



UNEP GLOBAL MERCURY PARTNERSHIP

Yellowfin Tuna, Courtesy NOAA Fisheries, © Photo by Jeff Muir

INFORMATION ON BECOMING A PARTNER

This information sheet provides an overview of the United Nations Environment Programme (UNEP) Global Mercury Partnership for prospective partners. Further information is available at:

web.unep.org/globalmercurypartnership

GOAL OF THE PARTNERSHIP

The overall goal of the UNEP Global Mercury Partnership is to protect human health and the global environment from the release of mercury and its compounds by minimizing and, where feasible, ultimately eliminating global, anthropogenic mercury releases to air, water and land.

PARTNERSHIP AREAS

The UNEP Global Mercury Partnership is a voluntary and collaborative relationship between various parties, governmental, non-governmental, public and private, in which all participants agree to work together in a systematic way to achieve its goal.

Initiated in 2005¹, the Partnership today focuses its work on supporting timely and effective implementation of the Minamata Convention on Mercury; on providing state of the art knowledge and science on mercury; and on delivering outreach and awareness raising towards global action on mercury.

¹ UNEP Governing Council Decision 23/9

The Partnership is structured around eight areas:

Artisanal and small-scale gold mining

Mercury cell chlor-alkali production

Mercury air transport and fate research

Mercury in products

Mercury releases from coal combustion

Mercury waste management

Mercury supply and storage

Mercury releases from the cement industry

OUR PARTNERS

Over 190 partners from governments, IGOs, NGOs, private sector and academic institutions:

- Support the overall goal of the Partnership.
- Contribute resources or expertise to the development and implementation of Partnership activities.
- Network with other organizations, agencies, entities and individuals addressing mercury issues.

BECOMING A PARTNER

To become a partner, interested entities or individuals should submit a letter to UNEP signifying their support for the UNEP Global Mercury Partnership and their commitment to achieving its goal. The letter should also specify how they will contribute to meeting the goal of the Partnership.

Together with this letter, UNEP requests interested entities or individuals to also complete and submit the registration form (see reverse). Participation in the UNEP Global Mercury Partnership will be confirmed by UNEP. Partners' letters of support will be made public through the UNEP's website.

SUPPORT LETTER AND REGISTRATION FORM SHOULD BE SUBMITTED TO:

Head, Chemicals and Health Branch
Economy Division
United Nations Environment Programme

Palais des Nations
8-14 avenue de la Paix
CH-1211 Geneva 10, Switzerland
E-mail: metals@un.org



UNEP GLOBAL MERCURY PARTNERSHIP

PARTNERSHIP AREAS

Please check the partnership area(s) to which your organization intends to contribute to:

- Artisanal and small-scale gold mining
- Mercury releases from coal combustion
- Mercury cell chlor-alkali production
- Mercury waste management
- Mercury air transport and fate research
- Mercury supply and storage
- Mercury in products
- Mercury releases from the cement industry

> Please specify in your support letter how your organization intends to contribute to each of the selected partnership area(s).

ORGANIZATION APPLYING TO BECOME A PARTNER

Name of Organization:

Type of Organization:

Government	Industry
Intergovernmental Organization	Academia
Non-governmental Organization	Other, please specify

Mailing Address:

Postcode: City:

E-mail:

Telephone: Website:

ORGANIZATION'S REPRESENTATIVE TO THE UNEP GLOBAL MERCURY PARTNERSHIP

Mr. Ms.

First Name: Last Name:

Functional Title:

Section / Department:

E-mail:

* UNEP Global Mercury Partnership registration forms are to be accompanied by a letter to UNEP signifying support for the UNEP Global Mercury Partnership and commitment to achieving its goal. The support letter should specify how the organization intends to contribute to meeting the goal of the UNEP Global Mercury Partnership. Please submit the support letter and registration form to:

**Head, Chemicals and Health Branch, Economy Division
United Nations Environment Programme**

Palais des Nations
8-14 avenue de la Paix
CH-1211 Geneva 10, Switzerland
E-mail: metals@un.org



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SCIENZE DELLA TERRA

To: Head, Chemicals and Health Branch,
Economy Division United Nations Environment Programme
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Object: Application to Global Mercury Partnership

Dear Sirs,

This document is meant to propose the membership of the Department of Earth Sciences (University of Florence, Italy) to the UNEP Global Mercury Partnership. We would like to introduce our team, which includes professors, researchers, post-doc and PhD students who have been investigating different scientific aspects related to the geochemistry of mercury in the last 10 years.

The main topics of our research activity include:

- the study of the fate, transport, reaction processes and distribution pathways of mercury in different environmental matrices such as water, air, stream sediments and soils, and the interaction processes with the biosphere;
- the study of natural and anthropogenic sources: from volcanic and hydrothermal environments to industries, mines and museum collections;
- applicative case studies of remediation of mining sites and how the metal distributes in the different matrices,
- development of innovative statistical graphical-numerical tools to determine geochemical baseline/background in time and space to model and forecast Hg biogeochemical behavior.

