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EXECUTIVE BODY FOR THE CONVENTION ON
LONG-RANGE TRANSBOUNDARY AIR POLLUTION

Working Group on Strategies and Review

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OPTIONS FOR REVISING THE PROTOCOL ON HEAVY METALS

Note by the secretariat

INTRODUCTION

1. At its twenty-seventh session in 2009, the Executive Body to the Convention considered amendments to the 1998 Protocol on Heavy Metals and to its annexes proposed by three Parties to the Protocol: the European Commission, on behalf of the European Union; Sweden, as President of the European Council; and Switzerland. It mandated the Working Group on Strategies and Review to start negotiations with a view to presenting amendment proposals for adoption by the Parties to the Protocol at the twenty-ninth session of the Executive Body in 2011.

2. To provide a basis for the negotiations, the Executive Body invited Parties to forward proposed text for amendments to the secretariat, and requested the secretariat to collect the proposals and to annex them to a working document for submission to by the Working Group on Strategies at its forty-sixth session (ECE/EB.AIR/99/Add.2, annex).

3. The present document contains in its annex proposed text sent to the secretariat by Switzerland. The amendment proposals to the text of the Protocol on Heavy Metals are presented

in chapter I and those to the Protocol's annexes in chapter II, except for the proposed amendments to annex III on best available techniques. The amendment proposals to annex III, which is of a recommendatory nature, are included in an informal document, due to the limitation on the length of United Nations' official documents.

4. The proposed amendments to the text of the Protocol on Heavy Metals and its annexes have been drafted taking into consideration the work carried out and in progress by the Task Force on Heavy Metals as well as the adopted amendments to the 1998 Protocol on Persistent Organic Pollutants (POPs) and those proposed to the 1999 Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol). The proposals:

(a) Reflect the work of the Task Force on Heavy Metals with regard to updating best available techniques (BAT) and emission limit values (ELVs) (EB.AIR/WG.5/2005/2 and Corr.1, EB.AIR/WG.5/2006/2) as well as background documents EB.AIR/WG.5/2007/15 and EB.AIR/WG.5/2008/9;

(b) Take into account the proposal by the European Union in 2008 to add mercury-containing products to annex VI to the Protocol;

(c) Take into account mercury generated as a result of the proposed measures;

(d) Introduce a review clause of the Protocol and rectify an omission in the Protocol with respect to the reporting of the use of alternative reduction strategies;

(e) Take into account the amendments to the Protocol on POPs adopted by the Parties to the Protocol at the twenty-sixth session of the Executive Body in 2009 (decisions 2009/1 to 2009/4 in document ECE/EB.AIR/99/Add.2);

(f) Take into account the proposed changes to the Gothenburg Protocol (EB.AIR/WG.5/2010/1) and the proposed annex to that Protocol on total suspended particles (TSP) (EB.AIR/WG.5/2009/21).

5. In the proposed text, BAT descriptions are still included in annex III. However, Parties to the Protocol could well decide to extract these descriptions from the Protocol and turn them into a guidance document, in line with the amended Protocol on POPs.

6. As mandated by the Executive Body, at its twenty-seventh session in 2009, the Working Group on Strategies and Review is expected to discuss the proposals and to report on its progress to the Executive Body at its twenty-eight session in 2010.

Annex

DRAFT OPTIONS FOR AMENDING THE 1998 PROTOCOL ON HEAVY METALS

I. PROPOSED DRAFT AMENDMENTS TO THE TEXT OF THE PROTOCOL

A. Article 1: Definitions

1. Paragraph 10 of article 1 of the Protocol shall be replaced by the following:

"1. "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 for a Party of: (i) this Protocol; or (ii) an amendment to this Protocol that imposes new requirements with respect to that stationary source."

2. Paragraph 12 of article 1 of the Protocol shall be replaced by the following:

"Countries with economies in transition (CET) are countries as defined in Executive Body Decision 2006/13 and any amendments thereto."

