two or more states. However, they were unable to reach full accord on the rough draft which had originally been adopted in the first session held in Nairobi last January. Thus a third meeting will probably be held late January in Nairobi, after the delegates consult with their home capitals on the issues still in dispute.

Representatives of the following states took part in the meeting sponsored by the United Nations Environment Programme (UNEP): Argentina, Brazil, Canada, France, India, Kenya, Mexico, Morocco, the Netherlands, Philippines, Poland, Romania, Senegal, Sweden, and the United States. Also present were observers from Bangladesh, Egypt, Yugoslavia, and seven international organizations.

During the Geneva session the working group set up three drafting parties to prepare texts in the areas assigned to them. After considering these efforts, the working group was able to reach provisional agreement on the formulation of some principles and guidelines. But no agreement could be reached on certain phrases, words, and paragraphs.

UNEP officials declared that "the Working Group was unable to reach a consensus on one formulation and decided to defer two alternative texts that had emerged from its deliberations for further consideration at its third session."

The texts involve: Exchange of information and consultations; Emergency Action (states should urgently inform other states which may be affected of any situation from utilization of shared natural resources that might cause sudden adverse environmental effects or of any sudden grave natural events that are related to natural resources); services of UNEP or other international organizations in clarifying the environmental aspects of problems; settlement of disputes over shared natural resources; responsibility and liability in shared natural resources; and equal right of access.

The latter issue has been deferred for future consideration.

The Working Group was unable to agree on a definition of the concept of shared natural resources, or even to agree if it should attempt such an undertaking. A UNEP spokesman said that several states felt it would be premature to attempt such a definition; other states felt it would not be necessary at all. This issue also was deferred to the next meeting.

The Working Group, nevertheless, was able to agree upon a "Formulation of Principle of Guidelines in Shared Natural Resources in the Field of Environment," and UNEP officials have expressed the hope that the

delegations will be able to reach final accord on the legal guidelines in time to forward them to the UNEP Governing Council in May 1977. If approved there, they would then go to the UN General Assembly for final approval.

WILLIAM G. MAHONEY

European Common Market Sets New Limits on Nitrogen Oxide Exhausts

BRUSSELS—The European Common Market has adopted new limits on the quantities of nitrogen oxide permitted in motor vehicle exhausts.

The measure enacted recently by the European Economic Community (EEC) Commission was a followup to actions curbing carbon monoxide and unburnt hydrocarbon in emissions. The earlier restrictions were enacted in 1970 and in 1973, when the EEC also decided to take further action necessary to reduce automotive emission pollution.

After extensive consultation, the EEC Commission environment authorities determined that although there had been a cut in the release of the other two pollutants, the inherent combustion characteristics of the conventional engines were such that this had also led to an increase in nitrogen oxide emissions. Studies in 1974 and 1975 with the European auto industry recommended new nitrogen oxide standards.

The new standards will become effective October 1, 1977, and motor vehicles above those norms will not be given approval for sales in the EEC. The move is seen as a first step in a future joint reduction of the pollutants in question.

DAVID FOUQUET

World Environment Report is published every other Monday by the Center for International Environment Information, 345 East 46th Street, New York, N.Y. 10017. Telephone (212) 697-3232. Cable address: UNASAMER. Subscription Rate: \$125 per year. \$15 additional for overseas airmail. Institutional and multicopy rates on request. All rights reserved. Reproduction in any form forbidden without express permission of the copyright owners.

Executive Director Dr. Whitman Bassow
Editor-In-Chief Albert Wall
Circulation Manager Ann C. Werner
Correspondents covering more than 60 countries.

The Center for International Environment Information is a non-profit, private organization which seeks to foster public understanding in the United States and Canada of global environment problems, how they affect the quality of life in North America, and the role of international cooperation in dealing with these problems. The Center was established by the UN Association of the USA with the support of the UN Environment Programme (UNEP). The Center alone is responsible for all material presented in *WER*, which in no way represents the official view of UNEP.

Special Report: A Survey of the Worldwide Fluorocarbon Problem

The current controversy over the use of fluorocarbons and their impact on the ozone layer which protects the planet is now worldwide. In the United States, the government will probably issue final regulations a year hence banning fluorocarbon gases from "nonessential" uses such as propellants in spray cans, and possibly as refrigerants.

