



**Governing Council
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Items 4 (a), 5 and 6 of the provisional agenda*

Policy issues: State of the environment

**Follow-up to the outcomes of the World Summit on Sustainable Development: contribution of the
United Nations Environment Programme to the forthcoming session of the Commission on
Sustainable Development**

**Implementation of the programme of work of the United Nations Environment Programme and the
relevant decisions of the Governing Council**

**Interim reviews of scientific information on lead and
cadmium**

Note by the Executive Director

Summary

The Executive Director has the honour to provide, in the annex to the present note, information regarding the interim reviews of scientific information on lead and cadmium referred to in document UNEP/GC/24/7. The annex has been issued without formal editing.

* UNEP/GC.24/1.

Annex

Interim reviews of scientific information on lead and cadmium

Summary

1. To assist in, and provide information for, the consideration of the possible need for global action in relation to lead and cadmium, this document sets out the process followed in developing the reviews of scientific information on lead and cadmium, called for in GC decision 23/9 III, and provides the key scientific findings of the two reviews, as developed by Lead and Cadmium Working Group, which assisted UNEP in the development of the reviews.
2. The full texts of the reviews of scientific information on lead and cadmium are available on the internet at http://www.chem.unep.ch/Pb_and_Cd/SR/Interim_reviews.htm.

I. Process for developing the reviews of scientific information on lead and cadmium

3. In 2005, the UNEP Governing Council, in GC decision 23/9 III, requested UNEP to undertake the development of reviews of scientific information on lead and cadmium, focusing especially on long-range environmental transport, in order to inform future discussions of the Governing Council on the need for global action in relation to lead and cadmium.
4. UNEP established a Working Group to assist it in developing the reviews of scientific information. The Working Group on lead and cadmium consisted of members nominated by Governments, intergovernmental organizations and non-governmental organizations. Working Group members assisted, first through a comment round by mail, then through a meeting of the Working Group, which took place 18-22 September 2006 in Geneva, Switzerland. The Working Group meeting was attended by 81 representatives from Governments, 6 representatives from intergovernmental organizations and 9 representatives from non-governmental organizations.
5. Chapters 7, 5, 4 and 3 of the interim reviews respond directly to the Governing Council request and were addressed specifically, and in that order of priority, by the Working Group at its meeting. Chapter 6, relating to trade, and Chapter 2, related to chemistry were considered by the Working Group to be necessary information to provide an indication of the extent of the issue. The Working Group considered that, while chapters 8, 9 and 10, and the appendices, fell outside the mandate of the Governing Council decision, they provided useful information and could be retained. They were not, however, reviewed by the Working Group.
6. During its meeting, the Working Group was unable to complete its review of the health effects (Chapter 3), and delegated responsibility for finalising this chapter to the World Health Organisation, in concert with UNEP, based on inputs from the Working Group at the meeting.
7. The Working Group recognised that, as there was ongoing work underway in other forums on this issue, it was not possible to finalise the reviews at this time. The version finalised by the secretariat after the Working Group meeting was therefore to be considered 'interim'. Subject to the recommendations of the Governing Council, the interim review may be developed further utilising additional submitted information. Such information,

when submitted, would also be made available on the website related to lead and cadmium. The full report of the meeting is also available on the lead and cadmium activities webpage.

II. Working Groups' considerations on the significant adverse impacts of lead and cadmium of global concern

8. During the meeting, the Working Group assisted UNEP with the further development of the interim reviews of scientific information on lead and cadmium and prepared summaries of the key findings of the interim reviews. These key findings, which are also included in the interim reviews, are included in the interim reviews.

9. Based on the recommendations made by the Working Group, UNEP subsequently further developed the interim reviews of scientific information on lead and cadmium (in English only), taking into account comments made during the meeting. These are attached to this document as Annex I and Annex II, respectively.

