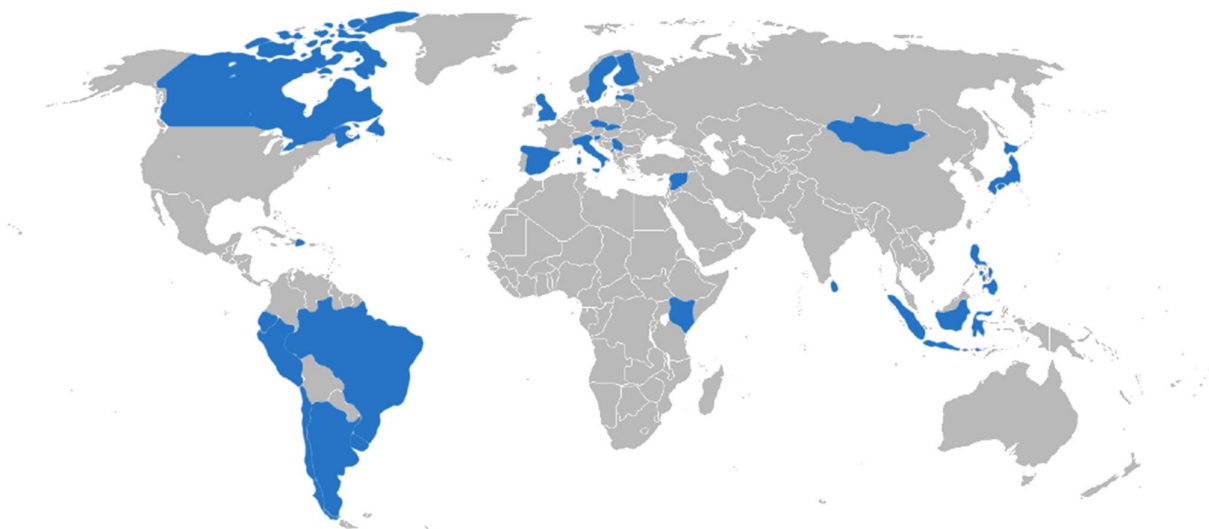


MUNI | RECETOX



FINAL REPORT

Global Assessment of Laboratories Analysing Mercury First Round, 2018



Coordinated by:
Chemicals and Health Branch
United Nations Environment Programme
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Acronyms

GEF	Global Environmental Facility
SCRC	Stockholm Convention Regional Centre
RECETOX	Research Centre for Toxic Compounds in the Environment
UNEP	United Nations Environment Programme
UN Environment	United Nations Environment Programme
CV-AAS	Cold Vapor Atomic Absorption Spectrometry
CV-AFS	Cold Vapor Atomic Fluorescence Spectrometry
ICP-MS	Inductively Coupled Plasma Mass Spectrometry
TD-AAS	Thermal Desorption Atomic Absorption Spectrometry
TD-GA-AAS	Thermal Desorption Atomic Absorption Spectrometry with Gold Amalgamation
XRF	X-Ray Fluorescence

1. Introduction

In 2016, the UN Environment Chemicals and Health Branch, in close cooperation with the World Health Organization and the Italian National Research Council, within the framework of the Global Environment Facility (GEF), GEF funded project "Development of a Plan for Global Monitoring of Human exposure to and Environmental Concentration of Mercury", developed a mercury laboratory survey to collect information on available capacities of laboratories analysing mercury worldwide. All countries were invited to participate in the survey through letters addressed to all SAICM focal points and Minamata Convention INC members. Participation in the survey was voluntary.

The Databank was developed in 2017 and it lists laboratories from all UN regions, including both developed and developing countries, capable of identifying and quantifying mercury species in biotic (human urine, cord blood, fish etc.) and/or abiotic (ambient air, sediment etc.) samples. The Databank is accessible online as shown in Figure 1 and is periodically updated. It currently comprises 210 laboratories from 62 countries in all five UN regions.



Figure 1 Print screen of the title page of Laboratory Databank at the UN Environment website (<http://informea.pops.int/HgPOPsLabs/index.html>), last accessed 17 November 2018.

Secondly, the Minamata Convention on Mercury requests Parties to cooperate on geographically representative monitoring of the levels of mercury in vulnerable populations and environmental media, building on existing monitoring networks and research programmes. The Convention also stipulates through Article 22 that the Conference of the Parties (COP) shall establish arrangements for obtaining comparable monitoring data for the assessment of the effectiveness of the Convention. In addition, entry into force of the Minamata Convention on Mercury and work undertaken regarding monitoring arrangements and effectiveness evaluation of the Minamata Convention between COP1 and COP2 in 2017 and 2018 resulted also in a higher request for information regarding existing laboratory capacities for mercury analyses worldwide and for the quality of such analyses.

