



View point

Finance: the next round, the next century



*Won-Hwa Park,
Deputy Director-
General for
Science and
Environment
Affairs, Ministry
of the
Environment,
Republic of Korea*

One reason why the Montreal Protocol has worked so well is its efficient implementation mechanism backed by the Multilateral Fund. The Fund's last triennium will come to an end in 1999. It will soon be time to think of renewal for the next period starting in the year 2000. The first step in this process may be for the next Meeting of the Parties, to be held 23–25

November 1998, in Cairo, Egypt, to request the Technology and Economic Assessment Panel (TEAP) to consider the situation and submit a report for consideration by the Open-Ended Working Group (OEWG) next year.

I would like to draw the attention of

those with responsibilities for future budgets to some of our achievements. At the Ninth meeting of the Parties in September, phase-out dates were decided for methyl bromide (2005 for developed countries and 2015 for developing countries); we introduced a licensing system to operate from the year 2000 to track trade in CFCs; and we celebrated the fact that the use of more than one million tonnes of ozone-depleting substances (ODS) a year has been eliminated over the past ten years.

The freeze date of 1 July 1999 for the consumption of CFCs in developing countries is close at hand. Reaching this target will require dedicated action from Article 5 countries and accelerated progress in investment and non-investment projects by the implementing agencies—the World Bank, UNDP, UNIDO and UNEP.

At the same time we need to invent new and better ODS substitutes, wherever possible with zero ozone-depleting potential (ODP) and zero global-warming

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potential (GWP). We must also make our phase-out programmes even stronger, before it is too late to take meaningful action in protecting the Earth from further increases in dangerous ultraviolet radiation.

Mr Park is also President of the 9th Meeting of the Parties to the Montreal Protocol.

THE 1999 FREEZE IN PRODUCTION AND CONSUMPTION OF CFCs IN DEVELOPING COUNTRIES

15 months to go

24th ExCom approves US\$20 million for projects

The 24th Meeting of the Executive Committee (ExCom) to the Montreal Protocol took place in Montreal, Canada, 25–27 March 1998. The agenda included the status of contributions and disbursements of the Multilateral Fund, the 1998 business plans and work programmes of the implementing agencies, strategies and guidelines for methyl bromide projects, and policy documents

on hydrocarbon safety costs, liquid carbon dioxide and operating costs of compressors. The Committee approved projects and activities worth nearly US\$20 million, including US\$2.82 million for methyl bromide projects. Other highlights included:

- a target to phase out 28 541 ODP

continued on page 8 ...

Canada ratifies the Montreal Amendment

Canada has ratified the amendments to the Montreal Protocol agreed at the Ninth Meeting of the Parties in Montreal, Canada, last September. Key amendments were:

- methyl bromide phase-out schedule advanced by five years for developed countries;
- methyl bromide phase-out schedule established for developing countries;
- a ban on import and export of methyl bromide between states not party to the Protocol;
- an obligation for countries that cannot comply with the Protocol's production controls not to export used ODS;
- establishment of a worldwide licensing system, effective in the year 2000, to track the export and import of ODS.

Contact: Environment Canada
fax: +1 819 953 0550

The **OzonAction** newsletter is available on-line at <http://www.unepie.org/ozonaction.html>.

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News from international agencies



Fund Secretariat

The Fund Secretariat notified governments of relevant decisions of the 23rd ExCom meeting, and arranged transfer of

resources to the implementing agencies in line with the relevant ExCom decision.

The Secretariat convened a meeting of interested bilateral donors, implementing agencies, Methyl Bromide Technical Options Committee members and NGOs to develop a strategy and guidelines for projects in the methyl bromide sector, 3–4 February 1998, in Montreal, Canada.

The Secretariat also held a coordination meeting with the implementing agencies, 5–6 February 1998 in Montreal, to discuss preparations for the 24th ExCom meeting, including the revision of draft 1998 business plans. The Secretariat reviewed a number of working documents and prepared policy papers for the meeting, including the consolidated 1998 business plan, safety costs of hydrocarbon technology and use of HCFC in Fund-assisted projects.

The Secretariat made arrangements for and attended the 5th Meeting of the Sub-group on the Production Sector, 17–19 February 1998, in US EPA headquarters.

Contact: Dr Omar El Arini, Secretariat of the Multilateral Fund, 1800 McGill College Avenue, 27th Floor, Montréal, Québec H3A 3J6, Canada
Tel: +1 514 282 1122 Fax: +1 514 282 0068
E-mail: secretariat@unmfs.org



UNEP IE OzonAction Programme

The 24th ExCom Meeting approved UNEP's 1998 Business Plan, along with

funding for methyl bromide projects, activities to develop refrigerant management plans, country programme preparation, institutional-strengthening renewals and the preparation of a data reporting handbook. This brings the total for the OzonAction work programme to US\$4.68 million for 1998.

The ODS Officers Network for Southeast Asia and the Pacific had its follow-up meeting in Bangkok, 19–20 March 1998, and that for Central America had its fourth annual meeting 30 March–1 April 1998 in Panama City, Panama.

The OzonAction programme also organized two training workshops: a Train-the-Trainer workshop on Refrigerant Management Planning and Good Practices

in Refrigeration in Guatemala, 23–24 February 1998; and a Regional Workshop on Monitoring and Control of ODS Consumption for Latin America and the Caribbean, 2–4 April 1998, in Panama.

