

**1998 PROTOCOL TO THE 1979 CONVENTION ON  
LONG-RANGE TRANSBOUNDARY AIR POLLUTION ON  
HEAVY METALS**

The Parties,

Determined to implement the Convention on Long-range Transboundary Air Pollution,

Concerned that emissions of certain heavy metals are transported across national boundaries and may cause damage to ecosystems of environmental and economic importance and may have harmful effects on human health,

Considering that combustion and industrial processes are the predominant anthropogenic sources of emissions of heavy metals into the atmosphere,

Acknowledging that heavy metals are natural constituents of the Earth's crust and that many heavy metals in certain forms and appropriate concentrations are essential to life,

Taking into consideration existing scientific and technical data on the emissions, geochemical processes, atmospheric transport and effects on human health and the environment of heavy metals, as well as on abatement techniques and costs,

Aware that techniques and management practices are available to reduce air pollution caused by the emissions of heavy metals,

Recognizing that countries in the region of the United Nations Economic Commission for Europe (UN/ECE) have different economic conditions, and that in certain countries the economies are in transition,

Resolved to take measures to anticipate, prevent or minimize emissions of certain heavy metals and their related compounds, taking into account the application of the precautionary approach, as set forth in principle 15 of the Rio Declaration on Environment and Development,

Reaffirming that States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and development policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction,

Mindful that measures to control emissions of heavy metals would also contribute to the protection of the environment and human health in areas outside the UN/ECE region, including the Arctic and international waters,

Noting that abating the emissions of specific heavy metals may provide

additional benefits for the abatement of emissions of other pollutants,

Aware that further and more effective action to control and reduce emissions of certain heavy metals may be needed and that, for example, effects-based studies may provide a basis for further action,

Noting the important contribution of the private and non-governmental sectors to knowledge of the effects associated with heavy metals, available alternatives and abatement techniques, and their role in assisting in the reduction of emissions of heavy metals,

Bearing in mind the activities related to the control of heavy metals at the national level and in international forums,

Have agreed as follows:

Article 1

DEFINITIONS

For the purposes of the present Protocol,

1. "Convention" means the Convention on Long-range Transboundary Air Pollution, adopted in Geneva on 13 November 1979;
2. "EMEP" means the Cooperative Programme for Monitoring and Evaluation of Long-range Transmission of Air Pollutants in Europe;
3. "Executive Body" means the Executive Body for the Convention constituted under article 10, paragraph 1, of the Convention;
4. "Commission" means the United Nations Economic Commission for Europe;
5. "Parties" means, unless the context otherwise requires, the Parties to the present Protocol;
6. "Geographical scope of EMEP" means the area defined in article 1, paragraph 4, of the Protocol to the 1979 Convention on Long-range Transboundary Air Pollution on Long-term Financing of the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP), adopted in Geneva on 28 September 1984;
7. "Heavy metals" means those metals or, in some cases, metalloids which are stable and have a density greater than 4.5 g/cm<sup>3</sup> and their compounds;
8. "Emission" means a release from a point or diffuse source into the

atmosphere;

9. "Stationary source" means any fixed building, structure, facility, installation, or equipment that emits or may emit a heavy metal listed in annex I directly or indirectly into the atmosphere;

10. "New stationary source" means any stationary source of which the construction or substantial modification is commenced after the expiry of two years from the date of entry into force of: (i) this Protocol; or (ii) an amendment to annex I or II, where the stationary source becomes subject to the provisions of this Protocol only by virtue of that amendment. It shall be a matter for the competent national authorities to decide whether a modification is substantial or not, taking into account such factors as the environmental benefits of the modification;

11. "Major stationary source category" means any stationary source category that is listed in annex II and that contributes at least one per cent to a Party's total emissions from stationary sources of a heavy metal listed in annex I for the reference year specified in accordance with annex I.

## Article 2

### OBJECTIVE

The objective of the present Protocol is to control emissions of heavy metals caused by anthropogenic activities that are subject to long-range transboundary atmospheric transport and are likely to have significant adverse effects on human health or the environment, in accordance with the provisions of the following articles.

## Article 3

### BASIC OBLIGATIONS

1. Each Party shall reduce its total annual emissions into the atmosphere of each of the heavy metals listed in annex I from the level of the emission in the reference year set in accordance with that annex by taking effective measures, appropriate to its particular circumstances.

