



Sixth Anniversary of the Minamata Convention

For Prelims: Minamata Disease, United Nations Environment Programme, World Health Organization, Global Environment Facility, planetGOLD program, Methylmercury

For Mains: Sources of Mercury Pollution, Minamata Convention.

Source: [UNEP](#)

Why in News?

The **sixth anniversary of the [Minamata Convention on Mercury](#)** is a reminder of global efforts to combat the toxic effects of mercury.

- On this occasion, the **[United Nations Environment Programme \(UNEP\)](#)** reflects on the ongoing campaign to **eradicate the use of mercury in small-scale gold mining**.
- This practice, despite its economic significance, poses **severe risks to both miners and the environment** due to the hazardous properties of mercury.

What is the Minamata Convention?

- The **Minamata Convention on Mercury** is a global treaty to protect human health and the environment from the adverse effects of mercury and its compounds.
 - It was agreed at the **fifth session of the Intergovernmental Negotiating Committee in Geneva, Switzerland** 2013.
- Controlling the anthropogenic releases of mercury throughout its lifecycle is one of the key obligations under the Convention.

What is Mercury Pollution?

- **About Mercury:**
 - Mercury is a **naturally occurring element** found in the Earth's crust. It is considered by the **[World Health Organization \(WHO\)](#)** as one of the top **ten chemicals** or groups of chemicals of major public health concern.
- **Major Applications of Mercury:**
 - **Thermometers and Barometers:**
 - Mercury's **high coefficient of thermal expansion** and easy visibility make it suitable for use in traditional thermometers and barometers.
 - **Chemical and Mining Processes:**
 - Mercury has been used in various chemical and mining processes, including the production of chlorine and mining of gold.

- **Electronics and Electrical Switches:**
 - Mercury-wetted switches are used in various electrical applications because **mercury's conductivity and low resistance** make it suitable for creating a reliable electrical connection.

- **Sources of Mercury Pollution:**
 - **Natural Sources:**
 - **Volcanic eruptions** release small amounts of mercury.
 - **Erosion of rocks** and soil can release mercury into water bodies.
 - **Anthropogenic Sources:**
 - **Artisanal and Small-Scale Gold Mining (ASGM):** ASGM is a major source of mercury pollution, where mercury is used to extract gold from ore.
 - Mercury is used to extract gold particles from ores, **creating amalgams** that are later heated to evaporate the mercury, leaving behind gold.
 - Artisanal gold mining **operations are responsible for 37% of global mercury pollution.**
 - **Industrial Processes:** Various industries, such as **chlorine production, cement manufacturing, and waste incineration**, emit mercury.
 - The cement industry is responsible for around **11% of global anthropogenic mercury emissions.**
 - **Waste Disposal:** Improper disposal of e-waste products containing mercury, such as **fluorescent bulbs and batteries**, leads to mercury leaching into the environment.

- **Associated Impact:**
 - Methylmercury accumulates in aquatic organisms like fish. People primarily come into contact with **methylmercury** through the **consumption of fish and shellfish.**
 - This compound carries a **higher risk of causing Minamata disease**, a condition characterized by **sensory impairment, tremors, and both auditory and visual deficits.**
 - This illness was initially observed in the residents of **Minamata Bay, Japan**, who consumed mercury-contaminated fish due to industrial waste pollution.

Note: Methylmercury and ethylmercury differ significantly. While methylmercury is linked to health issues, **ethylmercury is utilized as a preservative** in certain vaccines and is **not associated with health concerns.**

Way Forward

- **Mercury-Removing Filters:** Innovative mercury-removal filters for industrial emissions, wastewater treatment, and consumer products can be designed and deployed.
 - These filters could **selectively capture and adsorb mercury particles** from air and water streams.
- **Phytoremediation:** Phytoremediation, **allows plants to absorb and accumulate mercury from soil, water, or sediments.** These plants can then be harvested and safely disposed of, effectively removing mercury from the environment.
- **Implementing planetGOLD Program:** There is a need for global implementation of the **planetGOLD program**, led by **UNEP**, which seeks to eliminate mercury from artisanal gold mining and create safer working conditions. It operates under the **Minamata Convention on Mercury.**
 - Funded by the Global Environment Facility, the program provides financial and technical support to help miners transition away from mercury use.
 - planetGOLD's mercury-free processing plant in Burkina Faso serves as a model for transitioning away from mercury.

Q. Indiscriminate disposal of used fluorescent electric lamps causes mercury pollution in the environment. Why is mercury used in the manufacture of these lamps? (2010)

- (a) A mercury coating on the inside of the lamp makes the light bright white
- (b) When the lamp is switched on, the mercury in the lamp causes the emission of ultra-violet radiations
- (c) When the lamp is switched on, it is the mercury which converts the ultra-violet energy into visible light
- (d) None of the statement given above is correct about the use of mercury in the manufacture of fluorescent lamps

Ans: (b)

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