



United States Department of State
*Bureau of Oceans and International
Environmental and Scientific Affairs*

Post-INC7 Submission from the United States With Respect to Article 22: Effectiveness Evaluation

Summary of Interim Secretariat's Request

Governments, regional and subregional monitoring programmes and partnerships, the World Health Organization, regional representatives, regional and national institutions, academia, industry, civil society and others as appropriate are invited to submit to the interim secretariat information on existing monitoring programmes and how they can contribute to an overall monitoring approach, including availability of baseline information.

Submissions that would complement the information provided by Governments and relevant organizations in follow up to INC6, compiled in document UNEP(DTIE)/Hg/INC.7/12 and available at: <http://mercuryconvention.org/Negotiations/INC7/INC7submissions/tabid/4754/Default.aspx>, are particularly encouraged.

They are further invited to provide contact details for any individual whom they would designate to participate in consultations conducted via electronic means for the development of a roadmap as well as a report on effectiveness evaluation.

Overview

The United States previously submitted information to assist the Secretariat in the compilation of the sources of monitoring data available for the effectiveness evaluation pursuant to Article 22 of the Minamata Convention. That submission included an inventory of available mercury environmental datasets that could be useful in developing mercury environmental baselines and assessing future changes in mercury environmental conditions.

(<http://mercuryconvention.org/Portals/11/documents/technicalsubmissions/USA.pdf>)

We believe that monitoring information is an important component to be considered in establishing a clear methodology for understanding how well the Convention meets its objective in the medium and long term. We also believe that to ensure the information is in fact usable for this purpose, policy context must be provided for the scientific community to consider in identifying relevant data and for developing analyses. This should include policy objectives and principles for the consistent collection, quality assurance, and assessment of monitoring data, as they relate to Article 22.2.

A global monitoring roadmap should enable the scientific community to respond to the Convention's policy goals and critical questions as to whether the Convention is doing what, at its core, it is intended to do, i.e., improve public health by cutting global emissions and releases of mercury and mercury compounds. It should also promote the use of standardized approaches for data collection and quality assurance.

Many signatories and a wide range of institutions and agencies have made significant investments in increasing our understanding of presence and impact of mercury in the environment. This trove of knowledge will prove invaluable for evaluating the effectiveness of the Minamata Convention. Although we expect scientific understanding of mercury to improve in the future, enough data already exists to serve as a programmatic baseline for a shared understanding of current conditions and to establish a means for comparing regularly collected monitoring data to those conditions.

The United States believes that the UNEP Global Mercury Assessment (GMA) should be considered as the reference document for the effectiveness evaluation. The GMA is publicly available, can provide the major data points needed for a programmatic baseline, is already produced at regular intervals, is a comprehensive report on mercury worldwide, synthesizes other best available data, and captures mercury trends in anthropogenic mercury emissions and releases. It has the capacity to evolve with our understanding of the science of mercury, and can incorporate new information as it becomes available. While we believe the GMA is a sufficient baseline, we are comfortable with considering whether there are additional existing data sources to complement the GMA data points as a baseline such as data from long-term monitoring assessments.

In this submission, the United States identifies attributes fundamental to an effective global monitoring roadmap, highlighting key scientific principles and best practices which we believe should be a prominent feature of the roadmap. The information presented here draws from the experiences and lessons learned from more than 35+ years of consistent and cooperative monitoring through the North America's National Atmospheric Deposition Program (NADP) and U.S. participation in other regional and global monitoring and research efforts.

Best Practices for the Collection and Use of Monitoring Information

- *Develop Policy-Relevant Goals for the Use of Specific Types of Information*

The roadmap should set forth goals for mercury monitoring and modeling approaches that support the effective implementation of the Minamata Convention. This monitoring information should be aligned with the information needs of the policy-makers, resource managers, and scientists charged with managing risks and predicting environmental outcomes of mercury emissions changes and changes in other mercury releases. Examples of goals might include, but are not limited to:

- a. Establishing baseline mercury concentrations in multiple ecosystem compartments, and at different geographic scales.
- b. Determining spatial patterns and temporal long-term trends in mercury concentrations in aquatic and terrestrial ecosystems
- c. Quantifying the relations between mercury emission sources and total mercury deposition impacts to aquatic and terrestrial receptors, using multimedia monitoring and modeling approaches.
- d. Apportioning the contributions of global emissions (versus local and regional contributions) to media concentrations.

