

Draft amended text of the Protocol on Heavy Metals

*Summary*

This informal document contains the draft amended text of the Protocol on Heavy Metals, as outlined in secretariat note “Options for revising the Protocol on Heavy Metals” prepared for the forty-ninth session of the Working Group on Strategies and Review (ECE/EB.AIR/WG.5/2011/19). The options for revising the 1998 Protocol on Heavy Metals had been discussed by the Working Group on Strategies and Review at its forty-eighth sessions in April 2010.

The document indicates proposed changes to the current text of the Protocol. Proposed new text is in bold. Text in square brackets that is not marked for deletion has not been provisionally agreed by the Working Group.

With reference to the deletion of para 5-7 and Section II – IV in Annex III to the Protocol, the Chair of the Working Group prepared an updated draft guidance document on best available techniques extracted from annex III (ECE/EB.AIR/WG.5/2012/1), in line with the decision by the Working Group at its forty eighth session.

In line with the relevant decisions by the Executive Body at its twenty-ninth session, the Working Group is invited to continue, in accordance with its revised mandate (ECE/EB.AIR/106, para. 57 (a)–(c)), discussions on the Protocol on Heavy Metals at its fiftieth session, to give the highest priority to securing agreement on the text of an amended Protocol before devoting time to any other substantive issues. The Working Group is expected to agree on an amended text of the Protocol on Heavy Metals and recommend to the Executive Body to adopt the amendments at its session in December 2012.

## **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 (UNECE) 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 UNECE 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; - ~~delete~~] **"New stationary source" means any stationary source the construction or substantial modification of which commences after the expiry of two years from the date of entry into**

**force for a Party of: (a) the present Protocol; or (b) an amendment to the present Protocol that, with respect to a stationary source, either introduces new limit values in annex V or introduces the category in annex II in which that source falls. 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.

12. "Countries with economies in transition (CET)" are countries as listed in Executive Body Decision 2006/13 or, if the Executive Body modifies the list in a subsequent decision, the latest such decision.

13. "Particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>)"<sup>1</sup> means:

(a) PM<sub>2.5</sub>: The mass of particulate matter with an aerodynamic diameter equal to or less than 2.5 µm; and

(b) PM<sub>10</sub>: The mass of particulate matter with an aerodynamic diameter equal to or less than 10 µm;

(c) For Parties that are countries with economies in transition, the mass of particles, of any shape, structure or density, dispersed in the gas phase at the sampling point conditions which may be collected by filtration under specified conditions after representative sampling of the gas to be analysed, and which remain upstream of the filter and on the filter after drying under specified conditions.

## *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:

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<sup>1</sup> Unless the contrary is expressly stated, all references to "particulate matter" in this Protocol are to both PM<sub>2.5</sub> and PM<sub>10</sub>.

(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; - ~~delete~~] **for which guidance adopted by the Parties at a session of the Executive Body 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 - ~~delete~~] **for which guidance adopted by the Parties at a session of the Executive Body 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.

(e) **For stationary sources for which the construction (if the source was never substantially modified) or last substantial modification commenced prior to the year 1990 [1995], Parties that are countries with economies in transition may, as an alternative to applying paragraphs (c) and (d), choose to require that such sources be closed or phased out according to the timescale in annex IV.**

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. - ~~delete~~]. **Parties within the geographical scope of EMEP shall use the methodologies specified in guidelines prepared by the Steering Body to EMEP and adopted by the Parties at a session of the Executive Body. Parties in areas outside the geographical scope of EMEP shall use similar methodologies.**

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.

**8. Each Party should actively participate in programmes under the Convention on the effects of air pollution on human health and the environment and programmes on atmospheric monitoring and modelling, using guidelines adopted by Parties at a session of the Executive Body.**

**9. The Parties may, subject to the outcome of the reviews provided for under article 10, paragraphs 2 and 3, and no later than one year after completion of that review, decide to commence negotiations on further obligations to reduce emissions.**

#### *Article 4*

### 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[;]. **Where a Party applies different emission reduction strategies under article 3 paragraphs 2 (b), (c) and (d), it shall document the strategies applied and its compliance with the requirements of those paragraphs;**

(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. - delete] **Each Party within the geographical scope of EMEP shall report [within its capacity], through the Executive Secretary of the Commission, to EMEP, on a periodic basis information on the levels of emissions of heavy metals using the methodologies specified in guidelines prepared by the Steering Body of EMEP and adopted by the Parties at a session of the Executive Body. Parties in areas outside the geographical scope of EMEP shall make available similar information if requested to do so by the Executive Body. Each Party shall also provide information on the levels of emissions of the substances listed in annex I for the reference year specified in that annex;**

(c) **Each Party should report available information, through the Executive Secretary of the Commission, on air pollution effects programmes on human health and the environment and on atmospheric monitoring and modelling programmes under the Convention using guidelines adopted by the Parties at a session of 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 as 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 Depository 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 – delete~~] [,] VI [**and VII**] 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 Depositary 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. - ~~delete~~] **on which two thirds of those that were Parties at the time of their adoption have deposited with the Depositary 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. This paragraph shall be subject to paragraphs 5 bis and 5 ter below.**
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 Depositary 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 Depositary in writing within ninety days from the date of the communication of its adoption. The Depositary 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 Depositary, the amendment to such an annex shall become effective for that Party.