2. Each Party shall, no later than the timescales specified in annex IV, apply:

(a) The best available techniques, taking into consideration annex III, to each new stationary source within a major stationary source category for which annex III identifies best available techniques;

(b) The limit values specified in annex V to each new stationary source within a major stationary source category. A Party may, as an alternative, apply different emission reduction strategies that achieve equivalent overall emission levels;

(c) The best available techniques, taking into consideration annex III, to each existing stationary source within a major stationary source category for which annex III identifies best available techniques. A Party may, as an alternative, apply different emission reduction strategies that achieve equivalent overall emission reductions;

(d) The limit values specified in annex V to each existing stationary source within a major stationary source category, insofar as this is technically and economically feasible. A Party may, as an alternative, apply different emission reduction strategies that achieve equivalent overall emission reductions.

3. Each Party shall apply product control measures in accordance with the conditions and timescales specified in annex VI.

4. Each Party should consider applying additional product management measures, taking into consideration annex VII.

5. Each Party shall develop and maintain emission inventories for the heavy metals listed in annex I, for those Parties within the geographical scope of EMEP, using as a minimum the methodologies specified by the Steering Body of EMEP, and, for those Parties outside the geographical scope of EMEP, using as guidance the methodologies developed through the work plan of the Executive Body.

6. A Party that, after applying paragraphs 2 and 3 above, cannot achieve the requirements of paragraph 1 above for a heavy metal listed in annex I, shall be exempted from its obligations in paragraph 1 above for that heavy metal.

7. Any Party whose total land area is greater than 6,000,000 km<sup>2</sup> shall be exempted from its obligations in paragraphs 2 (b), (c), and (d) above, if it can demonstrate that, no later than eight years after the date of entry into force of the present Protocol, it will have reduced its total annual emissions of each of the heavy metals listed in annex I from the source categories specified in annex II by at least 50 per cent from the level of emissions from these categories in the reference year specified in accordance with annex I. A Party that intends to act in accordance with this paragraph shall so specify upon signature of, or accession to, the present Protocol.

EXCHANGE OF INFORMATION AND TECHNOLOGY

1. The Parties shall, in a manner consistent with their laws, regulations and practices, facilitate the exchange of technologies and techniques designed to reduce emissions of heavy metals, including but not limited to exchanges that encourage the development of product management measures and the application of best available techniques, in particular by promoting:

- (a) The commercial exchange of available technology;
- (b) Direct industrial contacts and cooperation, including joint ventures;
- (c) The exchange of information and experience; and
- (d) The provision of technical assistance.

2. In promoting the activities specified in paragraph 1 above, the Parties shall create favourable conditions by facilitating contacts and cooperation among appropriate organizations and individuals in the private and public sectors that are capable of providing technology, design and engineering services, equipment or finance.

Article 5

STRATEGIES, POLICIES, PROGRAMMES AND MEASURES

1. Each Party shall develop, without undue delay, strategies, policies and programmes to discharge its obligations under the present Protocol.

2. A Party may, in addition:

- (a) Apply economic instruments to encourage the adoption of cost-effective approaches to the reduction of heavy metal emissions;
- (b) Develop government/industry covenants and voluntary agreements;
- (c) Encourage the more efficient use of resources and raw materials;
- (d) Encourage the use of less polluting energy sources;
- (e) Take measures to develop and introduce less polluting transport systems;

(f) Take measures to phase out certain heavy metal emitting processes where substitute processes are available on an industrial scale;

(g) Take measures to develop and employ cleaner processes for the prevention and control of pollution.

3. The Parties may take more stringent measures than those required by the present Protocol.

#### Article 6

##### RESEARCH, DEVELOPMENT AND MONITORING

The Parties shall encourage research, development, monitoring and cooperation, primarily focusing on the heavy metals listed in annex I, related, but not limited, to:

(a) Emissions, long-range transport and deposition levels and their modelling, existing levels in the biotic and abiotic environment, the formulation of procedures for harmonizing relevant methodologies;

(b) Pollutant pathways and inventories in representative ecosystems;

(c) Relevant effects on human health and the environment, including quantification of those effects;

(d) Best available techniques and practices and emission control techniques currently employed by the Parties or under development;

(e) Collection, recycling and, if necessary, disposal of products or wastes containing one or more heavy metals;

(f) Methodologies permitting consideration of socio-economic factors in the evaluation of alternative control strategies;

(g) An effects-based approach which integrates appropriate information, including information obtained under subparagraphs (a) to (f) above, on measured or modelled environmental levels, pathways, and effects on human health and the environment, for the purpose of formulating future optimized control strategies which also take into account economic and technological factors;

(h) Alternatives to the use of heavy metals in products listed in annexes VI and VII;

(i) Gathering information on levels of heavy metals in certain products, on the potential for emissions of those metals to occur during the manufacture, processing, distribution in commerce, use, and disposal of the product, and on techniques to reduce such emissions.

