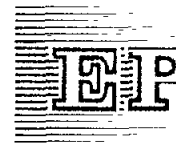


United Nations  
Environment  
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in co-operation with ECE, UNIDO, FAO, UNESCO, WHO, IAEA

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Meeting of Experts on Pollutants  
from Land-Based Sources

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Technical Annexes proposed for inclusion in the draft  
Protocol for the Protection of the Mediterranean Sea  
against Pollution from Land-Based Sources

Introduction

The technical annexes attached hereto relate directly to principles 4, 5 and 7 of the "Principles recommended for inclusion in the draft Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources" (UNEP/IG.6/6). As agreed at the Intergovernmental Consultation concerning a draft Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources, Athens, February 1977, the annexes are submitted to this meeting with a view to preparing agreed recommendations for consideration by the second intergovernmental consultation concerning a draft protocol to be convened in Venice from 17 to 21 October 1977.

Since the technical annexes were first presented at the Athens Intergovernmental Consultation, they have been revised in light of the comments made by the Governments of the Mediterranean Coastal States and the recommendations made by the Workshop on Coastal Water Pollution Control that was convened jointly with WHO in Athens from 27 June through 1 July 1977.

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ANNEX I

A. In the following groups, harmful substances and materials are to be selected mainly on the basis of their

- toxicity
- persistence
- bioaccumulation,

being excluded those which are biologically harmless in concentrations in which they usually occur, or which are rapidly converted into biologically harmless substances. These groups of substances are listed for the purpose of principle 4 of the Protocol which requires strict measures for their elimination from land-based sources.

1. Organohalogen compounds and substances which may form such compounds in the marine environment.
2. Organophosphorus compounds and substances which may form such compounds in the marine environment.
3. Organotin compounds and substances which may form such compounds in the marine environment.
4. Mercury and mercury compounds.
5. Cadmium and cadmium compounds.
6. Persistent mineral oils and persistent hydrocarbons derived from petroleum origin.
7. Persistent synthetic materials which may float, sink or remain in suspension and which may interfere with any legitimate use of the sea.
8. Substances which possess proven or suspected carcinogenic, teratogenic or mutagenic properties in or through the marine environment.

B. This Annex applies to all wastes from land-based sources, including municipal and industrial discharges as well as any other point and non-point sources, with the exception of those which contain the substances referred to in section A as trace contaminants only. The discharge of such wastes shall be subject to the provisions of Annexes II and III as appropriate.

## ANNEX II

A. The following waste substances and materials are selected mainly because they may endanger human health or marine organisms or may have other adverse effects on the marine environment, although these effects may be limited to the coastal water zone receiving such wastes. One or more of the following criteria may justify their inclusion:

- toxicity
- persistence
- bioaccumulation
- potentiation of the effects of other toxic substances
- deleterious organoleptic effects on edible marine organisms
- reduction of amenities
- adverse effects on the oxygen balance
- impairment of other legitimate uses of the sea.

Waste substances are listed hereunder for the purpose of principle 5 of the Protocol which requires strict limitation of their discharges from land-based sources.

1. The following elements and their compounds:

1. zinc	6. selenium	11. tin	16. vanadium
2. copper	7. arsenic	12. barium	17. cobalt
3. nickel	8. antimony	13. beryllium	18. thalium
4. chromium	9. molybdenum	14. boron	19. tellurium
5. lead	10. titanium	15. uranium	20. silver

2. Biocides and their derivatives not covered in Annex I.
3. Organosilicon compounds and substances which may form such compounds in the marine environment excluding those which are biologically harmless in concentrations in which they usually occur, or are rapidly converted into harmless substances.
4. Non-persistent mineral oils and non-persistent hydrocarbons derived from petroleum origin.
5. Cyanides and fluorides.
6. Non-biodegradable detergents and other surface-active substances.

7. Inorganic compounds of phosphorus and elemental phosphorus.
8. Pathogenic micro-organisms which are liable to endanger human health or marine organisms or to impair other legitimate uses of the sea because of their concentrations in the marine environment and the coastal waters in particular.
9. Waste heat releases.
10. Radioactive wastes and other radioactive matter.
11. Any other known or new waste substances and materials which are likely to produce deleterious environmental effects as described above but are not listed under items 1 to 10.

