



# (COP 39) MERCURY

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## A *Definitions and applicability*

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**Mercury** is a natural element that in its pure form is a shiny silver-white metal that is liquid at room temperature. Mercury and mercury-containing compounds are highly toxic and have a variety of significant adverse effects on human health, wildlife and the environment. Mercury can be mobilised in the environment from natural sources and as a result of human activities such as industrial combustion and artisanal mining.

Source:

- United Nations Environment Programme (UNEP) – *The Mercury Issue* (2008)  
[www.chem.unep.ch/mercury/awareness\\_raising\\_package/B\\_01-20\\_BD.pdf](http://www.chem.unep.ch/mercury/awareness_raising_package/B_01-20_BD.pdf)

The COP provision on **Mercury** is applicable to Members in the Mining Sector where mercury is used in processing or contained in saleable products, by-products or wastes. Other Members will address mercury issues under **Hazardous Substances**. See also Guidance for **Sourcing from Artisanal and Small-Scale Mining**.

## B *Issue background*

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Over the past 50 years, mercury's toxicity has been well documented and many countries have taken steps to reduce its uses and releases, and to protect their citizens from exposure to mercury. Mercury has been used in many products which can eventually become sources of release. Once released, mercury can persist in the environment where it circulates between air, water, sediments, soil and biota in various forms. Atmospheric mercury can be transported long distances in the atmosphere, incorporated by microorganisms and can bio-accumulate as it progresses up the food chain. In the human body, mercury may cause damage to the central nervous system, thyroid, kidneys, lungs, immune system, eyes, gums and skin. Neurological damage to the brain caused by mercury cannot be reversed.

Mercury is not used for processing in large-scale mining, but at some gold mines mercury is produced as a byproduct where it occurs naturally in the ore body, usually in the form of a stable compound of mercury sulphide. In the artisanal and small-scale mining (ASM) sector, pure mercury is commonly used for gold recovery, sometimes illegally. Given the socio-economic constraints of poverty and a lack of access to information about alternatives, from the viewpoint of the artisanal miners the mercury amalgamation process is seen by them as the best technology available. In most cases for ASM, amalgamation produces a higher gold recovery than without mercury-free techniques (eg gravimetric) or is the only gold recovery technology available to them.

The booming price of gold in recent years has triggered a significant growth in small-scale mining and consequently in mercury use in this sector. UNEP's 2013 Global Mercury Assessment estimates that artisanal and small-scale gold mining is now the largest sector demand for mercury, and the largest source of mercury emissions and releases in the world. Workers and their families involved in small-scale gold mining are exposed to mercury pollution in several ways, including through inhalation during the smelting. Mercury can also be released into river systems from these small-scale operations where it can contaminate fish, the food chain and people downstream.

The Minamata Convention on Mercury is a global legally binding instrument that has been in negotiation for a number of years, reaching fruition in 2013. The Alliance for Responsible Mining (ARM) believes the National Action Plans (Appendix E of the Convention) offer a great opportunity for formalization of Artisanal and Small-scale Gold Mining (ASGM), and commits to implementing the instrument in collaboration with miners, governments, civil society and the mining industry to ensure that the national mercury reduction programs will have the intended positive impact on the hundreds of mining communities that depend on this activity. ARM stresses that the implementation of Appendix E requires governments to invest in formalization processes through appropriate mechanisms and direct support to the miners that will guarantee their access to training, credit and cleaner technologies. These actions are urgent due to the planned rapid and drastic reduction in the mercury supply. Without leaving alternatives, the instrument could criminalize miners forcing them to buy mercury in illegal markets leaving them in the hands of criminal networks that control part of the mercury and gold trade.

## C *Key regulations*

### INTERNATIONAL

In January 2013, draft text of the Minamata Convention on Mercury was agreed by governments, with ratification open from October 2013, and implementation to commence within three to five years. After formal approval of the text of the Minamata Convention in October 2013, it needs to be ratified by 50 countries to enter into force. The Convention addresses allowable uses of mercury as a means of reducing releases to the environment. Aspects of the Minamata Convention for the mining and metals sector generally include:

- controls on the supply of and trade in mercury, notably mercury recovered as a by-product in non-ferrous metals production;
- the measures to be taken to reduce emissions from power plants and non-ferrous metals facilities producing copper, gold, lead and zinc;
- the measures to be taken to reduce emissions from artisanal and small-scale gold mining;
- the environmentally sound management of wastes containing mercury.

The Convention will require Party countries to draw up strategies and national action plans with reduction targets and strategies for promoting the reduction of emissions and releases of, and exposure to, mercury in artisanal and small-scale mining. Actions are also required to eliminate:

- whole ore amalgamation;
- open burning of amalgam or processed amalgam;
- burning of amalgam in residential areas; and
- cyanide leaching in sediment, ore or tailings to which mercury has been added without first removing the mercury.

The Minamata Convention also calls on countries that are Parties to the Convention to develop action plans that include:

- efforts to facilitate the formalization or regulation of artisanal and small-scale gold mining;
- conducting baseline assessments to estimate the quantities and uses of mercury in ASM gold mining;
- support for mercury-free alternatives and strategies for the reduction of emissions and exposure to mercury; and
- development of public health strategies and a public awareness campaigns for affected communities, including strategies for involving stakeholders in the development of these national action plans.