**5 bis. For those Parties having accepted it, the procedure set out in paragraph 5 ter below shall supersede the procedure set out in paragraph 3 above in respect of amendments to annexes I, II, IV, V, VI [and VII].**

**5ter (a) Amendments to annexes I, II, IV, V VI [and VII] shall be adopted by consensus of the Parties present at a session of the Executive Body. On the expiry of one year 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 Depositary a notification in accordance with the provisions of subparagraph (b) below;

(b) Any Party that is unable to approve an amendment to annexes I, II, IV, V, VI [and VIII] shall so notify the Depositary in writing within one year from the date of the communication of its adoption. The Depositary 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 Depositary, the amendment to such an annex shall become effective for that Party;

(c) Any amendment to annexes I, II, IV, V, VI [and VIII] shall not enter into force if an aggregate number of 16 or more Parties have either:

(i) Submitted a notification in accordance with the provisions of subparagraph (b) above; or

(ii) Not accepted the procedure set out in this paragraph and not yet deposited an instrument of acceptance in accordance with the provisions of paragraph 3 above.

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.
3. **A State or regional economic integration organization shall declare in its instrument of ratification, acceptance, approval or accession if it does not intend to be bound by the procedures set out in article 13, paragraph 5 ter, as regards the amendment of annexes I, II, IV, V, VI [and VIII].**

### *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 - <del>delete</del> ] <b>or for countries with economies in transition, an alternative year from 1985 to the year of the entry into force of the Protocol for a Party, and as specified by that Party upon ratification, acceptance, approval or accession.</b>
Lead (Pb)	1990; or an alternative year from 1985 to 1995 inclusive, [specified by a Party upon ratification, acceptance, approval or accession - <del>delete</del> ] <b>or for countries with economies in transition, an alternative year from 1985 to the year of the entry into force of the Protocol for a Party, and as specified by that Party upon ratification, acceptance, approval or accession.</b>
Mercury (Hg)	1990; or an alternative year from 1985 to 1995 inclusive, [specified by a Party upon ratification, acceptance, approval or accession - <del>delete</del> ] <b>or for countries with economies in transition, an alternative year from 1985 to the year of the entry into force of the Protocol for a Party, and as specified by that Party upon ratification, acceptance, approval or accession.</b>

## 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 - <del>delete</del> ] [,] zinc [ <b>and manganese</b> ] 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 - <del>delete</del> ] [,] zinc [ <b>and aluminium</b> ], 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.
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.

## ANNEX III<sup>2</sup>

### BEST AVAILABLE TECHNIQUES FOR CONTROLLING EMISSIONS OF HEAVY METALS AND THEIR COMPOUNDS FROM THE SOURCE CATEGORIES LISTED IN ANNEX II

#### [I. INTRODUCTION- ~~delete~~]<sup>3</sup>

1. This annex aims to provide Parties with guidance on identifying best available techniques for stationary sources to enable them to meet the obligations of the Protocol. **Further description of and guidance on such best available techniques are provided in a guidance document adopted by the Parties at a session of the Executive Body and may be updated as necessary by a consensus of the Parties meeting within the Executive Body.**

2. "Best available techniques" (BAT) means the most effective and advanced stage in the development of activities and their methods of operation which indicate the practical suitability of particular techniques for providing in principle the basis for emission limit values designed to prevent and, where that is not practicable, generally to reduce emissions and their impact on the environment as a whole:

- 'Techniques' includes both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned;
- 'Available' techniques means those developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration the costs and advantages, whether or not the techniques are used or produced inside the territory of the Party in question, as long as they are reasonably accessible to the operator;
- 'Best' means most effective in achieving a high general level of protection of the environment as a whole.

In determining the best available techniques, special consideration should be given, generally or in specific cases, to the factors below, bearing in mind the likely costs and benefits of a measure and the principles of precaution and prevention:

- The use of low-waste technology;
- The use of less hazardous substances;
- The furthering of recovery and recycling of substances generated and used in the process and of waste;
- Comparable processes, facilities or methods of operation which have been tried with success on an industrial scale;
- Technological advances and changes in scientific knowledge and understanding;
- The nature, effects and volume of the emissions concerned;
- The commissioning dates for new or existing installations;
- The time needed to introduce the best available technique;
- The consumption and nature of raw materials (including water) used in the process and its energy efficiency;
- The need to prevent or reduce to a minimum the overall impact of the emissions on the environment

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<sup>2</sup> Following the decision of the Executive Body, the main content of this annex has been moved to a guidance document (ECE/EB.AIR/2012/1).