B. Article 3: Basic obligations

3. Paragraph 5 of article 3 of the Protocol shall be replaced by the following:

"5. Each Party shall develop and maintain emission inventories for the heavy metals listed in annex I. Parties within the geographical scope of EMEP shall use 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 use similar methodologies";

4. After paragraph 7, three new paragraphs shall be added as follows:

"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 modeling 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."

"10. Each Party shall[1]:

(a) Prohibit metallic mercury, mercury-containing products and mercury compounds as specified in and in accordance with the conditions and timescales specified in annex VIII;

(b) Ensure the disposal of waste containing metallic mercury in accordance with the conditions and timescales specified in annex VIII."

C. Article 7: Reporting

5. In paragraph 1 (a), after the first sentence, a second sentence shall be added as follows:

"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;"

6. Paragraph 1 (b) shall be deleted and replaced by the following text:

"1 (b) Each Party within the geographical scope of EMEP shall report, 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 to 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."

7. After paragraph 1 (b) two new paragraphs 1 (c) and 1 (d) shall be added as follows:

" 1 (c) Each Party shall report through the Executive Secretary of the Commission, to the Executive Body, on a periodic basis and using as a minimum the methodologies to be specified and to be determined by the Steering Body of EMEP and approved by the Parties at a session of the Executive Body, information on:

(i) The amount of metallic mercury in use in the country;

[1] Measures in the Protocol result in important amounts of mercury that would enter the market (e.g. through gold mining) if left unregulated. The proposed new paragraph 10 aims at regulating the export and the disposal of mercury. In addition, in article 7 on reporting, a new paragraph 1 (c) is introduced to cover information requirements concerning mercury. Furthermore, a proposed new annex VIII was drafted to: define the conditions and timescales for the export prohibition; to define mercury and its compounds/mixtures under the export regulation; to define waste; and to regulate the disposal in an environmentally sound manner. In the European Union (regulation 1102/2008) and in the United States these issues have been regulated through legislation.

(ii) The amount of metallic mercury generated from mining in the country;

(iii) The amount of metallic mercury and mercury compounds generated as waste, as specified in paragraph 3 of annex VIII, in the country;

(iv) The amount of metallic mercury waste that is temporarily stored in the country;

(v) The amount of metallic mercury entering and leaving the country as waste;

(vi) The amount of metallic mercury that is permanently stored in the country.

1 (d) 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 atmospheric monitoring and modelling programmes under the Convention using guidelines adopted by the Parties at a session of the Executive Body."

D. Article 13: Amendments to the Protocol

8. Paragraph 3 shall be replaced by the following text:

"3. Amendments to the present Protocol and to annexes I, II, IV, V, VI and VIII 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 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."

9. After paragraph 5, the following new paragraphs shall be added:

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

"5 ter.

(a) Amendments to annexes I, II, IV, V, VI and VIII 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".

E. Article 15: Ratification, Acceptance, Approval and Accession

10. A new paragraph shall be added after paragraph 2 as follows:

"3. Any Party to the Convention that was not already a Party to this Protocol on [DATE OF ADOPTION AMENDMENTS], 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 14, paragraph 5 ter as regards the amendment of annexes I, II, IV, V, VI and VIII."

II. PROPOSED DRAFT AMENDMENTS TO THE ANNEXES TO THE PROTOCOL

D. Annex I: Heavy metals referred to in article 3, paragraph 1, and the reference year for the obligation

11. In annex I, in the text on the reference year of cadmium, lead and mercury, after the first part of the first sentences "1990; or an alternative year from 1985 to 1995 inclusive" replace the rest of the sentences by the following text (in bold):

Substance	Reference year
Cadmium (Cd)	1990; or an alternative year from 1985 to 1995 inclusive, **"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**"
Lead (Pb)	1990; or an alternative year from 1985 to 1995 inclusive, **"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."**
Mercury (Hg)	1990; or an alternative year from 1985 to 1995 inclusive, **"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."**

E. Annex II: Stationary source categories[2]

12. In annex II, in the list of categories, for the description of category 5 after the word "zinc" shall be added the words "and manganese", as follows:

Category	Description of the category
5	Installations for the production of copper, lead, zinc **and manganese** from ore, concentrates or secondary raw materials by metallurgical processes with a capacity exceeding 30 tons of metal per day for primary installations and 15 tons of metal per day for secondary installations, or for any primary production of mercury.

