

UNIDO & Mercury



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Foreword

Mercury remains a major global, regional and national challenge in terms of threats to human health and the environment. Over the last two decades, UNIDO has successfully reduced the negative impacts of using and discharging mercury in numerous industrial applications, including in the largest user and emitter of this hazardous metal, the artisanal and small scale gold mining sector.

UNIDO has also participated actively throughout the negotiations of the Minamata Convention on Mercury adopted in October 2013. The treaty is the first new global convention on environment and health in close to a decade, and despite the lingering effects of the global financial crisis, countries remained prepared to commit resources to combat the harmful effects of mercury.

The path toward fulfilling the obligations under the convention, and toward a more sustainable world, is long and replete with challenges. UNIDO is prepared to continue supporting countries by introducing clean technologies and policy reforms which contribute to reducing and eventually eliminating mercury contamination in all of its industrial uses.

This brochure outlines the major agreements related to the new treaty and the assistance that UNIDO can provide to countries to help them meet their legal obligation under the Minamata Convention, as well as introduces projects which have been developed by UNIDO.



Heinz Leuenberger
Director, Environmental Management Branch
UNIDO

Introduction

What is Mercury?

Mercury is a silvery white and naturally occurring heavy metal usually found in the form of cinnabar, a mercuric sulfide ore. It is the only metal liquid at normal conditions of temperature and pressure. It evaporates easily into the air and is recognized as a chemical of global concern due to its long-range transport in the atmosphere.



Health impacts

The notorious heavy metal is known to be a potent poison of the human nervous system since Greek and Roman times. The exposure to mercury through inhalation or ingestion may pose a range of serious health impacts including brain and neurological damages, memory loss, skin rashes, emotional changes, tremors, kidney, heart, vision and respiratory problems, deformation of fetus and even death.

Environmental impacts

Mercury circulates between soils, water, air, sediments, and biota in various forms and once released, it remains in the environment. A very important ecological impact is the ability for the organic forms of mercury to be absorbed by organisms and magnify in concentration along food chains, which can become extremely toxic to wildlife.

Mercury Emissions and Releases

Due to its unique chemical properties, mercury is used in numerous industrial applications and products, including in the production of chlorine and PVC and in fluorescent lamps, batteries, pesticides, cosmetics, thermometers, and dental amalgams. Additionally, mercury is present as an impurity in many ores including, inter alia, coal, gold, copper, zinc and lead. Their extraction and further processing (burning or smelting) emits large quantities of mercury to the atmosphere.

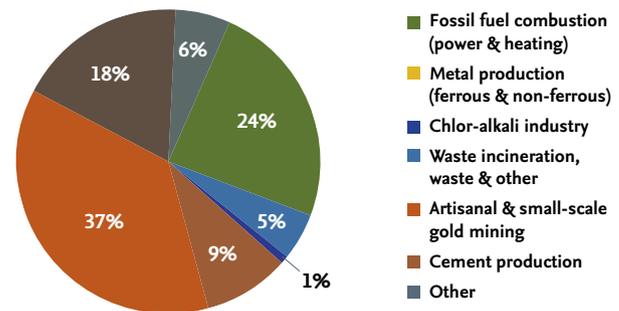
Artisanal and small-scale gold mining (ASGM) is responsible for approximately 37% of the global anthropogenic mercury emissions and is the largest source of air and water mercury pollution. UNIDO estimates that nearly 100% of the metal used in the sector is released into the environment.

Low prices, easy use, high accessibility, and the lack of knowledge about mercury and its risks are the main reasons artisanal and small-scale miners continue to use mercury to separate gold from other materials.

1960 TONNES of mercury were emitted in 2010 in to the atmosphere as a result of direct anthropogenic activities.

UNEP, Global Mercury Assessment 2013

Global anthropogenic mercury emissions in 2010



Source: Adapted from UNEP, Global Mercury Assessment 2013: Sources, Emissions, Releases and Environmental Transport, 2013.



Photo: Associated Press

The Minamata Convention is named after the city where approximately ten thousand people were poisoned by eating fish and shellfish taken from waters polluted by discharges of a local factory in the 1950s.