<sup>3</sup> As this Annex contains only three paras, this heading becomes unnecessary.

and the risks to it;

- The need to prevent accidents and to minimize their consequences for the environment.

The concept of best available techniques is not aimed at the prescription of any specific technique or technology, but at taking into account the technical characteristics of the installation concerned, its geographical location and the local environmental conditions.

3. The information regarding emission control performance and costs is based on official documentation of the Executive Body and its subsidiary bodies, in particular documents received and reviewed by [the Task Force on Heavy Metal Emissions and the Ad Hoc Preparatory Working Group on Heavy Metals. Furthermore, other international information on best available techniques for emission control has been taken into consideration (e.g. the European Community's technical notes on BAT, the PARCOM recommendations for BAT, and information provided directly by experts). - ~~delete~~] **the Task Force on Heavy Metals, best available techniques (BAT) reference documents from the European Integrated Pollution Prevention and Control Bureau (EIPPCB), the 2002 Global Mercury Assessment of the United Nations Environment Programme (UNEP), and various technical reports from the United States Environmental Protection Agency, Environment Canada and the European Commission, and information provided by national experts.**<sup>4</sup>

4. Experience with new products and new plants incorporating low-emission techniques, as well as with the retrofitting of existing plants, is growing continuously; [this annex may, therefore, need amending and updating - ~~delete~~] **the guidance document referred to in paragraph 1 above may, therefore, need amending and updating.**

[paras 5.-7., Section II., III. and IV. - ~~delete~~]

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<sup>4</sup> This text might be better placed in a guidance document due to its technical nature

## ANNEX IV

### **TIMESCALES FOR THE APPLICATION OF LIMIT VALUES AND BEST AVAILABLE TECHNIQUES TO NEW AND EXISTING STATIONARY SOURCES**

1. The timescales for the application of limit values and best available techniques are:
  - (a) For new stationary sources: two years after the date of entry into force of the present Protocol;
  - (b) For existing stationary sources: [eight years after the date of entry into force of the present Protocol. If necessary, this period may be extended for specific existing stationary sources in accordance with the amortization period provided for by national legislation. – delete]
    - (i) Eight years after the date of entry into force of the present Protocol for a Party. If necessary, this period may be extended for specific existing stationary sources in accordance with the amortization period provided for by national legislation; or**
    - (ii) For a Party that is a country with an economy in transition, up to fifteen years after the date of entry into force of the present Protocol for that Party.**
2. **The timescales for the application of limit values and best available techniques that have been updated or introduced as a result of amendment of this Protocol shall be:**
  - (a) For new stationary sources, two years after the date of entry into force of the relevant amendment for a Party; and**
  - (b) For existing stationary sources:**
    - (i) Eight years after the date of entry into force of the relevant amendment for a Party; or**
    - (ii) For a Party that is a country with an economy in transition, up to fifteen years after the date of entry into force of the relevant amendment for that Party.**
3. **The timescales for the close or phase out of stationary sources according to article 3, paragraph 2 (e), of the Protocol shall be up to [five] [fifteen] years, effective [fifteen] [five] years after the date of entry into force of the Protocol for a Party.**

## ANNEX V

### LIMIT VALUES FOR CONTROLLING EMISSIONS FROM MAJOR STATIONARY SOURCES

#### I. INTRODUCTION

[Sections I and II – delete]

##### **I. Introduction**

**1. Two types of limit value are important for heavy metal emission control:**

- (a) Values for specific heavy metals or groups of heavy metals; and**
- (b) Values for emissions of particulate matter in general.**

**2. In principle, limit values for particulate matter cannot replace specific limit values for cadmium, lead and mercury, because the quantity of metals associated with particulate emissions differs from one process to another. However, compliance with these limits contributes significantly to reducing heavy metal emissions in general. Moreover, monitoring particulate emissions is generally less expensive than monitoring individual species. Therefore, particulate limit values are of great practical importance and are also laid down in this annex in most cases to complement or replace specific limit values for cadmium or lead or mercury.**

**3. Limit value means the quantity of a substance contained in the waste gases from an installation that is not to be exceeded. Limit values for particulate matter refer to the solid substance in the waste gases. Limit values for heavy metals include the solid, gaseous and vapour form of the metal and its compounds, expressed as the metal. Unless otherwise specified, it shall be calculated in terms of mass of pollutant per volume of the waste gases (expressed as mg/m<sup>3</sup>), assuming standard conditions for temperature and pressure for dry gas (volume at 273.15 K, 101.3 kPa). With regard to the oxygen content of exhaust gas, the values given in the tables below for each source category shall apply. Dilution for the purpose of lowering concentrations of pollutants in waste gases is not permitted. Start-up, shutdown and maintenance of equipment are excluded.**

