

1 Introduction

1.1 Background and mandate

140. This report responds to the request of the Governing Council of the United Nations Environment Programme (UNEP), through GC decision 21/5, that UNEP undertake a global assessment of mercury and mercury compounds, in cooperation with other members of the Inter-Organization Programme for the Sound Management of Chemicals (IOMC), to be presented to the Governing Council at its 22nd session in 2003. The assessment would include contributions from Governments, intergovernmental and non-governmental organizations and the private sector, and cover the following elements:

- (a) To summarize existing information including recent authoritative reviews of the chemistry, including transformation and methylation processes, toxicology, and impacts of mercury on human health and the environment;
- (b) To compile and summarize existing information concerning the global natural and anthropogenic sources of mercury;
- (c) To consolidate and analyse information regarding relevant environmental long-range transport and the origin, pathways, deposition and transformation of these substances on a global scale;
- (d) To examine and describe the sources of release of mercury to the environment, and the current production and use patterns of mercury as a global commodity;
- (e) To compile and summarize information about prevention and control technologies and practices, and their associated costs and effectiveness, that could reduce and/or eliminate releases of mercury, including the use of suitable substitutes, where applicable;
- (f) To describe ongoing actions and compile information about future plans at the national, sub-regional or regional levels for controlling releases, and limiting use and exposures, including waste management practices;
- (g) To outline options for consideration at the twenty-second session of the Governing Council/Global Ministerial Environment Forum addressing any significant global adverse impacts of mercury, *inter alia*, by reducing and or eliminating the use, emissions, discharges and losses of mercury and its compounds; improving international cooperation; and ways to enhance risk communication; and
- (h) To provide, for elements (a) through (f), a summary description of scientific and technical information needs and data gaps.

141. The Governing Council requested UNEP to report on the results of the assessment to the Governing Council at its 22nd session, and also agreed to consider whether there is a need for assessments of other heavy metals of possible global concern at that session.

142. In this assessment report, the specific elements listed by the UNEP Governing Council in its decision 21/5 are covered as follows:

- Element (a) is covered in chapters 2, 3, 4 and 5;
- Element (b) is covered in chapter sections 6.1, 6.2 and 6.3;
- Element (c) is covered in chapter section 6.4;
- Elements (d), (e) and (f) are covered by chapters 7, 8 and 9 respectively;
- Element (g) is covered by chapter 11; and
- Element (h) is covered by chapter 10.

1.2 Submission of information for this report

143. UNEP, in April 2001, as a follow-up to the request from the Governing Council, invited Governments, intergovernmental and non-governmental organizations and the private sector to submit information relevant to mercury and mercury compounds. As information was received, it was as far as possible posted on the Global Mercury Assessment web site at <http://www.chem.unep.ch/mercury/>, specially established for the purpose of allowing insight into the information collected. For submitted reports and articles protected by copyright laws, respective copyright rules were observed.

144. As of 16 September 2002, 81 Governments plus the European Commission on behalf of the European Union (EU), 10 intergovernmental and 12 non-governmental organizations had submitted information for or comments to this report. The distribution of submissions from Governments between different geographic regions is shown in Figure 1.1.

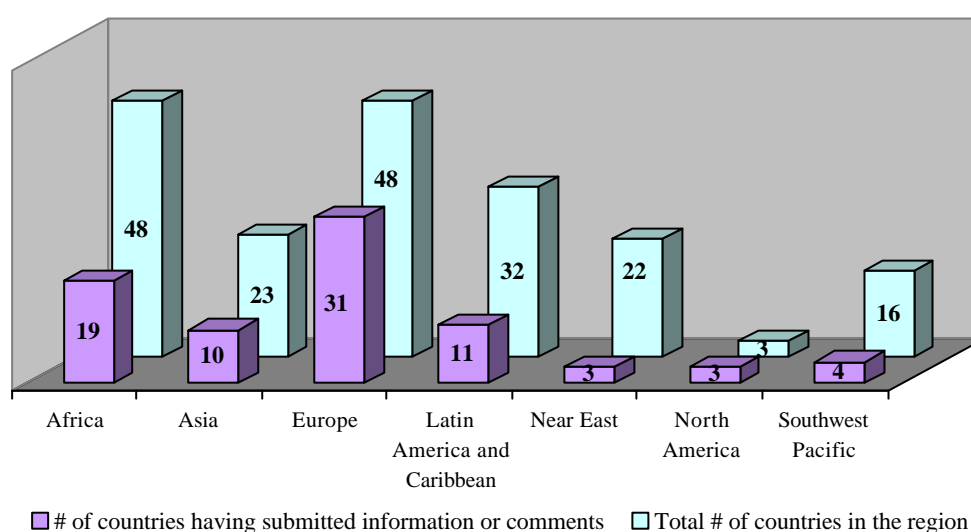


Figure 1.1 Overview of submissions to the Global Mercury Assessment, by geographic region.