THE CONVENTION

Minamata Convention on Mercury

After four years of intense negotiations, a global legally binding treaty – the Minamata Convention on Mercury – was adopted by governments and opened for signature in October 2013.

The treaty aims to regulate anthropogenic emissions and releases of mercury and its compounds in order to protect human health and the environment.

Major highlights of the Convention

- Ban on new mercury mines and phase-out of existing ones;
- Ban of production, export, and import of a range of mercury containing products by 2020;
- Phase-out or reduction of manufacturing processes using mercury or mercury compounds;
- Control measures on air emissions and releases to land or water;
- Sound management of mercury wastes and contaminated sites;
- National Action Plans for the artisanal and small-scale gold mining (ASGM) sector.

Special concerns related to ASGM sector

The Convention requires countries with more than insignificant use of mercury in ASGM operations to develop a National Action Plan to reduce the use of mercury or mercury compounds within three years of the treaty entering into force.

Cooperation expected from nations in the ASGM sector:

- Develop strategies to prevent the diversion of mercury or mercury compounds for use in ASGM and processing;
- Promote education, outreach and capacity building initiatives;
- Promote research on sustainable non-mercury alternative practices;
- Provide technical and financial assistance;
- Create partnerships to assist in the implementation of their commitments;
- Exchange information to promote knowledge, best environmental practices and alternative technologies that are environmentally, technically, socially and economically viable.



UNIDO Programme

UNIDO's Mercury Programme

As an implementing agency, UNIDO works to reduce global poverty and achieve the Millennium Development Goals through development of sustainable and inclusive industrial growth. To achieve this goal, UNIDO promotes Green Industry by undertaking green public investments and implementing public policy initiatives that encourage environmentally responsible private investments.

Promoting sound chemicals management is a key component of the Green Industry Initiative, to support sustainable consumption and resource efficiency, and minimize pollution and environmental degradation.

UNIDO's targets

Based on UNIDO's previous and existing experience in promoting environmentally sound management of mercury in the ASGM sector, the Organization plays an important role as co-lead of the sector under the Global Mercury Partnership – the main mechanism and technical advisory group to the Minamata Convention for the delivery of immediate actions on mercury, created by the United Nations Environment Programme (UNEP) in 2008.

UNIDO is also an active member of the partnership areas relating to mercury waste, mercury in products, chlor-alkali and mercury storage. Recently, UNIDO has expanded its technical assistance to include other mercury industrial sectors, such as mercury waste management, zinc smelting and chlor-alkali production.

UNIDO's Mercury Programme is leading and facilitating the introduction of clean technologies and policy reform to minimize the use and discharges of mercury. It promotes Best Available Technologies (BAT) and Best Environmental Practices (BEP) through awareness raising, capacity building, and technology transfer.

The Programme started in 1994 with some individual projects in the Philippines, Ghana and Tanzania, however it grew in importance with the development of the Global Mercury Project.

An aerial photograph of a river meandering through a dense, vibrant green forest. The river is dark blue and flows from the top center towards the bottom center. The surrounding land is covered in thick, healthy-looking trees. In the upper right, there's a patch of lighter green, possibly a clearing or a different type of vegetation. A semi-transparent white rectangular box is overlaid on the middle of the image, containing the title text.

Artisanal & Small-Scale Gold Mining (ASGM)

Global Mercury Project

Removal of Barriers to Introduction of Cleaner Artisanal Gold Mining and Extraction Technologies

Countries: Brazil, Lao PDR, Indonesia, Sudan, Tanzania and Zimbabwe

Duration:

Five years (August 2002–August 2007)

Budget/donor:

GEF: US\$ 6.8 million

Co-financing: US\$ 13 million

Co-financers:

UNIDO, UNDP, and national governments (Brazil, Indonesia, Laos, Sudan, Tanzania and Zimbabwe)

Main objective and key expected outputs

Six pilot countries located in key transboundary river/lake basins were assisted to overcome barriers to the adoption of best practices and pollution prevention measures to limit the mercury contamination of international waters from ASGM.

The aim of the project was to introduce cleaner technologies, train miners, develop regulatory mechanisms and capacities within government, conduct environmental and health assessments, and build capacity in local laboratories to continue monitoring mercury pollution after the project.