Contact: Mrs Jacqueline Aloisi de Lardere, UNEP IE, 39–43 quai André Citroën, 75739 Paris Cedex 15, France
Tel: +33 1 44 37 14 50 Fax: +33 1 44 37 14 74
E-mail: ozonaction@unep.fr
<http://www.unepie.org/ozonaction.html>



UNEP Ozone Secretariat

The Secretariat has been supporting the 1998 process of the three assessment

Panels and the seven Technical Options Committees (TOCs). It coordinated the essential use nominations, the Reporting Accounting Framework, the nominations of experts, and the support to experts from developing countries with the TEAP and TOCs; it followed up the reporting of data with the Parties; reminded developing countries of the 1999 freeze of production and consumption of CFCs; coordinated the interaction of members of the Ad Hoc Working Group of Legal and Technical Experts on Non-compliance; invited Parties to the Montreal Protocol to ratify the Montreal Amendment adopted by the Ninth Meeting of the Parties and, where relevant, the London and Copenhagen Amendments; contributed information to the Global Environmental Outlook (GEO-2); coordinated with the World Customs Organization the allocation of codes for the most used HCFCs; and distributed the new ODS data-reporting forms (see page 6).

Contact: Mr K. M. Sarma, UNEP Ozone Secretariat, PO Box 30552, Nairobi, Kenya
Tel: +254 2 623 885 Fax: +254 2 623 913
E-mail: madhava.sarma@unep.org
<http://www.unep.org/unep/secretar/ozone/home.htm>



UNDP

As of 30 March 1998, UNDP had

received US\$193 million in cumulative project approvals from the Multilateral Fund that will phase out 25 567 tonnes per annum of ODS. Completed and partially completed projects have resulted in a phase out of 6286 tonnes per annum. While most of UNDP's projects are in the refrigeration and foam sectors, a relatively large number of aerosol and halon projects were approved

at 24th ExCom meeting.

UNDP's 1998 business plan was also approved. According to this plan, UNDP will prepare 118 investment projects and 18 methyl bromide alternative demonstrations in 1998, for a value of US\$37.15 million in 24 countries: 10 in Africa, 11 in Asia and the Pacific, 1 CIS (Commonwealth of Industrialized States) country and 12 in Latin America.

Contact: Mr Frank Pinto, UNDP, 1 United Nations Plaza, New York, NY 10017, United States
Tel: +1 212 906 5042 Fax: +1 212 906 6947
E-mail: frank.pinto@undp.org



UNIDO

During 1997, UNIDO completed investment projects that phased out 2742 ODP tonnes a year,

bringing the total to 6135 tonnes out of a total approved budget of just more than 20 000 tonnes. Since January 1998, UNIDO has completed seven foams projects in which hydrocarbons were used to replace CFCs in Algeria, Kenya, Lebanon, Sudan and Tanzania; two foams projects in Brazil and Romania; and four refrigeration projects in China, Indonesia, Iran and Jordan.

From 1998 on, UNIDO will focus on investment projects in the refrigeration, foams and, increasingly, the methyl bromide sectors.

Contact: Angelo D'Ambrosio, UNIDO, PO Box 300, A-1400 Vienna, Austria
Tel: +43 1 21131 5085 Fax: +43 1 21131 6853
E-mail: adambrosio@unido.org



World Bank

At the 24th ExCom Meeting, the Bank's Business Plan, Work Program and investment projects for

China, Mexico, Thailand and Turkey were considered. A total of US\$7.36 million in investment projects were approved which will lead to the phase out of more than 1870 ODP tonnes. The end result is that the Bank's total deliverables during the 1997 business plan were US\$74.74 million. Funds for project preparation activities in Argentina, Chile, China, Ecuador, India, Indonesia, Jordan, Mexico, Pakistan, Thailand, Tunisia and Turkey were approved at about US\$1.11 million.

Contact: Ms Jessica Poppele, World Bank, 1818 H. Street, N.W. Washington D.C. 20433, USA
Tel: +1 202 477 1234 Fax: +1 202 522 3256
E-mail: jpoppele@worldbank.org

Industry and technology updates

REFRIGERANTS

Refrigerator retrofit kits developed

The refrigerator manufacturer Whirlpool has developed a retrofit kit that allows service technicians to convert refrigerators using CFCs to run on HFC-134a. The kits, which are currently available only through Sears service centres in the United States, can be used on most Whirlpool refrigerators made between 1983 and 1995. The conversion is designed to be used in cases where the compressor has failed because the kit replaces both the compressor and the refrigerant.

The conversion costs about the same as replacing the refrigerator with another CFC compressor. However, customers will still save money since they will avoid the new high prices for CFC-12 recharges and the new system uses about 25 percent less refrigerant than a CFC-12 system.

Contact: Whirlpool, fax: (1) 616 923 3785

HCFC used in new luxury cruise liner

A new Finnish-built cruise passenger ship is the first to be equipped with chillers designed for R-410A, a refrigerant

Titanic? ... No, the 2600-passenger Elation, which is fitted with non-ODS HVAC chillers from Sabroe Marine of Sweden.



From Montreal to Kyoto: towards integrated action

At the Meeting of the Parties to the Framework Convention on Climate Change in December in Kyoto, Japan, negotiators from nearly 165 nations agreed upon reduction targets for a 'basket' of six greenhouse gases: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons (HFCs), perfluorocarbons and sulphur hexafluoride. While HFCs are important replacements for some CFC refrigerant uses, and are not controlled under the Montreal Protocol, some developed countries are controlling their emissions to take advantage of 'win-win' opportunities that reduce both global warming and costs. The Kyoto Protocol commits countries to reduce overall emissions of gases within the basket but allows them to choose which emissions to reduce to achieve the greatest and most cost-effective reductions. The most common HFC is 134a, which contributes 80 percent of all HFC emissions, used in vehicle air conditioning, domestic refrigeration, commercial and residential air conditioning, and supermarket refrigeration.

Contact: Secretariat for UN Framework Convention on Climate Change, fax: +49 228 815 1999
<http://www.unfccc.de>, e-mail: secretariat@unfccc.de

developed by DuPont to replace HCFC-22. Marketed as Suva® 9100, the refrigerant is a non-flammable mixture of HFC-32 and HFC-125. It has been approved by the US EPA under its Significant New Alternatives Program (SNAP).

