Japan's Contribution to
the Minamata Convention

To Prevent Global Mercury Pollution

環境省
Ministry of the Environment

Mercury Circulates Globally, and Causes Environmental Pollution

Mercury is the only metallic element in a liquid form at room temperature (20°C).

It is highly volatile, and once released into the environment, it does not decompose and circulate globally. It can be absorbed by marine organisms.

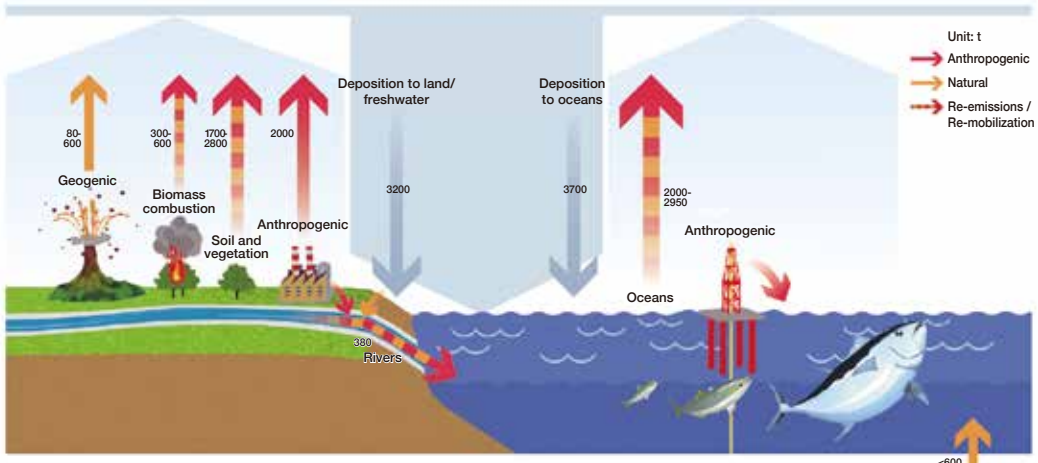
The toxicity of mercury varies depending on the chemical form, but methylmercury, in particular, is known to be highly toxic to the central nervous system of humans, and developing fetuses are most susceptible to it.

Mercury is released into the environment through natural processes such as volcanic activity. Meanwhile, mercury can also be released by artisanal and small-scale gold mining (ASGM)* or use of mercury-containing materials and fuels.

Reducing such releases is extremely important to reduce the total amount of mercury circulating globally.

* Artisanal and Small-scale Gold Mining is a method to extract gold by adding mercury to gold ores to dissolve gold into mercury amalgam and then heating up the amalgam to evaporate the mercury. Mercury used in the process is released into the environment.

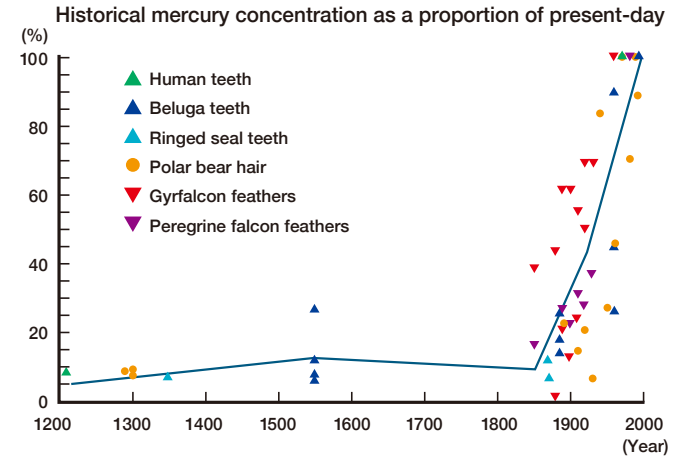
Global mercury cycling



Source: Ministry of the Environment of Japan (MOE) based on UNEP Global Mercury Assessment 2013.

* It is estimated that anthropogenic emissions, natural emissions and re-emissions/re-mobilization account for approximately 30%, 10% and 60% of the total environmental mercury emissions, respectively.

Assimilated mercury trend in animal species over time



Source: Global Mercury Assessment 2013 (UNEP, 2013)

* Recent studies on marine organisms, particularly in the Arctic, revealed that mercury concentrations in these organisms substantially increased compared to the pre-industrial period (i.e., before 1800).

Importance of Mercury Management in International Society and Japan's Initiatives

Minamata disease, officially acknowledged in 1956, is an environmental pollution and health damage caused by industrial wastewater contaminated with methylmercury. Experiencing significant damage from mercury, Japan strengthened its environmental conservation policies and has been working on mercury management through combined efforts of the national and local governments, industry, and the citizens.