Results

- More than 100 local experts and miners trained in new technologies, both on usage and how to build them using locally available materials;
- More than 30,000 miners trained, more than 25,000 community members sensitized on problems posed by the sector and their solutions;
- 15,000 brochures distributed, 75 media reports, nine publications in international journals, three chapters in books, two books, 37 papers in conference proceedings; and,
- Six international water basins benefited from significant reduced pollution at project sites on the Amazon River, the Java Sea, the Mekong River, the Nile River, Lake Victoria and on the Zambezi River.



The FAIRMINED® Gold Certification Label ensures that gold has been extracted and processed in a fair and responsible manner, free of child labor.



Burkina Faso, Mali & Senegal



Francophone West Africa: Improve the Health and Environment of ASGM Communities by Reducing Mercury Emissions and Promoting Sound Chemical Management

Duration:

Three years (May 2012–May 2015)

Budget/donor:

FFEM: US\$ 1,155,000

GEF: US\$ 990,000

SAICM: US\$ 220,000 (for Mali only)

Co-financing: US\$ 1,088,000

Co-financers:

The U.S. Department of State, European Commission,
the Governments of Burkina Faso, Mali and Senegal, and
UNEP and UNIDO

Main objective and key expected outputs

The main objective of the project is to strengthen local and national capacity to effectively manage and reduce mercury use, emissions, and exposure in ASGM communities.

In addition to finalizing national strategic plans in each country, comprehensive health education and technology training programs will be developed and delivered.

Lastly, the project will provide assistance for mining communities to obtain FAIRMINED® Gold certification in order to address social, environmental, and economic development issues.



Ecuador & Peru



Implementing Integrated Measures for Minimizing Mercury Releases from Artisanal Gold Mining

Duration:

Three years (October 2012–September 2015)

Budget/donor:

GEF: US\$ 999,900

Co-financing: US\$ 2,676,764

Co-financers:

UNIDO, National Geologic, Mining & Metallurgy Research Institute, INIGEMM (Ecuador), the Peruvian Ministry of Environment and U.S. Department of State

Main objective and key expected outputs

The project aims to reduce the use and emissions of mercury in ASGM by promoting low-mercury and mercury free technologies at local pilot sites. It will also promote innovative financial tools, support the formalization of ASGM miners and provide relevant information on the health risks posed by mercury.

A monitoring programme will be conducted in the Puyango-Tumbes river basin which will contribute to the understanding of the environmental impacts posed by ASGM activities in southern Ecuador and northern Peru.

Philippines



Improve the Health and Environment of Artisanal Gold Mining Communities in the Philippines by Reducing Mercury Emissions

Duration:

Two years (August 2013–August 2015)

Budget/donor:

GEF: US\$ 550,000

Co-financing: US\$ 1,081,070

Co-financers:

The Department of Environment and Natural Resources (DENR), the U.S. Department of State, Ban Toxics, Dialogos, and UNIDO

Main objective and key expected outputs

The project aims to promote sound chemical management of mercury by strengthening national capacity and reducing mercury use, emissions and exposure at pilot demonstration sites.

In addition to the transfer of techniques and technology, training programmes on the health risks of mercury will also be developed and delivered for miners.

The project will seek to reduce at least 50% of mercury use, emissions and exposure at local pilot sites by introducing low-mercury or mercury free technologies.

Colombia



Introduction of Cleaner Artisanal Gold Mining and Extraction Technologies

Duration:
Two years (January 2011–December 2012)

Budget/donor:
Co-financing: US\$ 722,010

Financers:
Local governments (Codechoco and Corantioquia states) and local partners

Main objective and key expected outputs

The project promoted sound management of mercury to reduce the risks associated with mercury use in ASGM, while improving the environmental and economic performance of the sector.

This objective was achieved by strengthening artisanal miners capacity through trainings based on safer and cleaner practices of gold mining.

At least 10-15 million miners are involved worldwide, mainly in Africa, Asia and South America. An estimated three million of them are women and children (UNEP, 2012).