Built in the Kvaerner Masa shipyard in Helsinki, Finland, the 2600-passenger *Elation*, built for Carnival Cruise Lines of California, is fitted with HVAC chillers from Sabroe Marine of Sweden. These incorporate new energy-efficient Stal S80 screw compressors specially designed for high-pressure refrigerants. They have low vibration and noise levels and benefit from a reduced refrigeration charge. The *Elation* will enter service on the North American cruise routes in spring 1998.

Contact: DuPont Europe, fax: +41 22 717 6077
<http://www.dupont.com/corp/environment>

FIRE FIGHTING

US EPA bans manufacture of halon blends

The US EPA has issued a final rule that bans the manufacture of halon blends in the United States, prohibits the intentional release of halons in most situations,

UNEP IE welcomes information from industry and will mention as many new technologies and products as possible in this newsletter

requires technician training, and requires the proper disposal of halons and halon-containing equipment. The provisions of the ruling took effect on 6 April 1998. In the ruling, the US EPA points out that the ban on halon blends was primarily intended to prevent newly manufactured halon mixtures from entering the market place, and will not affect existing stocks.

The ruling does exempt the manufacture of halon blends solely for aviation applications, provided that the manufacturer requires that the blend be returned to the manufacturer (or its designee) for recycling, and subsequently recycles it to industry standards.

The ruling establishes that facilities employing technicians who handle halon or halon-containing equipment must train such technicians in halon emissions reduction.

The ban on intentional releases of halons in the ruling applies to releases

New software for chiller conversion

New software called the Transition Refrigerant Manager™ has been released by Environmental Support Solutions for analysing what to do about out-of-date chillers that use ODS.

The software can be used to determine the economic benefits of all available containment, conversion and replacement options, for all types of chillers. The company claims that analyses that used to take days or weeks by hand can now be performed in as little as 20 minutes.

ESS has also recently introduced a new version of its Refrigerant Compliance Manager 97 Professional Edition for Windows 95.

Contact: ESS, fax: +1 834-4319
e-mail: info@environ.com
<http://www.environ.com>

during technician training as well as during testing, repair and disposal of halon-containing equipment. However, the US EPA exempts some of these releases under certain conditions relating to safety, environmental and other concerns.

Finally, the ruling establishes that halon and halon-containing equipment must be properly disposed of at the end of its useful life: it must either be sent for recovery and recycling to a facility operating in accordance with specified guidelines or it must be destroyed by an approved technology. The ruling is published in the 5 March 1998 issue of the *Federal Register* (vol. 63, pp. 11084–97).

Contact: USEPA, fax (1)202-565-2096. Internet: <http://www.epa.gov/ozone/title6/608/608.html>

Aviation task group on halon options

The United States Federal Aviation Administration (FAA) is conducting a research programme to determine performance criteria and certification methods for non-halon fire extinguishing and suppression systems in cooperation with the Joint Aviation Authorities (JAA) in Europe, the Civil Aviation Authority (CAA) in the United Kingdom, and Transport Canada Aviation (TCA). The International Halon Replacement Working Group (IHRWG) was established by the FAA to provide input for this programme. Participants include aviation regulatory authorities, other government agencies involved in research and development, airframe manufacturers, airlines, industry associations, manufacturers and suppliers of fire protection equipment and agents, and researchers.

The IHRWG reviews and assesses halon-substitution technologies for each major area of on-board aircraft use:

- engine nacelles;
- hand-held extinguishers;
- cargo compartments; and
- lavatory protection.

The IHRWG maintains a review of new technologies as they appear and periodically submits updated reports. Past reports were published in February 1995 and September 1996. The Group is now working on a third report for which comments are requested.

Contact: IHRWG, e-mail: tapscott@nmeri.unm.edu
<http://nmeri.unm.edu/cget/ihrwg.htm>

Beware: counterfeit CFCs!

AlliedSignal's Fluorine Products Division has issued a statement warning purchasers of the existence of large quantities of counterfeit AlliedSignal GENETRON® 12. The cylinders have been packaged in unauthorized counterfeit AlliedSignal boxes and are marked 'AlliedSignal R-12' but are not labelled 'GENETRON®'. What the cylinders contain has not been established but it is not CFC-12. Other cylinders bearing the name of another manufacturer or repacker (enclosed in the same boxes) may or may not contain CFC-12. Brokers have been offering considerable quantities of these materials, in one instance as much as 86 truck loads.

AlliedSignal warn potential users that this counterfeit material may not be safe or suitable for use in vehicle air-conditioning systems.

Contact: AlliedSignal, fax: +1 201 455 6395
<http://www.genetron.com/index.html>

SOLVENTS

Semi-aqueous ultrasonic cleaning

The US J. M. Ney Company has introduced a new semi-aqueous ultrasonic cleaning system for defluxing and degreasing products such as circuit boards. The company claims the system, called the EnviroSONIK™, is well suited as a substitute for ozone-depleting cleaners. The system comprises four tanks enclosed in two stainless steel modules. It can be operated manually or automatically. Products are subjected in turn to ultrasonic cleaning, gravity separation for

organic materials, primary rinse, secondary rinse with optional ultrasonics, and hot air drying.

Contact: J. M. Ney, fax: +1 203 242 5688

New citrus cleaner introduced

In the United States, Oakite Products has introduced its new citrus-based cleaner CitriDet. It is claimed to be effective on hard surfaces for removing oils, rust preventatives, grease, asphalt, tar, soot, and uncured resins and inks. It is used in a water solution and can be applied by any convenient method such as a soak tank, spray, ultrasonic tanks, foam gun, or bucket and brush. Recommended cleaning operations include vapour degreasing, floor cleaning, petrochemical plant maintenance, removing tar and asphalt, and cleaning sewage treatment plants.

Contact: Oakite, tel: +1 201 464 6900

HFC 43-10 mee developed for European market

DuPont and Elf-Atochem have announced that they will jointly develop a new family of eco-efficient fluorochemical-based cleaning and drying agents for European market.