Most of our studies was carried out in the Mt. Amiata mining district (Tuscany, Italy), an ideal study area for understanding the biogeochemical behavior of mercury. In this area, mercury was exploited since the Etruscan times. In the second half of XIX century, the production of

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mercury strongly increased, and in 1925 more than 50% of mercury worldwide was provided by the Mt. Amiata mining district, mostly (up to 70%) from the mine of Abbadia San Salvatore. Here, the cinnabar was roasted and liquid mercury produced. The mining activity lasted for more than one century (1847 to 1974), with an overall production of about 100,000 tons of liquid mercury. Since 2010, a large effort has been carried out by the local authorities to increase the knowledge about the mercury-related environmental issue, including the Hg-distribution in ground and surface waters, air, stream sediments, soils, fish, barks, building materials and mining structures. Extensive analyses of mercury were thus carried out in this area, which showed several criticalities in terms of Hg^0 and total and leachable mercury when air and natural and anthropogenic materials from the edifices and mining structures were analyzed. These data are going to be used during the operational activities dedicated to the remediation of the mining district of Abbadia San Salvatore with the ultimate goal to recover this area for historic museum and mining park purposes.

Particular interesting results were highlighted when the creeks draining the eastern side of Abbadia San Salvatore were investigated. These creeks indeed feed the Paglia River that then enters the Tiber River, the latter going through Umbria and Latium regions and crosscutting Rome. In the Paglia River, a correlation between total mercury (presumably as Hg^{2+}) and methyl-Hg was observed and some fishes were also found to contain relatively high methyl-Hg concentration. In the stream sediments of Paglia River a significant correlation between the concentration of Total Organic Carbon (TOC) and the methyl-Hg was found and relatively high contents of Hg and methyl-Hg were also recognized in surface waters and soils. Preliminary studies on Hg isotope composition in stream sediments along the Paglia River indicate that the mining-derived Hg showed a distinct isotope signature with respect to the natural one, thus allowing its tracing along the water course. Further investigations were also devoted to the Tiber River, which displays relatively high Hg concentrations in sediments almost up to the city of Rome.

To improve our understanding on the geochemical behavior and dispersion of gaseous mercury, several campaigns were also carried in quiescent and active volcanic areas, e.g. Solfatara crater (Campania, Italy), Mt. Etna volcano (Sicily, Italy) and Nisyros island (Greece). A new method to determine diffuse soil Hg fluxes was set up and applied at the Solfatara (Phleagrean Field, southern Italy) and Monterotondo (geothermal field of Larderello, central Italy). Our research team has also evidenced how tree barks can be used as reliable bioindicators for tracing Hg pollution and the effects of wildfires in forests.



Speciation of Hg in tree barks and trunks was additionally performed with the employment of synchrotron radiation.

More recently, Hg⁰ surveys were conducted in peculiar environments such as the herbaria of the Natural History Museum of Florence, where high concentrations of gaseous elemental mercury were detected and likely related due to sublimation processes of HgCl₂, which has been the most used preservative for herbaria specimens up to 1980s. Finally, a preliminary investigation was carried out at the end of last year in the Manica region (Mozambique) in collaboration with the colleagues of the Faculty of Medicine (Maputo) to analyze water and stream sediments along several creeks where artisanal and small scale gold mining activities are located without any environmental regulations.

We think that the researches carried out by our team fit with the main goal of the Global Mercury Partnership: “Protect human health and the global environment from the release of mercury and its compounds by minimizing and, where feasible, ultimately eliminating global, anthropogenic mercury releases to air, water and land”. Specifically, our team may play an advisory role to suggest and recommend the transfer of the scientific results and evaluations directions for stakeholders during the negotiation of the global mercury convention. We can also contribute to the decisions made in the last “Call for information and follow-up on the decisions adopted by the Conference of the Parties to the Minamata Convention at its third meeting (Geneva, Switzerland, 25 to 29 November 2019)”.

The research group of the Department of Earth Sciences is composed, in alphabetical order, by:

- Prof. Marco Benvenuti
- Prof. Antonella Buccianti
- Dr. Francesco Capecciacci
- Post-doc student Francesco Ciani
- Prof. Pilario Costagliola
- Post-Doc student Silvia Fornasaro
- PhD student Marta Lazzaroni
- Dr. Mario Paolieri
- PhD student Antonio Randazzo
- Dr. Valentina Rimondi



- Prof. Franco Tassi
- Prof. Orlando Vaselli
- Dr. Stefania Venturi

Sincerely yours.

The Head of the Department of Earth Sciences (University of Florence)

Prof. Carlo Alberto Garzonio

Selected references of the team from the Dept. of Earth Sciences (University of Florence)

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