UNITED NATIONS **E**

Economic and Social Council

Distr.
GENERAL

EB.AIR/WG.5/2003/4
1 July 2003

ORIGINAL: ENGLISH

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

Working Group on Strategies and Review
(Thirty-fifth session, Geneva, 16-19 September 2003)
Item 3 of the provisional agenda

FURTHER ASSESSMENT OF HEAVY METALS

Report of the first meeting of the Expert Group on Heavy Metals
prepared by the Chairman in collaboration with the secretariat

Introduction

1. The Executive Body at its twentieth session decided to establish an Expert Group on Heavy Metals under the leadership of Germany (ECE/EB.AIR/77, paras. 48 (f)). In accordance with the work-plan for the implementation of the Convention (ECE/EB.AIR/77/Add.2, annex XIII, item 1.6), the first meeting of the Expert Group was held in Geneva on 20-21 March 2003. It took stock of relevant information on heavy metals, considered the experience of the Expert Group on persistent organic pollutants (POPs) (EB.AIR/WG.5/2003/3) and developed a long-term work-plan. The Presentations can be accessed at www.unece.org/env/hm/welcome.html.

2. Experts from Austria, Azerbaijan, Canada, Czech Republic, Finland, Germany, Netherlands, Norway, Russian Federation, Sweden, Switzerland, United Kingdom and the United States of America participated in the meeting. The European Community was also represented. Representatives from the Chemical Coordinating Centre (CCC) and the Meteorological Synthesizing Centre East (MSC-E) of EMEP as well as the United Nations Environment

Programme (UNEP) were present. Representatives of the International Council on Mining and Metals and the World Chlorine Council also attended.

3. Mr. Dieter JOST (Germany) chaired the meeting.

4. The Expert Group agreed an assessment of the effects of, and the control measures for, heavy metals would be important parts of the review process for the Protocol on Heavy Metals. This could only begin once the Protocol had entered into force[1/] The Expert Group considered that particular priority should be placed on cadmium and mercury, though not to the exclusion of other metals. The Expert Group agreed it might also consider to what extent the technical annexes to the Protocol should be revised, in particular annex III (Best available techniques for controlling emissions of heavy metals and their compounds from the source categories listed in annex II). It could also consider the appropriateness of an effects-based approach to the possible revision of the Protocol. Experts representing the Convention's subsidiary bodies and programme centres, as well as those from other organizations, provided relevant information to the Expert Group as summarized below.

I. RESULTS FROM EMEP AND THE WORKING GROUP ON STRATEGIES AND REVIEW

A. Heavy metal emission inventories and projections

5. The representative of MSC-East informed the Expert Group about its activities related to heavy metals. He noted that while there had been much progress in recent years on reporting heavy metal emissions, such emissions were probably significantly underestimated. Despite problems of data quality, emission reporting on metals was expected to continue to improve in the coming years, due in part to the use by Parties of the revised Guidelines for Estimating and Reporting Emission Data. Where data were insufficient, MSC-E used, for modelling purposes, expert estimates, such as those provided by the Netherlands Organisation for Applied Scientific Research (TNO) and other organizations. The Expert Group stressed the need to improve emission inventories of heavy metals.

B. Monitoring and modelling of heavy metals

6. A representative of CCC provided information on the EMEP monitoring programme on heavy metals. The programme maintained a database that included measurements of heavy metals from 1999. Reports were published annually and available from the EMEP web site (www.emep.int). Maps showing the annual average lead, cadmium and mercury concentrations in precipitation, and the annual average concentrations of lead, cadmium and mercury in aerosols

[1/] As of 10 June 2003, 14 signatories had ratified the Protocol; 16 ratifications are required for entry into force.

were available for 2000. Chemical speciation of mercury deposition was not yet possible; CCC collected data on total mercury only, without differentiating between organic and inorganic mercury, or between other components.

7. Some experts reported that their countries would be establishing monitoring super-sites that would measure mercury, among other pollutants. The expert from the Netherlands informed the Expert Group about a project proposal submitted to the European Commission by TNO that would establish a monitoring programme for 10 to 15 super-sites that would include measurements of POPs and heavy metals. The representative of the European Community (EC) confirmed that the EC was intending to make monitoring of POPs and heavy metals mandatory for its Member States, as part of the draft fourth daughter directive on heavy metals and polycyclic aromatic hydrocarbons (PAHs).

8. For metals with global dispersion (e.g. mercury), MSC-East was developing a long-range model on a Northern hemispheric scale that tended to show convergent results from measuring and modelling. It was noted, moreover, that it was important to consider intercontinental mercury dispersion, since transport outside the EMEP region accounted for approximately 60% of anthropogenic mercury emissions from Europe. Specifically, it contributed about 55 metric tons/year to mercury deposition to the Arctic, that is, nearly 40% of the total deposition of anthropogenic mercury to this region. In evaluating the intercontinental transport of mercury, it was important to identify the sources of hemispheric deposition by region, since it was estimated that of the total (anthropogenic and natural) mercury deposited in Europe, 60% was from European sources, 15% from Asia, 5% from North and South America, and 12% from mercury emissions from the ocean surface.