The U.S., however, produces only 38 percent of the most widely used fluorocarbons (mostly Freon 11 and 12); the remainder comes mostly from the industrialized nations of Europe plus Japan. Because such widespread production and consumption has made the matter one of international concern, *World Environment Report* has asked some of its correspondents to survey the fluorocarbon situation in their countries:

Great Britain—British-made aerosols have been available for a quarter of a century. They supply the bulk of the home market and about 20 per cent of their production goes for export.

By 1974, the year of highest production, the U.K. was using 46,000 metric tons of chlorofluorocarbons (CFCs) 11 and 12, about 6 per cent of the world usage. Of this, 80 per cent was used as aerosol propellant, seven per cent in refrigeration and air conditioning, 10 per cent in production of foam plastics, and the remainder in other uses.

The U.K. was amongst the countries that researched the effects of supersonic flight exhaust on the chemical composition of the stratosphere. This led to concern that the presence of chlorine might be an even more powerful agent than CFCs in the destruction of ozone.

The research by Molina and Rowland in the U.S. in 1974, investigating the release of CFCs from aerosol propellants as a source of this chlorine, was referred to in the fourth report of the Royal Commission on Environmental Pollution published in December of that year. British research continued, sponsored by the government, at the Atomic Energy Research Establishment, Harwell. Work on atmospheric chemistry was directed at measuring CFCs in the atmosphere and at identifying any ozone-depleting reactions.

In April 1976, the Central Unit on Environmental Pollution of the Department of the Environment (DoE) produced a report, "Chlorofluorocarbons and Their Effect on Stratospheric Ozone." It concluded that on present evidence of usage, a maximum depletion of about eight per cent in the ozone layer would occur a century hence, with a consequent increase of approximately 16 per cent ultraviolet radiation reaching the ground. This was "no worse than the increase currently experienced in moving from the north to the south of England" and did not call for "precipitate action." Manufacturers were advised to intensify their search for alternatives to CFCs 11 and 12 and to try to minimize leakage arising from operation of their products.

"We stand by these recommendations still," a spokes-

man for the DoE told *WER*. He also pointed out that the report stressed the need to treat the problem as an international one and had outlined channels already existing for collaborative research within the framework of both the European Economic Community (EEC) and the Organization for Economic Cooperation and Development (OECD).

Professor Jim Lovelock, Professor of Atmospheric Science at the University of Reading, Berkshire, and the British scientist who first measured CFCs in the atmosphere, described himself as "squarely behind" American scientists at the National Academy of Sciences who had suggested a two-year wait for the result of further research before advocating legislation phasing out CFCs. When interviewed by *WER* he said, "There is a danger if these CFCs go on being used indefinitely, but no need whatever for panic." The possible projected depletion of ozone of between two and 20 per cent in the middle of the next century, he said, was not only no more than in moving from one part of the world to another, but did not take account of factors under investigation which might be neutralizing the effect of chlorine in the atmosphere.

France—The government here is refusing to be panicked into adopting measures concerning the use of fluorocarbons, although officials are following U.S. legislative developments with interest and are ready to introduce controls if a conclusive case can be established against the gas.

For the moment, however, France has no specific regulations controlling the use of fluorocarbons. All the government has done thus far is to broadcast television warnings concerning the use of insecticide aerosols in the home. But according to M. Deschamps, the director of the Pollution Division of the French Ministry of Environment, controls on the use of fluorocarbons could, of course, eventually be incorporated into a general environmental bill currently being prepared.

Caught between the conflicting demands of industry and environmental organizations, the government prefers to wait until a more conclusive case is established against fluorocarbons. Summing up administration caution, Deschamps says, "We must not cry wolf for fear of losing our credibility."

French industry, which accounts for some 10 per cent of world fluorocarbon production, thinks the danger of these gases has been greatly exaggerated. Rats made to breathe pure Freon 11 or 12 with the correct proportion of oxygen added have been shown to survive normally. Therefore, industry scientists claim the risk at every-day concentrations in the home must be considered zero.

With fluorocarbons accounting for 60 per cent of France's 350 million aerosols manufactured last year, it is understandable that French producers of fluorocarbon are reluctant to give up the propellant. The home market for aerosols is thought to be saturated, but considerable

growth is expected in the use of fluorocarbon for refrigeration and polyurethane foam. France also exports a considerable amount of aerosols, notably for perfumes and cosmetics.

Belgium—The European Common Market is taking a cautious attitude toward any possible regulation of fluorocarbons to protect the earth's ozone cover.