Article 7

REPORTING

1. Subject to its laws governing the confidentiality of commercial information:

(a) Each Party shall report, through the Executive Secretary of the Commission, to the Executive Body, on a periodic basis as determined by the Parties meeting within the Executive Body, information on the measures that it has taken to implement the present Protocol;

(b) Each Party within the geographical scope of EMEP shall report, through the Executive Secretary of the Commission, to EMEP, on a periodic basis to be determined by the Steering Body of EMEP and approved by the Parties at a session of the Executive Body, information on the levels of emissions of the heavy metals listed in annex I, using as a minimum the methodologies and the temporal and spatial resolution specified by the Steering Body of EMEP. Parties in areas outside the geographical scope of EMEP shall make available similar information to the Executive Body if requested to do so. In addition, each Party shall, as appropriate, collect and report relevant information relating to its emissions of other heavy metals, taking into account the guidance on the methodologies and the temporal and spatial resolution of the Steering Body of EMEP and the Executive Body.

2. The information to be reported in accordance with paragraph 1 (a) above shall be in conformity with a decision regarding format and content to be adopted by the Parties at a session of the Executive Body. The terms of this decision shall be reviewed as necessary to identify any additional elements regarding the format or the content of the information that is to be included in the reports.

3. In good time before each annual session of the Executive Body, EMEP shall provide information on the long-range transport and deposition of heavy metals.

Article 8

CALCULATIONS

EMEP shall, using appropriate models and measurements and in good time before each annual session of the Executive Body, provide to the Executive Body calculations of transboundary fluxes and depositions of heavy metals within the geographical scope of EMEP. In areas outside the geographical scope of EMEP, models appropriate to the particular circumstances of Parties to the Convention shall be used.

Article 9

COMPLIANCE

Compliance by each Party with its obligations under the present Protocol shall be reviewed regularly. The Implementation Committee established by decision 1997/2 of the Executive Body at its fifteenth session shall carry out such reviews and report to the Parties meeting within the Executive Body in accordance with the terms of the annex to that decision, including any amendments thereto.

Article 10

REVIEWS BY THE PARTIES AT SESSIONS OF THE EXECUTIVE BODY

1. The Parties shall, at sessions of the Executive Body, pursuant to article 10, paragraph 2 (a), of the Convention, review the information supplied by the Parties, EMEP and other subsidiary bodies and the reports of the Implementation Committee referred to in article 9 of the present Protocol.
2. The Parties shall, at sessions of the Executive Body, keep under review the progress made towards meeting the obligations set out in the present Protocol.
3. The Parties shall, at sessions of the Executive Body, review the sufficiency and effectiveness of the obligations set out in the present Protocol.

(a) Such reviews will take into account the best available scientific information on the effects of the deposition of heavy metals, assessments of technological developments, and changing economic conditions;

(b) Such reviews will, in the light of the research, development, monitoring and cooperation undertaken under the present Protocol:

- (i) Evaluate progress towards meeting the objective of the present Protocol;

(ii) Evaluate whether additional emission reductions beyond the levels required by this Protocol are warranted to reduce further the adverse effects on human health or the environment; and

(iii) Take into account the extent to which a satisfactory basis exists for the application of an effects-based approach;

(c) The procedures, methods and timing for such reviews shall be specified by the Parties at a session of the Executive Body.

4. The Parties shall, based on the conclusion of the reviews referred to in paragraph 3 above and as soon as practicable after completion of the review, develop a work plan on further steps to reduce emissions into the atmosphere of the heavy metals listed in annex I.

#### Article 11

#### SETTLEMENT OF DISPUTES

1. In the event of a dispute between any two or more Parties concerning the interpretation or application of the present Protocol, the Parties concerned shall seek a settlement of the dispute through negotiation or any other peaceful means of their own choice. The parties to the dispute shall inform the Executive Body of their dispute.

2. When ratifying, accepting, approving or acceding to the present Protocol, or at any time thereafter, a Party which is not a regional economic integration organization may declare in a written instrument submitted to the Depositary that, in respect of any dispute concerning the interpretation or application of the Protocol, it recognizes one or both of the following means of dispute settlement as compulsory ipso facto and without special agreement, in relation to any Party accepting the same obligation:

(a) Submission of the dispute to the International Court of Justice;

(b) Arbitration in accordance with procedures to be adopted by the Parties at a session of the Executive Body, as soon as practicable, in an annex on arbitration.