13. In annex II in the list of categories, for the description of category 6, after the words "zinc" shall be added the words "and aluminium", as follows:

Category	Description of the category
6	Installations for the smelting (refining, foundry casting, etc.), including the alloying, of copper, lead, zinc **and aluminium** including recovered

[2] According to the Task Force on Heavy Metals, the two source categories (5 and 6) are considerable sources of mercury. This is why manganese production from ores and secondary aluminium production are therefore included in the categories 5 and 6, respectively.

F. Annex IV: Timescales for the application of limit values and best available techniques to new and existing stationary sources

14. In annex IV, replace paragraph 1 (b) by the following text:

" 1 (b) For existing stationary sources:

(i) 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; 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 a Party.

15. After paragraph 1 (b), add new paragraph 2, as follows:

"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 15 years after the date of entry into force of the relevant amendment for a Party."

G. Annex V: Limit values for controlling emissions from major stationary sources

16. The text in annex V shall be replaced by the text below.[3]

"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

[3] Explanations regarding the proposed changes to the text of annex V:

- The ELVs in annex V have been updated using the work carried out by the Task Force on Heavy Metals since the Protocol came into force in 2003. For most categories, for ELVs for dust (all except one were the Gothenburg Protocol makes no proposal for ELVs) the options from the Gothenburg Protocol were used in the current proposal. Footnote 5 explains the different ELV options with option 2 being in line with national regulations of most European Union (EU) Member States and option 3 being less ambitious.
- The sectors are not fully congruent with those in the Gothenburg Protocol, as some of them are not relevant for the Gothenburg Protocol, such as chlor-alkali production or lead production. Inversely, most of the sources of the Gothenburg Protocol are not relevant for the heavy metal missions.
- ELVs for heavy metals were proposed for the different categories. Many EU countries already apply limit values for these categories. The proposed limit values are linked to option 2 for dust. If option 1 for dust was to be chosen, the limit values for heavy metals could in most cases be lowered accordingly.
- Only solid or liquid fuels are relevant for heavy metal emissions, therefore no additional category for gaseous fuels was included. In the Gothenburg Protocol, which focuses on dust, these fuels are taken into account.
- Information on costs can be found in the background document of the Task Force on Heavy Metals (EB.AIR/WG.5/2007/15). The original data referred to in United States dollars, was not changed. The current Protocol on Heavy Metals contains comparable data.
- Depending of the outcome of the negotiations on the Gothenburg Protocol, the introductory paragraphs 1– to 5 in annex V could be adjusted.

otherwise specified, it shall be calculated in terms of mass of pollutant per volume of the waste gases (expressed as mg/m3), 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[4]. 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, 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[5]

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.[6] Limit values refer to 6% O_2 in flue gas for solid fuels

[4] 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.

[5] 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.

[6] Individual combustion plants below 15 MWth shall not be considered to calculate the total rated input.

and to 3% O_2 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 different):

Thermal input [MWth]	Heavy Metals Protocol 1998	Option 1	Option 2	Option 3
New installations 50 to 100	50 mg/m^3	[10]	[20]	[50]
Existing installations 50 to 100	50 mg/m^3	[15]	[30]	[50]
New installations 100 - 300	50 mg/m^3	[10]	[20]	[30]
Existing installations 100 - 300	50 mg/m^3	[15]	[25]	[50]
New installations > 300		solid fuel [10] liquid fuel [5]	[10]	[30]
Existing installations > 300		[10]	[20]	[50]

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:

(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 50MW, 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, 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/m³.