The cleaning agents, based on HFC 43-10 mee, are being offered as alternatives to CFCs, HCFCs and trichloroethane, currently widely used in defluxing, precision-cleaning and degreasing, displacement drying, and other uses.

HFC 43-10 is a proprietary non-flammable HFC fluid claimed to have zero ODP and a low global warming potential (GWP). Its physical properties are claimed to include low surface tension, selective solvency power and high thermal stability, making it suitable for use in vapour-degreasing equipment.

Developed by DuPont, the product is already available globally in a range of



*Ney's new EnviroSONIK™
semi-aqueous ultrasonic cleaning system.*

Brominated solvents: a warning

Some recently developed solvent blends have appeared on the market and are being aggressively promoted in many countries. These include chlorobromomethane and n-propyl bromide. The blends are being marketed under trade names.

These brominated solvents all have ozone-depleting potentials (ODPs). The exact ODP values have still to be determined but it is probable that the ODP of chlorobromomethane is similar to that of 1,1,1-trichloroethane, while that of n-propyl bromide is more uncertain but comparable to low-ODP HCFCs controlled by the Montreal Protocol.

The Technology and Economic Assessment Panel (TEAP) and its Solvents, Coatings and Adhesives Technical Options Committee have notified the Ozone Secretariat of the potential for significant use, as required under Decision IX/24.

N-propyl bromide has a flash point quoted between -1° and -10° C, depending on the test method employed. The regulatory authorities in Germany and Switzerland have indicated that, for this reason, n-propyl bromide is unsuitable for use in open-top vapour degreasers.

The US EPA SNAP programme has proposed chlorobromomethane as unacceptable for all solvent applications. Application has been made for approval of n-propyl bromide for precision and electronic cleaning. The US EPA plans to propose its decision on acceptable end uses and maximum exposure levels for this substance later this year.

We recommend that these solvents be handled with extreme care and used only in non-emissive applications. It is also possible that some regulatory authorities may impose further restrictions, conditions or a total ban on their use.

Brian N. Ellis, Switzerland

Dr. John R. Stemmiski, United States

(both are members of the Solvents Technical Options Committee)

Contact: Brian Ellis, fax +41 21-648 2411, e-mail: b_ellis@protonique.com

azeotropic blends marketed under the DuPont Vertrel® trademark. Under the agreement, it will now also be marketed as part of the Atochem Forane® product range.

**Contact: DuPont Europe, fax: +41 22 717 6077
http://www.dupont.com/corp/environment**

INSTRUMENTATION

In the United States, the Solar Light Company has introduced its Microtops II, a hand-held device for measuring and storing data on solar ultraviolet radiation within the UV-B range at 305, 312.5 and 320.5 nanometres. There is an option to measure total water vapour and aerosol optical thickness at 102 nm.

Measurements are made by pointing the instrument at the Sun, aligning its image with the machine's crosshairs, and pushing a button. The results of all scans are shown on the screen and are stored in the unit's memory, along with details of the date, time, site coordinates, solar angle, altitude, pressure and temperature.

Price for the basic unit is about US\$4500. The company claims the instrument is suitable for use by weather stations, scientific and educational

establishments, pollution-monitoring agencies and health care organizations.

**Contact: Solar, fax: +1 212 927 6347
e-mail: info@solar.com, http://www.solar.com**



The Microtops II ozone meter, claimed to be suitable for use by weather stations, scientific and educational establishments, pollution-monitoring agencies and health care organizations.

In brief...

○ A new commercial web site has been created for buyers and sellers of refrigerants, solvents and halons in the United States. Known as Refrigerant Clearinghouse Direct, the system is expected to start early in 1998.

**Contact: fax: +1 941 283 0027
http://www.rcdusa.com**

○ A new web site now deals with natural refrigerants. A spin-off from the Annex 22 programme of the International Energy Agency at OECD, it details the use of hydrocarbons, ammonia, carbon dioxide, water and air as replacements for ODS.

**Contact: fax: +47 732 593 950
http://www.termo.unit.no/kkt/annex22/**

○ The UK's Environmental Investigation Agency estimates that illicit trade in CFCs currently amounts to some 30 000 tonnes a year, of which between 6000 and 20 000 tonnes occur in the European Union.

Contact: EIA, fax: +44 171 490 0436

○ ICI Klea has announced that it will expand its production of HFC-134a in Mihara, Japan, from some 10 000 to nearly 15 000 tonnes a year. The company's total production will then reach 54 000 tonnes a year.

Contact: ICI Klea, fax: +1 302 887 7706

○ The Swedish International Development Cooperation Agency (Sida) is providing UNDP with US\$1 million to speed action on ozone depletion in China.

Contact: Sida, fax: +46 8 20 47 31

○ In Canada the Manitoba Ozone Protection Industry Association (MOPIA) has launched an ozone challenge contest, with prizes for those who prove to know most about preservation of the ozone layer.

**Contact: MOPIA, fax: +1 204 338 0810
e-mail: mopia@mb.sympatico.ca**



● *What is an Article 7 data report?*

Each country which is a Party to the Montreal Protocol is obligated to submit statistical data on its production, imports and exports of all controlled substances, in accordance with Article 7 of the Montreal Protocol on Substances that Deplete the Ozone Layer.

● *To whom do I send the Article 7 reports and by what date?*

The Article 7 data report needs to be submitted to the Ozone Secretariat in Nairobi by 1 September of each year. The report should contain statistical data for your country for the previous year.

● *Where can I get the new formats for this report?*

The new formats have been sent to all countries that are Parties to the Montreal Protocol by the Ozone Secretariat. You can also download a copy from the Ozone Secretariat's web page (<http://www.unep.org/unep/secretar/ozone/home.htm>). You could also request copies from the implementing agency that is assisting you in the institutional-strengthening project for a copy. The ODSNET Regional Network Coordinator can also assist you in obtaining these new formats or other additional information.