145. Figure 1.2 illustrates the global coverage of the information or comments submitted from Governments. A list of information submissions and a list of comments to the first draft of this report are available in documents separate from this report; further details on the individual Governments, intergovernmental and non-governmental organizations that have submitted information or comments can be found there. In these lists, each submission or comment has been given a specific number, so that a reference can be provided for the information used in this report.

146. Although a relatively large number of Governments submitted information for the report, it should be noted that there were substantial differences in the amount of information available from each Government. Some Governments, especially those of OECD-countries, have comprehensive inventories that document mercury production, use and releases over a number of years, while others, although they are aware of mercury use in their country, have very limited documented data.

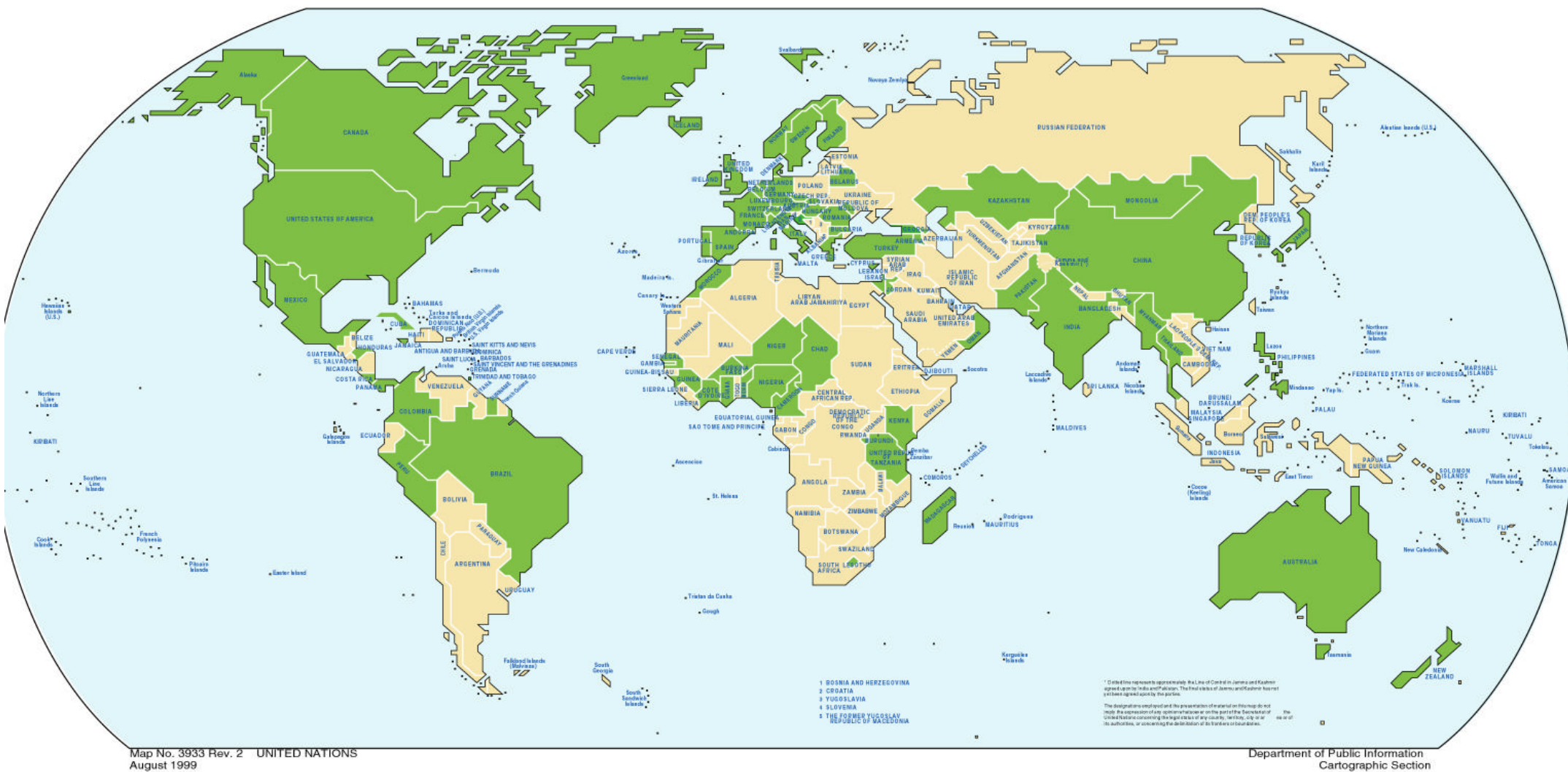


Figure 1.2 Submissions from Governments to the Global Mercury Assessment – global coverage.

1.3 Sources of information for this report

147. The sources of information used to develop this report are:

- Submissions from Governments, intergovernmental and non-governmental organizations and the private sector, received as of 2 April 2002;
- Additional publications, articles and reports of relevance to mercury identified through a literature search in scientific literature;
- Additional information, publications and reports publicly available on websites of various Governments, intergovernmental and non-governmental organizations; and
- Comments and additions provided by members of the Global Mercury Assessment Working Group after circulation of a first draft of this report and during the review of the revised draft report at the Global Mercury Assessment Working Group meeting that took place in Geneva, Switzerland from 9-13 September 2002.