11. Limit value for lead emissions: [0.5] mg/m³.

12. Limit value for mercury emissions: [0.03] mg/m³.

<u>Processing of ferrous ores and primary iron and steel industry annex II, category2) Sinter plants (annex II, category 2) (>150 t/day)[7]:</u>

13. Limit value for particulate emissions:

[7] 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, paragraph 11, table 6).

	HM Protocol 1998	Option 1	Option 2	Option 3
Limit value for particulate emissions	50 mg/m^3	[10] [1]	new installations [20] existing installations [50] [1]	[50]

[1] averaged over a substantial period of time

14. Limit value for cadmium emissions: [0.05] mg/m³.

15. Limit value for lead emissions: [1] mg/m³.

16. Limit value for mercury emissions: [0.05] mg/m³.

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

17. Limit value for particulate emissions:

	Option 1	Option 2	Option 3
Limit value for particulate emissions	[5] [1]	[10] [1]	[25]

[1] averaged over a substantial period of time

18. Limit value for cadmium emissions: [0.05] mg/m³.

19. Limit value for lead emissions: [0.5] mg/m³.

20. Limit value for mercury emissions: [0.05] mg/m³

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

21. Limit value for particulate emissions:

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

[1] averaged over a substantial period of time

22. Limit value for cadmium emissions: [0.05] mg/m³.

23. Limit value for lead emissions: [0.5] mg/m³.

24. Limit value for mercury emissions: [0.05] mg/m³.

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:

	Option 1	Option 2	Option 3
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/m³.

27. Limit value for lead emissions: [0.5] mg/m³.

28. Limit value for mercury emissions: [0.05] mg/m³.

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

29. Limit value for particulate emissions:

Limit value for particulate emissions	Option 1	Option 2	Option 3
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/m³.

31. Limit value for lead emissions: [0.5] mg/m³.

32. Limit value for mercury emissions: [0.05] mg/m³.

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:

Limit value for particulate emissions	Option 1	Option 2	Option 3
- 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 to much moist, 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/m³.

36. Limit value for lead emissions: [1] mg/m³.

37. Limit value for mercury emissions: [0.05] mg/m³.

Production of lead (annex II, categories 5 and 6)[8]:

38. Limit value for particulate emissions: [3/5/10] mg/m³.

39. Limit value for cadmium emissions: [0.05] mg/m³.

40. Limit value for lead emissions: [2] mg/m³.

41. Limit value for mercury emissions: [0.05] mg/m³.

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_2 concentration in flue gas.

	Option 1	Option 2	Option 3
Limit value for particulate emissions	[15]	[20]	[50]

44. Limit value for cadmium emissions: [0.05] mg/m³.

45. Limit value for lead emissions: [0.5] mg/m³.

46. Limit value for mercury emissions: [0.05] mg/m³.

Glass industry (annex II, category 8)[9]

47. Limit values refer to different O_2 concentrations in flue gas depending on furnace type: tank furnaces (continuous melters): 8%; pot furnaces and day tanks (discontinuous melters): 13%.

[8] Note that the 1999 Gothenburg Protocol does not cover production of lead.

[9] 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).

48. Limit value for particulate emissions:

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

49. Limit value for lead emissions: [0.5] mg/Nm³.

50. Limit value for lead emissions in container glass production using foreign cullet: [0.8] mg/Nm³.

51. Limit value for lead emissions in glass production if lead is required for product quality: [3] mg/Nm³.

52. Limit value for cadmium emissions:[0.05] mg/Nm³.

53. Limit value for cadmium emissions in container glass production: [0.5] mg/Nm³.

54. Limit value for cadmium emissions if cadmium compounds are used as colouring agents for quality reasons: [0.2] mg/Nm³.

55. Limit value for mercury emissions: [0.05] mg/Nm³.

56. For oxy-fuel burners and electrical heating it is necessary to evaluate the performances only in terms of specific mass emissions (kg/tonne 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][10] 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)

[10] 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).

