

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

**THE 2000 REVIEW ON STRATEGIES AND POLICIES
FOR AIR POLLUTION ABATEMENT**

THE 1998 PROTOCOL ON HEAVY METALS
REPLIES TO QUESTIONS 28 - 36 OF THE 2000 QUESTIONNAIRE

Prepared by the secretariat from submissions by the Parties

Introduction

1. This document is the basis for part of the 2000 Review of Policies and Strategies requested by the Executive Body at its seventeenth session in December 1999. It provides the answers as received from Parties in response to the questionnaire circulated in January 2000. It is in English only, non-English submissions were passed to the UN translation services, and are incorporated as translated. Answers have been reformatted for the document but have been subjected to minimal editing. Indication is given where responses have been altered, e.g. moved where an answer appears to be for a different question.
2. The document is intended as a reference for the summary to be found in the 2000 Review of Strategies and Policies (EB.AIR/2000/1/Add.1) and will be provided to the Executive Body, the Implementation Committee and will be made available through the Executive Body document Web site. The document groups questions in accordance with the sections of the questionnaire.
3. This section summarizes the answers received to questions 28 to 36 of the questionnaire. The Protocol on Heavy Metals is not yet in force. Consequently, all the questions in this section are optional. This section summarizes the answers received to questions 28 to 36. The signatories are: Armenia, Austria, Belgium, Bulgaria, Canada, Croatia, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Republic of Moldova, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom, United States, and European Community. In addition, the Russian Federation has replied to question 28.
4. **Question 28: Provide information, as required by article 7, on the national strategies, policies and programmes developed in accordance with article 5, paragraph 1, to implement the Protocol and control and reduce emissions of the heavy metals listed in annex I to the Protocol. You may wish to include information on measures such as those listed in article 5, paragraph 2. If applicable, please include information on measures taken for other heavy metals, not listed in annex I.**
5. **Austria.** Austria has not yet ratified the Protocol on Heavy Metals. Nevertheless in Austria early measures for the reduction of heavy metals emissions, like limit values for particulate matter and a ban on leaded petrol, have been taken. Currently regulations for stationary sources in general (see Q.30) and several specific sectors (see Q.31) as well as for several products (see Q.32

and Q.33) are in force. As a consequence, emissions of the heavy metals listed in Annex I have considerably dropped (by 2/3 and more) since the 80ies.

6. **Belgium.** Walloon region: As with other pollutants, in the Walloon region the metals reduction policy hinges primarily on the granting of operating permits to enterprises which set operating conditions and individual standards, based on the General Regulations on Occupational Safety (RGPT). These regulations are currently being revised with a view to imposing more stringent general, sectoral and individual operating standards and incorporating BATs. In addition, large fixed sources such as incinerators, large combustion installations and iron and steel plants are specifically regulated under European directives and the OSPAR decisions and recommendations. The glass sector is covered by a sectoral agreement in the Walloon region which, among other matters, deals with heavy metals.

7. With regard to air quality, limit values and guide values have been stipulated for suspended particulates and for lead. In addition, deposits of the following heavy metals are measured by the air quality monitoring network: aluminium, antimony, arsenic, barium, cadmium, calcium, chrome, copper, iron, magnesium, manganese, mercury, molybdenum, nickel, lead, selenium, silicon, titanium, vanadium, zinc.

8. Flemish region: In order to meet the emission reduction commitments made in the framework of the Third North Sea Conference (1990), the Flemish Government has made substance inventories for the metals of the priority list (Hg, Cd, Cu, Zn, Pb, As, Cr, Ni). These inventories contain annual loads per source categorie towards air, water and, if relevant, waste for the years 1985, 1990 and 1995. They are based on emission measurements at the sources and on estimations of the emissions by using emission factors and production or consumer statistics. They also bring into account monitoring data. Since these inventories were the base for reporting to the Fourth North Sea Conference (1995), the source specific loads given for the year 1995 were based on estimations. For information on the emission reduction goals for metals as stipulated in the Third North Sea Conference and the report on compliance for the region of Flanders, please see Question29.

9. At the Fourth North Sea Conference the emission reduction goals for hazardous substances like the metals mentioned above were set more ambitious. The goal is to reduce their emissions towards the target of their cessation within one generation (25 years) with the ultimate aim of concentrations in the environment near background values for naturally occurring substances and close to zero concentrations for man-made synthetic substances. The Environmental Policy and Nature Development Plan for the period 1997 to 2001 (Mina-2 plan), adopted by the Flemish Government in 1997, includes an action (action 28) to make a program to implement the agreements of the Fourth North Sea Conference and implement it. In order to fulfil these agreements the substance inventories are being further refined, the estimated values for 1995 are being checked with meanwhile available information and the actual annual loads per source categorie towards air, water and, if relevant, waste are being calculated. Substance specific reduction programs are being made on the base of these substance inventories. The next step is to implement these programs.

10. The Flemish Environmental Legislation (VLAREM) imposes an emission limit value towards air for all activities exceeding a set threshold value defined as total emission load. For

some specific sectors more severe emission limit values have been set. For more detailed information see Question 31.

11. **Brussels capital region:** The Protocol shall be implemented through the regulations on environmental permits and the preparation of an inventory of emissions of the heavy metals concerned. The new smoke scrubbing system in operation in the Neder-Over-Hembeek incinerator since 1999 has to abide by reasonably strict standards relating to heavy metal emissions. Leaded petrol has not been available at Belgian pumps since January 2000. This measure will have a positive effect on lead concentrations in the air in this region, where there is heavy road traffic. An air pollution programme is under preparation for Brussels capital region and will be finalized before the end of 2000.

12. **Federal Government:** Belgium is following work by the European Commission on the substances listed in annex I to the Protocol and the current situation is as follows:

Substances concerned	Directive no.	Incorporated by Royal decree of:
Pb carbonate and sulphate	89/677/EEC	05/11/1990
Pb	91/157/EEC	17/03/1997
Pb	93/86/EEC	31/12/1993
CMR compounds of Pb	97/10/EC	5/10/1998
Pb	97/56/EC	9/01/2000
	99/43/CEE	9/01/2000

Substances concerned	Directive no.	Incorporated by Royal decree of:
Hg compounds	89/677/EEC	05/11/1991
Hg (unnumbered)	91/157/EEC	17/03/1997
Hg (unnumbered)	93/86/EEC	17/03/1997
Hg	98/101/EC	In progress

Substances concerned	Directive no.	Incorporated by Royal decree of:
cadmium and its compounds	91/338/EEC	25/02/1996
cadmium (unnumbered)	91/157/EEC	17/03/1997
cadmium (unnumbered)	93/86/EEC	-
cadmium and its compounds (CMR)	97/10/EC	

13. **Bulgaria.** Bulgaria signed the Protocol in Orhus, Denmark. National strategy, co-ordinated with relevant institutions was elaborated.

14. **Canada.** Canada will implement the requirements of this article through existing strategies, policies, programmes and measures addressing Heavy Metals. These include:

(a) The federal Toxic Substances Management Policy (TSMP) and the Canadian Council of Ministers of the Environment (CCME) Policy for the Management of Toxic Substances (PMTS) whose management objectives are the life cycle management of track 2 substances (natural substances such as lead, cadmium and mercury that are used or released as a result of human activity may be targeted for reduction to naturally occurring levels under Track 2) ;

(b) The Canada-Wide Standards (CWS) process under the Canada-Wide Accord on Environmental Harmonization establishes a common vision, objectives and principles to inform

the partnership of environmental management between the federal and provincial/territorial governments. In particular, the Canada-Wide Environmental Standards Sub-Agreement will allow for the development of national standards and guidelines for Hazardous Air Pollutants;

(c) Federal legislation and regulations such as the Canadian Environmental Protection Act (CEPA) and the Fisheries Act which regulate toxics released to air, water and soil;

(d) Provincial/territorial legislation and regulations which regulate the release of toxics to air, water and soil in their jurisdictions;

(e) Regional and ecosystem strategies, including the Northern Contaminants Programme (NCP), the North American Regional Action Plans (NARAPs), the Great Lakes Water Quality Agreement, the Great Lakes Binational Toxics Strategy (GLBTS), the Canada-Ontario Agreement (COA), the Fraser River Action Plan (FRAP) and St-Laurent Vision 2000 (SLV-2000).

15. **Croatia.** Current state Emission of heavy metals in Croatia in the period 1990-1998. Among heavy metals the greatest attention is given to emission of cadmium (Cd), lead (Pb) and mercury (Hg) because of their long-range transboundary transmission. Among the three metals observed the highest emission recorded in Croatia refers to lead (286 t/year) originating from traffic (90.6 per cent). The lead emission in the period observed has been going down as a result of an ever-growing utilisation of unleaded petrol. In 1997 the share of the unleaded petrol was 47 per cent as opposed to only 4 per cent in 1990. The emission of mercury is mostly the result of using wood in households and other institutions (72.6 per cent) and of the operation of the Central gas station in Molve (13.4 per cent) and thermal power plants (9.3 per cent). Cadmium is generally emitted by thermal power plants and road traffic (28.7 per cent by each sector). Looking at the heavy metals mentioned (excepting mercury) it may be stated that the highest emissions are generated by combustion of fuel in industry and traffic. The emission of heavy metals originating directly from production processes in the Republic of Croatia is lower than in the majority of other countries.

16. Besides the energy source, industrial plants with the highest heavy metals emissions (particulate matters) in Croatia are refineries, gas processing plants, cement plants, organic chemical industry, fertilizer production and carbon-black plants. The shutdown of the Sisak Ironworks, the Šibenik Ferroalloy Plant, the Šibenik Aluminium Plant and the Bakar Coke Oven Plant has considerably released the pressure of industrial sources.

17. Emissions coming from industry are to the most part a consequence of fuel combustion during which mainly particulate matters, sulphur dioxide, nitrogen oxides and carbon monoxide are emitted. Refineries are characterized by the emission of volatile organic substances and sulphur hydrogen (H₂S), particulate matters, cement plants by high emissions of particulate matters and nitrogen oxides, gas processing plants by high emissions of mercury, sulphur hydrogen and carbon dioxide, organic chemical industry by emission of volatile organic substances, persistent organic compounds and particulate matters, fertilizer production by emission of ammonia and the greenhouse gas dinitrogen oxide, and carbon-black plants by emission of particulate matters, sulphur hydrogen and carbon monoxide.

1. Major industrial sources are applying the technology originating from the 70' and 80' which means that some of them have reached the end of their service life. All of these sources are operating with reduced capacities and most often with a highly variable output. It can be almost generally said that the process of privatization and restructuring has not ensured the input of new

capital, therefore it is very difficult to secure the finance necessary for environmental protection measures and introduction of new technologies. There are, however, some isolated examples where one's own initiative has helped achieve results surpassing those prescribed by law. Such an example is the Cement plant in Koromačno that, by introducing the ISO 14001, accepted the implementation of environmental protection as a strategic objective of its business operations.

19. Policies and measures. Main instruments of the air quality protection policy are the By-Law on Limit Values of Pollutant Emissions from Stationary Sources, By-Law on Quality Standards for Liquid Oil Fuels, By-Law on Recommended and Limit Ambient Air Quality Values and Law on Waste following with some by-laws.

20. For industrial and energy sources the By-Law on Limit Values for Pollutant Emissions has prescribed emission standards, obligations of emission monitoring and time-limits for implementation. The prescribed limit values take into account the status of technology and the service life of the plants selectively for individual plants. After 2004, when values stricter than those valid at present for new plants will be applied, in some industrial plants it will be necessary to undertake additional measures for emission abatement.

21. The Law on Air Quality Protection lays down the obligation for areas with the third category of air quality to draw up remedial programmes. In areas with the second category of air quality the remedial programme is to be prepared by the local unit. On the basis of this obligation certain industrial sources such as, for example, the Rijeka Refinery, the Sisak Refinery, the Kutina Petrochemical Industry and cement works in Pula and Split are bound to propose programmes of measures to reduce the effect on air quality with a clear specification of their impacts, objectives to be achieved and time-limits for implementation.

22. According to the proposed Air Quality and Protection Strategy the following measures that are to be systematically and continuously encouraged and applied in industry are:

- (a) clean production (minimization of energy consumption, natural resources, emissions, waste generation and environmental impact in general);
- (b) "eco-efficiency" (economically profitable business operations including application of environmentally acceptable procedures and technologies);
- (c) application of best available technologies not entailing excessive costs in accordance with the UNECE protocols and the EU legislation (the BATNEEC principle);
- (d) raising energy efficiency in generation, transmission and consumption of all forms of energy (cogeneration, new combustion technologies, energy consumption management, etc.);
- (e) use of renewable energy sources (biomass and municipal wastes, solar energy, wind energy, geothermal energy, hydroenergy) etc.

The measures stated are applicable for both the existing and new plants.

23. **Czech Republic.** The new document on national policies is The State Environmental Policy approved by Government of the Czech Republic on April 14, 1999. This document includes national policies and strategies, selected targets and measures for emission reduction of HM, with the respect to the obligations under the Protocol to the CLRTAP. Law No. 309/1991 Coll., on protection of the air against pollutants (the Clean Air Law), as amended, and implementing Decree 117/1997 Coll., including the prepared amendment, will provide to a considerable degree for the requirements of the Protocol on heavy metals. Full provision through

suitable legislation will be achieved when the new Law on air protection and protection of the ozone layer of the Earth and the pertinent regulations for implementation are passed and when the new Law on integrated pollution prevention and control is passed, which are expected to come into effect by November 1, 2001 (air) and January 1, 2003 (IPPC).

24. Decreasing of Pb emissions is one of the individual tasks following from the Transport policy and medium-term strategy in the sector of transportation in CR.

