



EXPERT CONSULTATIONS MEETING ON MERCURY MONITORING ON SOIL AND BIOTA

International Atomic Energy Agency – Environment Laboratories
13 to 14 May 2019, Monaco, Principality of Monaco



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Background

Between 2014 and 2018, the Chemicals and Health Branch of the United Nations Environment Programme (UN Environment) implemented and executed the project “Development of a Plan for Global Monitoring of Human Exposure to and Environmental Concentrations of Mercury” funded by the Global Environment Facility.

The project aimed at identifying approaches, existing monitoring networks and worldwide capacities to analyse mercury. It developed, among others, elements to consider when designing monitoring plans, Standards Operating Procedures (SOPs) for the assessment of prenatal exposure to mercury, and Manual Instructions for passive air sampling of mercury in ambient air.

The Second Meeting of the Conference of the Parties to Minamata Convention, that took place from 19-23 November 2018 discussed the arrangement for and effectiveness evaluation framework. During the discussion, among others the matrices biota and soil were highlights. In light of this decision the Chemicals and Health Branch of UN Environments intends to organize an expert coordination meeting with the aim to initiate a discussion and gather information on the analytical and monitoring methods of mercury in these two matrices.

Objectives

- Towards contributing further to facilitate the work of the Minamata Convention, the consultation was to assist compilation of Information:
 - on methods for the analysis of mercury in soil and biota
 - to contribute to the discussion on global monitoring of mercury in these two matrices.
- Discuss possible additional areas for further contribution to the future work of the effectiveness evaluation of the Minamata Convention.
- Explore opportunities for enhanced collaboration between International Atomic Energy Authority (IAEA) and UN Environment on the implementation of related activities.

Opening of the meeting

The meeting started at 9:15 am on the 13 May 2019 at the International Atomic Energy Agency (IAEA) Environmental Laboratories, 4 Quai Antione 1^{er}, 98000, Principality of Monaco. On behalf of the IAEA, Ms.

Sylvia Sander welcomed the participant to the expert consultation meeting on mercury on soil and biota. Mr. Ludovic Bernaudat, representing UN Environment, GEF Team, welcomed the participants and presented briefly the context of the UNEP/GEF-funded project in which the meeting was organized. The group adopted the provisional agenda previously circulated as a meeting document (Annex I).

Attendance

The following experts and delegates attended the meeting: Ms. Katerina Sebkova, Ms. David Kapindula, Ms. Milena Horvat, Mr. David Evers, Mr. Linroy Christian, Ms. Seunghee Han, Ms. Gabriela Nair Medina, Ms. Sylvia Sander, Ms. Emilia Vasileva, Mr. Eisaku Toda, Mr. Ludovic Bernaudat and representatives from Chemicals and Health Branch, UN Environment. The list of participants is attached to report as Annex II.

Meeting Deliberations

Deliberations of the consultation were started with few presentations followed by focused discussion on related aspects.

1. Presentations:

a. Objectives and background

UN environment presented the objectives of the consultation and possible discussion points. Participants were also informed of major outputs delivered so far by the UN environment/GEF project on Global Monitoring of Mercury including pilot testing of air monitoring and human biomonitoring in 12 countries, the interlaboratory assessment of facilities analysing mercury and several publications including, manuals, standards operating procedures, protocols and videos on mercury assessment.

b. An update on the Ad-hoc Technical Expert Group on Effectiveness Evaluation

The secretariat of the Minamata Convention explained briefly the main discussion points focused during the ad hoc group of experts on the arrangements for providing the conference of the parties with comparable monitoring data, and elements of an effectiveness evaluation framework. The ad hoc group of experts included 25 government-designed experts and up to 10 invite experts. The group has met two times so far, once in Ottawa, Canada, 5-9 March 2018, and the other in Geneva, Switzerland, 8-12 April 2019.

The secretariat highlighted that a draft report of the expert group will be posted on the Convention website for comments from 15 July to 5 September 2019, and the report for COP 3 will be finalized by 1 October 2019.

c. Improving Analytical Capabilities and Quality of Measurement Results for Mercury Monitoring in the Marine Environment

d. IAEA Capacity building for Mercury Analysis

The two presentations were made of the International Atomic Energy Agency – Environmental Laboratories, focused on the activities undertaken regarding mercury monitoring mainly on the marine environment, and the technical cooperation, capacity building and support provided to their members states.

e. Networks for soil monitoring and Mercury

The RECETOX – SCRC Czech Republic presented the main results of a review on “Worldwide Networks for soil monitoring and mercury”. The main finding showed that the networks/monitoring activities on soil comprise other parameters rather than mercury, and if they comprise mercury, is only total mercury.

f. Global Mercury Monitoring with Biota

g. Mercury in soil – local vs. global implications

These two presentations were based on the first drafts of two reports commanded by UN Environment to the Biodiversity Research Institute (BRI) for biota and to Jožef Stefan Institute (JSI) for soil. The reports are work in progress, the main highlights are details below in section 3.