A Party which is a regional economic integration organization may make a declaration with like effect in relation to arbitration in accordance with the procedures referred to in subparagraph (b) above.

3. A declaration made under paragraph 2 above shall remain in force until it expires in accordance with its terms or until three months after written

notice of its revocation has been deposited with the Depository.

4. A new declaration, a notice of revocation or the expiry of a declaration shall not in any way affect proceedings pending before the International Court of Justice or the arbitral tribunal, unless the parties to the dispute agree otherwise.

5. Except in a case where the parties to a dispute have accepted the same means of dispute settlement under paragraph 2, if after twelve months following notification by one Party to another that a dispute exists between them, the Parties concerned have not been able to settle their dispute through the means mentioned in paragraph 1 above, the dispute shall be submitted, at the request of any of the parties to the dispute, to conciliation.

6. For the purpose of paragraph 5, a conciliation commission shall be created. The commission shall be composed of equal numbers of members appointed by each Party concerned or, where the Parties in conciliation share the same interest, by the group sharing that interest, and a chairman chosen jointly by the members so appointed. The commission shall render a recommendatory award, which the Parties shall consider in good faith.

#### Article 12

##### ANNEXES

The annexes to the present Protocol shall form an integral part of the Protocol. Annexes III and VII are recommendatory in character.

#### Article 13

##### AMENDMENTS TO THE PROTOCOL

1. Any Party may propose amendments to the present Protocol.

2. Proposed amendments shall be submitted in writing to the Executive Secretary of the Commission, who shall communicate them to all Parties. The Parties meeting within the Executive Body shall discuss the proposed amendments at its next session, provided that the proposals have been circulated by the Executive Secretary to the Parties at least ninety days in advance.

3. Amendments to the present Protocol and to annexes I, II, IV, V and VI shall be adopted by consensus of the Parties present at a session of the Executive Body, and shall enter into force for the Parties which have accepted them on the ninetieth day after the date on which two thirds of the Parties

have deposited with the Depository their instruments of acceptance thereof. Amendments shall enter into force for any other Party on the ninetieth day after the date on which that Party has deposited its instrument of acceptance thereof.

4. Amendments to annexes III and VII shall be adopted by consensus of the Parties present at a session of the Executive Body. On the expiry of ninety days from the date of its communication to all Parties by the Executive Secretary of the Commission, an amendment to any such annex shall become effective for those Parties which have not submitted to the Depository a notification in accordance with the provisions of paragraph 5 below, provided that at least sixteen Parties have not submitted such a notification.

5. Any Party that is unable to approve an amendment to annex III or VII shall so notify the Depository in writing within ninety days from the date of the communication of its adoption. The Depository shall without delay notify all Parties of any such notification received. A Party may at any time substitute an acceptance for its previous notification and, upon deposit of an instrument of acceptance with the Depository, the amendment to such an annex shall become effective for that Party.

6. In the case of a proposal to amend annex I, VI or VII by adding a heavy metal, a product control measure or a product or product group to the present Protocol:

(a) The proposer shall provide the Executive Body with the information specified in Executive Body decision 1998/1, including any amendments thereto; and

(b) The Parties shall evaluate the proposal in accordance with the procedures set forth in Executive Body decision 1998/1, including any amendments thereto.

7. Any decision to amend Executive Body decision 1998/1 shall be taken by consensus of the Parties meeting within the Executive Body and shall take effect sixty days after the date of adoption.

#### Article 14

#### SIGNATURE

1. The present Protocol shall be open for signature at Aarhus (Denmark) from 24 to 25 June 1998, then at United Nations Headquarters in New York until 21 December 1998 by States members of the Commission as well as States having consultative status with the Commission pursuant to paragraph 8 of Economic

and Social Council resolution 36 (IV) of 28 March 1947, and by regional economic integration organizations, constituted by sovereign States members of the Commission, which have competence in respect of the negotiation, conclusion and application of international agreements in matters covered by the Protocol, provided that the States and organizations concerned are Parties to the Convention.

2. In matters within their competence, such regional economic integration organizations shall, on their own behalf, exercise the rights and fulfil the responsibilities which the present Protocol attributes to their member States. In such cases, the member States of these organizations shall not be entitled to exercise such rights individually.