● *Who can I ask for assistance in filling out these new formats?*

You can address your queries to the Ozone Secretariat. You also have the option of contacting the implementing agency that is assisting you in the institutional-strengthening project. UNEP's ODSNET Regional Network Coordinators will also be able to guide you in this exercise. For implementing agencies and Regional Network Coordinator contacts, see the UNEP IE OzonAction web site (<http://www.unepie.org/ozonaction.html>).

● *How do I collect data for submission?*

The data can be collected through the establishment of a consultative system with customs and licensing departments, importers and large manufacturing industries of ODS and ODS-containing equipment, ministries of trade and industry, bureaus of standards and other national bodies. The data can be cross-referenced through data collected from distributors, service and maintenance workshops, fire-fighting departments, hotels and other major consumers of ODS.

● *What if the data I submitted earlier is incorrect?*

You have the option of submitting amended data to the Ozone Secretariat and informing them of the inaccuracies found in the earlier report and requesting them to replace the wrong report with the amended one.

● *Do I have to report on methyl bromide and HCFCs?*

Yes, but only if your country has ratified the Copenhagen Amendment.

● *Is the Article 7 data report an essential component in assessing whether my country will meet the freeze requirements?*

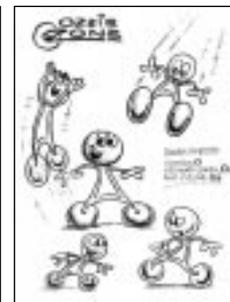
Yes. The Article 7 report enables a review of your country's trends in consumption and production of Annex A CFCs over the past years. Additionally, the level of consumption at which the freeze will be realized will be determined by averaging the data reported from 1995 to 1997.

Contacts:

Ozone Secretariat: fax: +254 2 623913; <http://www.unep.org/unep/secretar/ozone/home.htm>
UNEP IE OzonAction Programme: fax: +33 1 44 37 14 74; <http://www.unepie.org/ozonaction.html>

Spreading the word

National Ozone Units continue to produce information awareness products. Shown below are the most recent publications, from Bolivia (top), Egypt (bottom left) and Barbados (bottom right).



Contacts: NOU Bolivia, fax: +591 2 37 2063
 NOU Egypt, fax: +202 378 42 85
 NOU Barbados, fax: +1 246 429 2448

Phase-out successes

Another Indian company eliminates CFCs in foam blowing

Preto Foams, an enterprise based in Hyderabad, India, has phased out 12 tonnes of CFC-11 annually, in the manufacture of cold cured moulded and integral skin polyurethane foam, mostly used for the production of vehicle seat cushions and steering wheels. This was achieved through a project (IND/FOA/19/INV/76) funded by the Multilateral Fund (US\$167 000) approved in November 1995 and implemented by UNDP/UNOPS. The conversion technology selected by Preto Foams is the use of fully water-blown systems. Transfer of technology was provided by the implementing agency's consultant, by the equipment manufacturer and by the chemical supplier. The project is part of the UNDP/UNOPS foam sector programme in India which consists of 43 investment projects and an umbrella project covering an additional 80 small and medium-sized enterprises (SMEs). These projects will eliminate a total of 381 ODP tonnes per year.

Contact: UNDP, fax: +1 212 906 6947

Ozone science news

Ozone hole update

Last year's Antarctic ozone hole was one of the strongest, very similar to those of the past six to seven years. For nearly 80 days, the surface of the ozone hole was constantly greater than 10 million km². From mid-September until the second half of October, for more than 40 days, it spread over 20 million km² with a maximum of approximately 24 million km² (close to the highest of about 25 million km² reached in 1996) during 23–27 September. Ozone depletion in the lower stratosphere caused reduction of the monthly means in September, October and November in the 12–20 km layer by about 60, 85, and 75 percent respectively compared with the 1970s values at Syowa. At its largest, the ozone hole now extends into the southern tip of South America.

In the northern middle and polar latitudes, overall ozone values during December to February were about or only slightly below the long-term averages. For short periods of a week or two at the end of December and the middle and end of February, there were losses of about 10 percent over Europe and about 20 percent over the Arctic. The lower stratospheric temperatures were relatively high and thus did not support ozone destruction processes.

Contact: Dr R. D. Bojkov
fax: +41 22 734 23 26;
e-mail: bojkov_r@gateway.wmo.ch

Halon levels increasing

Atmospheric halon levels continue to increase in the atmosphere according to a new study by the US National Oceanic and Atmospheric Administration's Climate Monitoring and Diagnostics Laboratory in Boulder, Colorado. The studies, which were reported in the *Journal of Geophysical Research* (20 January 1998), indicate that three bromine-containing fire extinguishants, halons H-1211, H-1301 and H-2402 are still being released into the atmosphere.

The findings are the result of a ten-year analysis of air samples from eight remote climate monitoring stations and seven research cruises in the remote ocean.

Lead author James Butler commented: 'These increases are significant and of concern because of the efficiency of bromine in depleting stratospheric ozone and because of the long atmospheric lifetimes of these gases'.

The sources of the compounds are halons produced before the ban on production in developed countries, and from current production in developing nations.

Contact: Climate and Monitoring Diagnostics Laboratory, <http://www.cmdl.noaa.gov/noah>

European Commission launches THESEO campaign

The European Commission (EC) has launched the Third European Stratospheric Experiment on Ozone (THESEO) to monitor and study ozone depletion over Europe. The programme will run until the end of 1999 and will involve more than 400 scientists in the EU, Canada, Iceland, Japan, Norway, Poland, Russia, South Africa, Switzerland and the United States. Measurements will be made from 30 ground-based stations, 6 research aircraft, more than 1000 ozonesondes launched from 30 stations in 19 countries, and more than 40 stratospheric balloons.

The programme will study the Arctic ozone hole (which has registered up to 50 percent ozone depletion over the past three winters) and the total ozone decline over Europe (down 10 percent since the 1970s).