#### *Standards for artisanal gold mining*

The Alliance for Responsible Mining (ARM) actively promotes mercury-free artisanal mining as the best available technology under its Fairmined Standard. At the same time, ARM acknowledges that mercury plays an important role in the current ASM processing methods and the reduction and elimination of its use must be accompanied by capacity building and technical support for the miners. This approach is implemented on the ground via ARM's producer support initiatives for certification against the Fairmined Standard.

ARM's support for responsible artisanal mining requires artisanal miners to use a concentration process (gravimetry, flotation, hand-sorting, etc.) prior to amalgamation, and makes the use of retorts or other mercury recovery devices during amalgam decomposition obligatory. Both requirements ensure that mercury emissions are drastically reduced and both can be implemented without jeopardizing the human right of artisanal miners and their families to satisfy their basic needs.

Under the auspices of the UNEP Governing Council, the UNEP Global Mercury Partnership was established to further long-term international action to address mercury release. The overall goal of the 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.

## C Key regulations (cont)

### NATIONAL LAW

Many jurisdictions already have a legal and regulatory framework for mercury controls and management. The Minamata Convention is expected to come into force over the next three to five years and Parties to the convention may add new legislation and/or regulatory frameworks as a result. It is essential that Members are familiar with applicable law in all areas of operation.

Where Members produce mercury as a by-product of gold mining or refining, this should be managed in compliance with applicable law and regulations. For example, the State of Nevada in the United States in 2006 issued regulations requiring best available control technologies to control mercury air emissions from industrial gold mines in that state. The program applies to mining facilities that process mercury-containing ore and use thermal treatment processes that have the potential to liberate mercury into the atmosphere. The United States Environmental Protection Agency (EPA) also issued a final rule concerning mercury for National Emission Standards for Hazardous Air Pollutants for gold ore processing and production facilities, relating to mercury as a bioaccumulative pollutant under the US Clean Air Act.

## D Suggested implementation approach

*The Suggested implementation approach provides general guidance for implementing the mandatory requirements of the Code of Practices. The guidance is not normative and should be seen as a starting point for information and support.*

### COP 39.I: MERCURY IN PRODUCTS, BY-PRODUCTS AND EMISSIONS

**Members in the Mining Sector where mercury is contained in saleable products, by-products or emissions shall adopt responsible management practices that are at minimum in accordance with Applicable Law to control and, where feasible, reduce mercury emissions using best available techniques or best environmental practices that take into account technical and economic considerations.**

#### Points to consider:

- Identify and quantify all sources and emissions of mercury and mercury compounds from operations, and put in place appropriate controls using cost effective best available technology determined through a risk-based approach.
- A risk based approach can be used to assess and prioritise management options. These could include:
  - **Reduce or eliminate** sources and emission of mercury.
  - **Substitute** mercury and mercury compounds with less hazardous alternative, where available.
  - **Mitigate** any impacts associated with handling and discharges of mercury and its compounds with pollution abatement technologies. Waste streams such as air emissions, tailings and wastewater discharges should adopt appropriate pollution abatement technologies to minimise mercury emissions to the environment. Examples include mercury vapour recovery systems that can significantly reduce exposure to atmospheric mercury levels.
- Stay aware of relevant legislation and regulation controlling mercury. These will evolve over coming years with national government implementation of the Minamata Convention, so it will be important to stay up to date with applicable changes and monitor legal compliance.

## D Suggested implementation approach (cont)

### COP 39.2: MERCURY IN ASM AND ASSOCIATED PROCESSING:

**Members in the Mining Sector using mercury in artisanal and small-scale mining and processing activities shall take steps to control, reduce, and where feasible eliminate, the use of mercury and mercury compounds in, and the emissions and releases to the environment of mercury from, such mining and processing. Members shall eliminate whole ore amalgamation, open burning of amalgam or processed amalgam, and burning of amalgam in residential areas; and cyanide leaching in sediment, ore or tailings to which mercury has been added without first removing the mercury.**

#### Points to consider:

- The informal sector of artisanal and small-scale gold mining (ASM) is a relatively large global consumer of elemental mercury and may be the source of significant mercury released to the environment every year. This provision is applicable to RJC Members that themselves use mercury in their mining and processing activities.
- While mercury alternatives are preferred, they may not always be available for use in certain contexts, or technically or economically viable for ASM. Notwithstanding, the RJC COP supports the Minamata Convention in requiring the elimination of the following activities:
  - whole ore amalgamation;
  - open burning of amalgam or processed amalgam;
  - burning of amalgam in residential areas; and
  - cyanide leaching in sediment, ore or tailings to which mercury has been added without first removing the mercury.
- Where mercury is being used in ASM activities, controls should be in place to prevent exposure to anyone under the age of 18 years and pregnant women.
- Within the socio-economic and political complexities of ASM enterprises, there are opportunities for RJC Members to provide support for the transfer of technology that improves productivity and reduces reliance on mercury, particularly in the context of sourcing relationships (see guidance on [Sourcing from Artisanal and Small-Scale Mining](#)).
- Where mercury continues to be used in processing at operations under the ownership or control of RJC Members, controls that minimise mercury emissions should be put in place. See the *UNEP Practical Guide: Reducing Mercury Use in Artisanal and Small-Scale Gold Mining* (2012) – available in English and French – for further guidance.