- *Build on Existing Long-term Monitoring Programs*

The approach must build on existing surveillance and monitoring efforts (e.g., National Atmospheric Deposition Program), where possible to maximize information, benefits, coordination, and efficiency, and to reduce cost. The approach should facilitate coordination between environmental monitoring programs to share expertise, enhance monitoring capacity, and maximize the effectiveness of a global mercury monitoring program. Cooperative arrangements between existing monitoring programs and related activities should facilitate meaningful contributions to global monitoring coordination. Measurement data and metadata documentation obtained from existing monitoring programs should be harmonized, and shared to the extent possible. Multimedia modeling data, where available, should also be considered.

- *Facilitate Data Comparability*

Standard operating procedures (SOPs) should be defined for field and laboratory operations, data management, and quality assurance. These SOPs would apply to all media targeted in a global monitoring program.

Written SOPs would enable participants in a globally-coordinated mercury monitoring approach to ensure procedural consistency over time. The SOPs would need to be flexible to accommodate a range of scientific efforts, adaptable to improvements from new research studies, and managed so that updates can be communicated and implemented systematically in a timely manner. SOPs would be developed through open and transparent decision-making processes that encourage scientific consensus. The approach should recognize that disparate methods and quality assurance/quality control procedures used across existing monitoring stations, programs, and regions yield data of unknown or varying quality. Efforts should be made to characterize these differences and where possible, harmonize sampling and analytical methodologies, practices, and procedures under a standard monitoring framework.

- *Robust Quality Assurance is Critical*

Confidence in the quality of the mercury monitoring data is an essential element for evaluating effectiveness. This can be facilitated by the development of standardized approaches to quality assurance that are consistently implemented and documented across regions. Quality assurance (QA) for mercury analysis would include steps for characterizing uncertainty and interferences for mercury species. Quality assurance for mercury sampling and analysis would include intercomparisons and audits of field procedures, instruments, and laboratories, establishment and maintenance of field sites, field sample collection procedures, data validation and verification, laboratory analysis/QA, public data release protocols, and external QA programs. The U.S. Geological Survey (USGS) external quality assurance program is a useful example to consider in designing such a quality assurance plan. (see <http://pubs.usgs.gov/of/2005/1024/>)

Robust quality assurance includes activities to evaluate potential sample alteration due to contamination and/or preservation issues, estimate the variability and bias of laboratory results, facilitate integration of data from various monitoring networks, and evaluate field-instrument performance. Good QA programs also seek to improve data collection and presentation protocols and to enhance data quality.

- *A Global Monitoring Plan Necessitates Global Participation*

The approach should also recognize the regional differences and gaps in mercury monitoring coverage, and opportunities for the use of modeling information. Strategic partnerships between programs and regions may help to fill data gaps, encourage capacity-building activities, and improve the comparability of the mercury monitoring data. Collaborative planning to facilitate sharing of data among countries should be strongly considered to allay any potential concerns about how data are released and used.

- *Integrate Modeling Data*

The establishment and use of modeling within the context of a global monitoring framework for mercury emissions has several potential benefits. It can help expand assessment coverage to areas that do not have robust monitoring data. Under some circumstances models can provide estimates of concentration data within a reasonable range of uncertainty. Such estimates can provide essential corollary information to monitoring efforts, particularly in the absence of contemporary data. Multimedia modeling approaches can be used to make linkages between different multimedia data sets such as emissions, deposition, transport, bioaccumulation and fish concentrations.

- *Data Should Be Publicly Available*

Monitoring information should be available through publicly accessible, documented, permanent databases that include archived atmospheric and environmental mercury measurement datasets. A traceable quality-assurance protocol and standardized formats would help achieve a common framework for storing, retrieving, and comparing the data. A plan would facilitate communications about data regularly in an open, structured forum. The plan would ensure accountability for data quality at multiple levels – from sampling to analysis to data archival.