Contact: DG XII-D, fax: +32 2 295 88 15
e-mail: georgios.amanatidis@dg12.cec.be

The bacterium that eats methyl bromide

Scientists with the US Geological Survey (USGS) have discovered a bacterium in the soil that thrives on low levels of methyl bromide. The strain, a rod-like organism, is called IMB-1, and is closely related to the *Rhizobium* bacteria that convert atmospheric nitrogen to a more useful form in the soil. It grows by oxidizing methyl bromide and similar chemicals. The rate at which methyl bromide disappears from the soils can thus be greatly accelerated by the addition of this bacterium to the soil, without adding to atmospheric emissions. Typically, methyl bromide disappears from soils treated with the bacterium within 1–2 days, compared to 7 days for untreated soils. However, the organism is killed by high concentrations of methyl bromide. Scientists at the USGS are now working on ways to mass produce the bacteria for soil application.

Contact, Ronald S. Ormeland, USGS
tel: +1 650 329 4482
e-mail: roremelan@usgs.gov

Network news

Southeast Asia and the Pacific

The follow-up meeting for the ODS Officers network for Southeast Asia and the Pacific was held in Bangkok, Thailand, 19–20 March 1998. The meeting was attended by ODS Officers from Fiji, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Sweden, Thailand and Vietnam, and by the director of UNEP's Regional Office for Asia and the Pacific and a representative from the donor country, Sweden. The agenda for the main meeting was discussed, and will include:

- alternatives to methyl bromide in pre-shipment and quarantine;
- measures and assistance needed to phase out ODS consumption by SMEs;
- alternatives to HCFC in air-conditioning, refrigeration and foams;
- policy measures and activities carried out by developed countries to phase out ODS in the servicing sector; and
- the needed assistance to develop ODS monitoring and control/licensing systems.

Refrigerant Management Plans for Southern and Eastern Africa

Fourteen National Ozone Units (NOUs) from southern and eastern African countries plus representatives from the German cooperation agency GTZ and from the UNEP IE OzonAction Programme met in Windhoek, Namibia, 10–12 March 1998, to discuss the development of Refrigerant Management Plans (RMPs). The adoption of national RMPs will be a crucial step in efforts to comply with the 1999 freeze for CFCs and the reduction steps that follow. The workshop was part of a bilateral project for the development of RMPs for 10 low-volume ODS-consuming countries in Southern and Eastern Africa. The project has been approved by the Multilateral Fund as a German bilateral project.

The participating countries were made aware of the actions needed to implement RMPs, and action plans were agreed. During the workshop, Namibia and Ethiopia agreed to start training programmes on the recovery and recycling of ODS by the summer of 1998. The Government of Finland will support these two training projects.

Contact: UNEP IE OzonAction Programme,
fax: +33 1 44 37 14 74
<http://www.unepie.org/ozonaction.html>

SPECIAL FEATURE : National Ozone Units speak up



**Carmen
Mora
Doanyre**

**ODS Officer,
Peru**

● *What are the major achievements of your National Ozone Unit over the past three years?*

'We have improved coordination with dealers and import companies, users of ODS, service companies and technical associations. We have also updated the information in the Peruvian Country Programme, which has enabled us to quantify ODS use by sector. We have also had a number of projects approved: four in commercial refrigeration, and three in the solvents sector.'

● *What have been the major difficulties in meeting your goals?*

'We need more people who can speak with authority about the problems of

ozone depletion; more public information in local languages; better equipment such as laboratories and computers; and technical and financial assistance to enable us to work with SMEs.'

● *What steps are you taking to meet the 1999 freeze?*

'We are implementing ten industrial conversion projects as well as the National Recovery Program, the Coolant Recycling Program, and training in good practices in refrigeration. At the same time we are developing training, diffusion, supervision and follow-up activities, and will enact the necessary legislation. If there are no unforeseen difficulties, it won't be difficult for us to meet the 1999 freeze.'

● *What lessons have you learned that could be helpful to other developing countries?*

'All the work I've done as an Ozone Officer has convinced me that to reach any goal, the first step is to identify the real problems and then design a Strategic Plan which outlines the best means of

overcoming them. Without such a plan, mistakes can be made at an early stage which will distract attention from the real issues. Although many countries have similar problems, each is different in detail and therefore we can't use the same strategy everywhere. However, exchanging experiences can be very useful at the planning stage. In Peru, participation has been a key ingredient of our Strategic Plan, and so the first steps for us were coordination with entrepreneurs, providing advice for the formulation and implementation of projects, followed by diffusion and training seminars. At the same time, we are developing recovery and recycling programmes, and training in good refrigeration practices. With this background we can enact the proper legislation without serious damage either to industry or consumers. But supervision is needed in every single aspect of our work.'

Contact: NOU Peru, fax: +51 1 2 243264

e-mail: mitinci@ambien.gob.pe

Note: the National Ozone Unit of Peru was recognized as one of the outstanding NOUs at the 10th Anniversary Celebrations of the Montreal Protocol held in September 1997.

... continued from page 1

tonnes of consumption and 11 400 tonnes of production by the end of 1998;

- countries experiencing significant delays in implementation could be eliminated from business plans if the causes of the delays were not addressed;
- the strategy and guidelines for methyl bromide were approved;
- US\$600 000 was allocated for technical audits of ODS production in countries that have submitted satisfactory data on the production sector;
- each agency's disbursement target for 1998 should be 70 percent of funds approved to the end of 1997 for all funded projects;
- major issues for discussion at the next meeting are likely to include the progress reports of the implementing agencies.