All the measures of the Ministry of Transport and Communications of CR concerned with decreasing fuel consumption are directed towards decreasing Pb emissions. In this respect, contributions are made by implementation of the long-term measures following from the "Program of stabilization and decreasing CO₂ emissions from transportation in CR" of 1994 and also the individual measures of the "Set of measures to decrease the environmental burden from transportation in CR" of 1997. These consist primarily in:

- (a) Application of guideline values for specific consumption of fuel for newly designed vehicles;
- (b) Implementation of combined transportation;
- (c) Support for research and introduction of vehicles with alternative power and fuels;
- (d) Increasing the production and use of alternative fuels;
- (e) Concluding of international agreements on regulation of highway freight transportation;
- (f) Construction and modernization of urban by-passes and access roads;
- (g) Use of alternative fuels for powering motor vehicles in urban mass transportation.

25. The Ministry of Transport and Communications of the Czech Republic is adopting further measures for development and introduction of less polluting transportation systems:

- (a) support for public transportation
- (b) transfer of part of freight transportation from highways to railways
- (c) implementation of combined transportation
- (d) conversion of urban bus transportation to gas.

26. **Denmark.** The primary goal is that exposure of the environment and humans to heavy metals is limited to the extent possible. In practice this means that the concentrations of heavy metals in the environment (land, sea and air) and the exposure to heavy metals of humans should not be allowed to increase from its present level, and shall if possible be reduced. This goal will guide the efforts relating to cadmium, lead and mercury as well as the efforts directed towards other heavy metals (arsenic, chromium, copper, nickel etc.), which deserve attention. To reach this goal it is still necessary to limit the release of heavy metals to the environment. It is the strategy primarily to aim at limiting the use of heavy metals by substitution, secondly to promote recycling and treatment. (Quotation from Heavy metals, State of the Art, Targets and Reduction instruments, Danish EPA, no. 3, 1994).

27. In 1990 a new guideline regulating the emission to the air from all significant sources was introduced. As to Cd the impact in the surroundings from individual sources should not exceed 0.01 µg/m³, given as 99% percentile of hour average value during any month of the year. For Hg the impact in the surroundings should not exceed 0.1 µg/m³ and if the discharge to the atmosphere is more than 1 gram/hour the concentration in the discharge should not exceed 0.1 mg/Nm³. For Pb the guideline stipulates an impact limit in the surroundings of 0.4 µg/m³ and if

the discharge is bigger than 5 gram/hour the concentration should not exceed 1 mg/Nm³.

28. **Germany.** National strategies, policies and programmes developed for air pollution abatement cover the various stages of the generation of air pollution and a large spectrum of environmental policy instruments. Ambient air quality standards and emission control requirements for plants and products are of most practical relevance. A point to be highlighted is the independent function of emission limits for installations and of corresponding requirements for products. This means that all emission sources are subject to the statutory requirement of emission avoidance at source according to the state-of-the-art. The establishment and operation of installations particularly liable to cause harmful effects on the environment is subject to licensing. The plants concerned are listed in the Ordinance on Installations Subject to Licensing (4th BImSchV). Detailed provisions relating to the licensing procedure are laid down in the Ordinance on the Licensing Procedure (9th BImSchV).

29. **Greece.** Greek law provides for emission limit values for all fixed sources emitting Cd and Pb to the atmosphere. In addition, every fixed source of these heavy metals has to be licensed and environmental protection measures must be taken. This apart, the provisions of Community Directive 96/61/EC (IPPC) will be applied. Leaded petrol being their principal source, Greek emissions of Pb will be substantially reduced by the use of unleaded petrol.

30. **Netherlands.** National strategies: The main objective of the Netherlands environmental policy is the pursuit of sustainable development, which has been apparent in all three environmental policy plans. The first plan was built on the stand-still principle, pollution prevention prevention, the polluter pays and source-oriented measures based on effect-oriented quality standards. The second plan shifted the emphasis from regulation to self-regulating frameworks. The third plan aims to decouple economic growth from environmental pressure. The long term aim is to reduce the emission of air pollutants to a sustainable level. The Netherlands support an effect-based approach to support identify the sustainable level for HM emissions. The emissions of HMs are regulated by environmental permits.

31. **Poland.** An “Analysis of the possibilities for signing by Poland the protocols on persistent organic pollutants and on heavy metals to the Convention on Long-range Transboundary Air Pollution” was prepared prior to signing both protocols by Poland in 1998. It includes an evaluation of the possibilities of implementation of the basic obligations by Poland. This document was the basis for the draft “National strategy for the reduction of heavy metal emissions” which was elaborated at the end of 1999 and is now awaiting approval. At the same time a frame work draft document - the new National Environmental Policy covering overall environmental issues, including heavy metal emissions, is under discussion and waiting to be approved by the Council of Ministers and the Parliament this year. Within its short-, medium- and long term priorities the need for, inter alia, undertaking activities leading to heavy metal emission reduction and for preparation and implementation of a heavy metal emission reduction programme, is underlined. Wider use of emission standards in the industry, energy and transport sectors, the use of product control measures (limit values for heavy metal contents), introduction of BAT, and emission standards for 11 source categories to the Polish legislation and elimination of the use of leaded petrol by 2005 – are only some of the points mentioned in the new environmental policy. The need for the reduction of heavy metal emissions through changes in the structure of fuel consumption with an increase in the use of natural gas, liquid fuels and renewable

sources, installation of emission reduction devices, phasing out of leaded petrol etc. is also stressed in the draft governmental document "Principles for Poland's national energy policy until 2020" which was approved by the Council of Ministers in February 2000. According to this document a detailed programme for the implementation of the energy strategy is planned to be completed by the end of this year. In compliance with the EU directives Poland will introduce obligations concerning the sulphur content limit values in motor fuels.

The draft strategy on heavy metal emission reduction points out the most important needs related to the provisions of the Protocol that include:

- (a) modification of the Polish public system of statistics (emission inventories);
- (b) a detailed prognosis for heavy metal emissions on the national and sectoral level;
- (c) an inventory of major emission sources within the 11 categories;
- (d) evaluation of applied technologies and emission control measures;
- (e) technical and cost-effective analysis of the possibilities for introducing BAT;
- (f) mandatory and recommended product control measures;
- (g) analysis of the effectiveness of applying different economic and market instruments;
- (h) preparation of appropriate emission standards for stationary and mobile emission sources.

Most of the listed activities are already underway and initial results have been achieved.

32. **Republic of Moldova.** The main activities for atmospheric air pollution prevention are included in the range of laws, prepared and entered in force after the Republic of Moldova became independent. The following legislative acts were developed and introduced:

- (a) Law on Protection of Environment (nr.1515 from 16.06.1993);
- (b) Law on Atmospheric Air Protection (nr.1422-XIII from 17.12.1997);
- (c) Law on Ecological Expertise and Environmental Impact Assessment (nr.851 from 29.05.1996);
- (d) Law on the Payment for Environmental Pollution (nr.1540 - XIII from 25.02.1998);
- (e) Law on Sanitary-Epidemiological Protection of the Population (nr.1514-XII from 16.06.1993);
- (f) Law on Hydrometeorological Activity (nr.1536 – XIII from 25.02.1998), - and other legislative and sub-legislative acts.

33. In the National Strategic Action Plan for Environmental Protection, approved by the Decree of the President of the Republic of Moldova in 1995 and National Action Plan on Environmental Protection, approved by the Decision of the Government in 1996 the principle "Polluter pays" was included. Realization of this principle was established in new legislative and normative acts:

- (a) Law on change and adding to the Law on Protection of Environment (nr.1539 – XIII from 25.02.1998);
- (b) Law on the Payment for Environmental Pollution (nr.1540 - XIII from 25.02.1998);
- (c) Regulation on Ecological Fund (nr.988 from 21.09.1998).

The main goal of the Law on the Payment for Environmental Pollution was implementation of the principle "Polluter pays" and stimulation of industrial enterprises in the process of restructuring and privatization. It was made for the implementation of the most economic installations with

minimum impact on the environment, and also resources collection for formation of ecological funds for financing of environmental projects.

34. Also, strategic directions of environmental protection, including atmospheric air, from toxic substances were included in the following documents:

(a) Environmental Performance Review. The ECE Committee on Environmental Policy and the ECE review team wish the Moldavian environmental managers success in implementing and following up the policy recommendations that are included in this review;

(b) The National Plan of Activities for Health in relation with environment was developed in the Republic of Moldova in 1999, which includes a range of provisions for 2001 and next years regarding protection of environment from HMs, establishment of HMs control systems in environment and other provisions.

35. Economic instruments for reduction of the toxic substances, including HMs:

(a) The taxes for pollutant emissions into environment and wastes deposits are established by the Law on the Payment for Pollution of the Environment of the Republic of Moldova. Annex 1 of this Law includes activities for protection of environment, and their costs are taken into consideration when the tax for environmental pollution is estimated;

(b) Economic instruments are introduced by the provisions of the same Law, that stimulates import and use of unleaded fuel;

(c) The economic agents pay for air emissions from stationary sources in two cases:

(i) In established pollutants' limits;

(ii) In limits that are higher than those established.

36. Each economic agent pays for the pollutants that are enclosed in the permit given by State Ecological Inspection of the Ministry of Environment and Territorial Development. The payment is increased in 5 times when the emissions into air from stationary sources are higher than the established limits. When the accidental emissions from stationary sources are having place then it's going to be increased in 50 times. Payment for air pollution by mobile sources, using petrol as fuel (leaded, unleaded) and diesel fuel, is established for juridical and physic persons, importing this kind of fuel. The payment for the emissions into atmospheric air is established for the mobile sources (auto vehicles) in our republic that use liquefied natural gas as and pressed hydrocarbon gas as fuel (excluding the owners of private transport, that don't carry business activities).

37. Presently the following documents are under development:

(a) National Strategy on Sustainable Development "Moldova 21";

(b) First National Communication in the framework of UNDP project "Enabling Moldova to prepare its first National Communication in response to its commitments to the UN FCCC".

Chapter "Diminishing of greenhouse gases" is included in this communication, where the measures for reduction of priority greenhouse gases and other gases such as NO_x, NMVOCs, CO etc. were developed. Certain measures for reduction of emissions of greenhouse gases in all sectors of national economy will be also to reduction of the emissions of HMs. Also, presently in the framework of mentioned UNDP project is under development chapter National Plan of Activities of reduction of greenhouse gases;

(c) Draft of Programme of Integrated Monitoring of Quality of the Environment;

(d) Programme for emissions reduction from mobile sources. According to this Programme a range of measures for reduction of toxic emissions into air is foreseen:

- (i) Total exclusion of use of leaded petrol;
- (ii) Supplying the auto vehicles with neutralizers and catalysts;
- (iii) Reduction of sulphur in fuel;
- (iv) Enhance the usage of gaseous fuel for transport.

This program is under development and in the nearest future will be presented in our Government of the Republic of Moldova.

(e) New Concept of Environmental Policy of the Republic of Moldova. One of the points of this concept is pollution prevention and improvement of the environment, including atmospheric air, from toxic substances, including HMs.

- (f) National Programme on Production and Municipal Wastes Management.
- (g) Law on Energy Conservation.

38. **Russian Federation.** See the reply to question 6.

39. **Switzerland.**

Emission level (in tonnes) of	1970	1980	1985	1990	1995	1998
Mercury	2.4	7.9	7.8	6.8	3.3	2.7
Cadmium	7.1	6.4	4.7	4.2	2.5	2.2
Lead	2160	1760	768	520	226	149
Zinc	1'750	1'280	925	861	629	571

40. Information, as required by article 7, on national strategies, policies and programmes developed in accordance with article 5, paragraph 1 to implement the Protocol and control and reduce emissions of the heavy metals listed in annex I to the Protocol. The principles of the air pollution control policy are set out in the 1985 Federal Law relating to the Protection of the Environment. Its objective is to protect human beings, animals and plants, their biological communities and habitats against harmful effects or nuisances and to maintain the fertility of the soil. Both a source-oriented (through emission standards) and an effect-oriented (through ambient air quality standards) approach are followed. Irrespective of existing environmental pollution, as a precautionary measure, emissions are to be limited as much as technology and operating conditions allow, provided this is economically feasible. Emissions shall be limited more stringently if harmful effects are found or expected, taking into consideration the existing level of environmental pollution.

41. The Ordinance relating to Environmentally Hazardous Substances of 1986 regulates the import, the production, the supply, the use and the export of substances that may present a hazard to the environment. It comprises instructions for the environmental impact assessment of new and existing substances and products. Corresponding to the assessment, the substances must be labelled with information on the type of hazard, on the methods of disposal and on other particular instructions such as safety instructions. In addition to the general regulations, annexes to this ordinance contain special regulations for particular groups of chemicals. Among them, several are of special interest regarding the emissions of hazardous substances into the atmosphere which may occur during production and use or during waste treatment (e.g. heavy metals).

42. **Ukraine.** An outline plan to reduce emissions of heavy metals into the atmosphere has

been developed. It is currently being assessed by the Government. The outline plan makes provision for:

- a) The development of a programme to reduce emissions of heavy metals into the atmosphere;
- b) A survey of emissions of heavy metals into the atmosphere up to the year 2002;
- c) The preparation of legislation to introduce a new system of regulation for emissions of heavy metals into the atmosphere with effect from 2002, including the complete phasing-out of the production and use of leaded petrol in Ukraine.

A draft programme to reduce emissions of heavy metals into the atmosphere is being developed. It is planned to adopt the programme in 2001-2002.

43. **United Kingdom.** Please refer to the answer given in question 70.

44. **Question 29 Provide information, as required by article 3, paragraph 1, on measures taken to reduce emissions of the heavy metals listed in annex I from their level in the reference year set in accordance with that annex. Please indicate the reference year for each metal.**

45. **Austria.** Please see Q.30–33 for details.

46. **Belgium.** Walloon region: The Protocol has not yet been ratified by Belgium. The reference year has not yet been set.