Although there is general support for what the U.S. is doing to control potentially harmful and unnecessary use of such products, there is a reluctance to emulate the U.S. without further study of the consequences. Despite a recent personal appeal by Russell E. Train, Administrator of the U.S. Environmental Protection Agency, before a gathering of his counterparts in Brussels, no European country appears on the verge of limiting fluorocarbon usage.

At a recent Brussels meeting of the NATO alliance's Committee on the Challenges of Modern Society, Train warned that "urgent and coordinated national actions are needed immediately to deal effectively with fluorocarbon-caused reductions of the ozone layer." This call was echoed at the same meeting by Erik Lykke, the director general of Norway's Environment Ministry, who had previously expressed his country's support for similar restrictions and for an international conference and treaty. (The UN Environment Programme will convene such a conference in Washington, D.C. in March.)

European Economic Community (EEC) environment officials, although they privately backed regulation, noted nevertheless that there was considerable skepticism about the U.S. position in Europe. One noted that European countries had once before rushed to follow American appeals to protect the environment against the threat of PCBs (polychlorinated biphenyls) only to find they had acted first and that the United States was lagging. Another said that there is considerable cynicism about the fluorocarbon threat in Europe. He said it is widely believed that American firms have already developed alternative products for the suspected substances and that if Europe acts to regulate them also, the American alternatives will enjoy an advantage on the markets.

West Germany—If the production and use of fluorocarbons are a danger to the world environment, this country is one of the lesser offenders. Out of a world production of some 800,000 tons a year, West Germany accounts for 100,000 tons. The value of the German output is \$80 million; by far the greatest part comes from Hoechst AG, whose annual sales of all products run to over \$5 billion.

Thus far, neither the German public nor the press have shown any great concern over the alleged dangers of fluorocarbons. When the Rowland-Molina report appeared in 1974, the government, industry, and the scientific community immediately began their own inquiries to determine the validity of its conclusions.

In answer to four parliamentary questions during

1975, the government stated its position as being against any restrictions beyond those already in effect on the manufacture or use of fluorocarbons. It promised to investigate the alleged ozone effect, and has done so via a contract with the Max Planck Institute for Chemistry of the Atmosphere, whose findings are expected to be delivered sometime in 1977. Meanwhile, there are no bills in the legislative mill dealing with the subject.

Government, industrial, and scientific circles generally reject the thesis put forward by the President's Council on Environmental Quality in the U.S. that "fluorocarbons are guilty until proven innocent."

"This," says B. Hoffmann of Hoechst's application technology department, "runs contrary to all our traditions, particularly when the implication of guilt is so tenuous as in this case. It is our position that the study of possible effects on the ozone layer should continue, but that no restrictive legislation should be passed until the damage has been scientifically demonstrated to exist. It would be wrong to rush into such a move on the strength of a political impulse."

Italy—For the most part, scientists here have maintained a hands-off attitude in the controversy over fluorocarbons vs. ozone. However, they are following with keen interest world scientific literature and current developments on the subject.

An expert in chemistry, Fabrizio Bruner, told *World Environment Report*: "Although it is certainly proved that chemical reactions occur between fluorocarbons and ozone, this is not a proof of the possible destruction of the ozonosphere shield to the point of significant increase in the danger of skin cancer."

Bruner, who is a research director of the National Council of Research (CNR), said that "probably the depleting action of fluorocarbons and other by-products of human industry is balanced by the natural forces that maintain the present layer of ozone around the Earth."

"It is true that fluorocarbons are destructible only in the stratosphere, if they ever reach there. It is true that the more fluorocarbons we release, the more we shall find around, in the future. However, solar rays and the oxygen which interact to generate the ozone are always there. So, a collapse of the ozonosphere seems out of the question for the near future. I think more studies are necessary before banning the fluorocarbons. Substitutes for these substances with their unique physical and chemical features are expensive to find and to produce."

A Roman expert in upper atmosphere agreed that the opinion of the Italian specialists on the precise effects of the fluorocarbons on the ozonosphere is not yet firm. Giorgio Fiocco, a geophysicist at the University of Rome, said that there is no experimental proof of ozone depletion by fluorocarbons.