**4. Emissions shall be monitored in all cases. Compliance with limit values shall be verified. The methods of verification can include continuous or discontinuous measurements, type approval, or any other technically sound method.<sup>5</sup> In case of continuous measurement, compliance with the emission standards is achieved if the validated [daily/monthly] emission average does not exceed the limit values. In case of discontinuous measurement or other appropriate determination procedures, compliance with the emissions standards is achieved if the mean value based on an appropriate number of measurements under representative conditions does not exceed the value of the emission standard. The inaccuracy of the continuous and discontinuous measurement methods may be taken into account for verification purposes.**

**5. Sampling and analysis of relevant polluting substances and measurements of process parameters, as well as the quality assurance of automated measuring systems and the reference measurement methods to calibrate those systems shall be carried out in accordance with CEN standards. If CEN standards are not available, ISO standards,**

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<sup>5</sup> Indirect monitoring of substances is also possible via sum parameters/cumulative parameter (e.g., dust as sum parameter for heavy metals). In some cases using a certain technique to treat emissions can assure a value/limit value is maintained or met.

national or international standards which will ensure the provision of data of an equivalent scientific quality shall apply.

**II. Specific limit values for selected major stationary sources<sup>6</sup>**

**6. The following emission limit values can be achieved by applying BAT:**

**Combustion of fossil fuels (annex II, category 1)**

**7. Combustion plants (boilers and process heaters) with a rated thermal input exceeding 50 MWth or combustion plants when combined to a common stack with a total rated input exceeding 50 MWth.<sup>7</sup> Limit values refer to 6% O<sub>2</sub> in flue gas for solid fuels and to 3% O<sub>2</sub> for liquid fuels. These values do not apply to combustion plants running less than 500 hours a year. The competent authorities may grant derogations from the obligation to comply with the emission limit value for combustion plants not operated more than [XXX] operating hours, starting from [DATE] and ending no later than [DATE].**

**8. Limit value for particulate emissions for solid and liquid fuels (if not stated differently):**

<i>Thermal input [MWth]</i>	<i>Heavy Metals Protocol 1998</i>	<i>Option 1</i>	<i>Option 2</i>	<i>Option 3</i>
<b>New installations</b>				
<b>50 to 100</b>	<b>50 mg/m<sup>3</sup></b>	<b>[10]</b>	<b>[20]</b>	<b>[50]</b>
<b>Existing installations</b>				
<b>50 to 100</b>	<b>50 mg/m<sup>3</sup></b>	<b>[15]</b>	<b>[30]</b>	<b>[50]</b>
<b>New installations</b>				
<b>100 to 300</b>	<b>50 mg/m<sup>3</sup></b>	<b>[10]</b>	<b>[20]</b>	<b>[30]</b>
<b>Existing installations</b>				
<b>100 to 300</b>	<b>50 mg/m<sup>3</sup></b>	<b>[15]</b>	<b>[25]</b>	<b>[50]</b>
<b>New installations</b>				
<b>&gt; 300</b>		<b>solid fuel [10]</b>		
		<b>liquid fuel [5]</b>	<b>[10]</b>	<b>[30]</b>
<b>Existing installations</b>				
<b>&gt; 300</b>		<b>[10]</b>	<b>[20]</b>	<b>[50]</b>

**9. Special provision for combustion plants:**

**(a) For combustion plants larger than 50 MWth, the competent authority may grant derogation from the obligation to comply with the emission limit values provided for in paragraph [X] in the following cases:**

<sup>6</sup> The proposed options for ELVs are in accordance with those proposed for the Gothenburg Protocol. They include:  
Option 1: ELV 1 is a demanding but technically feasible option with the objective of achieving a high level of reduction.  
Option 2: ELV 2, while technically demanding, pays greater attention to the costs of the measures for achieving reduction.  
Option 3: ELV 3 represents current [good] practices based on the legislation of a number of Parties to the Convention.

<sup>7</sup> Individual combustion plants below 15 MWth shall not be considered to calculate the total rated input.

- (i) For combustion plants using [only/mainly] gaseous fuel who have to resort exceptionally to the use of other fuels because of a sudden interruption in the supply of gas and for this reason would need to be equipped with a waste gas purification facility;
  - (ii) [For combustion plants not operated more than XXX operating hours, starting from DATE and ending no later than DATE];
- (b) Where a combustion plant is extended by at least 50MWth, the emission limit value specified in paragraph [X] for new installation shall apply to the extensional part and to the plant affected by the change;
- (c) Parties shall ensure that provisions are made in the permits for procedures relating to malfunction or breakdown of the abatement equipment;
- (d) In the case of a multi-fuel firing combustion plant involving the simultaneous use of two or more fuels, the competent authority shall provide rules for setting the emission limit values;
- (e) In particular, the limit values shall not apply to:
- (i) Plants where the combustion process is an integrated part of a specific production, i.e., the coke oven used in the iron and steel industry and glass and ceramic production plants;
  - (ii) Plants in which the products of combustion are used for direct heating, drying, or any other treatment of objects or materials;
  - (iii) Post combustion plants designed to purify the waste gases by combustion which are not operated as independent combustion plants;
  - (iv) Facilities for the regeneration of catalytic cracking catalysts;
  - (v) Facilities for the conversion of hydrogen sulphide into sulphur;
  - (vi) Reactors used in the chemical industry;
  - (vii) Coke battery furnaces;
  - (viii) Cowpers;
  - (ix) Waste incinerators; and,
  - (x) Plants powered by diesel or petrol or combustion turbines, irrespective of the fuel used.