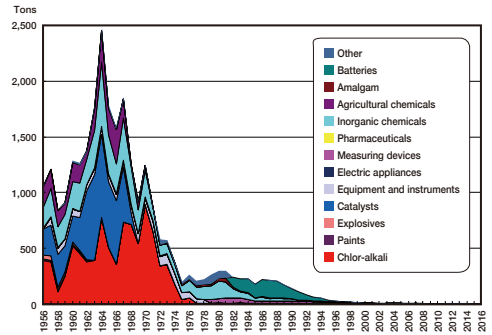
Examples of Japan's mercury management initiatives

- Setting environmental standards or guideline values for mercury in air, water or soil, and controlling mercury emissions
- Phasing out mercury use in batteries, reducing mercury content in fluorescent lamps and promoting LED lighting
- Shut down of mercury mines in Japan (by 1974)
- Conversion from mercury-based to mercury-free manufacturing processes

As a result, the domestic mercury demand which used to reach to approx. 2,500 tons has been reduced to as low as approx. 5 tons. Emissions to the atmosphere have also been reduced to 17 tons (excluding natural emissions), approx. 1/100 of the total of global mercury emissions.

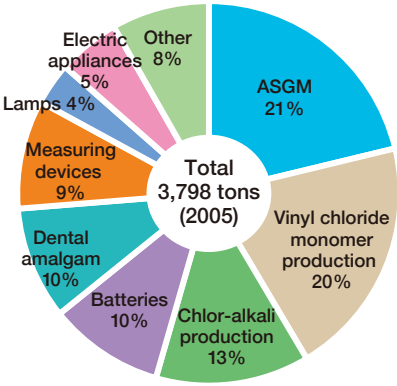
Meanwhile, mercury is still used for many purposes throughout the world, especially in developing countries, and is emitted from various sources including ASGM, and use in mercury-containing materials and fuels.

Trends of mercury demands in Japan



Note: Fluorescent lamps are categorized into equipment and instruments for 1956-1978 and electric appliances from 1979.
Source: Prepared by the MOE based on the Yearbook of Mining, Non-ferrous Metals, and Products Statistics, Iron and Steel, Non-ferrous Metal and Fabricated Metals Statistics, Non-ferrous Metal Supply and Demand Statistics.

Global mercury demands (2005)



Source: Technical Background Report to the Global Atmospheric Mercury Assessment (2008, UNEP)

Japan's Contribution towards the Adoption of the Minamata Convention

The Global Mercury Assessment released by UNEP in 2002 extended the recognition of the importance of the global mercury management, and intergovernmental negotiations on the issue started in 2009. In the negotiation process, Japan contributed to the progress by hosting relevant international conferences and by presenting the experience of and lessons learned from its mercury management activities.

After years of discussions, the Minamata Convention on Mercury was adopted at a diplomatic conference held in Kumamoto and Minamata in October 2013.

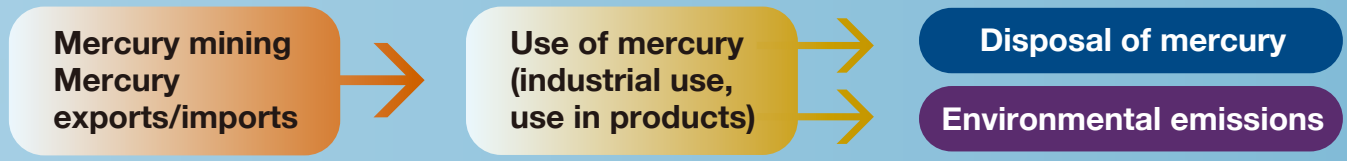
The convention is named after the Japanese city, Minamata, similar to the Kyoto Protocol for climate change or Nagoya Protocol for biodiversity conservation.

The name expresses the determination not to repeat the tragic event like Minamata disease, ever again.

2002	**UNEP published Global Mercury Assessment**
2009	**International negotiations on global mercury management started**
2010-2013	**1st to 5th Sessions of Intergovernmental Negotiating Committee (INC)**
2013	**October: Diplomatic conference for adopting and signing Minamata Convention**
2014-2016	**6th and 7th Sessions of INC**
2017	**Minamata Convention on Mercury entered into effect**

International Rules Set by Minamata Convention and Japan's Initiatives

The Minamata Convention on Mercury calls for mercury management activities at various stages from production, through trade, use, environmental emissions, to disposal.



Mercury mining

Mercury mining is prohibited. (No mercury mining is conducted in Japan.)

Mercury exports/imports

Approval is required at the time of exporting/importing. (In Japan, additional processes to confirm the purpose in compliance with the Convention or at the time of exporting/importing are implemented.)

Use of mercury (in manufacturing processes)

Use of mercury in manufacturing processes as a catalyst or electrode is prohibited. (No longer used in Japan.)

Use of mercury (in products)

Manufacturing and export/import of specified products whose mercury content exceeds standard values are prohibited. (In consideration with the advanced mercury alternative or reduction technologies in Japan, lower mercury content levels and/or earlier termination of manufacturing (phase-out dates) than those provided by the Convention are applied for some products.)