In government quarters, the cautious attitude of the Italian scientists is not considered a stumbling block to an international meeting for protection of the stratosphere. Giorgio Cortellessa, advisor to the Minister for Science Research Mario Pedini, told *WER* that "the Italian

government is open to attending an international meeting, provided that participation is limited to the producing countries, all of them." The limitation would spare time-wasting bickering, he said.

Production of fluorocarbons in Italy account for about five per cent of the world total, roughly the same as the Japanese total. The giant chemical concern Montedison, the prime producer in this country, will not reveal its data, but informed sources estimate the Italian production as more than 50,000 tons per year. The import-export of fluorocarbons is said to leave a similar amount for the Italian market. In this country, fluorocarbons account for half the propellants used in spray cans.

Japan—This country has scheduled full-fledged efforts to develop instruments for measuring the composition of the ozone layer sometime this year. Dr. Hisashi Muramatsu of the Japan Meteorological Agency's Research Institute is currently leading a team of experts in gathering materials for this investigation. Dr. Muramatsu said his team's efforts were initiated by the World Health Organization (WHO) and will continue under the direction of that organization.

Dr. Muramatsu contended that there are some scientists in Japan who remain highly skeptical of the theory that fluorocarbons could possibly eat away the ozone layer of the earth's stratosphere. He also pointed out that the cause of skin cancer has not yet been proven, and that whether it is caused by genetic defects or by a particular type of virus is unknown. Furthermore, he said, the majority of the Japanese scientists see the impact from SSTs as a more immediate problem that should receive attention. However, the meteorologist concedes that since the power of fluorocarbons to deplete the ozone is an already proven laboratory fact, it is important that scientists everywhere should study the matter on a worldwide basis.

A spokesman for Michio Hashimoto, director-general of the Air Quality Bureau of Japan's Environment Agency, told *WER* that officials within the bureau are aware of the possible danger and are closely following reports on the subject. But he said they are not making any moves at this time, nor would the bureau comment publicly until such time when either the OECD or WHO seek international cooperation in multilateral efforts involving studies and research into the matter.

According to statistics supplied by the Japan Fluorogas Industry Association, Japan produced 51,500 tons of fluorocarbons in 1975, 35 per cent of which were used for refrigerants, 30 per cent for propellants in spray cans, 15 per cent for blowing agents used in plastics and resins to make such a product as styrofoam, and 20 per cent for other miscellaneous purposes, including exports to other countries. The only Japanese safety regulations pertaining to fluorocarbons are precautions involving the inflammability of spray cans and the dangers of explosion.

BARBARA MASSAM, MICHAEL PARROTT,
DAVID FOUQUET, J. M. BRADLEY, VITTORIO PESCIALLO,
A. E. CULLISON

Simultaneous Planting of 7 MM Trees Performed by Sri Lankans

COLOMBO—An estimated seven million trees were planted simultaneously in various parts of Sri Lanka last month in an unprecedentedly massive tree planting campaign inaugurated by Prime Minister Sirima Bandaranaike.

As conch shells screeched and festive drums throbbed, Bandaranaike ceremonially planted three trees in Colombo to launch the campaign at 7:41 A.M.—a time decreed to be most propitious by astrologers. The first of these was an ironwood tree, the second a jak tree which yields a staple fruit as well as useful timber, and the third a king coconut palm.

Every conceivable national resource was thrown into this campaign. The night before the tree planting got under way, the Prime Minister went on the air to exhort her countrymen to plant and protect trees and to conserve the environment of their lush tropical homeland. "Trees bring rain, prevent floods and save the soil... They give us fruit, shade, add beauty to our environment, and fill our hearts with joy. Who will not be happy to see a tree laden with fruit or in full bloom? A good and full tree is a joy to behold," she said.

The Prime Minister, who said that next to air and water trees were man's greatest need, also presented some disturbing statistics. Every year, Sri Lankans cut down or otherwise destroy some 13 million trees. That means that for every man, woman, and child in this 25,000 square mile Indian Ocean island one tree a year is destroyed. Against this, the number of trees planted annually has been less than ten million.

For weeks before the tree planting campaign began, the media in Sri Lanka published numerous articles on conservation. Special radio programs were broadcast, and Bandaranaike, whose Ministry of Planning and Economic Affairs coordinated the campaign, made a special appeal in Parliament to ensure the success of the campaign.

Pivotal to the effort were Sri Lanka's three million school children who participated in the December 1 campaign by planting trees in their home gardens, school compounds, and public places. Environmental protection is now a part of the school curriculum.