#### Article 15

##### RATIFICATION, ACCEPTANCE, APPROVAL AND ACCESSION

1. The present Protocol shall be subject to ratification, acceptance or approval by Signatories.
2. The present Protocol shall be open for accession as from 21 December 1998 by the States and organizations that meet the requirements of article 14, paragraph 1.

#### Article 16

##### DEPOSITARY

The instruments of ratification, acceptance, approval or accession shall be deposited with the Secretary-General of the United Nations, who will perform the functions of Depositary.

#### Article 17

##### ENTRY INTO FORCE

1. The present Protocol shall enter into force on the ninetieth day following the date on which the sixteenth instrument of ratification, acceptance, approval or accession has been deposited with the Depositary.
2. For each State and organization referred to in article 14, paragraph 1, which ratifies, accepts or approves the present Protocol or accedes thereto after the deposit of the sixteenth instrument of ratification, acceptance, approval or accession, the Protocol shall enter into force on the ninetieth day following the date of deposit by such Party of its instrument of ratification, acceptance, approval or accession.

Article 18

WITHDRAWAL

At any time after five years from the date on which the present Protocol has come into force with respect to a Party, that Party may withdraw from it by giving written notification to the Depositary. Any such withdrawal shall take effect on the ninetieth day following the date of its receipt by the Depositary, or on such later date as may be specified in the notification of the withdrawal.

Article 19

AUTHENTIC TEXTS

The original of the present Protocol, of which the English, French and Russian texts are equally authentic, shall be deposited with the Secretary-General of the United Nations.

IN WITNESS WHEREOF the undersigned, being duly authorized thereto, have signed the present Protocol.

Done at Aarhus (Denmark), this twenty-fourth day of June, one thousand nine hundred and ninety-eight.

Annex I

HEAVY METALS REFERRED TO IN ARTICLE 3, PARAGRAPH 1,  
AND THE REFERENCE YEAR FOR THE OBLIGATION

Heavy metal	Reference year
Cadmium (Cd)	1990; or an alternative year from 1985 to 1995 inclusive, specified by a Party upon ratification, acceptance, approval or accession.
Lead (Pb)	1990; or an alternative year from 1985 to 1995 inclusive, specified by a Party upon ratification, acceptance, approval or accession.
Mercury (Hg)	1990; or an alternative year from 1985 to 1995 inclusive, specified by a Party upon ratification, acceptance, approval or accession.

Annex II

STATIONARY SOURCE CATEGORIES

I. INTRODUCTION

1. Installations or parts of installations for research, development and the testing of new products and processes are not covered by this annex.
2. The threshold values given below generally refer to production capacities or output. Where one operator carries out several activities falling under the same subheading at the same installation or the same site, the capacities of such activities are added together.

II. LIST OF CATEGORIES

Category	Description of the category
1	Combustion installations with a net rated thermal input exceeding 50 MW.
2	Metal ore (including sulphide ore) or concentrate roasting or sintering installations with a capacity exceeding 150 tonnes of sinter per day for ferrous ore or concentrate, and 30 tonnes of sinter per day for the roasting of copper, lead or zinc, or any gold and mercury ore treatment.
3	Installations for the production of pig-iron or steel (primary or secondary fusion, including electric arc furnaces) including continuous casting, with a capacity exceeding 2.5 tonnes per hour.
4	Ferrous metal foundries with a production capacity exceeding 20 tonnes per day.
5	Installations for the production of copper, lead and zinc from ore, concentrates or secondary raw materials by metallurgical processes with a capacity exceeding 30 tonnes of metal per day for primary installations and 15 tonnes of metal per day for secondary installations, or for any primary production of mercury.
6	Installations for the smelting (refining, foundry casting, etc.), including the alloying, of copper, lead and zinc, including recovered products, with a melting capacity exceeding 4 tonnes per day for lead or 20 tonnes per day for copper and zinc.
7	Installations for the production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other furnaces with a production capacity exceeding 50 tonnes per day.
8	Installations for the manufacture of glass using lead in the process with a melting capacity exceeding 20 tonnes per day.

Category	Description of the category
9	Installations for chlor-alkali production by electrolysis using the mercury cell process.
10	Installations for the incineration of hazardous or medical waste with a capacity exceeding 1 tonne per hour, or for the co-incineration of hazardous or medical waste specified in accordance with national legislation.
11	Installations for the incineration of municipal waste with a capacity exceeding 3 tonnes per hour, or for the co-incineration of municipal waste specified in accordance with national legislation.