Disposal of mercury

Mercury waste is to be managed in an environmentally sound manner. (Provisions to comply with the standards for proper management of mercury wastes based on the mercury content etc. have been implemented in Japan.)

Environmental emissions

For emissions/releases into the air, water and soil, the measures shall be implemented based on the best available technology (BAT)/best environmental practice (BEP)*.
(Emission reduction measures in compliance with the emission standards etc. are implemented in Japan.)

* Best Available Technology/Best Environmental Practice: Practically available technologies, control measures, etc. that provide maximum emission reduction to the environment.

Examples of Japan's measures that exceed the provisions set by the Convention

Product	Mercury content standard, etc.	Earlier phase-out (end of 2020 in the Convention for all)
Silver oxide batteries (Button batteries only)	Convention standard: <2%　Japanese standard: <1%	Brought forward to 2017
Zinc–air batteries (Button batteries only)	Same as Convention standard (<2%)	Brought forward to 2017
Dry batteries	Same as Convention standard (Prohibited)	Brought forward to 2017
Fluorescent lamps (CFLs, LFLs) for general lighting	Same as Convention standard	Brought forward to 2017
Cosmetics	Convention standard: ≤1 ppm　Japanese standard: Prohibited	Brought forward to 2017

* Regulations on manufacturing and import of mercury-using products under the Minamata Convention will not prohibit the use of products already in use at home.

Sharing Japanese Technologies and Experiences to Support Mercury Management around the World

MOYAI Initiative to promote international cooperation

In promoting international mercury management, financial and technological supports are essential for early ratification and implementation of the Convention by as many developing countries as possible. At the diplomatic conference where the Minamata Convention on Mercury was adopted, Japan expressed its intention to support developing countries and promote voices and messages from Minamata, through the actions titled "MOYAI Initiative"*. As part of this initiative, the MINAS* is being promoted.

* MOYAI Initiative for Networking, Assessment and Strengthening

* MOYAI literary means a bowline ropes connecting boats together, or cooperative works especially in rural areas. In Minamata, “Moyai-naoshi” initiatives for revitalizing the area through talks and joint efforts have been promoted.

MOYAI Initiative

Voices and messages from Minamata

MINAS: - Supporting Developing Countries -

Networking
Building networks of activities (e.g., monitoring) and information between Japan and partner countries

Assessment
Accelerating mercury management efforts by supporting their situation assessment, taking advantage of Japan's experience

Strengthening
Strengthening developing countries' mercury management by internationally sharing Japan's advanced mercury management technology and know-how

Support developing countries for the implementation of the Convention

Proving opportunities for sharing Japan’s knowledge

To support developing countries for implementing mercury management under the Minamata Convention, training programs on Japan's experiences on mercury management and mercury monitoring for government officials and engineers in developing countries, or workshops for introducing Japanese technology that contributes to mercury management have been held.

Japan's Advanced Technology on Mercury Management

Recycling mercury contained in waste

In Japan, waste from mercury-containing products collected through voluntary collection by companies or sorted waste collection by municipalities, or waste (sludge) generated during refining process of non-ferrous metals are treated in an environment-friendly manner. Most of the mercury recovered from such waste is recycled and reused for necessary purposes.

Reducing use of mercury in manufacturing processes

Manufacturing processes that use mercury include chlor-alkali (caustic soda) manufacturing, vinyl chloride monomer or acetaldehyde manufacturing but all of such processes have been converted to non-mercury methods in Japan. Caustic soda can be produced by mercury process, diaphragm process or ion-exchange membrane process. During the postwar economic growth period, the caustic soda was produced primarily by the mercury process.
From the 1960s until the mid 1970s, mercury used in caustic soda manufacturing accounted for more than half of the mercury usage in Japan. By 1986, the mercury process was completely withdrawn. At the same time, the Japanese soda industry invested in technology development. As a result, ion-exchange membrane process has become a principal technology of Japan, and it replaced all caustic soda manufacturing processes in Japan by 1999. As it has many advantages including high product quality and low energy consumption, this technology has been exported to the global market.

National Institute for Minamata Disease (NIMD)

NIMD is the only organization in the world that is specialized in comprehensive mercury research, and it has accumulated a significant amount of mercury-related information as well as numbers of analytical technologies and research outcomes. As the World Health Organization (WHO) Collaboration Center for studies on mercury, the NIMD conducts disseminates of information on Minamata disease as a lesson for the world to learn from. NIMD is also engaged in survey and researches to assess the exposure to mercury and to prevent its impact in countries suffering the environmental pollution from mercury. Furthermore, NIMD promotes a research on simplified and efficient mercury analysis technologies to strengthen mercury management in developing countries.

Ministry of the Environment Website, about the Minamata Convention

https://www.env.go.jp/chemi/tmms/index.html [in Japanese]

United Nations Environment Programme Website, Minamata Convention

https://www.mercuryconvention.org/

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