47. **Flemish region:** At this moment the protocol on heavy metals has not been ratified yet by Belgium. For this reason no reference year has been chosen yet. As an alternative the rapportation in the framework of the Third and Fourth North Sea Conferences is given. In the table below information is given on the emission reduction goals for metals as stipulated in the Third North Sea Conference and the rapportation on compliance for the region of Flanders at the Fourth North Sea Conference. The reference year is 1985. The goals are defined as percentages of reduction of total load via water and air and in some more severe cases via all possible routes. The rapportation on the reduction percentage achieved by Belgium concerned emission reduction percentages to air and water. Here it is restricted to the releases to air, as is required by article 3, paragraph 1 of the protocol.

metal	emission reduction goal for the year 1995 with the year 1985 as reference	Achieved percentage of emission reduction to the air in 1995 for the region of Flanders with 1985 as reference
Hg	70 % of reduction of total load via all possible routes	47 %
Cd	70 % of reduction of total load via all possible routes	63 %
Cu	50 % of reduction of total load via water and air	70 %
Zn	50 % of reduction of total load via water and air	34 %
Pb	70 % of reduction of total load via all possible routes	74%

As	50 % of reduction of total load via water and air	96%
Cr	50 % of reduction of total load via water and air	44 %
Ni	50 % of reduction of total load via water and air	38 %

48. Federal Government: Belgium has participated actively in the 1996 review of implementation of the OECD environment ministerial declaration on risk reduction of lead and has updated its contribution in the February 1999 draft report.

49. **Bulgaria.** Expected reference years for the total annual emissions of heavy metals are:

Heavy metals	Reference years
Cadmium Cd	1989
Lead Pb	1989
Mercury Hg	1990

50. **Croatia.** Heavy metals emissions trend in the period 1990-1998 are as following:

Heavy metals	1990 emission (t) reference year	1995 emission (t)	1998 emission (t)
Pb	466	264	183
Hg	1.149	0.285	0.320
Cd	1.609	0.951	01.059

The lead emission in the period observed has been going down as a result of an ever-growing utilisation of unleaded petrol. The mercury emission in the period observed has decreased as a result of installing the technological unit for removing mercury from natural gas in Central gas station in Molve. The cadmium emission in the period observed has decreased as a result of shutdown of the Ironworks in Sisak, Ferroalloy Plant in Šibenik and Coke Oven Plant in Bakar.

51. **Czech Republic.** Heavy metals (according to the Protocol Pb, Cd, Hg) are monitored primarily in the operations of agglomerations where sludges and dust from blast furnace or steel plants are processed. The amount of heavy metals emitted into the air depends to a considerable degree on the efficiency of the equipment for separation of particulate matter. In accord with the criteria for BAT, there is a significant decrease in emissions heavy metals when technology is employed enabling the highest removal of particular matter (50 mg/m³). The technology is expensive, and requires the introduction of multi-stage cleaning of the waste gases and the use of special fibre filters.

52. Following modernization of the production of chlorine by electrolysis using Hg cathodes, the specific emissions of Hg correspond to 1.11 and 2.57 g/t of Cl₂ produced in two existing facilities respectively.

53. The main source of lead in the category of mobile sources of emissions consists in vehicles

and off-highway mobile sources. From the beginning of the year 2003, CR will distribute only automobile petrol and diesel fuel that comply with the requirements of annexes I and II of the Directive 98/70/EC. The content of lead in automobile petrol is stipulated by law. Pursuant to Decree No. 244/1999 Coll., automobile petrol supplied for direct consumption for the operation on-road motor vehicles after January 1, 2000 must comply with the following conditions:

Standards for the lead content in petrol

Automobile petrol	Lead content, g.l ⁻¹	
	min.	max.
leaded	0.03	0.15
unleaded	-	0.005

Expected trends in the production of lead emissions

Year	1997	1998	1999	2000	2005	2010
Emissions of Pb, t	141	132	118	99 ¹⁾	1	1

¹⁾ estimate

Lead emissions are decreased in the Czech Republic mainly as the result of the rapidly increasing fraction of automobiles fueled by unleaded petrol (See also Q.6).

54. **Denmark.**

(a) Cadmium: The use of cadmium as surface treatment, as pigment and as stabiliser in plastics was banned – with some delays - in a Statutory Order in 1983. The Order was revised in 1992, implementing an EU directive with the same scope. The content of cadmium in phosphorous fertilisers was limited by a Statutory Order in 1989. The Order prescribes a gradual reduction in the period 1990-1995 down to a maximum of 110 mg pr. kg. P.

(b) Lead: A Statutory Order banning lead in products has been notified to the EU in late 1998 and is expected to come into force in spring 2000. For chemical compounds of lead it is a general ban - with delays and exemptions -. For metallic lead it is a ban of specified uses.

(c) Mercury: A general ban - with delays and exemptions – on mercury in products was issued in 1994 and was revised in 1998.

55. **Germany.** Requirements on the reduction of Heavy Metals emissions are laid down in particular in the following regulations and cover beside Hg, Cd and Pb also Tl, As, Co, Ni, Se, Te, Sb, Cr, Cu, Mn, Pt, Pd, Rh, V and Sn (a reference year has not yet been set):

(a) Technical Instructions on Air Quality Control (TA Luft - 1st BImSchVwV);

(b) Ordinance on Large Firing Installations (13th BImSchV);

(c) Ordinance on Incinerators for Waste and similar Combustion Material (17th BImSchV).

56. Of equal importance as direct regulatory measures to control air emissions is an efficient use of energy. The measures initiated to this end are listed in the Federal Government's Second National Report under the Framework Convention on Climate Change.

57. Measures for elimination and use restrictions of Heavy Metals in Products are regulated on the basis of the Chemicals Act: The Ordinance on the Prohibition of Chemicals and the Ordinance on Hazardous Substances cover the placement on the market and the use of certain hazardous substances, preparations, and products. Currently, provisions on compounds of As, Cd, Pb, Hg,

and Sn are in force.

58. **Latvia.** Reference years for lead, cadmium and mercury are 1990. Emission levels are not set.

59. **Netherlands.** When providing permits the following limit values are in use

Source category	Limit values	Statistical treatment	Measures
1. Combustion installations	dust x 5.20 kg/m ³	8 hour average	ESP
2. Roasting/sintering	dust x	8 hour average	wet dedusting
3. Iron and steel	dust x 30 mg/m ³	8 hour average	ESP
4. Ferrous foundries	dust x 10 mg/m ³	8 hour average	FF
5. Cu, Pb, In ores	dust x 10 mg/m ³	8 hour average	FF
6. smelting	dust x 10 mg/m ³	8 hour average	FF
7. Cement	dust x 15 mg/m ³	8 hour average	ESP
8. Glass	dust x 0,1 - 0,3 kg/ton glass	year average	ESP/FF
9. Chlor alkali	Hg 1,5 g Hg/tonCl ₂	year average	
10. Incineration hazardous waste	dust total 10 mg/m ³ Hg 0,05 mg/m ³ Cd+Th 0,05 mg/m ³ Hm incl. Pb 0,5 mg/m ³	8 hour average	ESP/wet dedusting
11. Incineration municipal waste	dust total 5 mg/m ³ Hg 0,05 mg/m ³ Cd 0,05 mg/m ³ HM incl. Pb 1 mg/m ³	8 hour average	ESP/wet dedusting

x dust total and
Hg 0,2 mg/m³
Cd 0,2 mg/m³
Pb 1,0 mg/m³

*ESP = electrostatic precipitator and FF
= fabric filter.
The reference year is Hg = 1990, Pb =
1990, Cd = 1990

60. **Poland.** The Protocol on heavy metals does not determine obligatory annual emission ceilings for the three heavy metals (cadmium, lead and mercury), but requires not to exceed the emission levels of the reference year(s). According to the draft "National strategy for the reduction of heavy metal emissions" Poland should choose the following reference years for heavy metal annual emissions: 1985 – for cadmium, 1985 – for lead, and 1988 – for mercury. So far, the emission reduction levels achieved by Poland for these metals in 1997 compared to the years above are as follows: for cadmium – app. 40%, for lead – app. 57%, and for mercury – app. 15%. Prognosis for the year 2010, regardless some assumed increase in mercury emissions but not exceeding the level of the year 1988, is optimistic – introduction of emission standards to major categories of emission sources, changes in energy sectors, the use of product control measures and phasing out of leaded petrol by the year 2005, among other measures, should bring satisfactory results in Poland.

61. **Republic of Moldova.** According to the report for 1998 presented by us regarding national annual anthropogenic emissions, emissions of all toxic substances, including HMs, in comparison with the reference year were diminished because of economic decrease in all of the branches of national economy and stopping of industrial enterprises activity.

62. Also, were effectuated certain measures for reduction of the emissions and for stimulation of use of the most ecological technologies and installations:

(a) There was increased the volume of burning of gaseous fuels in comparison with other types of fuels in the Republic of Moldova in order to reduce the emissions of heavy metals from stationary and mobile sources;

(b) Installations of vehicle refueling vapor recovery equipment at petrol stations;

(c) Low-NOx burners are used;

(d) Romanian standard SR - 176; 1977”Benzines with lead for auto vehicle” was prohibite1998 by Decision of the Department of the Technical Control, Standards and Metrology on the territory of the Republic of Moldova because of the discordance in physic-chemical indexes of European standard EN 228 and State standard 2984 – 77;

(e) Prohibition of use of leaded petrol was introduced as obligatory requirement for the construction of petrol stations in the cities of Chisinau, Balti and Cahul as a result of examination of projects by State Ecological Expertise;

(f) A range of normative and legislative acts concerning payment for air pollution, including heavy metals, was introduced in our country since 1998;

(g) The import of transport with the exploitation period more than 10 years was prohibited;

(h) There were introduced economic instruments for stimulation of import of unleaded petrol;

(i) The taxes for pollutant emissions into environment and wastes depositing are established by the Law on the Payment for Pollution of the Environment of the Republic of Moldova. Annex 1 of this Law includes activities for protection of environment, and their costs are taken into consideration when the tax for environmental pollution is estimated. Economic instruments are introduced by the provisions of the same Law, that stimulate import and use of unleaded fuel. The economic agents pay for air emissions from stationary sources in two cases:

(i) In established pollutants’ limits;

(ii) In limits that are higher than those established.

Each economic agent pays for the pollutants that are enclosed in the permit given by State Ecological Inspection of the Ministry of Environment and Territorial Development. The payment is increasing in 5 times when the emissions into air from stationary sources are higher than the established limits. When the accidental emissions from stationary sources are having place then it’s going to be increased in 50 times. Payment for air pollution by mobile sources, using petrol as fuel (leaded, unleaded) and diesel fuel, is established for juridical and physic persons, importing this kind of fuel. The payment for the emissions into atmospheric air is established for the mobile sources (auto vehicles) in our republic that use liquefied natural gas as and pressed hydrocarbon gas as fuel (excluding the owners of private transport, that don’t carry business activities).

63. Certain directions of the activity on air management were included in the document “Environmental Performance Review” (Chapter 4, part two). This review was elaborated and the final document with recommendations for solution of existing problems in national environmental policy and management was presented in 1998 for evaluation by the ECE Committee on Environmental Policy at its annual session in Geneva. This document was approved and published.

64. Actually proposals to introduce modifications in the Law on Payment for Pollution of the Environment are under development and their goal is stipulation of payment provisions for some

goods that have environmental impact. List of goods that are supposed to be regulated by some economic instruments will include the following:

- (a) Substances depleting ozone layer and products containing those substances;
- (b) Plastic packaging including PVC;
- (c) Heavy fuel oil medium-sulphur and high-sulphur;
- (d) Luminescent lamps;
- (e) Pesticides;
- (f) Cigarettes;
- (g) Auto vehicles accumulators;
- (h) Detergents;
- (i) Mineral oils;
- (j) Naphtalin and other products.

The reference year for: Cd - 1990; Pb - 1990; Hg - 1990.

65. **Switzerland.** Information, as required under article 3, paragraph 1, on measures taken to reduce emissions of HMs listed in annex I from their level in the reference year set in accordance with that annex. Application of precautionary principle, i.e. preventing emissions as much as technically feasible and economically acceptable. No other reduction targets. For Switzerland, the reference year for each metal will be 1990 (see emission level evolution above).

66. **Question 30 Report, as required by article 3, paragraph 2 (c), on progress made towards applying best available techniques to existing stationary sources. In your reply, list the source categories in your country that are considered to be major stationary source categories under the Protocol, taking into account its article 1 (Definitions) and annex II. For each source category state the control techniques applied using annex III to the Protocol as guidance. A Party may, as an alternative, have applied different emission reduction strategies that achieve equivalent overall emission reductions. Should this be the case, please describe the strategies and any progress made.**

67. **Austria.** Without prejudice to the future determination of the reference year it may be assumed that all categories of Annex II are major source categories. According to the Industrial Code and the Clean Air Act for Steam Boilers, a license for each new or modified installation is required. The determination of emission limit values and/or measures according to best available technology is carried out in the licensing procedure; these provisions have been introduced in the 80ies. For several categories of (new and existing) stationary emission sources explicit emission limit values and BAT requirements have been set by ordinance, see Q.31.

68. **Belgium.** Walloon region: The use of filters, electrostatic precipitators and scrubbers is widespread and subject to operating permits.