C. Heavy metals abatement measures and costs

9. The Expert Group was informed about the work of the Expert Group on Techno-economic Issues, led by France, which was developing a techno-economic database on costs of abatement technologies for various pollutants, including heavy metals. Although the mandate of that Group covered heavy metals, the current focus of its work was to finalize the database on costs of abatement measures for pollutants covered by the 1999 Gothenburg Protocol in order to provide the necessary data to the Centre for Integrated Assessment Modelling. At a later stage, the Expert Group on Heavy Metals could foresee the need for collaborating with the Expert Group on Techno-economic Issues in the updating of the technical annexes to the Protocol on Heavy Metals, if appropriate, once the Protocol had entered into force.

II. RESULTS FROM THE WORKING GROUP ON EFFECTS

10. The Chairman of the Working Group on Effects informed the Expert Group of relevant

activities. While the mapping of critical loads had been focused on the metals covered by the Protocol (cadmium, lead and mercury), other metals were addressed in the monitoring programmes.

A. Heavy metals in natural vegetation, crops and materials

11. The Heavy Metals in European Mosses Survey, begun in the 1980s, now covered almost all of Europe. The International Cooperative Programme (ICP) on Vegetation would produce a multi-decade trend report on heavy metals in mosses (icpvegetation.ceh.ac.uk).

12. The International Cooperative Programme on Effects of Air Pollution on Materials, including Historic and Cultural Monuments (ICP Materials) had been working on the release of heavy metals (zinc, lead and copper) due to the corrosion of materials. A workshop on the release of heavy metals from materials due to corrosion would be held in Munich, Germany, on 12-14 May 2003. It was noted that a substantive report on the effects of air pollutants including heavy metals was in preparation based on existing results from ICPs. The Expert Group welcomed the preparation of the report that was due to be finalized in 2004.

13. It was also noted that a summary report by the Joint Task Force on the Health Aspects of Air Pollution had been presented to the Working Group on Effects at its nineteenth session (EB.AIR/WG.1/2000/12). The report had focused on the health effects of lead, cadmium and mercury, for which dietary intake was the major route.

B. Heavy metals in surface waters

14. A representative of the International Cooperative Programme on Assessment and Monitoring of Acidification of Rivers and Lakes (ICP Waters) informed the Expert Group about its relevant activities. He noted that ICP Waters received data on heavy metals from 22 monitoring sites in ECE countries. A workshop had been held at Lillehammer, Norway, in March 2002, focusing on lead, cadmium and mercury in surface waters. The aim of the workshop had been to agree on monitoring and analytical methods for critical loads and limits for heavy metals in surface waters. The workshop had concluded that existing ranges for critical limits were scientifically sound, though results from recent national monitoring programmes and other surveys from lake regions had so far been inconclusive. The workshop had recommended further monitoring of water, sediments (core and surface) and fish, and identified the need for improved data on heavy metals in waters. ICP Waters could facilitate the development of critical loads applied to heavy metals in waters and update its programme manual to include more information on heavy metals.

C. Modelling and mapping of heavy metals

15. The International Cooperative Programme on Modelling and Mapping of Critical Loads and Levels and their Air Pollution Effects, Risks and Trends (ICP Modelling and Mapping) work-plan for 2003-04, which is coordinated with EMEP, included work on critical loads for heavy metals (cadmium, lead and mercury). An expert meeting, held in December 2002 in Berlin, had focused on the further development of critical limits (related to effects on human health and the environment) and transfer functions, as well as general aspects of effects-based methods. Minutes of the meeting are available on the ICP web site: http://www.icpmapping.org. Preliminary maps of critical loads of cadmium and lead, which were the results of tests of the methodology, and therefore not yet appropriate for policy use, are accessible on the web site of the Coordination Center for Effects (CCE) www.rivm.nl/cce. A chapter on heavy metals to the mapping manual would be drafted by 2004. A workshop on critical loads for heavy metals was planned for early spring 2004. There would be a call for data in autumn 2004.

16. A workshop on mercury was planned in Sweden in spring 2004. It would be organized by the Nordic Council with possible cooperation with the Expert Group, UNEP and the European Commission. The workshop would focus on chlor-alkali installations, and their mercury waste elimination, and critical loads. It may be held back to back with the critical loads workshop. A representative of the chlor-alkali industry offered to be involved in the planning of the workshop. The Chairman of the Expert Group suggested calling for a comprehensive report on heavy metals including critical loads.