- 10. Limit value for cadmium emissions: [0.05] mg/m<sup>3</sup>.
- 11. Limit value for lead emissions: [0.5] mg/m<sup>3</sup>.
- 12. Limit value for mercury emissions: [0.03] mg/m<sup>3</sup>.

**Processing of ferrous ores and primary iron and steel industry (annex II, category 2)**

**Sinter plants (annex II, category 2) (>150 t/day)<sup>8</sup>**

**13. Limit value for particulate emissions:**

	<i>HM Protocol 1998</i>	<i>Option 1</i>	<i>Option 2</i>	<i>Option 3</i>
<b>Limit value for particulate emissions</b>	<b>50 mg/m<sup>3</sup></b>	<b>[10]<sup>a</sup></b>	<b>new installations [20] existing installations [50]<sup>a</sup></b>	<b>[50]</b>

*Note:* HM = heavy metals.

<sup>a</sup> Averaged over a substantial period of time.

**14. Limit value for cadmium emissions: [0.05] mg/m<sup>3</sup>.**

**15. Limit value for lead emissions: [1] mg/m<sup>3</sup>.**

**16. Limit value for mercury emissions: [0.05] mg/m<sup>3</sup>.**

**Pellet plants (annex II, category 2) (>150 t/day)**

**17. Limit value for particulate emissions:**

	<i>Option 1</i>	<i>Option 2</i>	<i>Option 3</i>
<b>Limit value for particulate emissions</b>	<b>[5]<sup>a</sup></b>	<b>[10]<sup>a</sup></b>	<b>[25]</b>

<sup>a</sup> Averaged over a substantial period of time.

**18. Limit value for cadmium emissions: [0.05] mg/m<sup>3</sup>.**

**19. Limit value for lead emissions: [0.5] mg/m<sup>3</sup>.**

**20. Limit value for mercury emissions: [0.05] mg/m<sup>3</sup>.**

**Blast and oxygen furnaces including continuous casting (annex II, category 2) (>2.5 t/hour)**

**21. Limit value for particulate emissions:**

<i>Limit value for particulate emissions</i>	<i>Option 1</i>	<i>Option 2</i>	<i>Option 3</i>
<b>Blast furnace: hot stoves</b>	<b>[5]<sup>a</sup></b>	<b>[10]<sup>a</sup></b>	<b>[50]</b>
<b>Basic oxygen steelmaking and casting; existing installations</b>	<b>[10]<sup>a</sup></b>	<b>[30]<sup>a</sup></b>	<b>[50]</b>

<sup>a</sup> Averaged over a substantial period of time.

<sup>8</sup> The proposed limit values for sinter plants for the Gothenburg Protocol are less ambitious, making under option 2 no distinction between old and new installations (see ECE/EB.AIR/WG.5/2009/21, para. 11, table 6).

22. Limit value for cadmium emissions: [0.05] mg/m<sup>3</sup>.  
 23. Limit value for lead emissions: [0.5] mg/m<sup>3</sup>.  
 24. Limit value for mercury emissions: [0.05] mg/m<sup>3</sup>.

**Secondary iron and steel industry (annex II, category 3)**

**Electric arc furnaces (annex II, category 3) (> 2,5 t/hour)**

25. Limit value for particulate emissions for existing and new installations:

	<i>Option 1</i>	<i>Option 2</i>	<i>Option 3</i>
Limit value for particulate emissions for existing installations	[10]	[15]	[20]
Limit value for particulate emissions for new installations	[5]	[5]	[20]

26. Limit value for cadmium emissions: [0.05] mg/m<sup>3</sup>.  
 27. Limit value for lead emissions: [0.5] mg/m<sup>3</sup>.  
 28. Limit value for mercury emissions: [0.05] mg/m<sup>3</sup>.

**Iron foundries (annex II, category 4) (>20 t/day)**

29. Limit value for particulate emissions:

<i>Limit value for particulate emissions</i>	<i>Option 1</i>	<i>Option 2</i>	<i>Option 3</i>
All furnaces (cupola, induction, rotary); All mouldings (lost, permanent)	[10]	[20]	[50]
Hot and cold rolling	[10]	[20]	[30]

30. Limit value for cadmium emissions: [0.05] mg/m<sup>3</sup>.  
 31. Limit value for lead emissions: [0.5] mg/m<sup>3</sup>.  
 32. Limit value for mercury emissions: [0.05] mg/m<sup>3</sup>.