The backing the campaign received from the highest political levels helped mobilize governmental and private agencies, including the military, police, the provincial administrations and a variety of other organizations including religious organizations. Even prisoners in many of the country's jails participated in the tree planting.

The Buddhist scriptures (Sri Lanka is predominantly a Buddhist country) were freely tapped to infuse a religious motif into the tree planting campaign, best summarized by the ancient exhortation: "Let whomsoever eats a fruit, plant a tree."

MANIK DESILVA

Overseas Visitors Survey U.S. Environmental Efforts

NEW BRUNSWICK, N.J.—A seminar on international environmental policy and management held at Rutgers University in New Brunswick, New Jersey, last month brought together leading environmental officials, scientists, and policymakers from Asia, Africa, Latin America, and Europe, students and faculty associated with the Rutgers International Environmental Studies Program, and representatives of the U.S. Department of State and the Institute of International Education.

The International Environmental Studies Program, which sponsored the program at Rutgers, was established in 1975, and is being developed with the cooperation of the UN Environment Programme. Supported by a grant from the U.S. Office of Education, the Program trains students for careers in international aspects of environmental management.

The Rutgers seminar was the culmination of a month-long Multi-Regional Project on the Environment, sponsored by the State Department's Bureau of Educational and Cultural Affairs, and arranged by the Institute of

The seminar sought to compare national, regional, and international approaches to environmental protection and to assess the extent to which U.S. private and public efforts in establishing environmental programs and in generating strategies for coping with particular problems may have wider applicability. Discussions in three panels focused on a series of specific questions relating to the political etiology of environment as an issue; the range and effectiveness of various strategies for managing environmental stress; and the global relevance of the U.S. experience.

The first panel considered the varied contexts in which environmental conditions have come to be seen as political and economic issues in different parts of the world, and the functions of scientific, governmental, regional and non-governmental bodies in generating concern for environmentally-related policy questions.

The emerging roles of such bodies in deriving management perspectives and strategies were analyzed in the second panel. Here, inherent contradictions between attempts to define and deal with environmental problems were noted, given the incompatibility between long-range planning requirements and short-term demands for rapid institutional and technical response to such problems as oil spills, localized chemical contamination, or specific manifestations of ecological stress on food producing systems.

We were particularly interested in the third panel, during which the overseas visitors were asked to synthesize their impressions of the U.S. approach to environmental protection and management and to comment on the extent to which their perceptions of the success or failure of U.S. policy may have instructive bearing on their home situations.

The U.S. experience in the environmental field was seen by most participants as offering guidelines which

can be followed by other countries, with modifications in administrative arrangements, regulatory practice, and legal definition and testing in keeping with individual nation's requirements. The environmental impact assessment process was felt to be of particular value, and hope was expressed that it could be more widely adopted after more careful assessment of its advantages and disadvantages. Their visit to the United States confirmed participants' impressions of the dominant role of the Environmental Protection Agency, but they also noted the wide range of environmental responsibility given to other federal agencies in keeping with the National Environmental Policy Act of 1969. This was seen as leading to communications gaps among agencies.

The range and diversity of public participation (especially through public interest and conservation groups) in the definition of environmental policy in the U.S. was thought to be of great advantage, and hope was expressed that such participation would emerge throughout the world as other countries became more environmentally conscious through formal and informal education. Some inconsistency was noted, however, in the recent approval of "bottle laws" in some states and the rejection of anti-nuclear power initiatives in others. There was also concern that perceptions in the U.S. of success or failure in the environmental field varied widely, and that particular attention should be given to the effects on various constituencies of special technical or administrative circumstances associated with a given issue, so as to encourage responses to problems that could be more widely acceptable.

Overseas participants in the Rutgers seminar included: Dr. Martin Boesch of the Swiss League for the Protection of Nature in St. Gallen, Switzerland; Dr. Rafael Esteban Caceres Perera, Assistant to the Head, Research Division on Environmental Contamination of the Ministry of Public Health and Social Welfare, Caracas, Venezuela; Paulo Basto Cruz, Executive Secretary, Commission for the Study of Pollution Control, Federaion of Industries of the State of Sao Paulo, Brazil, and Ismael Ouedraogo, Assistant Director, Forests and Environment Service, Ministry of Tourism and the Environment, Ouagadougou, Upper Volta.