69. **Flemish region:** The sectors of annex II will be taken in a reorganised form : all metallurgical industry included sinter plants are taken together because no specified information for the subgroups is available; waste incineration in big (>3 ton/h) and smaller (>1 ton/h) installations is taken here as one group because they are treated the same in Flemish Environmental Legislation (VLAREM); cement production doesn't exist in the region of Flanders.

sector (referring to annex II)	ranking of the major stationary sources for emission of the specified metal (high=1, to 4) (situation of 1995)								applied BAT
	Hg	Cd	Cu	Zn	Pb	As	Cr	Ni	
cat1. Combustion installations	2	3	4	6	4	2		1	dust filters
cat2,3,4,5,6. sinter plants and all other ferrous and non-ferrous metallurgy	4	2	2	1	2	1	3	3	filters (electrostatic/fabric) and other gas cleaning measures
cat8. glass production				4					
cat9. chlor-alkali production	3								good house keeping
cat10,11. waste incineration	1	4	3	2	3	4	1	2	- optimize combustion conditions - start/stop procedure (burners to keep T high enough; stop flow of waste when a set minimum T) - gas cleaning measures (optimised fabric filter operation)
other sectors not mentioned in annex II		1 trans port	1 trans port	3 trans port 5 wear of tires	1 trans port	3 wood impre gnati on	2 surf. treat ment of metal	4 wear of brake shoes	

70. **Canada.** Emission standards in Canada for most industrial sources are set and enforced provincially. However, national emission guidelines are developed jointly by the federal and provincial governments working with industry and other interested parties. Most of these efforts will result in codes of practice, performance standards or other instruments which become de-facto minimum national standards. The Canada-Wide standards and CEPA Strategic Options Processes will help to identify the BAT for the different source categories. While generally avoiding a technologically prescriptive approach, Canadian standards, limits, permits and guidelines generally are based on what can be reliably achieved technologically, with BAT considerations entering into a formulation of performance expectations. However, sources often can opt for alternatives to BAT as long as performance expectations are met. Where provinces regulate, they generally do not prescribe the technology, rather they allow industry to determine how they will achieve the required limits.

71. **Croatia.**

(a) Hazardous waste incineration plant PUTO: incineration in rotary kiln at a temperature of 950-1 000°C, equipped with abatement techniques (activated carbon injection, wet NaOH scrubber or dry sodium bicarbonate dry scrubbing, urea injection for NO_x scrubbing, bag-house filters) which ensure compliance with emission standards;

(b) Refinery in Rijeka: high-efficiency plant meeting all air emission limits (a new unit for hydrodesulphurization and mild hydrocracking gas oil), including Claus process for elementary sulphur production and low-NO_x burners;

(c) Gas exploration facility in Molve: separation of gas impurities (CO₂, H₂S and mercury);

(d) Installation of dry low-NO_x burners in the reconstructed gas combined cycle power plants in Zagreb and Jertovec, ensuring NO_x concentration below 100 mg/m³;

(e) The new coal-fired power plant PLOMIN II is equipped with a desulphurization unit (limestone wet scrubber with efficiency over 95%), low-NO_x burners and an electrostatic precipitator;

(f) Thermal power plant PLOMIN I installed an electrostatic precipitator;

(g) Adaptation of cement production technology so that conventional energy materials can be partially replaced by wastes while maintaining the same cement quality and emission standards.

(Cement plant in Koromačno installed electrostatic precipitator and introduced ISI 14000).

72. **Czech Republic.** At the present time, the in rem intent of the Law on integrated pollution prevention and control (IPPC) is being prepared and is fully in accordance with Directive 96/61 EC. In connection with Annex No. I of this Directive, preparations are being made for inclusion of CR in the work of the IPC Office in Seville, which is responsible for the preparation of BREFs, defining BAT for the individually specified branches. Simultaneously, several studies have been contracted, concerned with monitoring and assessing the state of application of BAT in various branches (chemical, metallurgical and steel, the textile industry, and also the pulp and paper industry). Further evaluations of BAT applications in other branches named in Annex I are being prepared. The in rem intent of the Law on IPPC will be submitted to the Government of CR in May of 2000. Its articulated wording will be submitted to the Government in the first half of 2001 so that, following discussion in the Parliament and Senate of CR, it will be prepared and passed in the first quarter of 2002. From the standpoint of emissions, a new Law on protection of the air is of fundamental importance, and is being prepared in connection with the preparation of the Law on IPPC.

73. For reduction of mercury emissions in the production of chlorine by electrolysis using Hg cathodes the technology DeNora (Italy) has been realized in combination with two-step demercurization of waste water, hydrogen and sodium hydrate. The results are corresponding with BAT, the reached specific emission of Hg is 1,11 g/t of chlorine produced.

74. The company with great tradition in treatment of lead and silver ores from its area is working now as a recycling plant only. To accomplish all the ecological laws which were set in work several years ago the company had to rebuild its technology completely. It was made by purchasing of know how from the German company Varta and by construction of this equipment by a local firm. The company equipped with the technology which can be described as BAT is now successfully working in competitive conditions of West European plants.

75. **Denmark.** See answer to Q.28.

76. **Germany.** Request for information on new stationary sources (article 3, paragraph 2a) is missing! The principle of applying state-of-the-art techniques to new and existing installations is well established in German legislation. For source categories, limit values, and applied techniques, see Q.31.

77. **Greece.** While the information below is not final, the major categories of stationary source of the three heavy metals are:

- (a) Combustion plants;
- (b) Steelworks and other metal-manufacturing plants.

78. **Latvia.** There are 33 stationary sources with a net rated thermal input exceeding 50 MW in 1997 in Latvia. In 1997 coal is not used in these combustion installations, fuel oil is switched in 13 stationary sources, gas in 6 stationary sources, mix of fuel oil and gas in 11 stationary sources, mix of gas and fuel oil, and wood in 2 stationary sources, and mix of gas and fuel oil, and peat in one stationary source.

79. Measures to reduce pollution (particulates) for public power, cogeneration and district heating plants:

- (a) Fuel with smaller ash content;
- (b) Fuel switching from coal to gas;
- (c) Flue gas treatment (installation of battery cyclons);
- (d) Multistage fuel switching, flue gas recirculation.

80. **Netherlands.** See question 29

81. **Poland.** The use of best available techniques, although it is not mandatory, is forced upon individual plants or enterprises, being significant stationary emission sources, indirectly by regulations on air protection containing certain emission requirements that plants have to comply with. An overall inventory on a national level on the use of best available techniques is not available. Also there would be some difficulty in the interpretation of the term “BAT” in trying to identify the processes used case by case. Effects are the ones that count in the end and for those see Question 29. The list the source categories considered to be major stationary source categories in Poland are as follows:

- (a) fuel combustion processes for energy production [app. 70% of cadmium emissions, 60% - mercury, 36% - lead];
- (b) steel and iron production (incl. sinter plants, coke production);
- (c) non-ferrous metal production (lead, zinc, copper and aluminium);
- (d) [both source categories above together: 30% of Poland’s lead emissions, 5% of mercury and cadmium emissions];
- (e) production of construction materials (production of cement and crystal glass) [20% of mercury emissions; 1% of cadmium and 0.5% of lead];
- (f) non-ferrous industry (iron alloys, production of lead batteries);
- (g) chemical industry (production of phosphorus fertilisers)[3% of mercury emissions, 0.5% of cadmium emissions];

- (h) transport [27% of lead emissions, 2% of cadmium emissions];
- (i) waste incineration [1% of mercury emissions, 0.5% of lead and cadmium emissions].

82. **Republic of Moldova.** In conformity with article I “Definitions” and annex II “Stationary source categories” there are major stationary sources of the certain categories in the Republic of Moldova:

(a) Category 1: Combustion installations with a net rated thermal input exceeding 50 MW.

(b) Category 4: Ferrous metal foundries with a production capacity exceeding 20 tonnes per day.

In the Republic of Moldova there weren't identified the stationary sources of the HMs emissions of the categories 3,6, 8, 10, 11. At the same time, we think that certain installations of listed categories in a range of plants can have place.

83. Enterprises under construction or reconstruction are designed according to the legislative acts, ecological and health standards which call for the use of minimum emission technology. The experts performing the environmental appraisal assess whether the right technology has been selected to reduce adverse environmental impact. The Law on Ecological Expertise and Environmental Impact Assessment stipulates that projects involving the construction of new enterprises or reconstruction of existing ones must make provision measures for reducing emissions in the environment, including atmospheric air, utilizing the best available technology.

84. Multiple BAT requirements are contained in the Law on Protection of Environment and other laws. The Law on Protection of Environment, the Law on Atmospheric Air Protection and the Law on Ecological Expertise and Environmental Impact Assessment require the permit that should be obtained before commencing construction. This permit is a result of examination of projects for the construction of new enterprises or reconstruction of existing enterprises, effectuated by State Ecological Expertise. Also, there are requirements regarding obligatory obtaining of permit for emissions of pollutants in atmospheric air.

85. In conformity with national legislative acts and normative documents import and export of harmful products and substances is undertaken in the base of license, given by competent authorities with accord of the environmental protection authorities. The Law on Regime on Harmful Products and Substances stipulates that physical and juridical persons are obliged to take into consideration sanitary requirements and technical norms managing harmful products and substances, including transportation, import and export, and should undertake measures in order to prevent and liquidate harmful impacts on human health and environment.

86. A range of provisions of the Law on Wastes of Production and Consumption notes the obligatory character of procedure realization for waste management, including their destruction or disposal, environmental risk minimization or exception of any risk. At the same time the concept of terminology “Best available techniques” are not explicitly stated in our legislation.

87. Certain directions of the activity on cleaner production and waste management were included in the document “Environmental Performance Review” (Chapter 7, part two). This review was elaborated and the final document with recommendations for solution of existing problems in national environmental policy and management was presented in 1998 for evaluation by the ECE Committee on Environmental Policy at its annual session in Geneva. This document

was approved and published.

88. In conformity with annex III to Protocol were effectuated certain measures for reduction of the emissions and for stimulation of use of the most ecological technologies and installations, indicated in Q. 29 and other questions. Also, there are the following measures:

- (a) Secondary reduction measures in particular – the off-gas cleaning
- (b) Best management practices such as good housekeeping, preventive maintenance programmes and primary measures such as the enclosure of dust-creating units.

89. **Switzerland.** List of source categories that are considered as major stationary source categories under the Protocol, taking into account article 1 (Definitions) and annex II to the Protocol.

90. Question 31 Report, as required by article 3, paragraph 2 (d), on progress made towards applying the limit values specified in annex V to existing stationary sources. In your reply, list the source categories in your country that are considered to be major stationary source categories under the Protocol, taking into account its article 1 (Definitions) and annex II. For each source category, state the limit values applied or to be applied, the units and statistical treatment, and the pollution control measures applied. For limit values to be applied, please indicate when they will come into effect. In your response, you may wish to use the table format suggested below. A Party may, as an alternative, have applied different emission reduction strategies that achieve equivalent overall emission reductions. Should this be the case, please document the strategies applied and their compliance with article 3, paragraph 2 (d).

Source category	Limit values 1/	Units & statistical treatment 2/	Pollution control measures applied 3/

1/ Refer to the limit values specified in annex V to the Protocol.

2/ The statistical treatment can be a percentile (e.g. 95 percentile), a daily average, a monthly average, etc.

3/ Refer to annex III to the Protocol concerning the control techniques.

91. **Austria.** Concerning major source categories see Q. 30. Sector specific emission limit values have been set explicitly by law for several sectors:

(a) For the metals of Annex I and for further heavy metals: Combustion of waste and hazardous waste, production of iron and steel, production of non ferrous metals, casting of metals, production of glass, production of cement;

(b) for particulate matter in general also for other sectors as for steam boilers, industrial boilers except steam boilers and sinter plants.

These limit values are in force for new and existing sources.

92. **Belgium** Walloon region:

Source category	Limit values 1/	Units and statistical treatment 2/	Anti-pollution measures applied 3/

combustion of solid and liquid fossil fuels	50 mg/m ³ (particles)	Daily average + 97 % of the daily averages per ½ h no greater than 6/5 of the limit value and with no average value per ½ h exceeding twice the limit value	See Q 32
Built-up area	As per operating permit		
Blast furnaces	As per operating permit		
Copper and zinc production	As per operating permit		
Cement works	As per operating permit		
Glass non-specialized glass: specialized glass:	Powders: 50 mg/Nm ³ sum total of Cr+V+Pb+Cd+Sb+Ni+ Co+Se+V = 5 mg/Nm ³ Pb : 5 mg/Nm ³ Cd : 0,2 mg/Nm ³		
Chlorine and caustic soda industry	2 g Hg/T of capacity of CL ₂		Mercury-based production discontinued in RW (2000)
Household waste incineration Hospital waste used oil incineration	Pb+Cr+Cu+Mn :5mg/Nm ³ Hg : 0.2 mg/Nm ³ Cd : 0.2 mg/Nm ³ (O ₂ content: 17 %) Pb+Cr+Cu+Mn :5mg/Nm ³ Hg : 0.2 mg/Nm ³ Cd : 0.2 mg/Nm ³ (O ₂ content: 9 %) Cd : 0.5 mg/Nm ³ Pb : 5 mg/Nm ³	Shifting average over 7 days and daily average no greater than 30% of the limit value	

1/ Refer to the limit values specified in annex V to the Protocol.

2/ The statistical treatment can be a percentile (e.g. 95 percentile), a daily average, a monthly average, etc.

3/ Refer to annex III to the Protocol concerning the control techniques.