Côte d'Ivoire



Reducing Mercury Risks from Artisanal and Small Scale Gold Mining in Côte d'Ivoire

Duration:
Two years (August 2012–August 2014)

Budget/donor:
Co-financing: US\$ 191,300

Co-financers: Strategic Approach to International Chemicals Management (SAICM) Quick Start Programme Trust Fund

Main objective and key expected outputs

The project aims to reduce the risks associated with mercury use in ASGM while improving the environmental and economic performance of the sector. This objective will be achieved by building capacity within the country to promote sound management of mercury in ASGM, to carry out inventories of gold mining sites and to design and implement a National Action Plan on ASGM.

The obligations surrounding ASGM under the Minamata Convention on Mercury play a key role in guiding this process.

Low-mercury and mercury free methods are available for the ASGM sector, but socio-economic conditions are often barriers to the adoption of better practices.



Mercury Waste Management

Argentina



Preparatory Project to Facilitate the Implementation of the Legally Binding Instrument on Mercury (Minamata Convention) in Argentina to Protect Health and the Environment

Duration:
Two years (November 2013–November 2015)

Budget/donor:
GEF: US\$ 350,000
Co-financing: US\$ 530,000

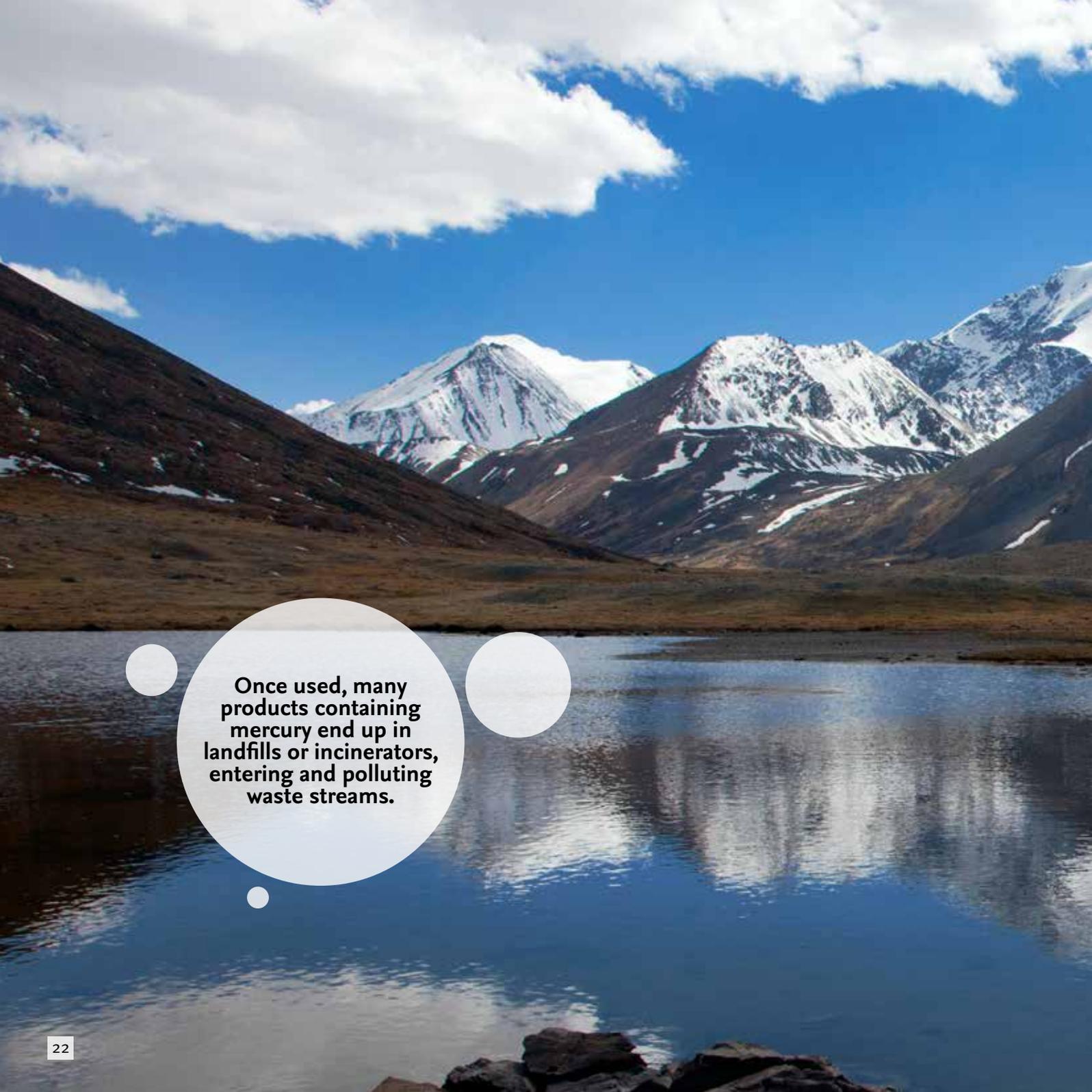
Co-financers:
UNIDO, Asociación Argentina de Médicos por el Medio Ambiente (AAMMA), and the Basel Convention Regional Centre for South America