Others in attendance were Dr. Otto A. Weber, Deputy Director, Institute for Medical Research, Yugoslav Academy of Sciences and Arts, Zagreb; Dr. Claude-Georges Ducret, Environmental Affairs Officer, U.N. Economic Commission for Europe, Geneva; Dr. Kwon Sook-Pyo, Director, Institute for Environmental Pollution Research, Yonsei University, Seoul, Korea, and Thomas Von Randow, science editor of the Hamburg, West Germany newspaper, "Die Zeit."

BARUCH BOXER

(Dr. Boxer, Professor of Geography and Director, International Environmental Studies Program at Rutgers, arranged the seminar reported above.)

In Brief...

Malta Opens Oil Spill Center for Mediterranean

Philippe Le Lourd, Director of the Regional Oil Combating Center for the Mediterranean, is making final preparations for the opening of the Center in Malta.

Joseph Camilleri, former Secretary to Prime Minister Dom Mintoff, and Secretary to the Cabinet, has been appointed administrator of the Center which will be housed in a government building on Manoel Island.

The Inter-Governmental Maritime Consultative Organization has stated that the establishment of a Regional Oil Combating Center in Malta is aimed at intensifying the fight against pollution in the Mediterranean Sea.

The principal objectives of the Center will be to facilitate cooperation among the coastal states of the region to combat massive spillages of oil—especially in emergency situations—and to assist the coastal states, where necessary, to develop their own national capabilities to combat oil pollution.

The Center will be operated within the framework of the program of activities of the United Nations Environment Programme (UNEP) and will be financed during the initial period of its operation by UNEP's Environment Fund.

Norway Polices Dumping Of Scrap on Continental Shelf

Norwegian environmental authorities will begin a pilot project this month designed to examine the amount of scrap that has been dumped on the seabed as a result of oil activity in the North Sea.

The survey will also consider the ecological harm of such dumping and the possible remedies. A spokes-

man for the Environment Ministry said a special budget request may be placed before Parliament for additional work at the conclusion of the initial project. It was also indicated that if the study revealed extensive violation of the regulations against scrap dumping on the continental shelf, then the restrictions and penalties might have to be tightened.

The scientists involved will make use of seismic measurements by so-called "side searching" sonar and magnetic meter, and will receive television pictures of the seabed. All drilling wells, oil and gas fields, and pipelines will be inspected, and firms violating the restrictions may be fined.

Japanese Evolve New Method To Recycle Steel-Mill Wastes

A new method of recycling wastes from steel mills developed by the Japanese Kawasaki Steel Corporation has drawn worldwide attention and resulted in a succession of inquiries from American, West German, British and French steel-makers. This Reduced Pellet method involves the recycling of iron ore dust discharged from blast and other types of steel mill furnaces to produce reduced iron ore pellets. The Kawasaki Corporation has already applied this method to its production lines, resulting in higher productivity than found in other steel plants.

According to Kawasaki, the production of pig iron and steel, in the case of the basic blast furnace operation, usually results in 10 kilograms (22 pounds) of such dust per ton of crude steel produced. Therefore, a large steel mill capable of producing 10 million tons of crude steel a year will produce 1,000 tons of such dust daily on the average and more than 360,000 tons yearly. Such discharges of steel mills, together with their gas emissions make up the two major air pollution factors.

Kawasaki also further explains that the Reduced Pellet method con-

sists in deriving pelletized iron ore with an average iron content of more than 90% by reducing such furnace dust, chiefly consisting of iron and oxygen and a little amount of zinc, by means of cokepowders which are mostly carbon. The hardware of this method has five working sections: 1) Blending of different kinds of such furnace dust. 2) Reshaping such dust into particles of roughly uniform sizes measuring 12 to 13 millimeters (0.47 inch) in diameter. 3) Warming the processed particles with a pre-heater. 4) Reducing the heated particles in a rotary kiln. 5) Refrigerating the reduced particles in a rotary cooler.

The Kawasaki Corporation points out that the difference between this system from foreign equivalents is its two-stage reduction structure made up of the pre-heater and rotary kiln, which has made it much easier to control the rotary kiln and thus ensures a much higher productivity. In the past years, the Kawasaki Corporation has been operating two units of the system with success. The first one since 1968 with a monthly capacity of 5,000 tons of reduced pellets and the second one since 1973 with a monthly capacity of 30,000 tons. A third one with a production capacity of 30,000 tons of reduced pellets a month is expected to be completed in July 1977.