III. WORK OF OTHER ORGANIZATIONS

17. A representative from the UNEP Chemicals unit presented the report of the Working Group Global Mercury Assessment, which aimed to assess the mercury situation worldwide and proposed action to reduce its adverse effects. The report can be accessed at www.chem.unep.ch. The Expert Group welcomed the work of UNEP and encouraged further collaboration with the Global Mercury Assessment Working Group.

18. A representative of the European Commission (Environment Directorate) introduced the draft daughter directive on heavy metals and PAHs (to the current Air Quality Framework Directive, 96/62/EC) that would propose air quality standards for arsenic, cadmium, mercury, nickel and PAHs. The draft directive focused on the impacts to human health by inhalation, rather than dietary intake (www.europa.eu.int/comm/environment/air_en.htm).

19. Information was presented on the Convention for the protection of the Marine Environment of the North-East Atlantic (OSPAR), which monitored cadmium, lead and mercury in precipitation, and in the air, as well as metals in biota and sediments in water (www.ospar.org)

and the Expert Group welcomed further collaboration.

20. Experts from Canada and the United States presented national and regional programmes devoted to heavy metal abatement in North America www.unece.org/env/hm/welcome.html.

IV. REVIEW OF HEAVY METALS NOT CURRENTLY IN THE PROTOCOL

21. The Expert Group was informed about relevant work by MSC-East on heavy metals not currently covered by the Protocol, in particular arsenic, chromium, copper, nickel, selenium and zinc. The expert from the United Kingdom noted that his country had been working on critical loads for arsenic and nickel.

22. Parties had made much progress in reporting on these other metals, though the Expert Group agreed it would need guidance to determine the highest priority for new substances to be added, if any. As there was no agreement on additional metals, the Expert Group felt that a subsequent meeting could address this question and explore the future work to be done. A formal decision on whether Parties wished to add new metals to the Protocol would be taken once the Protocol entered into force.

V. WORK-PLAN FOR THE EXPERT GROUP

23. The Expert Group discussed its role in the preparations for the review of the Protocol on Heavy Metals, which could only take place once the Protocol entered into force. It was felt that in future the technical annexes should not be overloaded with information that required continual updating; it would be more efficient to include only the mandatory information in the text of the Protocol, and to provide technical information separately in guidance documents. Based on the discussion of the review process, the Expert Group proposed the detailed work programme below, where lead countries and contributing bodies are identified.

A. Sufficiency and effectiveness of reducing cadmium, lead and mercury

24. The Expert Group, in preparation for the review of the Protocol, will collect and assess information available, including results of upcoming workshops on heavy metals, on:

(a) Emissions and projected emissions of heavy metals currently covered by the Protocol (cadmium, lead and mercury): EMEP/United States/[Netherlands] (2003-2004);

(b) Atmospheric and dispersion modelling of heavy metals: EMEP/United States/[Netherlands] (2003-2004); and

(c) Effects of heavy metal pollution, including the potential for an effects-based approach: Working Group on Effects/International Cooperative Programmes (2003-2005).

B. Review of metals not currently included in the Protocol

25. The Expert Group, in preparation for the review of the Protocol, will collect and assess information available on heavy metals not currently covered by the Protocol, which may be recommended by a Party for addition to the Protocol, in accordance with Executive Body decision 1998/1, including:

(a) Emissions and projected emissions of heavy metals not currently covered by the Protocol: EMEP/United States/[Netherlands](2003-2004);

(b) Atmospheric and dispersion modelling of heavy metals not currently covered by the Protocol: EMEP/United States/[Netherlands](2003-2004);

(c) Effects of pollution from heavy metals not currently covered by the Protocol, including the potential for an effects-based approach: Working Group on Effects/International Cooperative Programmes (2003-2005).

C. Techniques for controlling emissions from heavy metals

26. The Expert Group, in preparation for the review of the Protocol, will:

(a) Assess the information on best available techniques for controlling emissions of heavy metals and their compounds from the source categories listed in annex II to the Protocol, and their costs, by:

(i) Developing synergies with the abatement of particulate matter and the work carried out by the Expert Group on Techno-economic Issues: Germany (2003-2004); and

(ii) Providing information regarding annex III to the Protocol to reflect technological developments and changing economic conditions: Germany (2003-2004);

(b) Assess the timescales for the application of limit values and best available techniques to new and existing stationary sources; and assess the limit values for controlling emissions from major stationary sources, by:

(i) Providing information regarding annex IV to the Protocol: Germany (2003-2004); and

(ii) Providing information regarding annex V to the Protocol: Germany (2003-2004).

D. Product control measures and product management measures

27. The Expert Group, in preparation for the review of the Protocol, will assess the information on product control measures and product management measures, by:

(a) Providing information regarding annex VI to the Protocol [Sweden and Canada were invited to explore the possibility of collaborating]; and

(b) Providing information regarding annex VII to the Protocol [Sweden and Canada were invited to explore the possibility of collaborating].

28. The Expert Group proposed to hold its next meeting in Germany on 17-18 November 2003.