10. The key findings developed by the Working Group show that there is a significant international dimension of the risks to human health and the environment arising from the release of lead and cadmium into the environment, and that it may warrant international action. Some of the main findings relating to significant adverse impacts of lead and cadmium of global concern are summarized below:

(i) Lead

- **Transport** - Lead is released by various natural and anthropogenic sources to the air, water and soil, with movements between these compartments. Once emitted to air, lead is subject to atmospheric transport on local, national, regional or intercontinental scales, depending on various factors. Because it has a relatively short residence time in the atmosphere (days or weeks), this metal is mainly transported over local, national or regional distances, however the regional and intercontinental atmospheric transport of lead contributes to deposition in remote regions such as the Arctic, where there are few local sources for lead releases. Rivers can transport lead on a national and regional scale, and oceans are also a transport medium.
- **Use** - Lead is used and traded globally as a metal in various products. The major use of lead in recent years is lead batteries, however other uses include plastics, paints, electronic equipment and certain toys. Some uses of lead which have been phased out in industrialized countries have continued or increased in developing countries. Another issue for developing countries is the export of new and used products containing lead, including electronic equipment and batteries, to countries which lack the capacity to manage and dispose of the lead in these products in an environmentally sound manner. Some products containing lead may cause exposure through normal use, such as certain toys.
- **Waste disposal** - Inappropriate waste disposal may result in the release of lead to soil or water, while the open burning in some developing countries of waste products containing lead could be an important source of local and regional lead emissions to the atmosphere and to land and aquatic systems. This may lead to elevation local and regional release levels.
- **Exposure** - Exposure to lead occurs mainly through inhalation of dust and air and ingestion of foodstuffs, water and dust. In some countries, lead in petrol is still an important source of exposure. Other sources include lead in paint, low temperature-fired ceramics, informal sector recycling of car batteries, mine tailings and the air, soil and dust in the vicinity of point sources (e.g., smelters)
- **Toxicity** - Lead is a heavy metal that is toxic at very low exposure levels and has acute and chronic effects on human health. In the environment, lead is toxic to plants, animals and micro-organisms. For lead, the most significant health effects are neurodevelopmental effect, with children and pregnant women the populations of

concern. The environmental effects of lead are well documented. Secondary poisoning has also been extensively documented, especially for predators feeding on contaminated animals.

(ii) **Cadmium**

- **Transport** - Cadmium is released by various natural and anthropogenic sources to the air, water and soil, with movements between these compartments. Cadmium, once emitted to air, is subject to atmospheric transport on local, national, regional or intercontinental scales. Because it has a relatively short residence time in the atmosphere (days or weeks), however, this metal is mainly transported over local, national or regional distances, however it is considered to be subject to a certain degree of long-range air transport on an intercontinental scale. The regional and intercontinental atmospheric transport of cadmium contributes to deposition in remote regions, such as the Arctic, where there are few local sources for cadmium releases, although may make only minor contributions in areas with local or regional releases. Rivers can transport cadmium and other heavy metals on a national and regional scale, and ocean transport also occurs.
- **Use** - Cadmium is produced mainly as a by-product of mining, smelting and refining of zinc and, to a lesser degree, as a by-product of lead and copper production. Cadmium is used and traded globally as a metal and as a component in various products. A growing proportion of refined cadmium consumption is accounted for by NiCd batteries. Some of the uses of cadmium which have been phased out in industrialized countries have continued or increased in developing countries. Another issue faced by developing countries is the export of new and used products containing cadmium, including electronic equipment and batteries, to those countries which lack the capacity to manage and dispose of the cadmium in these products in an environmentally sound manner.
- **Waste disposal** - Inappropriate waste disposal may lead to the release of cadmium to soil or water, while the open burning in some developing countries of waste products containing cadmium could be an important source of local and regional cadmium emissions to the atmosphere and to land and aquatic systems. This may lead to elevated local and regional release levels in developing countries.
- **Toxicity** - Cadmium is a non-essential and toxic element for humans mainly affecting kidneys and the skeleton. It is also a carcinogen by inhalation. In the environment, cadmium is toxic to plants, animals and micro-organisms. Cadmium is persistent and bioaccumulates mainly in the kidneys and liver of vertebrates and in aquatic invertebrates and algae, which are the organisms most sensitive to cadmium. The dissolved cadmium concentrations measured in some European waters (mainly rivers) are exceeding the threshold concentration producing adverse effects of cadmium in the aquatic ecosystem.

11. Global efforts are needed to efficiently address these challenges, not least in developing countries. This need was further highlighted during discussions at the Intergovernmental Forum on Chemical Safety (IFCS), which, in the Budapest Statement on Mercury, Lead and Cadmium, called for further global, regional, national and local actions as appropriate. IFCS, in this statement, invited the UNEP Governing Council to initiate and strengthen voluntary actions, including partnerships and other activities, as was as giving high priority to considering measures, as appropriate, on lead and cadmium. The UNEP GC may therefore wish to consider the need for further action.