Mexico City to Purchase Its Shanty-Town Properties

Mexico City officials have announced that the city will begin buying the "lost cities"—shanty towns—which have sprung up on the edges of the metropolitan area. In most cases, no taxes of any kind are paid by inhabitants of the carton and crate settlements, thus legally paving the way for city authorities to buy the land. Some 50 of these neighborhoods lack even the most elemental services such as toilets and pure drinking water, a city spokesman said.

Prague Orders Cutbacks In Imports of Refined Fuels

Radio Prague has recently announced that a major part of the increase of energy resources in the next five years will be supplied by domestic resources.

This, the commentator stated, would be "a substantial change in the increases of prime resources of energy."

To show the degree of change, he noted that in the 1971-75 period more than 90 per cent of the increase in energy use had been covered by "imports of refined fuels." In the coming years, the report continued, the increase "will be only less than one-half that amount and so the major portion must be conserved through domestic exploitation."

The report added that one-third of all investment funds set aside for industry would be spent on "the development of the fuel and energy base" in the 1976-80 plan period.

Greece Adopts Huge Irrigation Plan With World Bank Aid

The Greek Government has recently adopted an irrigation and drainage plan to increase productivity on 40,000 acres in North-western Greece. In announcing the plan, Minister of Public Works Christopher Stratos said that after completion of the works, "the area will become one of the most fertile in Greece."

The project will cost \$70 million, part of which will be financed by the World Bank, and will include four reservoirs, 390 miles of irrigation and drainage pipelines, 43 pumps, a total of 310 miles of main and side roads, and eight bridges.

Stratos said similar projects are also planned in other parts of the country, particularly in central and southern Greece where large quantities of underground waters have been located.

Mexico Orders Contamination Tests For 1977 Model Cars

Mexico has ordered contamination tests for all 1977 model cars assembled in the country. The law ordering the tests requires all manufacturing plants to submit models at least two months before sales are scheduled so they can undergo nearly 4,000 miles of testing.

Maximum permissible levels have been set for hydrocarbons, 2.1 grams per vehicle kilometer; carbon monoxide, 24.2 grams, and nitrogen oxides, 2.2 grams. Although Mexico does not produce its own cars, there are assembly plants for Ford, Chevrolet, American Motors, Datsun, Volkswagen, and Renault.

Strict Fines Set in Taiwan To Cope With Air Pollution

The Taiwan National Health Administration has put into effect the enforcement rules governing the recently passed air pollution control act.

Highlights of the enforcement rules include: 1) Air pollution control areas will be designated according to the factors of population, industrial development, traffic and supply of energy. 2) An air pollution testing station will be established in each of the industrial development areas. 3) Plants with insufficient air pollution control equipment have to submit plans for improvement to the authorities within three months after the enforcement rules become effective. 4) Individuals burning pollution-causing materials in controlled areas without permission or adequate pollution control facilities will be fined \$8 to \$80. Offending factories will be fined \$40 to \$400. 5) Plants emitting exhaust fumes causing serious hazards to human health are liable to fines of \$240 to \$800 or may even be shut down or have their licenses revoked.

Honey Storage Drums Found Contaminated in Argentina

Agricultural authorities in Buenos Aires have warned honey producers against purchasing inadequately prepared storage drums which could contaminate their product.

Because clandestine firms are selling used drums which have been improperly cleaned and lined, the producers and the public run the risk that the honey will be contaminated by the paint, chemicals, and other products previously stored in the drums.

Honey exporters have therefore asked the government to regulate the use of drums by establishing minimum sanitary conditions and insisting that only new drums be used. Thus far, however, the government has not adopted any norms and has limited itself to warning producers.

HK Passes Comprehensive Environmental Ordinance

The small and densely populated British colony of Hong Kong is stepping up its campaign against pollution by transforming its anti-pollution laws, which now fall under some ten different categories, into one comprehensive environmental ordinance.

Heavier fines for the increased detection of violators of all pollution laws are being reinforced. The Marine Department is planning to raise the present maximum fine of \$4,000 to \$8,000 or more, under the New Control of Ports Regulation and Merchant Shipping Ordinance which will be enacted within the next 6 months.

As for sea refuse, the Government has approved more than \$126,000 for the construction of a shallow draught vessel to deal with oil slicks on beaches, and to buy 10 more scavenging boats which can collect an average of 13 tons of sea rubbish daily.