93. Flemish region: General limit values for metals and total suspended particles in the Flemish Environmental Legislation (VLAREM). The Flemish Environmental Legislation (VLAREM) imposes an emission limit value towards air for all activities exceeding a set threshold value defined as total emission load. As specified in annex V, I.1. the table below gives emission limit values for metals and for total suspended particles together with the according threshold value. In most of the cases the emission limit value counts only when the total emission load exceeds the set threshold value. In other cases, more severe emission limit values are imposed on specific sectors (see next paragraph). The limit values count under standard conditions (273.15 K, 101.3 kPa and dry gas). They have to be respected for all new installations

and from the first of January 1999 for installations authorised before the first of January 1993 or for which an authorisation was demanded before the first of September 1991.

contaminant	threshold value for total load (g/h)	emission limit value (mg/Nm ³)
total suspended particles	≤ 500 > 500	150 50
Cd Hg Th and their compounds	≥ 1	0.2
As Ni Se and their compounds	≥ 5	1
Sb Pb Cr Co Cu Mn Pt V Sn and their compounds	≥ 25	5

The emission limit values also count for the sum of the contaminants of the same group (as shown in table)

Measuring frequency for metals	Compliance (statistical treatment)
Discontinuous measurements, frequency > or = monthly	any measured value < or = emission limit value, or i) any daily average from hour values < or = emission limit value and ii) not more than about 5% exceedings of hour values in function of the number of samples**, and iii) any hour average < 2 times emission limit value

**The allowed number of samples not meeting the emission limiting values - as a function of the number of samples - is prescribed in art. 4.4.4 of Vlarem II.

Measuring frequency for total suspended particles	Compliance (statistical treatment)
Continuous measurements	a) any daily average < or = emission limit value, and b) 97% of the half hour averages < or = 6/5 times emission limit value, and c) any half hour average < 2 times emission limit value

94. Sector-specific limit values for metals and total suspended particles in the Flemish Environment Legislation (VLAREM). The answer is limited to the categories of annex II and to the specific limit values as set in annex V, II. Unless specified all the limit values concern the emission of total suspended particles. The limit values count under standard conditions (273.15 K, 101.3 kPa and dry gas). For the pollution control measures applied see Q.30.

Source category	emission limit values
Combustion of fossil fuels (> 50 MW)	Following standards are valid from 01/01/95
1. Plants authorised before 01/07/87	
Solid fuels	150 mg/Nm ³
Liquid fuels	150 mg/Nm ³
2. Plants authorised after 01/07/87 and before 01/01/96	
Solid fuels	50 mg/Nm ³
Liquid fuels	50 mg/Nm ³
3. Plants authorised after 01/01/96	
Solid fuels	50 mg/Nm ³
Liquid fuels	50 mg/Nm ³

95. Statistical treatment for combustion installations :

Measuring frequency	Compliance
Discontinuously	any measured value < or = emission limit value
Continuously	any daily average < or = emission limit value, and 97% of the half hour averages < or = 6/5 times emission limit value, and any half hour average < 2 times emission limit value

Source category	emission limit values
Metallurgical activities	
sinter plants and primary ferro	50 mg/Nm ³ if total load >500g/h 150 mg/Nm ³ if tot. load ≤500g/h
primary non-ferro	
Pb	10 mg/Nm ³
Other	20 mg/Nm ³
Electric arc furnaces	20 mg/Nm ³
Melting	
Pb	10 mg/Nm ³
Other	20 mg/Nm ³
Foundries	20 mg/Nm ³
Source category	emission limit values

glass industry concerns a limit value for Pb !! referred to 8 % O ₂ concentration in flue gas for tank furnace and to 13 % for pot furnace	5 mg/Nm ³ if total load ≥ 25g/h
--	--

96. Statistical treatment : the following principles count for all sectors (except combustion installations):

Measuring frequency	Compliance
Discontinuous measurements, frequency < monthly	any measured value < or = emission limit value
Discontinuous measurements, frequency > or = monthly	a) any measured value < or = emission limit value, or b) i) any daily average from hour values < or = emission limit value and ii) not more than about 5% exceedings of hour values in function of the number of samples**, and iii) any hour average < 2 times emission limit value
Continuous measurements	a) any daily average < or = emission limit value, and b) 97% of the half hour averages < or = 6/5 times emission limit value, and c) any half hour average < 2 times emission limit value

**The allowed number of samples not meeting the emission limiting values - as a function of the number of samples - is prescribed in art. 4.4.4 of Vlarem II.

97. **Bulgaria.** The 1991 Regulation (SG 51/91) enforces the following limit values for heavy metals. Emission Limit Values of heavy metals in mg/m³ are:

Class	till 1992.12.31*		from 1993.01.01	
	mass flow	ELV	mass flow	ELV
I class Hg, Cd	0,1 kg/h	2	1 g/h	0,2
II class As, Co, Ni, Se	1 kg/h	5	5 g/h	1
III class Mu, Pb, Cr, Pt, V	3 kg/h	15	25 g/h	5

By 1996.12.31 existing stationary sources must reduce their emission to the limit values for new stationary sources.

Emission Limit Values of solid particles in mg/m³ are:

Source category	Emission Limit Values for new stationary sources	
	till 1992,12,31	from 1993.01.01
Stationary Combustion Sources (SCS) above 50 MW solid fuels	200	above 500 MW B 50 below 500 MW B 100
Liquid fuels	50	50
Sinter plants	30	30

Iron and steel production	30	30
Arc furnaces	30	30
Copper and zinc production	50	20
Lead production	50	10
Cement plants	up to 20 th. m ³ /h B 300 from 21-100 th. m ³ /h B 300 above 100 th. m ³ /h B 150	up to 20 Th. m ³ /h B 150 from 21-60 th. m ³ /h B 130 above 60 th. m ³ /h B 80
Household wastes incineration	30	10
hazardous waste incineration	-	10

98. **Canada.** Canada has selected the option of reducing annual atmospheric emissions by 50 % from the 1990 base year for each of the three Heavy Metals (cadmium, lead and mercury). Atmospheric emissions information on these three substances will be provided to demonstrate Canada's achievement of the 50% reduction target.

99. **Croatia.**

Source category	Limit values 1/	Units & statistical treatment 2/	Pollution control measures applied 3/
Combustion installations: All thermal power plants (7) in Croatia	for particulates: coal: 100 mg/m ³ liquid fuel: 50 mg/m ³ natural gas: 5 mg/m ³ for inorganic substances and their compounds (As, Pb, Cd, Cr, Co, Ni) total: 0.5 mg/m ³ for coal 2 mg/m ³ for liquid fuel	Continuous measurements measurements once a year	Applicable for all new sources since January 1, 1998. For existing sources will enter into effect by July 1, 2004 Controlled measures: desulphurization unit, fabric or electrostatic filters
Cement plants (6 plants in Croatia)	particulate: 50 mg/m ³	continuous measurements	Applicable for all new sources since January 1, 1998. For existing sources will enter into effect by July 1, 2004 Control measures: fabric or electrostatic filters

Glass production (two plants in Croatia)	particulate: 50 mg/m ³	continuous measurements	Applicable for all new sources since January 1, 1998. For existing sources will enter into effect by July 1, 2004 Control measures: fabric or electrostatic filters
Incineration plants	particulate: 10 mg/m ³	continuous	Applicable for all new

	heavy metals: 0.05 mg/m ³	measurements measurements twice a year at six month interval	sources since January 1, 1998. For existing sources will enter into effect by July 1, 2002
--	--------------------------------------	---	---

1/ Refer to the limit values specified in annex V to the Protocol.

2/ The statistical treatment can be a percentile (e.g. 95 percentile), a daily average, a monthly average, etc.

3/ Refer to annex III to the Protocol concerning the control techniques.

100. **Czech Republic.** The emission limits for heavy metals for existing stationary sources are laid down either as specific summary emission limit for several metals (glass industry, waste incineration - Annex No. 2 to Decree No. 117/1997 Coll.) or in the framework of group emission limits that are generally valid for individual groups of pollutants containing some heavy metals (Annex No. 3 to Decree No. 117/1997 Coll.). A specific emission limit is laid down separately only for emissions of Hg (as a gas) from agglomeration belts for sintering of iron and manganese ores and for chlorine production by electrolysis using the mercury process, as annual average emission of Hg per ton of chlorine produced (see Annex - Table Q.31). According with the requirements of the Protocol will follow from the prepared new Law on protection of the air and protection of the ozone layer of the Earth, which is expected to come into effect by November 1, 2001, along with the pertinent regulations for implementation.

101. **Denmark.** For waste incineration plants a revised guideline was published in 1993, setting out an emission limit for Pb and the sum of Cd and Hg of 1 mg/Nm³ and 0.2 mg/m³ respectively. The figures are given for the sum of both gas phase and solid.

Source category	Limit values 1/	Units & statistical treatment 2/	Pollution control measures applied 3/
Hazardous and medical waste	10 mg part./m ³	Daily average	ESP
Municipal Waste	10 mg part./m ³	Daily average	ESP

1/ Refer to the limit values specified in annex V to the Protocol.

2/ The statistical treatment can be a percentile (e.g. 95 percentile), a daily average, a monthly average, etc.

3/ Refer to annex III to the Protocol concerning the control techniques.

102. **Germany.** Again, a reference to new stationary sources (article 3, paragraph 2(b)) is missing! The limit values in the table below are valid for new and existing sources. After their introduction in 1986, for existing installations transition periods of 3, 5 or 8 years were applied, depending on the impact potential of the emitted substances and the amount emitted.

Source category	Limit values 1/	Units & statistical treatment 2/	Pollution control measures applied 3/
		mg/Nm ³ , daily average	

combustion of fossil fuels in utility and industrial boilers >50 MW:			
solid fuels	dust: 50	5/6/7 % O ₂	Electrostatic Precipitator (ESP), Flue Gas Desulphurisation (FGD), Fabric Filters (FF) fuel switch
solid fuels except coal or wood	Σ As, Pb, Cd, Co, Cr, Ni in dust: 0,5		
liquid fuels	dust: 50	3 % O ₂	ESP, FGD, FF fuel switch
special fuel oils	Σ As, Pb, Cd, Co, Cr, Ni in dust: 2		
gaseous fuels	dust: 5	3 % O ₂	use of clean gas

municipal, medical and hazardous waste incineration		11 % O ₂ mg/Nm ³	
	dust 10 30	daily average ½-hour average	ESP (wet & dry) wet scrubber, FF
	Σ Cd, Tl: 0,05 Σ Sb, As, Pb, Cr, Co, Cu, Mn, Ni, V, Sn: 0,5	min 3 samples per year, each 0,5 - 2 hours	ESP (wet & dry) wet scrubber, FF
	Hg 0,03 0,05	daily average ½-hour average	wet scrubber, FF pre-coated with activated coal or coke, activated carbon filters
General heavy metals limit values for industrial installations including the sectors covered below (subject to TA Luft)	Σ Cd, Hg, Tl: 0,2 Σ As, Co, Ni, Se Te: 1 Σ Sb, Pb, Cr, CN ⁻ , F ⁻ , Cu, Mn, Pt, Pd, Rh, V, Sn: 5	sector specific O ₂ -contents	
Primary iron and steel industry	dust: 50	no fixed O ₂ -content	ESP or FF
Secondary iron and steel industry	dust: 20	no fixed O ₂ -content	FF
Iron foundries	dust: 20 - 50	no fixed O ₂ -content	wet scrubber or FF
lead industry other metal	dust 10	no fixed O ₂ -content	capture of fugitive emissions, FF

production:	dust 20		
cement industry	dust 50	10 % O ₂	ESP or FF
Glass industry	dust 50	11/13 % O ₂	ESP or FF
chlor-alkali-industry	Hg: 1,5 g/t _{Cl} 2,0 g/t _{Cl}	(commissioned before 1972)	

1/ Refer to the limit values specified in annex V to the Protocol.

2/ The statistical treatment can be a percentile (e.g. 95 percentile), a daily average, a monthly average, etc.

3/ Refer to annex III to the Protocol concerning the control techniques.

103. **Greece.** See R.30 and the following:

Source category	Limit values 1/	Units and statistical treatment 2/	Pollution-control measures applied 3/
All licensed sources			
- before 1982	mg particles/m ³ mg Pb or Cd/Nm ³	150 20	Generally, fabric filters or electrostatic precipitators
- since 1982	mg particles/m ³ mg Pb or Cd/Nm ³	100 10	

1/ Refer to the limit values specified in annex V to the Protocol.

2/ The statistical treatment can be a percentile (e.g. 95 percentile), a daily average, a monthly average, etc.

3/ Refer to annex III to the Protocol concerning the control techniques.

104. **Latvia.**

Source category	Limit values 1/	Units & statistical treatment 2/	Pollution control measures applied 3/
Gaseous fuels 50-500 MW and exceeding 500 MW	particulate emissions 5 ^a mg/m ³ (3% O ₂ in flue gas)		
Liquid fuels 50-500 MW and exceeding 500 MW	50 ^a mg/m ³ (3% O ₂ in flue gas)		
Solid fuels 50-500 MW	100 mg/m ³ (6% O ₂ in flue gas)		
exceeding 500 MW	50 mg/m ³ (6% O ₂ in flue gas)		

1/ Refer to the limit values specified in annex V to the Protocol.

2/ The statistical treatment can be a percentile (e.g. 95 percentile), a daily average, a monthly average, etc.

3/ Refer to annex III to the Protocol concerning the control techniques.

^a will be introduced for new combustion plants from 01.07.2000; will be introduced for existing combustion plants from 01.01.2006

105. **Netherlands.** See question 29.

106. **Poland.** Emission limit values for fuel combustion energy sources are the only air pollution emission standards covered by the Polish existing legislation. In Poland the main criteria for determining emission ceilings for an individual enterprise is the ambient air pollution concentration in the vicinity of the emission source. Each case is evaluated individually and a decision on permissible emission level is issued on the basis of the limit values for ambient air quality standards (a list of over 170 air pollutants, incl. mercury, cadmium, lead, chromium, nickel, manganese, zinc, selenium, molybdenum, bismuth, cerium, with their limit concentrations is included in a separate regulation). This effect approach is used for all emission sources, except for fuel combustion installations. Possible changes in this approach are being considered. Furthermore, preparation of a proposal for draft air emission standards for pollutants generated in industrial processes is one of the latest projects underway at the Institute of Environmental Protection. It includes air emission standards for selected industrial sources (iron and steel production, foundries, cement production, thermal metallurgical processes, coke production, crude oil refineries, production of sulphuric and nitric acid, production of fertilisers).