#### CHECK

- Do your operations produce mercury products, by-products or emissions?
- If so, do you have management practices in place to control, and where feasible, reduce mercury emissions?
- Are you aware of and in compliance with Applicable Law concerning the use and control of mercury?
- If you are an ASM producer and use mercury amalgamation, have you sought alternatives, and have you taken steps to eliminate the activities specified in COP 39.2?

## E Further information

The following websites have further information related to mercury:

- Alliance for Responsible Mining (ARM) – Position Paper on Mercury (2010)  
[communitymining.org/attachments/086\\_ARM%20Mercury%20Position%20English%20Sep2010.pdf](http://communitymining.org/attachments/086_ARM%20Mercury%20Position%20English%20Sep2010.pdf)
- Global Mercury Project – Global Impacts of Mercury Supply and Demand in Small-Scale Mining (2007)  
[www.globalmercuryproject.org/documents/non\\_country%20specific/2006%20GMP%20Report%20to%20UNEP%20GC24.pdf](http://www.globalmercuryproject.org/documents/non_country%20specific/2006%20GMP%20Report%20to%20UNEP%20GC24.pdf)
- International Council on Mining and Metals (ICMM) – Position Statement on Mercury Risk Management (2009)  
[www.icmm.com/document/556](http://www.icmm.com/document/556)

## E Further information (cont)

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- Draft Minamata Convention on Mercury  
[www.unep.org/hazardoussubstances/Portals/9/Mercury/Documents/INC5/5\\_7\\_e\\_annex\\_advance.pdf](http://www.unep.org/hazardoussubstances/Portals/9/Mercury/Documents/INC5/5_7_e_annex_advance.pdf)
- Mercury Watch – Charting the Improvement of Artisanal small-scale gold mining  
[www.mercurywatch.org](http://www.mercurywatch.org)
- United Nations Environment Programme (UNEP) Global Mercury Partnership – Guide Pratique: Réduire l'utilisation du mercure dans le secteur de l'orpaillage et de l'exploitation minière artisanale (2012)  
[docs.google.com/a/artisanalgold.org/viewer?a=v&pid=sites&srcid=YXJ0aXNhbmFsZ29sZC5vcmd8YWdjMXneDozZDYzM2RiYWNhZjg4NWQw](http://docs.google.com/a/artisanalgold.org/viewer?a=v&pid=sites&srcid=YXJ0aXNhbmFsZ29sZC5vcmd8YWdjMXneDozZDYzM2RiYWNhZjg4NWQw)
- United Nations Environment Programme (UNEP) Global Mercury Partnership – Overview  
[www.unep.org/hazardoussubstances/Mercury/GlobalMercuryPartnership/tabcid/1253/Default.aspx](http://www.unep.org/hazardoussubstances/Mercury/GlobalMercuryPartnership/tabcid/1253/Default.aspx)
- United Nations Environment Programme (UNEP) Global Mercury Partnership – Guidance, Training Material and Toolkits  
[www.unep.org/hazardoussubstances/Mercury/MercuryPublications/GuidanceTrainingMaterialToolkits/tabcid/3609/Default.aspx](http://www.unep.org/hazardoussubstances/Mercury/MercuryPublications/GuidanceTrainingMaterialToolkits/tabcid/3609/Default.aspx)
- United Nations Environment Programme (UNEP) Global Mercury Partnership – A Practical Guide: Reducing Mercury Use in Artisanal and Small-Scale Gold Mining (2012)  
[www.unep.org/hazardoussubstances/Portals/9/Mercury/Documents/ASGM/Techdoc/UNEP%20Tech%20Doc%20APRIL%202012\\_120608b\\_web.pdf](http://www.unep.org/hazardoussubstances/Portals/9/Mercury/Documents/ASGM/Techdoc/UNEP%20Tech%20Doc%20APRIL%202012_120608b_web.pdf)
- United Nations Environment Programme (UNEP) Global Mercury Partnership – Analysis of formalization approaches in the artisanal and small-scale gold mining sector based on experiences in Ecuador, Mongolia, Peru, Tanzania and Uganda (2012)  
[www.unep.org/hazardoussubstances/Portals/9/Mercury/Documents/ASGM/Formalization\\_ARM/Formalization%20Document%20Final%20June%202012.pdf](http://www.unep.org/hazardoussubstances/Portals/9/Mercury/Documents/ASGM/Formalization_ARM/Formalization%20Document%20Final%20June%202012.pdf)
- United States Environmental Protection Agency (EPA) – final rule concerning mercury for National Emission Standards for Hazardous Air Pollutants for gold ore processing and production facilities  
[www.epa.gov/ttn/atw/area/gold\\_mines\\_fs\\_121610.pdf](http://www.epa.gov/ttn/atw/area/gold_mines_fs_121610.pdf)