Main objective and key expected outputs

The aim of the project is to set the groundwork to facilitate the fulfillment of the obligations under the Minamata Convention.

The project will facilitate discussion among key stakeholders and conduct in-depth analyses of the existing legal framework and of locally available Best Available Technology and Best Environmental Practices for the management of mercury and waste containing mercury.

On this basis, a proposal for potential changes to the legal/policy framework of the country and for a small-scale pilot demonstration project for temporary and final disposal of mercury and waste containing mercury, will be prepared.



Once used, many products containing mercury end up in landfills or incinerators, entering and polluting waste streams.

Mongolia



Reduce Exposure of Mercury to Human Health and the Environment by Promoting Sound Chemical Management in Mongolia

Duration:

Two years (November 2013–October 2015)

Budget/donor:

GEF: US\$ 600,000

Co-financing: US\$ 1,569,000

Co-financers:

The Mongolian Ministry of Nature and Green Development, the Mongolian Ministry of Health, the private sector (Mireco) and UNIDO

Main objective and key expected outputs

The objective of the project is to develop national guidelines for environmentally sound management of waste containing mercury, demonstrate sound mercury remediation and stabilization techniques at the pilot scale in mercury hot-spot areas contaminated from previous mining activities.

Practical guidelines for the environmentally sound collection, transportation, treatment, and disposal of waste containing mercury will be established and implemented at local and national levels.



Non-Ferrous Metal Smelting

China



Reduction of Mercury Emissions and Promotion of Sound Chemical Management in Zinc Smelting Operations

Duration:
Two years (September 2012–September 2014)

Budget/donor:
GEF TF: US\$ 990,000
Co-financing: US\$ 4 million

Co-financers:
The Foreign Economic Cooperation Office (FECO) of Ministry of Environment; Zhuzhou, Shuikoushan and Shangluo zinc enterprises; Hunan, Shaanxi, and Guizhou provinces; Sino-Norwegian projects; and UNIDO

Main objective and key expected outputs

The project aims to strengthen national and local capacity to effectively manage and reduce mercury emissions from zinc smelting operations in neighboring communities. Best Available Technologies and Best Environmental Practices for cleaner zinc production will be demonstrated at two pilot sites.

The project will also establish coordination and monitoring system, and propose policy reform for mercury management in the zinc smelting sector.

50% of the global anthropogenic mercury emissions to the atmosphere comes from Asia. China accounts for one third of the global total. (UNEP, 2013)



Minamata & Beyond

Since 2008, and the end of the Global Mercury Project, the UNIDO Mercury Programme has raised US\$ 17.9 million, including US\$ 6.4 million of project funds directly managed by UNIDO. The programme currently operates in 11 countries. The Global Environment Facility has been the major source of funds with 25% of the total, but bilateral support has also been provided by the Governments of Finland and France.

Based on its experience and comparative advantage, UNIDO will have an important and increasing role in the coming years supporting governments in fulfilling their legal obligations under the Minamata Convention on Mercury.

Focus will be placed on setting national objectives and targets, complementing existing programmes, exploring innovative market-based approaches, promoting policy reform, enhancing awareness, and promoting intervention on the ground to secure global mercury emission reductions through technology transfer.

Most of the identified issues relating to mercury are industrial by nature. UNIDO therefore, together with our financing partners, stands ready to continue and expand our assistance to the signatories of the Minamata Convention to ensure its rapid ratification and to continue demonstrating concrete results at local and global levels.

Contact

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