B. This Annex applies to all wastes from land-based sources, including municipal and industrial discharges as well as any other point and non-point sources, with the exception of those which contain the substances referred to in section A as trace contaminants only. The discharge of such wastes shall be subject to the provisions of Annex III.

C. The control and strict limitation of the discharge of substances referred to in section A should be implemented in accordance with the criteria set out in Annex III.

ANNEX III

According to principle 5 of the Protocol, the factors to be considered in establishing criteria governing the issue of an authorization for the discharge of wastes containing substances referred to in Annex II include:

A. Characteristics and composition of the waste

A general characterization of wastes provides for their classification and assessment of potentially harmful properties:

1. Type and size of waste source (industrial process, etc.).
2. Type of waste (origin, average composition).
3. Form of waste (solid, liquid, sludge, slurry).
4. Total amount (volume, e.g. per year).
5. Discharge pattern (continuous, intermittent, seasonal variations, etc.).
6. Concentrations with respect to major constituents, substances listed in Annex I, substances listed in Annex II, and other substances as appropriate.
7. Physical, chemical and biochemical properties of the waste.
8. Presence of pathogenic micro-organisms.

B. Characteristics of potentially harmful waste constituents

The potential harmfulness of specific waste constituents requires individual evaluation in the light of actual concentrations and amounts discharged:

1. Persistence (physical, chemical, biological) in the marine environment.
2. Toxicity and other harmful effects.
3. Accumulation in biological materials or sediments.
4. Biochemical transformation rendering harmful compounds.
5. Susceptibility to physical, chemical and biochemical changes and interaction in the aquatic environment with other sea-water constituents which may produce harmful biological or other effects on any of the uses listed in section E below.

C. Characteristics of discharge site and receiving water

The local conditions of the water into which the wastes are discharged require consideration with regard to the following:

1. Hydrographic, meteorological, geological and topographical conditions of the coastal area.
2. Location of the waste discharge (outfall, canal, outlet, etc.) and its location in relation to other areas (e.g. amenity areas, spawning, nursery and fishing areas, shellfish grounds), and other discharges.
3. Initial dilution achieved at the point of waste release.
4. Dispersion characteristics (e.g. effects of currents, tides and wind on horizontal transport and vertical mixing).
5. Water characteristics with respect to physical, chemical, biochemical, biological and ecological conditions in the discharge area.
6. Capacity of the receiving water to absorb waste discharges without undue effects.

D. Availability of waste treatment technology

The method of waste treatment and discharge should be selected with the following considerations taken into account:

1. Availability of alternative methods for reuse or disposal of wastewaters on land.
2. Feasibility of alternative methods for municipal sewage treatment and disposal and for combined treatment of industrial and domestic wastewaters.
3. Acceptable methods for disposal of waste treatment residuals on land.
4. Availability of specific treatment processes for hazardous industrial waste constituents or for their transformation into substances less harmful for discharge into the sea.

E. Potential impairment of sea-water uses

An assessment of the possible impact of waste discharges on the following uses of the sea and the coastal waters is required:

1. Effects on human health through pollution impact on:
  - (a) fish and shellfish;
  - (b) bathing waters;
  - (c) aesthetics.
2. Effects on living resources, in particular on:
  - (a) fisheries;
  - (b) fishing activities;
  - (c) aquaculture;
  - (d) others, including birds and mammals.
3. Effects on marine ecosystems.

Principle 7. Discharges from new installations  
(revised version)

[ The Parties should, through the implementation, jointly or individually as appropriate, of programmes and measures, ensure within ... year(s) from the entry into force of the Protocol that domestic or industrial wastes reaching the Protocol Area from newly established installations as defined in Annex IV are discharged in such manner or, as necessary, after such treatment as to avoid deleterious effects on the marine environment which interfere with any existing or foreseeable legitimate uses.]

ANNEX IV

A. "New installation" for the purposes of Principle 7 of the Protocol means any industrial, commercial, residential and tourist construction or site,

- (i) for which the building contract is placed or, in the absence of a building contract, the construction or site works are commenced after the expiry of ... year(s) from the entry into force of the Protocol; or
- (ii) which is completed three years or more after that date.

B. Extensions or conversions of existing installations shall be considered as new installations if the resulting increase in the waste discharge exceeds 25 per cent of the previous waste load.