**Primary and secondary non-ferrous metal industry (annex II, categories 5 and 6)**

**Production of primary and secondary non-ferrous metals except lead (annex II, categories 5 and 6)**

33. Limit value for particulate emissions:

<i>Limit value for particulate emissions</i>	<i>Option 1</i>	<i>Option 2</i>	<i>Option 3</i>
Fabric filters, ceramic filters	[3]	[5]	[20]
Electrostatic precipitators	[7]	[12]	[20]
Scrubbers	[10]	[20]	[20]

34. The preferred technique for dust abatement is the use of fabric filters or ceramic filters. Electrostatic precipitators should be used for gases containing too much moisture, for hot gases, or when the dust is too sticky. Scrubbers should be used as the temperature or the nature of the gases precludes the use of other techniques, or when gaseous elements or acids have to be removed simultaneously with dust.

35. Limit value for cadmium emissions: [0.05] mg/m<sup>3</sup>.

36. Limit value for lead emissions: [1] mg/m<sup>3</sup>.

37. Limit value for mercury emissions: [0.05] mg/m<sup>3</sup>.

**Production of lead (annex II, categories 5 and 6)<sup>9</sup>**

38. Limit value for particulate emissions: [3/5/10] mg/m<sup>3</sup>.

39. Limit value for cadmium emissions: [0.05] mg/m<sup>3</sup>.

40. Limit value for lead emissions: [2] mg/m<sup>3</sup>.

41. Limit value for mercury emissions: [0.05] mg/m<sup>3</sup>.

**Cement industry (annex II, category 7)**

42. Installations for the production of cement clinker in rotary kilns with a capacity > 500 Mg/day or in other furnaces with a production capacity exceeding 50 Mg/day.

43. Limit values refer to 10% O<sub>2</sub> concentration in flue gas.

	<i>Option 1</i>	<i>Option 2</i>	<i>Option 3</i>
Limit value for particulate emissions	[15]	[20]	[50]

44. Limit value for cadmium emissions: [0.05] mg/m<sup>3</sup>.

45. Limit value for lead emissions: [0.5] mg/m<sup>3</sup>.

46. Limit value for mercury emissions: [0.05] mg/m<sup>3</sup>.

<sup>9</sup> Note that the 1999 Gothenburg Protocol does not cover production of lead.

**Glass industry (annex II, category 8)<sup>10</sup>**

47. Limit values refer to different O<sub>2</sub> concentrations in flue gas depending on furnace type: tank furnaces (continuous melters): 8%; pot furnaces and day tanks (discontinuous melters): 13%.

48. Limit value for particulate emissions:

	<i>Option 1</i>	<i>Option 2</i>	<i>Option 3</i>
Limit value for particulate emissions	[10]	[20] GP [30]	[50]

*Note:* GP = Gothenburg Protocol.

49. Limit value for lead emissions: [0.5] mg/Nm<sup>3</sup>.

50. Limit value for lead emissions in container glass production using foreign cullet: [0.8] mg/Nm<sup>3</sup>.

51. Limit value for lead emissions in glass production if lead is required for product quality: [3] mg/Nm<sup>3</sup>.

52. Limit value for cadmium emissions:[0.05] mg/Nm<sup>3</sup>.

53. Limit value for cadmium emissions in container glass production: [0.5] mg/Nm<sup>3</sup>.

54. Limit value for cadmium emissions if cadmium compounds are used as colouring agents for quality reasons: [0.2] mg/Nm<sup>3</sup>.

55. Limit value for mercury emissions: [0.05] mg/Nm<sup>3</sup>.

56. For oxy-fuel burners and electrical heating it is necessary to evaluate the performances only in terms of specific mass emissions (kg/ton<sup>11</sup> of glass melted).

**Chlor-alkali industry (annex II, category 9)**

57. Limit values refer to the total quantity of mercury released by a plant into the air, regardless of the emission source and expressed as an annual mean value.

58. Limit values for existing chlor-alkali plants using the mercury cell process:

[1.0 g per Mg]<sup>12</sup> chlorine produced.

59. New chlor-alkali plants are to be operated mercury free.

**Municipal waste incineration (> 3 t/hour), medical and hazardous waste incineration (> 1 t/hour) (annex II, categories 10 and 11)**

60. Limit values refer to 11% O<sub>2</sub> concentration in flue gas for waste incineration; co-incineration in combustion installations: 6% O<sub>2</sub> for solid fuels and 6% O<sub>2</sub> for liquid fuels; co-incineration in cement kilns: 10% O<sub>2</sub>.