2. General discussion on the importance and relevance of mercury presence in soil and biota

General point for guiding the discussion on mercury in soil and biota in the light of the Ad-hoc group of experts of the Minamata convention and the effectiveness evaluation discussion.

- i. Existing capacities / networks – gaps. What are the relevant policy questions?
- ii. What are the main elements to consider for soil and biota as matrices to be considered in the effectiveness evaluation framework and monitoring under the Convention?
 - Relevance of the Matrix
 - Mercury compounds to be monitored
 - Frequency of monitoring
 - What type of results can be expected?
- iii. Discussion on the comparability and need for correlations
- iv. What can be obtained? Advantages and disadvantages including resources and costs.

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3. Highlights and element to consider for biota and soil as matrix for monitoring mercury.

Biota: The main goal was to generate a proposed monitoring approach for biota that could be used by the Effectiveness Evaluation ad hoc group. The general highlights toward this goal included:

1. Compilation of a comprehensive biotic Hg database – called the Global Biotic Mercury Synthesis, which was initially funded by UNEP STAP for BRI to compile data from peer-reviewed literature since 2014.
2. Review of Biota mercury monitoring networks with examples illustrated for:
 - a. global (AMAP),
 - b. regional (Caribbean Region Mercury Monitoring Network), and
 - c. local (New York State, USA).
3. Identification of data gaps, namely, related to:
 - a. Spatial (identified through models depicting ecosystem sensitivity spots)
 - b. Temporal trends that use standardized data
 - c. Percent of Methyl-mercury (MeHg) of the total-mercury (THg) in some fish species (as identified by IAEA)
4. Discussion of the Why, How, What, When and Where of a global biomonitoring approach and reasons for each, which are still being developed within the group for the “When” and “Where”.

Soil: General highlights of using soil as a potential matrix:

1. Complexity of Hg dynamics in soils: non-homogenous solid phase, aqueous, solid and biological phases
2. Soil as source: emissions to air and releases to water (point vs. diffusive)
 - a. Long-time scales for removal of Hg from land and water (background vs. contaminated sites)
3. Land use and climate change induced processes (i.e. permafrost, erosion, flooding)
4. Hg loading to soil needs better re-quantification (litterfall, sewage sludge, etc.)
5. Global vs. local implications of mercury contaminated soils
6. Comparability of Hg measurements (total/speciation/fractionation) in soils, standardization for flux measurements
7. Inventory of local and regional legislations

4. Next Steps:

- An informative document will be prepared summarizing the main finding of the project, with a special focus on highlighting the main finding regarding biota and soil as matrices to consider for mercury monitoring. Including a special section with the possible roles and contributions of IAEA Environmental Laboratories and the synergies. The informative document would be submitted to the COP3 of the Minamata Convention, that is schedule for November 2019;
- Two report will be drafted:
 - Element to consider for mercury monitoring in Biota
 - Element to consider for mercury monitoring in Soil
- Sharing some points with those experts participated at the meeting from different regions to engage in a discussion at the Minamata COP regional preparatory meetings, towards promoting enhanced IAEA collaboration;
- Based on the above, develop collaboration project ideas on monitoring.

Annex I

UN Environment / IAEA

Expert Consultations Meeting on Mercury Monitoring on Soil and Biota Matrices

13-14 May 2019, Monaco

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Provisional Agenda

1. Opening remarks
2. Meeting objectives
3. Update of the ad-hoc Technical Expert Group on Effectiveness Evaluation
4. IAEA activities on mercury
5. IAEA capacity building
6. Networks for soil monitoring
7. Mercury in biota
 - i. Key elements in monitoring and analysis of biota
8. Mercury in soil
 - i. Key elements in monitoring and analysis of soil
9. Format and annotated table of content on soil and biota reports
10. Key information resources
11. Way forward for the development of the reports
12. Future opportunities and next steps beyond the GEF-funded project
13. End of the meeting

(Visit of the IAEA Environmental Laboratory)

Annex II

List of participants

UN Environment / IAEA

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