**Contact: Multilateral Fund,
fax: +1 514 282 0068
e-mail: secretariat@unmfs.org**

Attention focuses on environmental crime

The environment ministers of the G8 nations (Canada, France, Germany, United Kingdom, United States, Italy, Japan and Russia) and representatives of the European Union met April 3-5 1998 to discuss the key environmental issues that face the world. One of the issues involved current efforts to combat growing violations of international environmental agreements. The ministers decided to protect existing multilateral environmental agreements by increasing cooperation between their nations in taking enforcement actions against environmental crimes. The steps agreed to by the ministers included continuing to fight the illegal trade in ODS, hazardous waste and protected species; sharing information and collaborative efforts to detect and prosecute transboundary environmental violations; supporting international efforts to train law enforcement officers in environmental enforcement; and fully

utilizing international organizations, such as Interpol, the World Customs Organization, and the International Maritime Organization, in the effort to fight environmental crime.

On 23 March 1998, Joseph Kodel, of Miami, Florida, was ordered to pay a US\$6.3 million penalty for evasion of excise taxes. Kodel's company, Florida Motor Oil Distributors Inc., violated federal law by not possessing CFC consumption allowances that are required under federal law, and by not paying more than US\$6 million in federal CFC excise taxes. In addition, he was sentenced to 12 months home confinement and placed on three years probation. Kodel previously pleaded guilty to charges that arose from the illegal distribution of 580 tonnes of CFC-12.

**Contact: EC DGXI, fax: +32 2 29 69 559
US EPA, fax +1 202 565 2096**

Meetings and workshops

Foam TOC holds workshop in India

The Foams Technical Options Committee held a workshop on foam-blowing technologies in Asia in New Delhi, India, 16 March 1998. There were presentations on the latest commercial technologies in use and case studies were presented by Indonesia, Malaysia, Philippines and India on projects completed under the Multilateral Fund. Participants explored the issue of what actions SMEs should take and what can be done about safety issues. The local Polyurethane Association agreed to make follow-up studies on these issues, and on the suitability of equipment manufactured elsewhere for developing countries and the rising prices of chemicals.

Contact: Polyurethane Association of India
fax: +91 40 271907

Emerging trends in refrigeration

The International Institute of Refrigeration conference on emerging trends in refrigeration and air conditioning was held in New Delhi, India, 18–20 March 1998. Organized by the Mechanical Engineering Department of the Indian Institute of Technology, the meeting discussed a number of important topics:

- the use of HFCs in view of the new requirements of the Kyoto Protocol;
- the implications of energy efficiency for ODS-free technologies;
- substitutes for HCFCs; and
- technology transfer and policy issues in relation to HFC use, energy standards and the safety of hydrocarbons.

Contact: International Institute of Refrigeration
fax: +33 1 47 63 17 98

African workshop on SMEs

The workshop on Ozone Depletion and Management of ODS-phase out in SMEs for the African Region was organized by the Centre for Science and Technology of the Non-aligned and other Developing Countries (NAM S&T Centre) in Pretoria, South Africa, 7–10 October 1997, with the support of UNEP. It was held at the Foundation for Research Development of South Africa in Pretoria and was co-sponsored by the Commonwealth Science Council, London.

There were 21 presentations at the various technical sessions dealing with the phasing out of ODC by eminent scientists and technologists from South Africa and

other African countries, India and UN organizations. These were followed by a panel discussion on recommendations and a concluding session. The workshop was attended by representatives from Egypt, Lesotho, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe, and from UNEP and UNIDO.

Participants recommended that member countries should survey and collect focussed data on SMEs operating in their countries and quantify the consumption of various ODS. They also recommended a regional approach to assisting SMEs in retrofitting, setting up regional advisory and training centres, organizing training programmes, seminars and workshops within the country and outside, and information dissemination in local languages.

Contact: NAM S&T Centre, fax: +91 11 464 4973

Guatemala workshop on refrigeration

The National Train the Trainer Programme on Good Practices in Refrigeration and Refrigerant Management Plan for Guatemala was launched in Guatemala City with the first workshop for trainers, 23–27 February 1998.

The Programme is being implemented by the OzonAction Programme of the UNEP Industry and Environment centre, in cooperation with the National Ozone Office from Guatemala, and is being funded by the Multilateral Fund for the Implementation of the Montreal Protocol.

The objectives of the programme are to train and certify 26 trainers and 425 refrigeration technicians, to establish an accreditation system for refrigeration technicians, equip four classrooms with recovery equipment, complete the design of a Refrigerant Management Plan for Guatemala and avoid the use of approximately 68 tonnes of CFC per year in the servicing of refrigeration equipment.

Twenty trainers from technical training schools and managers from servicing workshops participated. The programme will be followed by approximately 34 training courses for refrigeration technicians. The whole programme will be completed by the end of 1999.

Apart from preparing the 20 trainers, the workshop was successful in allowing these trainers to organize future phases of the programme. The workshop also created the first refrigeration trade

association in Guatemala and completed the Refrigerant Management Plan.

Contact: Guatemalan Ozone Focal Point
fax: +502 360 0445

Refrigerants of the 21st century

Some 115 participants attended a meeting organized by CETIM (the French Centre Technique des Industries Mécaniques) in Paris, France, 10 March 1998, to discuss alternatives to the refrigerant R-22. They included research scientists and end users, and representatives from the refrigeration industry, and ministries of environment and industry. Special concern was expressed about reducing emissions of R-22 further in the light of the Kyoto Protocol which had been concluded the previous December. A representative from the French Ministry of Industry explained that the French government intended to apply the Protocol in a consultative, non-authoritative way to encourage industrial initiatives. The French laboratories ARMINES (Association pour la Recherche et le Développement des Méthodes) and CETIM are already working on methods of improving containment, with financial support from ADEME, the French Agency for Environmental Protection.

Contact: CETIM, fax: +33 3 44 67 34 00

ODS control and monitoring in Latin America

A Regional Workshop on Control and Monitoring of ODS Consumption for Latin America was held in Panama City, 2–4 April 1998. Nineteen countries participated in the workshop which was organized by the UNEP IE OzonAction Programme and the Government of Panama, and funded by the Multilateral Fund.