107. According to the draft “National strategy for the reduction of heavy metal emissions” it would be necessary to establish emission limit values for the following source categories and processes: sinter plants, pellet plants, blast furnaces, electric arc furnaces, production of copper and zinc, production of lead, cement industry, chlor-alkali industry, glass industry and waste incineration. In the case of emission limit values for fuel combustion processes changes are needed in the existing limit values for particulate emissions for solid and liquid fuels.

108. **Republic of Moldova.** Presently limit values for HMs for existing stationary sources aren't established in the Republic of Moldova. In our state hygienic standards of maximum permitted concentrations of HMs polluting air for residential areas were established. Standards relating to maximum permissible emissions are set in accordance with current legislation in order to protect the ambient air. Maximum permissible emissions (MPEs) are established for each sources in such a way that the emissions of harmful substances from a given source and the totality of sources in the city or population settlements, taking into account forecast development of industrial enterprises and the spread of harmful substances in the atmosphere, will not create a ground-level concentration which exceeds their maximum permissible concentrations for the population and plant and animal life. This requirement must be observed for all enterprises, whether they are existing, new or undergoing reconstruction. The general rules for the establishment of MPEs are governed by State standard 17.2.3.02 – 78 “Protection of air quality. Atmosphere. Rules for the establishment of permissible emissions of harmful substances from industrial enterprises”, which entered into force in 1980. In cases where objective factors prevent the establishment of maximum permissible emissions for the moment, provision is made for the step-by-step reduction of emissions and the setting of provisionally agreed emissions in the light of what is technically feasible at present and subject to the eventual setting of MPEs.

109. The Indicative Plan of Activities in Energetic Sector of the Energetic Strategy of the Republic of Moldova includes stipulations on the elaboration of standards and norms of emissions into environment for 2000-2005 (section VI “Protection of the environment”). Also, the National Plan of Activities for Health in relation with Environment was developed in the Republic of Moldova in 1999. This plan includes a range of provisions for 2001 and next years regarding

protection of environment from HMs, establishment of HMs control systems in environment, elaboration of the norms and standards for HMs and other provisions. Also, presently the New Concept of Environmental Policy of the Republic of Moldova is under development. The points of this concept are:

- (a) Pollution prevention and improvement of the environment, including atmospheric air, from toxic substances, including HMs.
- (b) Environmental management improvement.
- (c) Legislative and normative aspects.
- (d) Reduction, exclusion of products use with negative environmental impact.

These points will include priority provisions on elaboration of the limit values for HMs for existing stationary and mobile sources.

110. **Switzerland.** Progress made towards applying best available techniques to existing stationary sources in the categories listed under question 39.

Source category	Limit values	Units & Statistical treatment
All mercury emitters	0,2 mg/m ³	As sum of class 1 substances At a mass flow of 1 g/h or more
All cadmium emitters	0,1 mg/m ³	At a mass flow of 0,5 g/h or more
All lead emitters	5,0 mg/m ³	As sum of class 3 substances At a mass flow of 25 g/h or more
Installations for the production of lead accumulators	1,0 mg/m ³	
Installations for incinerating municipal and special waste	1,0 mg/m ³ 0,1 mg/m ³	For lead and zinc and their compounds, indicated as metals, as sum total. For mercury and cadmium and their compounds, indicated as metals, each one.
Installations for incinerating waste timber, paper and similar waste	5 mg/m ³	Lead and zinc together

Emission limit values and best available techniques: In Switzerland, the emission limitations are in principle strived for by prescription of emission limit values (maximum value not to be exceeded) without prescribing the techniques to be applied. Emission standards are usually based on the state of the art (best available techniques). Emissions shall be limited as much as technology and operating conditions allow, provided this is economically feasible. A medium-sized and economically sound industrial plant is used as the criterion for assessing the economic feasibility of emission limitation. Emission limitation, therefore, is not governed by the weakest economic sector.

111. **Question 32 Provide information, as required by article 3, paragraph 3, on the application of product control measures in accordance with the conditions specified in annex VI. You may wish to refer to your answer to question 6 in section 2 concerning unleaded petrol.**

112. **Armenia.** Armenia has commenced phase-out of the use of leaded petrol. By decision of

the Government of the Republic, with effect from 1 March 2000:

- (a) The production of leaded petrol is prohibited in Armenia;
- (b) The following threshold limit values are introduced for lead content in petrol used in the country:
 - (i) For leaded petrol - 0.15 g/l;
 - (ii) For unleaded petrol - 0.013 g/l;
- (c) The import into Armenia of petrol not complying with the above requirements is prohibited;
- (d) The Ministry of Nature Protection is entrusted with developing and submitting to the Government a programme of action for the further phase-out of leaded petrol;
- (e) The Government Office for Standardization, Weights and Measures and Certification is entrusted with developing and adopting a national standard for automotive fuel in compliance with the European standard EN 228.

113. **Austria.** Leaded petrol is banned since 1 November 1993; mercury content in batteries is limited to 0.001 per cent for zinc carbon batteries and to 0.025 for alkaline manganese batteries.

114. **Belgium..** Federal Government: With regard to the use of mercury in batteries, Belgium has incorporated the Community provisions in directive 91/157/EEC, as set out in para. 5 of annex VI to the Protocol, through its Royal decree of 17 March 1997. Note: directive 98/101/EC reduces concentrations referred to in para. 5 of annex VI by a factor of 100. Belgium is currently incorporating this directive.

115. Belgium has discontinued the use of leaded petrol for road vehicles. Belgian petrol companies started distributing petrol with a lead substitute from 1 April 1999 on a voluntary basis and, as a result, leaded petrol has no longer been sold in Belgium since that date. In accordance with European Directive 98/70/EC, the marketing of leaded petrol has been prohibited in Belgium since 1 January 2000.

116. **Bulgaria.** Pursuant to Regulation No. 17/99 (SG 97/99), the content of lead in unleaded petrol will be reduced:

Unleaded petrol lead content in g/l

Unleaded petrol lead content	Year	
	till 2003.12.31	after 2004.01.01
	0,013	0,005

117. **Canada.** Canada will provide information on its leaded gasoline regulations under the Canadian Environmental Protection Act to demonstrate compliance with the application of product control measures as they pertain to lead. Lead additives in gasoline for on-road vehicles were phased out in December 1990. Lead additives are still allowed in aviation gasoline and competitive racing fuels. These exemptions are reviewed on a periodic basis.

118. **Croatia.** Croatia expects to phase out leaded petrol till the year 2005. The permitted content of Pb in unleaded petrol is 0.013 g/l and 0.15 g/l in leaded petrol with exception for domestic produced leaded petrol (allowed content of lead in leaded petrol is 0.5 g/l by July 1, 2002). Total petrol consumption declined between 1990 and 1993. From 1993 to 1997 energy

consumption increased for transport (total +33 per cent) due to the growth in road transport (+39 per cent) and air transport (+27 per cent). The fourth RON grades of petrol are available on the Croatian market: unleaded 91, 95 and 98 RON and leaded 98 RON. For unleaded grades, 95 RON has the biggest market share (78.7 per cent against 21.3 per cent for 91 RON). The market share of unleaded petrol increased from 2.5 per cent in 1990 to 30 per cent in 1996, while the consumption of leaded petrol has remained almost constant in recent years.

119. **Czech Republic.** In June of 1998, the Czech Republic joined the ECE "Pan-European Strategy of Gradual Phasing Out of Leaded Petrol", which entails the phasing-out of leaded petrol by January 1, 2005, at the latest. From the beginning of the year 2003, only automobile petrol and diesel fuel that comply with the requirements of the annexes I and II of the Directive 98/70/EC will be distributed in CR. Pursuant to Decree No. 244/1999 Coll., the sales of leaded automobile petrol directly to consumers in CR must be terminated by January 1, 2001 at the latest.

120. **Germany.** Unleaded petrol in three qualities is available everywhere in Germany. Leaded petrol has been phased out. Remaining amounts of imported leaded petrol have a market share below 0.01% in 1998. Lead replacement additives (e.g. potassium based) are sold at petrol stations in bottles to the end user.

121. According to EU Directive 98/101/EC of 22. Dec. 1998, alkaline manganese batteries containing more than 5 ppm Hg must no longer be marketed. The Directive, whose provisions are more stringent than the HM Protocol's, is currently being transformed into national law by amending the German Battery Ordinance. Major European battery producers state that since 1994 Hg-free alkaline manganese batteries only have been marketed. Despite this voluntary phase-out, batteries taken back under the Joint Battery Take Back System presently still contain approximately 0,02% Hg, which is supposed to originate from old batteries and imports. Along with the transformation into German national law of the EU Directive, Hg-Oxide button cells will also be banned.

122. **Greece.** See R.6.

123. **Latvia.** Up to now in force are Regulations on Fuel Quality Standards for Environment approved by the Cabinet of Ministers on 07.07.1998, which include requirements of Council Directives 85/210/EEC, 87/416/EEC and 93/12/EEC. Instead of above mentioned regulations are elaborated draft Regulations on Fuel Quality Standards expected to be approved by the Cabinet of Ministers on 01.05.2000. These regulations include requirements of Council Directives 93/12/EEC, amendments 1999/32/EC and Directive 98/70/EC of the European Parliament. Amount of unleaded petrol 0.005 g Pb/litre will be 99.5% of total. Amount of leaded petrol 0.15 g Pb/litre for on-road vehicles will not exceed 0.5% of total from 01.05.2000. Expected date to phase out leaded petrol 0.15 g Pb/litre for 0.5% of total is not appointed.

124. **Netherlands.**

- (a) Reduction of mercury has already a long history;
- (b) Two main sources of mercury in batteries: a. mercury-oxide button-cells (1980: 25% mercury) and b. alkaline batteries (1980: 1% mercury);
- (c) Mercury-oxide button cells;

- (i) In 1979: the Foundation for Collection and processing of Mercuryoxide batteries was founded. The collection rate was not sufficient.
- (ii) November 1th 1985: a voluntary agreement between the Ministry of Environment and 5 important producers and distributors of mercury button cells and producers/importers/retailers of audiological apparatus is made. Targets; to replace the mercury-oxide battery as much as possible by the zinc-air buton-cells (with 1% mercury), to collect the mercury-oxide battery. Results after expiration in 1989: reduction of mercury of 38%, but still many mercury-oxide batteries sold, collectionrate 70% (for hearing-aids);

(d) Alkaline batteries: January 1th 1987: a voluntary agreement between the Ministry of Environment and the Dutch association of producers and importers of batteries (Nefibat) for reduction of mercury in alkaline batteries. Target: reduction from 1% to 0,15% in 1990. Results: in 1990 0,1% and for the European producers of batteries 0,025 % in 1992;

(e) 1992: Implementation plan for batteries is made together with Ministry of Economic Affairs, importers and producers of batteries, consumerorganisations, municipalities etc for the collection of batteries and programmes for raising awareness;

(f) 1995: Battery Disposal Decree. The Decree is an implementation of Directive 91/157/EEC on batteries and accumulators containing certain dangerous substances. The Decree sets limit values for mercury: in alkaline batteries: 0.025 %, in heavy duty alkaline batteries: 0.05%. There is no limit value for mercury button-cells;

(g) 1998: Decree on mercury containing products: is prohibiting in general the distribution of mercury containing products (with some exceptions). This Decree is not valid for those cases where the Battery Disposal Decree is valid, and therefore mercury containing button cells are not prohibited;

(h) 2000/2001: at the moment we are working on the implementation of Directive 98/101/EC; this Directive sets limit values of 0.0005% mercury for batteries and 2% for button-cells. The implementation is delayed because of lack of capacity but will be installed as soon as possible.

125. At this moment:

(a) All alkaline batteries produced by European producers contain less than 5 ppm mercury (in practice even less than 3 ppm, which is the natural level of contamination).Recent investigation of imported batteries from Asia indicates: 3 of the 119 contain more than 0,025 % mercury (recent limit value), and 17 of the 119 contain more than 5 ppm mercury (EC limit value);

(b) The market for mercury button cells is decreasing:Please also refer to section 2 Q6. The Netherlands also has product control measures for Cd.

126. **Poland.** According to the new draft Act on waste (submitted to the Parliament) some specific measures are to be considered mandatory, and in particular regarding batteries and car batteries containing certain amounts of mercury, cadmium or lead. Other obligations concerning heavy metal content in packaging materials are foreseen in the draft Act on packaging and packaging waste. Detailed requirements are set for limit values of the sum of cadmium, lead, mercury and chromium⁺⁶ in a packaging material (the value should not exceed 100 ppm). Some general requirements concerning products are included in the draft acts: on environmental protection and on the management of certain waste, and product charges and deposit fees. Permissible doses of mercury (from 5 to 16 mg of mercury per lamp) in 4 categories of lamps

depending on the type of the lamp (fluorescent, sodium, ultraviolet) and its construction are set in a regulation of the Minister of Economy on product requirements with regard to protection of human health and the environment (1998).

127. **Republic of Moldova.** Our response to question 6 of section 2 is “yes”.

(a) The Law on the Payment for Pollution of the Environment of the Republic of Moldova establishes the taxes for pollutant emissions into environment and wastes deposit. Annex 1 of this Law includes activities for protection of environment, and their costs are taken into consideration when the tax for environmental pollution is estimated. Economic instruments are introduced by the provisions of the same Law, that stimulate import and use of unleaded fuel;

(b) In conformity with the Law on Licensing Certain Types of Activities and other national legislative acts and normative documents production, import and export, sales and use of harmful products and substances is undertaken in the base of license, given by competent authorities with accord of the environmental protection authorities;

(c) In conformity with the Law on Regime on Harmful Products and Substances physical and juridical persons are obliged to take into consideration sanitary requirements and technical norms managing harmful products and substances, including transportation, import and export, and should undertake measures in order to prevent and liquidate harmful impacts on human health and environment;

(d) There was increased the volume of burning of gaseous fuels in comparison with other types of fuels in the Republic of Moldova in order to reduce the emissions of heavy metals from stationary and mobile sources.