148. References for the information used to develop this report are given as far as possible in the text. If no specific reference is provided, it has been found in the submission provided by the specific Government or organization.

149. Because of the large volume of reports, articles, abstracts, etc. relating to mercury that were submitted/collected, it was not possible to review all the information in detail in the time available. The information was screened and a prioritisation was made. Focus was given to country-specific information that might add to the global understanding of the use and regulation of mercury, especially from non-OECD countries, and information that might add to the general knowledge of the various issues linked to mercury, based on the recently published authoritative reviews on such issues.

150. As this report should provide a global overview, summarising the issues related to mercury, there are substantial amounts of detailed information dealing with various aspects that have not been included, such as detailed national mercury consumption and use data. This information might, however, be a basis for further, detailed review and analysis later should a decision on further work be taken.

1.4 Scope and coverage in this report

151. Although this report is entitled “Global Mercury Assessment”, it does not assess mercury in the true meaning of the word – to judge or decide the amount, value, quality or importance of (Cambridge International Dictionary of English, 1995). It is not a scientific analysis of the toxicology of mercury and mercury compounds, its effects on human health or the environment and environmental long-range transport and pathways, nor a global assessment of the risks related to use and releases of mercury.

152. Rather, it attempts, for each element identified by the Governing Council, to compile and provide, as far as possible, a global overview of evaluations and assessments already made and conclusions already drawn by the scientific community, national Governments, organizations, etc on the various issues related to mercury. Although this report has not been independently peer-reviewed, it has been extensively reviewed by the Global Mercury Assessment Working Group and is considered to be a useful summary of current science and other topics relevant to mercury. The report draws mainly on recently published authoritative reviews on the various topics relevant to mercury, supplemented by national information. As a large part of the previously published reviews focus on OECD-countries, where much of the current research is ongoing and some reduction measures implemented, an attempt has been made to identify and include relevant information from non-OECD countries.

153. As this report attempts to provide a global overview of the issues related to mercury on a limited number of pages, all the information submitted by each individual country or organization cannot be reflected. However, certain compilations have been developed that contain comprehensive national

information on certain specific issues, such as regulatory actions. If they are found useful, these might be kept updated in future.

154. To facilitate reading, in each chapter an overview of the main points in the chapter is given at the very beginning of the chapter. In addition, the section entitled "Summary of the report" at the beginning of the report constitutes a summary of the information in each chapter. A summary of the key findings of the report is also included at the very beginning of the report. When reading the full report, readers might notice that there is some overlap in the information in some of the sections. However, this was deemed necessary, as it is assumed that in the future that many of the sections might be read separately by a reader interested in a specific topic.

155. The report was originally drafted by two environmental consulting companies, COWI Consulting Engineers and Planners AS in Denmark and Concorde East/West in Belgium, with COWI as the project manager. The main contributor in each company was Mr. Jakob Maag and Mr. Peter Maxson, respectively. Both have extensive experience and have previously been involved in a number of publications relevant to mercury, both at national and international level. Within UNEP Chemicals, Ms. Aase Tuxen coordinated the work and, together with Mr. Charles French, contributed to the drafting, editing and finalization of the report.

1.5 Purpose of this report

156. As part of the implementation of Governing Council decision 21/5, UNEP established a Working Group to assist it in preparing for the Governing Council's discussions on the issue at its session in February 2003. The Global Mercury Assessment Working Group was open-ended and consisted of members nominated by Governments, intergovernmental organizations and non-governmental organizations. Working Group members assisted in the drafting and finalization of this report, first through a comment round by mail, then through a meeting of the Working Group, which took place 9-13 September 2002 in Geneva, Switzerland.

157. The Working Group reviewed the draft assessment report and agreed to a number of changes and enhancements. It also identified the key findings of importance and finalized the assessment report for submission to the Governing Council. Based on the key finding of this report, the Working Group concluded that, in its view, there was sufficient evidence of significant global adverse impacts to warrant international action to reduce the risks to human health and/or the environment arising from the release of mercury into the environment. It agreed on an outline of possible options to address these global adverse impacts of mercury at the global, regional, national and local levels. Finally, the Working Group agreed to the need to submit to the Governing Council a range of possible immediate actions in light of their findings on the impacts of mercury. The conclusions of the Working Group are outlined in chapter 11 of this report.

158. This report will be forwarded to the Governing Council for consideration at its 22nd session. By having initiated the development of this assessment report and the outline of options, the Governing Council will have a better basis for considering if any international action on mercury is called for in order to promote environmentally sound management of mercury and its compounds. The assessment report will contribute to increased awareness and understanding among decision makers of the major issues related to mercury and its compounds, thereby facilitating the debate on the issue at the next session of the Governing Council.

159. The results of the Governing Council's discussions on the issue during its 22nd session will be available on the Global Mercury Assessment website at <http://www.chem.unep.ch/mercury/> once the session has taken place.