<sup>10</sup> Note that the proposal for the Gothenburg Protocol is less ambitious and makes a distinction between old and new installations (see ECE/EB.Air/WG.5/2009/21, para. 12, table 9).

<sup>11</sup> Unless otherwise specified, tons refers to metric tons.

<sup>12</sup> See the recommendation for an ELV by the Task Force on Heavy Metals submitted to the Working Group on Strategies and Review in 2007 (EB.AIR/WG.5/2007/15)

61. Limit value for particulate emissions:

	<i>Option 1</i>	<i>Option 2</i>	<i>Option 3</i>
For waste incineration, co-incineration of waste with a thermal input from waste > 25%, and co-incineration in cement kilns with a thermal input from waste > 60%	[3]	[5]	[10]
For co-incineration of waste with a thermal input from waste < 25%, and co-incineration in cement kilns with a thermal input from waste < 60%	[5] no proposal in GP	[10]	no proposal in GP

*Note:* GP = Gothenburg Protocol.

62. Limit value for mercury emissions:

- (a) [0.03] mg/m<sup>3</sup> for waste incineration and co-incineration;
- (b) [0.05] mg/m<sup>3</sup> for co-incineration of waste in cement kilns if mercury emissions are due to raw material input.

63. Limit value for cadmium emissions: [0.05] mg/m<sup>3</sup>.

64. Limit value for lead emissions: [0.5] mg/m<sup>3</sup>.

## ANNEX VI

### PRODUCT CONTROL MEASURES

1. Except as otherwise provided in this annex, no later than six months after the date of entry into force of the present Protocol, the lead content of marketed petrol intended for on-road vehicles shall not exceed [0.013- ~~delete~~] **0.005** g/l. Parties marketing unleaded petrol with a lead content lower than [0.013- ~~delete~~] **0.005** g/l shall endeavour to maintain or lower that level.
2. Each Party shall endeavour to ensure that the change to fuels with a lead content as specified in paragraph 1 above results in an overall reduction in the harmful effects on human health and the environment.
3. Where a State determines that limiting the lead content of marketed petrol in accordance with paragraph 1 above would result in severe socio-economic or technical problems for it or would not lead to overall environmental or health benefits because of, inter alia, its climate situation, it may extend the time period given in that paragraph to a period of up to 10 years, during which it may market leaded petrol with a lead content not exceeding 0.15 g/l. In such a case, the State shall specify, in a declaration to be deposited together with its instrument of ratification, acceptance, approval or accession, that it intends to extend the time period and present to the Executive Body in writing information on the reasons for this.
4. A Party is permitted to market small quantities, up to 0.5 per cent of its total petrol sales, of leaded petrol with a lead content not exceeding 0.15 g/l to be used by old on-road vehicles.
- [5. Each Party shall, no later than five years, or ten years for countries with economies in transition that state their intention to adopt a ten-year period in a declaration to be deposited with their instrument of ratification, acceptance, approval or accession, after the date of entry into force of this Protocol, achieve concentration levels which do not exceed:
  - (a) 0.05 per cent of mercury by weight in alkaline manganese batteries for prolonged use in extreme conditions (e.g. temperature below 0° C or above 50° C, exposed to shocks); and
  - (b) 0.025 per cent of mercury by weight in all other alkaline manganese batteries.

The above limits may be exceeded for a new application of a battery technology, or use of a battery in a new product, if reasonable safeguards are taken to ensure that the resulting battery or product without an easily removable battery will be disposed of in an environmentally sound manner. Alkaline manganese button cells and batteries composed of button cells shall also be exempted from this obligation. - ~~delete~~]

5. **Each Party shall prohibit, no later than 5 years, or 10 years for countries with economies in transition, the placing on the market of batteries that contain more than 0.0005% of mercury by weight, whether into appliances or not incorporated. The restriction shall not apply to:**
  - (a) **Button cell batteries with a mercury content of no more than 2% mercury by weight; and**
  - (b) **Mercury-containing batteries used in:**
    - (i) **Equipment connected with the protection of a Party's essential security interests, arms, munitions and war material, with the exclusion of products that are not intended for specifically military purposes;**

(ii) Equipment designed to be sent into space.

6. Each Party shall prohibit, no later than 5 years, or 10 years for countries with economies in transition, the placing on the market of: fever thermometers that contain mercury; and other measuring devices that contain mercury intended for sale to the general public (e.g., manometers, barometers, sphygmomanometers, thermometers other than fever thermometers). The restriction shall not apply to:

- (a) Measuring devices more than 50 years old [*on 3 October 2007*]; and
- (b) Marketing or use for research and development or analysis purposes.

7. Each party shall prohibit, no later than 5 years, or 10 years for countries with economies in transition, the placing on the market of vehicles if they contain mercury-containing materials and components exceeding 0.1% mercury by weight in homogenous materials. The restriction shall not apply to:

- (a) Discharge lamps for headlight application; and
- (b) Fluorescent tubes used in instrument panel displays.