128. Actually proposals to introduce modifications in the Law on Payment for Pollution of the Environment are under development and their goal is stipulation of payment provisions for some goods that have environmental impact. List of goods that are supposed to be regulated by some economic instruments will include the following:

- (a) Substances depleting ozone layer and products containing those substances;
- (b) Plastic packaging including PVC;
- (c) Heavy fuel oil medium-sulphur and high-sulphur;
- (d) Luminescent lamps;
- (e) Pesticides;
- (f) Cigarettes;
- (g) Auto vehicles accumulators;
- (h) Detergents;
- (i) Mineral oils;

Naphtalin and other products.

129. **Switzerland.** Switzerland phased out the use of leaded petrol for on-road vehicles by 1st January 2000. The lead content of unleaded petrol is limited to 5 mg/l.

130. Osubst: Annex 4.10 Figure 2 Import and supply: 21 Batteries and accumulators: “The following types of batteries and accumulators shall only be imported in the form of merchandise or supplied by a manufacturer on condition that they do not contain more mercury and cadmium than necessary according to the state of current technology, and at most:

Type	Maximum level in percent by	
------	-----------------------------	--

	weight	
	Mercury	Cadmium
Carbon-zinc batteries	0,010	0,015
Alkali-manganese batteries / accumulators	0,025	----

For alkali-manganese batteries and accumulators that are supplied for uses in which exceptional conditions such as. temperature below 0°C or above 50°C, or heavy vibrations, may occur over an extended period, a maximum level of 0,05% mercury by weight shall apply. The maximum level according to paragraph 1 and 2 shall not apply to alkali manganese button cell batteries.

131. Figure 4 Obligation to return and to accept used batteries:

(a) 41 Obligation to return: « Consumers shall return used batteries and accumulators to an authorised dealer, consign them to a collection designated for this purpose, or hand them in to a collection point.

(b) 42 Obligation to accept:

(i) Dealers who supply batteries or accumulators of up to 5 kg in weight shall accept any such batteries and accumulators from consumers free of charge.

Acceptance of lead accumulators is dealt in Paragraph;

(ii) Dealers who supply lead accumulators or batteries and accumulators greater than 5 kg in weight shall accept from consumers those types of batteries and accumulators sold by them;

(iii) For manufacturers, the same obligations shall apply as under Paragraph 1 and 2 towards dealers and consumers.”

132. **Question 33** If applicable and as suggested in article 3, paragraph 4, describe briefly additional product management measures currently being applied and future measures being considered, taking into account annex VII to the Protocol.

133. **Austria.** Regulations exist for several products, most of them since the early 90ies:

(a) antifoulings must not contain mercury and arsenic;

(b) the use of pigments containing cadmium for paints and plastics and the use of cadmium for treatment of metal surfaces is prohibited;

(c) the use of pesticides containing mercury and cadmium is prohibited;

(d) mercury, cadmium and arsenic content of fluorescent lamps is restricted;

(e) each producer, wholesaler and retail trader is obliged to take back used batteries and rechargeable batteries; for fluorescent lamps and equivalent lamps a management scheme based on deposits exists;

(f) capture of amalgam in waste water of dental surgeries is compulsory.

134. **Belgium.** Federal Government:

(a) In the case of mercury-containing electrical components (switches, tripping devices, contactors, thermostats), Belgium is following work in the Commission on the preparation of a directive on this matter;

(b) There are voluntary programmes for industry in Belgium on measuring apparatus (thermometers, manometres, pressure gauges).

Mercury-containing pesticides are regulated by a Royal decree of 5 November 1991.

135. **Canada.** Under the Canadian Council of Ministers of the Environment (CCME) Harmonization Accord and its Canada-Wide Environmental Standards Sub-Agreement, Canada-Wide Standard (CWS) for selected mercury containing products (fluorescent tubes, dental amalgam/wastes, and sewage sludge) will be completed early in 2000. Scheduled reporting will include an assessment of the performance of the governments in meeting the benchmarks and timelines relevant to the standards.

136. A North American Regional Action Plan (NARAP) on Mercury will be submitted for approval of the three North American countries by June 2000. Within the NARAP on Mercury, Action Item 2: Mercury Management in Processes, Operations and Products states “The Parties will promote policies and programs to reduce and, where warranted, eliminate mercury in processes, operations and products where there is a likelihood of releases throughout their life cycle. Under this Action item, there are specific actions that seek to reduce mercury releases from products by promoting the development of life-cycle management practices and substitution options for mercury for the following sectors/ manufacturers: Automotive vehicle equipment, Dry cell battery, Electrical switches and relays, Lamps, Health and dental care, Cultural and artisanal uses, and Analytical, testing, measurement, calibration and education.

137. A Regional Action Plan was developed by the Conference of New England Governors and Eastern Canadian Premiers Committee of the Environment. Under the direction of the Plan, a Mercury Task Force was formed in September 1998. Under products initiatives, one of the proposals is to “Eliminate or reduce non-essential uses of mercury in household, institutional and industrial products and processes. Segregate and recycle mercury attributable to the remaining uses and or products to the maximum degree possible.” Specifically, Objective #1 states that “By 2003, reduce the overall amount of mercury-containing wastes from household, commercial and industrial products, through source reduction, segregation and safe waste management, including recycling”.

138. **Czech Republic.** not used.

139. **Germany.** Provisions concerning Heavy Metals in products are laid down in the ordinances under the Chemicals Act, including

- (a) Cd as a dyeing agent in plastics;
- (b) Cd in paints;
- (c) Cd as PVC stabiliser;
- (d) Cd as a metal surface treatment agent;
- (e) Pb compounds in paints;
- (f) Hg, As, and Tin-organic compounds in anti-fouling paints;
- (g) Hg and As compounds for wood or textile impregnation;
- (h) Hg, As and Tin-organic compounds in water treatment;
- (i) As in cleaning and pickling agents, paints, pesticides, glass production, textile industry, enamel production, metal surface treatment, production of pyrotechnical products, metal glues.

In order to recover Hg from fluorescent tubes, German industry has set up recycling facilities. The use of Hg in thermometers in households has nearly vanished without administrative action.

140. The German Battery Ordinance regulates in general the take back of all batteries, not only those containing hazardous pollutants. This exceeds provisions of the EU Directive (see Q.32).

Furthermore, three eco-labels for low-pollutant batteries have been developed. The eco-label for rechargeable alkali manganese batteries is designed to enhance the share of these environmentally friendly batteries (rechargeable and low-pollutant).

141. On EU level some product specific measures, e.g. banning the use of lead in certain electrical and automotive applications are presently being considered, a consensus has not yet been reached.

142. **Netherlands.** On 1st November 1998 is the Act Mercury Containing Products under the Act of Environmental Hazardous Compounds in force. Due to this act import of mercury containing products is from 1st of January 2000 no longer permitted. From 1st of January 2003 mercury containing products are no longer permitted for trading and production purposes. In three years time trading companies are requested to sell out all mercury containing products. After 1st of January 2003 mercury containing products will be removed from storage facilities of manufactures and in shop and will be destroyed as hazardous waste. Mercury containing product that have been bought before 1st of January 2003 can be used and eventually sold as second hand product. The act aims towards products used by amateurs as well as professionals. It mainly concerns measuring instruments such as thermometers and manometers and electronic products, for which non mercury containing alternatives are available. This type of product includes approximately 40% of the applications of mercury. The act only aims towards products. The use of the chemical formula, mercury or mercury compounds in for example in laboratory or in the manufacturing is still allowed. The act also does not include pharmaceutical products and amalgam that is used by dentists. Products for which no alternative is available are still allowed.

143. Partly due to European legislation are the mercury content of specific product already controlled by a maximum limit. For batteries, the use of mercury has since 1995 only been allowed. Due to the Act on Pollution of Surface Waters mercury pollution from dentists has been limited. In the regulation on packaging and packing material a maximum content of heavy metals has been identified.

144. **Poland.** Certain management requirements concerning products that become waste are included in the draft new Act on waste. They cover:

- (a) a ban for landfilling tires;
- (b) an inventory system for PCB products and wastes;
- (c) specific waste management methods for certain types of waste (containing over 0.005% w/w of PCB; oil waste; batteries and car batteries containing over 0.0005% of mercury or 0.025% of cadmium or 0.4% of lead).

The draft Act on packaging and packaging waste introduces a limit value of 100 ppm for the contents of the sum of 4 heavy metals (lead, cadmium, mercury and chromium⁺⁶ in the packaging material. More requirements related mainly to economic mechanisms are included in the draft Act on product fees and deposit charges (lists of selected products, incl. lead acid and nickel-cadmium car batteries, other types of batteries, packaging, cooling devices and equipment, oil, lamps and tires are enclosed in the annexes to the act).

145. **Republic of Moldova.** Ministry of Environment and Territorial Development plans in the nearest future elaboration of proposals for:

- (a) Modification of the fuel quality standards in goals emissions reduction;

(b) Modifications of the Law on the Payment for Pollution of the Environment of the Republic of Moldova having as a goal implementation of economic instruments for regulation of products containing toxic substances and stimulation of import and use of clean technologies and products (fuels, lead accumulators and etc).

146. Actually proposals to introduce modifications in the Law on payment for environmental pollution are under development and their goal is stipulation of payment provisions for some goods that have environmental impact. List of goods that are supposed to be regulated by some economic instruments will include the following:

- (a) Substances depleting ozone layer and products containing those substances;
- (b) Plastic packaging including PVC;
- (c) Heavy fuel oil medium-sulphur and high-sulphur;
- (d) Luminescent lamps;
- (e) Pesticides;
- (f) Cigarettes;
- (g) Auto vehicles accumulators;
- (h) Detergents;
- (i) Mineral oils;
- (j) Naphtalin and other products.

147. **Switzerland.** The Ordinance relating to Environmentally Hazardous Substances of 1986 regulates the import, the production, the supply, the use and the export of substances that may present a hazard to the environment. It comprises instructions for the environmental impact assessment of new and existing substances and products. Corresponding to the assessment, the substances must be labelled with information on the type of hazard, on the methods of disposal and on other particular instructions such as safety instructions. In addition to the general regulations, annexes to this ordinance contain special regulations for particular groups of chemicals. Among them, several are of special interest regarding the emissions of hazardous substances into the atmosphere which may occur during production and use or during waste treatment (e.g. CFCs, halogenated organic compounds, heavy metals).

148. **Question 34 Provide information, as required by article 4, paragraph 1, on measures taken to 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.**

149. **Austria.** Information about measures to promote the exchange of technology related to air pollution control can be found in Q.25.

150. **Belgium.** Flemish region: Different activities have been developed during the past years to improve the exchange of technologies and information. Some examples :

(a) The Centre for Best Available Techniques, founded in 1994 and operating under VITO, collects information about available pollution prevention techniques and disseminates this information to the Flemish government and industry. The center itself also draws up BAT studies for different industrial sectors. Regulation in Flanders is based on these BAT studies. Studies

relevant for heavy metals are the, not yet terminated, BAT studies for foundries, for waste treatment and for combustion installations.

(b) The Energy and Environment Information System (EMIS) collects and provides information on environmental topics to professionals, managers, civil servants and consultants. In addition to information on law, literature, statistics and BAT, there is a databank with profiles that contains information sheets on companies, consultants and administrations. Furthermore, an overview of the current support programmes (to obtain investment support or subsidies for research and development) is available.

(c) The centre of expertise Rational Use of Energy (VITO) acts as a hub for the dissemination of knowledge and the promotion of cogeneration (or Combined Heat and Power, CHP), as well as a catalyst and objective assessor for the interest groups involved. The Flemish Support Point for Waste and Emission Prevention will be erected in June 2000. Its goal is to support all those intermediate organisations like federations, associations, local governments, socio-cultural groups... , active in the field of waste and emission prevention, by exchanging relevant information and playing a coordinating role for relevant projects.

151. **Bulgaria.** Refineries exclusively apply technologies, consistent with EC Directives for quality of petrol.

152. **Czech Republic.** In this connection, cooperation has been commenced with the IPPC Office in Seville, which provides for preparation of BREFs for the individual EU countries - to facilitate replacement of technology and techniques.

153. **Germany.** With the internet system "Cleaner Production Germany" (www.cleaner-production.de) the Federal Environmental Agency provides information on projects of clean production and pollution prevention and control. With the Transform-Programme Germany provides technical assistance to the countries of Central and Eastern Europe including policy advice, training and feasibility studies. Since 1992, about 120 projects with a total volume of 27 million DM have been funded in the environmental field. Special emphasis has been given to the reduction of transboundary air pollution and the improvement of air quality in the 'Black Triangle' between the Czech Republic, Germany and Poland. **The Twinning Programme** is a support programme carried out by the European Commission to help the accession countries of central and eastern Europe bring their environmental standards into line with those of the European Union (EU). The programme's main instrument is partnerships (twinning covenants) entered into between institutions of EU Member States and institutions in the candidate countries. Proposals for twinning projects are solicited from the Member States by the EU. The Federal Environmental Agency is carrying out a number of projects on behalf of the Federal Ministry for the Environment.

154. **Greece.** See R.7, R.16, R.25 and R.64.

155. **Netherlands.** See question 7 and 16

156. **Poland.** General requirements regarding the exchange of technologies and techniques, and the need for introducing best available techniques are included in most governmental documents related to the protection of atmosphere, as well as in the Polish environmental legislation (the draft one – to a greater extent). The Technical and Technological Agency, established in 1996, is

a specialised unit providing assistance in the implementation of new techniques and technologies in Poland. It also provides development and support for the transfer of environmentally sound technologies using economic mechanisms, such as tax concessions on investments (incl. licences, patents) and State Treasury guaranties. New techniques and technologies are supported by the National Fund for Environmental Protection and Water Management. Transfer of new environmental technologies are also one of the main issues included in multilateral and bilateral co-operation. Poland, within the EURECA Programme, participates in many projects aimed at the development of new technologies for air protection and environmentally oriented industrial technologies.