The workshop's objective was to provide policy and technical assistance to help countries put in place legal systems to control and monitor ODS consumption with the goal of meeting their freeze targets in 1999 and the reduction steps that will follow under the Montreal Protocol. By the end of the workshop, all participating countries had prepared action plans, and the necessary links between National Ozone Units and their counterparts in the Customs Departments had been made to start implementation.

Contact: NOU Panama, fax: +507 2 275276

Status of Ratification

(as at 31 March 1998)

The Vienna Convention
166 Parties; no new Parties

The Montreal Protocol
165 Parties; no new Parties

The London Amendment
120 Parties; new Party: Lithuania

The Copenhagen Amendment
78 Parties; new Party: Lithuania

The Montreal Amendment
1 Party; new Party: Canada

Classified

Saint Vincent and the Grenadines, Article 5 country

Forthcoming meetings

Ad Hoc Working Group of Legal and Technical Experts on Non-Compliance, Geneva, Switzerland, 3–4 July 1998

20th Implementation Committee under the Non-Compliance Procedure for the Montreal Protocol, Geneva, Switzerland, 6 July 1998

First Meeting of the Bureau of the 9th Meeting of the Montreal Protocol, Geneva, Switzerland, 6 July 1998

17th Meeting of the Open-Ended Working Group of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, Geneva, Switzerland, 7–9 July 1998
Environmental Effects Assessment Panel, 9–17 August 1998, Hawaii, United States

The Earth Technologies Forum (Ozone Layer and Climate Protection), Washington DC, United States, 26–28 October 1998

Methyl Bromide Technical Options Committee Meeting, United Kingdom, 6–14 September 1998

Second Meeting of the Bureau of the 9th Meeting of the Montreal Protocol, Cairo, Egypt, 17 November 1998

Implementation Committee under the Non-Compliance Procedure for the Montreal Protocol, Cairo, Egypt, 17 November 1998

18th Meeting of the Open-Ended Working Group of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, Cairo, Egypt, 18–20 November 1998

Tenth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, Cairo, Egypt, 23–25 November 1998

For additional information, see
<http://www.unepie.org/ozonaction.html>
<http://www.teap.org>

World policy round-up

Fiji drafts ozone bill

The Government of Fiji has drafted an ozone bill that will establish the mechanisms needed to control the import, storage and use of ODS, and provide for the implementation of the Vienna Convention and Montreal Protocol. Actions included are the creation of an Ozone Depleting Substances Unit, an Ozone Layer Protection Fund, and the development of an ozone strategy and action plan. The new ozone unit will be responsible for licensing operators to recycle and store ODS. The bill also bans the bulk import and manufacture of controlled ODS from 31 December 1999.

Contact: NOU Fiji, fax: +679 312879
e-mail: S96007238@usp.ac.fj

Ethiopia halves duty on CFC-free equipment

Ethiopia has halved the duty payable on imports of CFC-free refrigerating equipment, and increased to 15 percent the duty payable on controlled solvents such as carbon tetrachloride and 1,1,1-trichloroethane.

Contact: NOU Ethiopia, fax: +251 1 51 70 66
e-mail: NMSA@padis.gn.apc.org

Jamaica bans import of CFCs

Jamaica has banned the import of CFCs and equipment containing CFCs with effect from 1 March 1998.

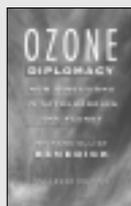
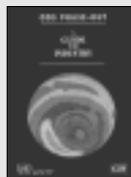
Contact: NOU Jamaica, fax: 1 876 923 5070
e-mail: nrca@infochan.com

Recent publications

ODS Phase-out: a guide for industry, Asian and Pacific Centre for Transfer of Technology and the Confederation of Indian Industry, New Delhi, India, 1998

Ensuring Patient Care: the role of the HFC MDI, International Pharmaceutical Aerosol Consortium, 1997

Ozone Diplomacy: new directions in safeguarding the planet, Richard Elliot Benedick, Harvard University Press, 1998, enlarged edition



Ukraine to license

ODS imports and exports

On 30 March 1998 the Ukraine Cabinet of Ministers passed a decree that requires firms planning to import or export ODS to obtain a permit from Ukraine's Ministry for Environmental Protection and Nuclear Safety.

Contact: Minecobezpeky, e-mail: demkin@meq.freenet.kiev.ua

Colombia launches awareness campaign

The Colombian Ministry of the Environment launched a major campaign called National Awareness on the Ozone Layer on 17 March 1998. The first phase of the campaign will include 330 national training courses for technical staff working on the recovery and recycling of domestic refrigerators. This will be followed by the distribution of information material to schools, colleges and both public and private universities in Colombia. 'The aim is to sensitize all sectors on the common commitment that has to be made in the face of ozone depletion', said the Minister of the Environment, Eduardo Verano de la Rosa.

Contact: Colombian NOU, fax: +571 283 3752

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Editorial Board: Mrs J. Aloisi de Larderel, Dr S. Andersen, Dr S. Carvalho, Dr O. El-Arini, Mr P. Horwitz, Dr M. Kerr, Mrs I. Kökeritz, Dr L. Kuijpers, Mr G. Nardini, Mr K. M. Sarma, Mr R. Shende, Mr D. Stirpe, Mr M. Verhille, Mr J. Whitelaw, Mr Liu Yi

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Please send comments and material for publication to Mr Rajendra Shende, Coordinator, OzonAction Programme, at the address below.

UNITED NATIONS ENVIRONMENT PROGRAMME
INDUSTRY AND ENVIRONMENT (UNEP IE)

OZONACTION PROGRAMME

Tour Mirabeau
39–43 Quai Andre Citroën
75739 Paris Cedex 15, France

TEL: +33 1 44 37 14 50 FAX: +33 1 44 37 14 74
TELEX: 204 997 F CABLE: UNITERRA PARIS

E-MAIL: ozonaction@unep.fr
<http://www.unepie.org/ozonaction.html>