60. Limit values refer to 11% O_2 concentration in flue gas for waste incineration; co-incineration in combustion installations: 6% O_2 for solid fuels and 6% O_2 for liquid fuels; co-incineration in cement kilns: 10% O_2.

61. Limit value for particulate emissions:

	Option 1	Option 2	Option 3
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

62. Limit value for mercury emissions:

(a) [0.03] mg/m³ for waste incineration and co-incineration;

(b) [0.05] mg/m³ 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/m³.

64. Limit value for lead emissions: [0.5] mg/m³."

H. Annex VI: Product control measures[11]

17. In annex VI, paragraph 1, replace twice the value "0.013 g/l" by the value "0.005 g/l". (Paragraphs 2–4 remain unchanged).

18. In annex VI, replace paragraph 5 by the following text:

"5. Each Party shall prohibit, no later than five years, or ten 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

[11] The proposed amendments to annex VI (paras 17-19) reflect the outcomes of the work initiated by the Task Force on Heavy Metals on track B review of the EU proposal to add mercury-containing products to annex VI to the Protocol (ECE/EB.AIR/WG.5/2009/8). The Task Force will continue with the track B reviews of products in 2010, taking into account the expected further information from the North America and EECCA countries. On the basis of the outcomes of this work, the Working Group should further discuss the amendment proposals to annex VI at its forty-seventh session in September 2010.

(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."

19. In annex VI, after paragraph 5, add new paragraphs (6–11), as follows:

"6. Each Party shall prohibit, no later than five years, or ten years for countries with economies in transition, the placing on the market of: (a) Fever thermometers that contain mercury; and (b) 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 labeled 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 five years, or ten 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 1000 volts for alternating current and 1500 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 5–11 above, the aim being to dispose of the mercury in an environmentally sound manner."

I. Annex VII: Product management measures

20. In annex VII, paragraph 3, subparagraphs 3 (a) to 3 (d) shall be deleted. (Paragraphs 1 and 2 remain unchanged).

J. Annex VIII: Export measures on metallic mercury and certain mercury compounds and mixtures and the disposal of waste of metallic mercury

21. After annex VII, new annex VIII on export measures on metallic mercury and certain mercury compounds and mixtures and the disposal of waste of metallic mercury, shall be added, as follows:

"**I. Export**

1. The export of metallic mercury (Hg, CAS RN 7439-97-6), mercury-containing products as prohibited in annex VI, cinnabar ore, mercury (I) chloride (Hg2Cl2, CAS RN 10112-91-1), mercury (II) oxide (HgO, CAS RN 21908-53-2) and mixtures of metallic mercury with other substances, including alloys of mercury, with a mercury concentration of at least 95% by weight from the Parties shall be prohibited one year after the entry into force of the present Protocol for the Party in question.

2. The mixing of metallic mercury with other substances for the sole purpose of export of metallic mercury shall be prohibited one year after the entry into force of the present Protocol for the Party in question.

II. Waste

3. The following shall be considered as waste and shall be disposed of in an environmentally sound manner, one year after the entry into force of the present Protocol for the Party in question, taking into account relevant sub-regional, regional and global regimes governing the management of hazardous wastes and their disposal, in particular the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal:

(a) Metallic mercury that is no longer used in the chlor-alkali industry;

(b) Metallic mercury resulting from the cleaning of natural gas;

(c) Metallic mercury and mercury compounds resulting from the cleaning of exhaust gasses of stationary sources;

(d) Metallic mercury resulting from non-ferrous mining and smelting operations;

(e) Metallic mercury extracted from cinnabar ore; and

(f) Obsolete mercury-containing products.

III. Disposal

4. The disposal of mercury-containing waste and the transboundary movement of waste shall be carried out in an environmentally sound manner, taking into consideration applicable sub-regional, regional and global regimes governing the transboundary movement and the management of hazardous wastes and their disposal, in particular the Basel Convention.”