157. In a significantly advanced phase of implementation is the Programme for the Promotion of Quality, aimed at preparing enterprises to introduce series of ISO 45 000 and ISO 9000 standards. Environmental management systems are of interest to the Polish Centre for Testing and Certification. Together with the Polish Standardisation Committee it is involved in popularisation of the ISO 14 000 standards and EMAS.

158. **Republic of Moldova.** Ministry of Environment and Territorial Development encourages exchange of information regarding technologies and measures designed to reduce emissions of HMs and other pollutants, including exchange of information on regulation of products. Independently, there are target-oriented or customized workshops with representatives of ministries, departments, industrial enterprises and other organizations regarding pollution prevention and improvement of the environment, existent technologies of limitation of the emissions in the environment, including atmospheric air, clean production, management of wastes.

159. We collaborate with the Commonwealth of Independent States (CIS) and Romania. The Republic of Moldova is a member of the Interstate Ecological Council (IEC) of CIS. We indicated the principal directions of these activities in the question 64. Also, representatives of the Ministry of Environment and Territorial Development participated in the training workshops, courses on waste management, clean production, emission reduction etc.

160. Certain directions of the activity on these problems were included in the document "Environmental Performance Review". This review was elaborated and the final document with recommendations for solution of existing problems in national environmental policy and management was presented in 1998 for evaluation by the ECE Committee on Environmental Policy at its annual session in Geneva. This document was approved and published. Also, the future documents that are under development now will include necessary directions on measures for execution of stipulations of art. 4 of the HMs Protocol.

161. **Switzerland.** No special activity at the governmental level, rather on a commercial and consultants basis.

162. **Question 35 Provide information, as required by article 4, paragraph 2, on procedures established to create more favourable conditions to promote the exchange of technologies, such as facilitating contacts and cooperation.**

163. **Austria.** See Q.34

164. **Belgium.** Walloon region: At the regional level, there is a “clean technologies” service in the Walloon environment authority and a technology observatory at the Public Service Scientific Institute (ISSeP), which are responsible for collecting and disseminating information on BATs.

At the international level:

(a) active participation in the European Union IMPEL network;

(b) participation in the drafting of BAT reference documents (BREFs) pursuant to the European Union’s IPPC directive.

165. **Flemish region:** The Flemish Institute for technological research (VITO) conducts scientific research and carries out policy studies on the topics environment, raw materials and energy. Some examples : research on techniques to reduce SO₂ emissions as part of the performance of BAT studies for different environmental sectors, modelling of emissions, measurements of deposition. Demonstration projects are an essential element in the development and promotion of reduction techniques. PRODEM, a promotion, demonstration and advice centre, founded in 1996 and operating under VITO, offers SMEs logistic and technological support in the introduction of environmentally friendly and economically feasible technologies.

166. Belgium also participates in important European and international networks aimed at co-operation on environmental research. Examples within the scope of the EU : CADDET, the network of the International Energy Agency about demonstrated new technologies, OPET, the network about the energy demonstration programme THERMIE, the IMPEL network of the EU and participation in the performance of European BAT studies (BREFs).

167. **Canada.** Canada will prepare a summary of documentation and initiatives (e.g., guidance documents) to facilitate the transfer of the latest BAT information on Heavy Metals. This may include information on programs and initiatives such as the Canadian Consultant Trust Fund, administered by Environment Canada’s Environmental Technology Advancement Directorate, and the Technology Partnerships Canada, administered by Industry Canada.

168. **Czech Republic.** not used.

169. **Germany.** See question 34.

170. **Greece.** See R.7, R.16, R.25 and R.64.

171. **Netherlands.** See question 7 and 16.

172. **Poland:** It is expected that integration processes within the European Union will create more favourable conditions to promote the exchange of technologies and will facilitate contacts and co-operation on a national and international level. For more details – see Q.34.

173. **Republic of Moldova.** We would like to inform you, that the Republic of Moldova is party of the international conventions:

(a) on Long-range Transboundary Air Pollution (Geneva, 1979);

(b) on Climate Change (New York, 1992);

(c) for the Protection of the Ozone (Vienna, 1985) and Montreal Protocol on Substances that Deplete the Ozone Layer (1987);
(d) on the Transboundary Effects of Industrial Accidents (Helsinki, 1992);
(e) on Environmental Impact Assessment in a Transboundary Context (Espoo, 1991);
(f) on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel), - and other conventions.

174. The stipulations of the national legislation established the procedure of international cooperation, exchange of the information, access to information and other stipulations.

175. Also, the ecological funds' resources are channeled to environmental protection measures significant at the national and local level, in the form of non-reimbursable or interest-free aid, including organization of information system, awareness programs and training for staff, organization of international cooperation, application of environmentally sound technologies, scientific research in environmental field at the ministry's order etc.

176. **Switzerland:** Procedures established to create more favourable conditions to promote the exchange of technologies, such as facilitating contacts and cooperation.
No special activity at the governmental level.

177. Question 36 Provide information on activities undertaken with a view to encouraging research, development, monitoring and cooperation related to this Protocol, taking into account article 6.

178. **Armenia.** The Government of Armenia has entrusted the appropriate monitoring organizations to include lead in the list of substances subject to systematic surveillance.

179. **Austria.** Measurements of heavy metals in soil have been carried out for several hundred sites in Austria throughout the last years; furthermore biomonitoring programs (with moss) have been used for monitoring of deposition. As of now monitoring of ambient air concentrations of lead (in particulate matter) is performed at about one dozen monitoring stations in Austria according to the Ambient Air Quality Law; deposition measurements of lead, cadmium and other heavy metals are carried out at more than 50 sites.

180. Research projects also dealt with e.g. the transfer of heavy metals (from waste to ground-water, from soil to plants), pollutant levels in eco-systems (wild animals in Bulgaria, Austrian high moors), analytical methods (development of bioassays for the heavy metal content of soils).

181. **Belgium.** Walloon region: Deposits of the following heavy metals are measured by the air quality monitoring network: aluminium, antimony, arsenic, barium, cadmium, calcium, chrome, copper, iron, magnesium, manganese, mercury, molybdenum, nickel, lead, selenium, silicon, titanium, vanadium, zinc. Emissions inventories have been kept for a number of metals since 1990, but they are insufficiently precise. More precise and comprehensive inventories are currently being established. For the BATs, see question 35.

182. There is a selective collection service for household waste containing heavy metals (batteries, thermometers, X-rays, motor oil, etc.). These are treated as hazardous wastes and

disposed of accordingly. Technical and economic studies are currently being carried out on a heavy metals policy for the Walloon region, including in the framework of the preparation of an air quality plan, with a view to clarifying, strengthening and supplementing the existing standards and measures in the light of the effects of these pollutants on health and on ecosystems.

183. Flemish region: At the moment the following monitoring programs for heavy metals exist in the region of Flanders :

- (a) measurement of the concentration of heavy metals on suspended matter at 30 locations;
- (b) deposition measurements of heavy metals in the vicinity of a metallurgical plant and at the coast;
- (c) measurement of the concentration of heavy metals in rain water.

184. An inventory for all metals on the priority list of the Third North Sea Conference (Hg, Cd, Cu, Zn, Pb, As, Cr, Ni) is being made in the framework of action 28 (to make a program to implement the agreements of the Fourth North Sea Conference and implement it) of the Flemish Environmental Policy and Nature Development Plan for the period 1997 to 2001 (Mina-2 plan). For these substances inventories containing annual loads per source categorie towards air, water and waste are being made. These inventories are based on emission measurements at the sources and on estimations of the emissions by using emission factors and production or consumer statistics. They also bring into account monitoring data. Substance specific reduction programs are being made on the base of these substance inventories. The next step is to implement these programs.

185. Other research projects include :

(a) optimisation and evaluation of the methodology of chemical and biological air measurement for the heavy metals As, Ni, Cd and Pb and for the metals Mn, Cr and Co. A toxicity index for the heavy metals will be formulated on the base of literature and measurements in contaminated industrial sites;

(b) an investigation of the relation between air contamination by heavy metals and vegetation. The concentration of Hg, Cu, Zn, Pb, As, Cd and Ni will be measured in vegetables and grasses in the vicinity of a metallurgical plant and compared with the results of deposition measurements;

(c) measurements of Pb, Cd, As, and Ni in particles PM_{2.5}, PM₁₀ and TSP;

(d) chemical analysis of aerosols; the composition of heavy metals is evaluated;

(e) a comparative investigation of the concentrations of heavy metals in PM₁₀ particles;

(f) a methodological study for making inventarisations of heavy metals by the case study of Cd.

186. Federal Government: On 16 July 1993 Belgium promulgated an eco-taxation act, modified by the act of 7 March 1996 setting out the procedures for the imposition of a tax on batteries, designed to encourage sorting and recycling.

187. **Canada.** Canada will provide information through existing programs and initiatives on research, development and monitoring of Heavy Metals such as:

(a) the Toxic Substances Research Initiative (TSRI);

(b) the Northern Contaminants Program (NCP) and the Arctic Monitoring and Assessment Program (AMAP);

- (c) Strategic Option Process (SOP) Initiatives;
- (d) the National Pollutant Release Inventory (NPRI) and the Accelerated Reduction/Elimination of Toxics (ARET);
- (e) the Integrated Atmospheric Deposition Network (IADN) and other monitoring in the Great Lakes Basin;
- (f) the Canadian Atmospheric Mercury Measurement Network (CAMNet);
- (g) Experimental Lakes Research;
- (h) the Ecological Monitoring and Assessment Network (EMAN);
- (i) Metals in the Environment (MITE);
- (j) the Mercury Deposition Network (MDN);
- (k) provincial and territorial Heavy Metals monitoring programs and initiatives; and
- (l) work within the Commission for Environmental Cooperation and the New England Governors/Eastern Canadian Premiers Initiatives;
- (m) work under the Great Lakes Binational Toxics Strategy (GLBTS); and,
- (n) the Canada-Ontario Agreement (COA).

188. **Czech Republic.** Every year, the Ministry of the Environment of the Czech Republic announces projects in the Program of Care for the Environment and projects in the ME Program of Research and Development. Top-priority projects following from the individual Protocols to the CLRTAP are also carried out in the framework of these programs. Financial means for work on these programs are partly or completely paid out of the state budget.

189. **Germany.** For research and development see Q.61. Monitoring: The heavy metals Cd, Hg, and Pb are measured at 8 EMEP stations of the Federal Environmental Agency based on PM10 and beginning on PM2.5.

190. **Greece.** See R.35.

191. **Latvia.** Regulations on Air Quality@ were adopted by the Cabinet of Ministers on 15 June 1999. Ambient air quality standards (related to health effects and related to ecological effects) for particulates and lead, methodology for measurement and monitoring, assessment levels for releases in air (maximum permissible single concentration determined within 20 minutes time and maximum permissible concentration within a day-night=s time) related to health effects, and information indicators for public information are included in the regulations. Regulations on Air Quality@ are prepared in accordance with provisions of EU Directives: 96/62/EC; 80/779/EEC; 82/884/EEC; 85/203/EEC; 92/72/EEC; 97/0266 (SYN).

192. **Netherlands.** The Netherlands have actively participated in the development of an effect based approach for heavy metals. In this context the Ministry of Housing, Spatial Planning and the Environment have published the manuals for calculating critical loads of heavy metals for aquatic and terrestrial ecosystems. Also the ministry has participated in the preparations of the Bad Harzburg and the Schwerin workshop aiming at the development of an effectbased approach for heavy metals.

193. **Poland.** Various projects and research surveys covering the issues related to this Protocol have been carried out and are still continued by different research institutes, universities, governmental institutions all over Poland. They include:

- (a) heavy metal emission inventories;
- (b) widening of the national environmental monitoring system;
- (c) research on new production technologies and emission control measures;
- (d) preparation of emission standards for industrial processes;

possible decrease in heavy metal content in products.

194. **Republic of Moldova.** Ministry of Environment and Territorial Development encourage research, development, monitoring and cooperation related to HMs Protocol. Taxes for environmental pollution that were gathered during 1999 and accumulated on the account of the National Environmental Fund were foreseen for the following expenditures:

- (a) Development of national programs and plans for protection of environment;
- (b) For scientific research in environmental field at the ministry's order;
- (c) Development of the system of ecological normative;
- (d) Organization of information system;
- (e) Awareness programs and training for staff;
- (f) Organization of international cooperation;
- (g) Application of environmentally sound technologies;
- (h) Accidents consequences liquidation;
- (i) Co-financing of environmental projects;

Financing of NGO basing of grants program etc.

195. **Switzerland.** Information on activities undertaken with a view to encouraging research, development, monitoring and cooperation related to this Protocol, taking into account article 6. Systematic monitoring of air pollution started in Switzerland in the mid-sixties. Since 1991, the National Air Pollution Monitoring Network (NABEL) comprises 16 monitoring stations located in different parts of Switzerland. The network was established with the aim of recording pollution levels at different characteristic sites of the country. Moreover, it serves to assess the long-term efficiency of air pollution control measures.

As measured in the national network (NABEL)	Reductions between 1988 and 1997 (order of magnitude)
Lead in suspended particulates (TSP)	75%
Cadmium in suspended particulates (TSP)	50%
Total suspended particulates (TSP)	25%

Heavy metals were also assessed by bio-monitoring in mosses at 200 sites in Switzerland in 1990 and in 1995 (see specific reports from the Swiss Agency for the Environment, Forest and Landscape, SRU Nr 194/1993 and UM Nr.101/1998, Bern). They will be further assessed in 2000.