The UN Environment has therefore asked the SCRC Czech Republic to provide support in a pilot assessment of laboratories analysing mercury and act as coordinator of the global assessment. RECETOX's tasks were to organize a first round of a global assessment, where invited laboratories would register to analyse the same samples of three different matrices for total mercury within a limited time frame. The laboratories would report their results to the coordinator of the assessment who would evaluate all results received according to international standards.

The present report provides outcome of the assessment and shows a state-of-the-art information regarding the worldwide capacity of laboratories to analyse mercury as available in 2018.

2. Participation in the Global Laboratory Assessment

Participation in the assessment was by invitation only.

On the basis of information provided by laboratories in the mercury survey organized by UN Environment in 2016, the invitation letter “Call for expression of interest to participate in the Global Assessment of Laboratories analysing Mercury” was sent to laboratories, in the UN Environment databank, in July 2018 who had agreed to participate in the comparative studies. The invited laboratories registered via a form provided in Annex I that comprised basic information about the pilot laboratory assessment for mercury including the planned timetable.

The target participation was 50 laboratories worldwide, with a representative geographical distribution among UN regions and participation of both developing and developed countries to evaluate capacity in UN regions to gather comparable data on the levels of mercury in vulnerable populations and environmental media.

The following criteria were used for the selection of the laboratories invited:

- Laboratory is in the UN Environment databank of laboratories analysing mercury.
- Laboratory indicated “Yes” in the databank questionnaire item on participation in the intercalibration assessment
- Laboratory has Quality Controls/Quality Assurance (QC/QA) systems in place and accreditations (international and/or national)
- UN Region, laboratories from developing countries and countries with economies in transition

If more than one laboratory in one country complied with criteria above, then the following were considered:

- Capability to analyse different matrices
- Laboratory X is a public laboratory.

All participating laboratories located in developing countries participated in the first round of the global assessment free-of-charge. Developed countries participation fee was 650 USD per laboratory covering test materials, their shipment and final data processing.

In addition, the Stockholm and Basel Convention Regional Centre in Uruguay (SBCRC-Uruguay) hosted by Technological Laboratory of Uruguay (LATU) approached UN Environment and suggested a broadened participation in the Latin America and Caribbean region. This as additional activity of the GEF/UNEP projects (Minamata Initial Assessments - MIAs, GEF ID 5879 and Mercury Risk Management Approaches - GEF ID 5494) in the region and a follow up to capacity building activities for mercury analyses in laboratories of the GRULAC region supported by SBCRC-Uruguay. Therefore, SBCRC-Uruguay identified additional 11 laboratories that were invited to participate to the global laboratory assessment as shown in Table 2.

3. Organization of the assessment

The technical coordination and assessment were performed by the Research Centre for Toxic Compounds in the Environment (RECETOX), Faculty of Science, Masaryk University, Brno, Czech Republic acting as the Stockholm Convention Regional Centre in the Czech Republic.

In July 2018, UN Environment Chemicals and Health Branch identified the laboratories and invited them to register and participate in the interlaboratory assessment via the form shown in Annex 1. UN Environment also classified invited laboratories into two groups - “free of charge participation” and “pay participation fee” and communicated this to RECETOX.

Planned timetable:

- Registration: open until 10 August 2018
- Confirmation of participation and verification of shipment address: until 10 August 2018
- Distribution of test samples: from 1 August until 15 August 2018
- Reporting of results (MS Excel templates will be provided when confirming the participation): Not later than 15 October 2018.

Registration opened on 16 July 2018 and registered laboratories were contacted for confirmation of the contact person and shipment address. Due to low registration rate, two additional rounds of invitations were performed until end of July. Consequently, registrations and verification of contacts were carried out until end of August.

Shipment of samples from RECETOX by the DHL company to registered laboratories started on 20 August 2018 and the last attempt to deliver test samples (repeated attempt) occurred on 20 October 2018. Each shipment was accompanied by a letter listing the type of test samples contained in the shipment and a customs letter referring to the interlaboratory assessment and non-commercial approach. Additional certificates on non-infectiousness or non-hazardousness of the materials were provided on request. Instructions for reporting the results were sent by e-mail to all laboratories together with the link to the shipment.

Due to delays in the registration of the laboratories and verification step of their contacts, the shipment of test samples was also extended and consequently, the final deadline of providing the results was pushed back to 22 October 2018.

The first results of analyses were received on 15 September 2018 and the last results on 8 November 2018.

预览已结束，完整报告链接和二维码如下：

https://www.yunbaogao.cn/report/index/report?reportId=5_14166

