



**United Nations  
Environment  
Programme**

Distr.: General  
27 July 2009

Original: English

**Ad hoc open-ended working group to  
prepare for the intergovernmental  
negotiating committee on mercury**  
Bangkok, 19–23 October 2009  
Item 4 (b) of the provisional agenda\*

**Preparations for the work of the intergovernmental negotiating  
committee to prepare a global legally binding instrument on  
mercury: update on preparations for the study on various types of  
mercury-emitting sources requested by the Governing Council  
(decision 25/5)**

**Outline of the study on various types of mercury-emitting  
sources**

**Note by the secretariat**

1. By paragraph 29 of its decision 25/5 III, the Governing Council of the United Nations Environment Programme (UNEP) requested the Executive Director of UNEP, “for the purposes of informing the work of the intergovernmental negotiating committee, to conduct a study, in consultation with the countries concerned, on various types of mercury-emitting sources, as well as current and future trends of mercury emissions, with a view to analysing and assessing the cost and the effectiveness of alternative control strategies and measures”.
2. Following preliminary consultations, UNEP has prepared a draft outline for the study, which is set out in the annex to the present note, and has engaged expert assistance for the preparation of the study. In view of the study’s importance to the work of the committee UNEP has expedited work on it and will provide a first draft of the study results to the committee at its second session, while the final results will be made available for the committee’s third session. Governments and other stakeholders will be requested to provide input on a number of topics that will be addressed in the study. The timely submission of such input is vital.

**Recommendations**

3. The working group may wish to consider the draft study outline and suggest additions or amendments, as appropriate. It should be noted that any substantial additions to the proposed study may have cost and time implications.

---

\* UNEP(DTIE)/Hg/WG.Pre/1/1.

## Annex

# Outline of the study on various types of mercury-emitting sources called for in paragraph 29 of decision 25/5 III of the United Nations Environment Programme Governing Council/Global Ministerial Environment Forum

## Introduction and summary

1. As called for in paragraph 29 of decision 25/5 III of the Governing Council/Global Ministerial Environment Forum of the United Nations Environment Programme (UNEP), a study will be undertaken on the various types of mercury-emitting sources and current and future trends in mercury emissions, including an analysis and assessment of the cost and the effectiveness of alternative control technologies and measures. The purpose of the study will be to inform the work of the intergovernmental negotiating committee to prepare a global legally binding instrument on mercury. The present document presents an outline of the study.

2. The study is intended to provide information on the various types of mercury-emitting sources and current and future trends in mercury emissions and to analyse the costs and efficiencies of various options for the control of mercury emissions. The study will be based on previous reports on global mercury emissions and emissions control options prepared for UNEP in 2008 and will focus on the main emitting sectors in up to nine selected countries. Additional information on emissions, technical source characterization and current and future plans for emissions control will be collected from the selected countries through a questionnaire to be distributed to UNEP contact points and through expert assessments by international and local experts. The study is expected to result in a set of scenarios in which ranges of control costs and likely emissions reductions will be presented for the selected countries and sectors. The results will be extrapolated to provide an overview of total costs for different emissions reduction scenarios on a global scale.

## I. Objectives and purpose

3. The purpose of the study is to inform the work of the intergovernmental negotiating committee and, as such, to give background information relevant to the development of measures for controlling mercury emissions that could be featured in the legally binding instrument that is to be elaborated.

4. The main objectives of the study are:

(a) To present updated and new information on mercury emissions for selected countries and sectors and current trends in mercury emissions;

(b) To provide an overview of the technical characteristics of the main sources of mercury emissions in important sectors in the selected countries;

(c) To provide an overview of current and planned initiatives and measures at the national, regional and global levels and how they may affect future mercury emissions. This includes initiatives directed to mercury, air pollution abatement and carbon dioxide abatement;

(d) To provide quantitative information on the effectiveness and costs of relevant and representative abatement measures in the selected sectors.

## II. Scope

5. The study will focus on up to nine of the top mercury-emitting countries that are significant contributors to global mercury emissions in each source category. The selected countries for the study are Brazil, China, India, the Russian Federation, South Africa, the United States of America and two or three member countries of the European Union. The results will be extrapolated to provide global estimates and presented in the form of a series of different mercury control scenarios providing a range of emissions reductions at different estimated implementation costs.

6. The study will focus on the largest emission source categories identified on the basis of previous UNEP emissions reports and other relevant information. These priority sources are coal-fired power

plants and industrial boilers; industrial metal production (with a focus on non-ferrous smelters, particularly lead, zinc and copper and gold); waste incineration; and cement production factories.

7. Time permitting, the cost and effectiveness of abatement measures in other sectors will be analysed if suitable information is available in relevant formats from relevant partnerships or industry associations.

## **A. Analysis of various types of mercury-emitting sources**

### **1. Source characterization**

8. The study will seek to provide, for each mercury-emitting sector and for each selected country, the approximate number of emitting facilities and a description of their important characteristics. It will also present information on the ownership structure prevalent in each sector to allow an initial assessment of how such structure may influence mercury reduction options.