These components shall be labelled or made identifiable to facilitate removal at end-of-life. The exemptions are valid for vehicles type approved before [*1 July 2012*] and spare parts for these vehicles.

8. Each party shall prohibit, no later than 5 years, or 10 years for countries with economies in transition, the placing on the market of new electrical and electronic equipment exceeding 0.1% mercury by weight in homogenous materials. The restriction shall not apply to:

- (a) Lamps, except for fluorescent lamps for which certain limit values apply;
- (b) Medical devices;
- (c) Monitoring and control instruments;
- (d) Electrical and electronic equipment designed for use with a voltage rating exceeding 1,000 volts for alternating current and 1,500 volts for direct current;
- (e) Large-scale stationary industrial tools; and
- (f) Spare parts for the repair, or to the reuse, of electrical and electronic equipment put on the market before [*1 July 2006*].

9. Each party shall prohibit, no later than 5 years, or 10 years for countries with economies in transition, the placing on the market of mercury-containing fluorescent lamps if their mercury content exceed, for:

- (a) Compact fluorescent lamps: 5 mg mercury per lamp; and
- (b) Straight fluorescent lamps for general purposes:
  - (i) 10 mg mercury for lamps with halophosphate;
  - (ii) 5 mg mercury for lamps with triphosphate and normal lifetime;
  - (iii) 8 mg mercury for lamps with triphosphate and long lifetime.

10. Each Party shall ensure the installation of amalgam separators at dentist practices within its territory.

**11. Each Party shall set up a collection system for the mercury and mercury-containing products mentioned in the paragraphs 5–10 above, the aim being to dispose of the mercury in an environmentally sound manner.**

## ANNEX VII

### PRODUCT MANAGEMENT MEASURES

1. This annex aims to provide guidance to Parties on product management measures.
2. The Parties may consider appropriate product management measures such as those listed below, where warranted as a result of the potential risk of adverse effects on human health or the environment from emissions of one or more of the heavy metals listed in annex I, taking into account all relevant risks and benefits of such measures, with a view to ensuring that any changes to products result in an overall reduction of harmful effects on human health and the environment:
  - (a) The substitution of products containing one or more intentionally added heavy metals listed in annex I, if a suitable alternative exists;
  - (b) The minimization or substitution in products of one or more intentionally added heavy metals listed in annex I;
  - (c) The provision of product information including labelling to ensure that users are informed of the content of one or more intentionally added heavy metals listed in annex I and of the need for safe use and waste handling;
  - (d) The use of economic incentives or voluntary agreements to reduce or eliminate the content in products of the heavy metals listed in annex I; and
  - (e) The development and implementation of programmes for the collection, recycling or disposal of products containing one of the heavy metals in annex I in an environmentally sound manner.
3. Each product or product group listed below contains one or more of the heavy metals listed in annex I and is the subject of regulatory or voluntary action by at least one Party to the Convention based for a significant part on the contribution of that product to emissions of one or more of the heavy metals in annex I. However, sufficient information is not yet available to confirm that they are a significant source for all Parties, thereby warranting inclusion in annex VI. Each Party is encouraged to consider available information and, where satisfied of the need to take precautionary measures, to apply product management measures such as those listed in paragraph 2 above to one or more of the products listed below:
  - [(a) Mercury-containing electrical components, i.e. devices that contain one or several contacts/sensors for the transfer of electrical current such as relays, thermostats, level switches, pressure switches and other switches (actions taken include a ban on most mercury-containing electrical components; voluntary programmes to replace some mercury switches with electronic or special switches; voluntary recycling programmes for switches; and voluntary recycling programmes for thermostats);
  - (b) Mercury-containing measuring devices such as thermometers, manometers, barometers, pressure gauges, pressure switches and pressure transmitters (actions taken include a ban on mercury-containing thermometers and ban on measuring instruments);
  - (c) Mercury-containing fluorescent lamps (actions taken include reductions in mercury content per lamp through both voluntary and regulatory programmes and voluntary recycling programmes);

(d) Mercury-containing dental amalgam (actions taken include voluntary measures and a ban with exemptions on the use of dental amalgams and voluntary programmes to promote capture of dental amalgam before release to water treatment plants from dental surgeries); - ~~delete~~]

[(e) - ~~delete~~] (a) Mercury-containing pesticides including seed dressing (actions taken include bans on all mercury pesticides including seed treatments and a ban on mercury use as a disinfectant);

[(f) - ~~delete~~] (b) Mercury-containing paint (actions taken include bans on all such paints, bans on such paints for interior use and use on children's toys; and bans on use in antifouling paints); and

[(g) - ~~delete~~] (c) Mercury-containing batteries other than those covered in annex VI (actions taken include reductions in mercury content through both voluntary and regulatory programmes and environmental charges and voluntary recycling programmes).