9. The study will attempt to characterize emission sources for each sector, including:

- (a) The number, type, location (approximate) and size (i.e., volume of production) of emitting facilities;
- (b) Sources and characterization of fuel or raw materials;
- (c) A description of main current air emission control approaches, including greenhouse gas emission controls that are known to have mercury emission reduction benefits;
- (d) Existing mercury-specific controls;
- (e) Expected changes in the sector (within the various groupings to the extent feasible) over the next decade.

10. While this type of information is necessary to evaluate sources and control options it is recognized that it may not be readily available, particularly at the facility-specific level. In such cases, the study will attempt to present such information at a level of aggregation, and at a level of detail, that is both practical and appropriate.

11. The study will also describe any national or regional plans that could result in meaningful mercury emission reductions from the identified sources. Plans for reducing emissions may include proposed national legislation relating to air quality or regional agreements that may regulate emissions, such as the protocols to the 1979 Convention on Long-Range Transboundary Air Pollution under the United Nations Economic Commission for Europe.

12. The study will focus on the following sectors:

- (a) Coal burning (power generation and industrial boilers in particular);
- (b) Cement kilns (including emissions both from combustion for heat generation and potentially from mercury contamination in raw materials);
- (c) Waste combustion (general and hazardous waste combustion, particularly hospital waste);
- (d) Industrial production of metals, including both mercury released from combustion to produce heat for smelting and mercury released directly from ores during processing.

13. Sources associated with use of mercury will be included if relevant information can be obtained readily from partnership areas, industrial organizations or others.

### **2. Emissions**

14. The study will provide an updated mercury emissions inventory for the sectors being analysed in the selected countries. This inventory will include a brief summary describing how it differs from previous inventories, describing the principal features of new information included and discussing the uncertainties inherent in the inventory.

### **3. Emissions trends from 1990 to 2005**

15. The study will seek to generate information updating trends in existing data for country and sector emissions. This will include, where necessary, recalculating existing mercury emissions data

using the same basis for calculation, which will enable direct comparison of trends in mercury emissions between 1990 and 2005.

## **B. Costs and effectiveness of control technologies and measures**

### **1. Estimated costs and effectiveness**

16. The technologies available for reducing mercury emissions in each sector will be described. The range of estimated costs and effectiveness (in terms of emissions reductions) of alternative control strategies for each sector will be presented in order to facilitate their comparison. The factors that affect the estimates will also be described.

17. The estimated costs of control strategies will, to the extent possible, be related to the likely capital costs of installation and the estimated operational costs of plants. These costs may be compared with the total costs of construction of new plants, or the modification of existing plants. An attempt will be made to assess the influence of control costs on expected net profits and the unit price for consumers of the products of a given sector.

18. The costs and effectiveness of non-technological measures, such as legislation and regulation, will be considered together with the social and economic cost of inaction.

### **2. Case studies**

19. A limited number of case studies of facilities that have implemented control technologies will be presented. These studies will be designed to provide industry-based evidence of mercury emission reductions achieved through the chosen control measures along with estimates of the capital and unit costs of achieving these reductions.

## **C. Future scenarios**

20. In this part of the study, information from the previous steps will be combined in a set of scenarios representing different degrees of ambition for mercury emissions control in the selected countries and sectors.

21. For each scenario, available industry information and plans will be used to predict broad market trends and estimates of likely future activities and technological change in each sector. This industry information will be combined with control strategy information from section 2 to estimate the cost of achieving a range of mercury emission reduction targets.

22. National overviews will be developed that may consider existing mercury reduction activities and plans to implement controls and present possible scenarios that include the cost and effectiveness of such activities and plans. The incremental cost of reducing mercury emissions beyond planned reduction levels may also be calculated.

23. For the scenarios developed, where possible, the impact at the national or sectoral level will be extrapolated to illustrate the potential impact on global mercury emissions.

## **III. Draft outline**

24. It is proposed that the report on the results of the study comprise the following chapters and sections:

Executive summary

Introduction, comprising the following four sections:

A. Background

B. Scope and mandate: This section will include an analysis of the request from the UNEP Governing Council/Global Ministerial Environment Forum and establish the boundaries of what will and will not be covered in the study.

C. Sources of information: This section will include in particular previous studies (emissions, reducing major uses and emissions, Open-ended Working Group cost-benefit) and how they have been used in the present study.

D. Methodology: This section will set out the process used in conducting the study, including consultations, information gathering, etc.

- I. Analysis of various types of mercury emitting sources, comprising the following three sections:
    - A. Source characterization
    - B. Emissions from sources
    - C. Emissions trends from 1990 to 2005
  - II. Costs and effectiveness of control technologies and measures, comprising the following two sections:
    - A. Estimated cost and effectiveness: This section will be divided into separate subsections on coal burning; cement kilns; waste combustion; industrial metals production, including mercury released from combustion to produce heat for smelting and mercury released directly from ores; chlor alkali production; vinyl chloride monomer production; the manufacture of mercury-containing products; and artisanal and small-scale gold mining. Each of these sections will discuss the cost and effectiveness of control technologies and non-technological measures.
    - B. Case studies
  - III. Future scenarios
-