

Concept Note on Workshop

Background

Mercury is highly toxic, especially to the developing nervous system. Some populations are especially susceptible, most notably the fetus and young children. Yet mercury continues to be used in many products and processes all over the world, including in small-scale gold mining; manometers and thermometers; electrical switches; fluorescent lamps; dental amalgams, batteries and VCM (vinyl-chloride-monomer) production and some pharmaceuticals. The most significant mercury releases to the environment are emissions to air, but mercury is also released from sources directly to water and land. Important emissions sources include: coal-fired power generation, waste incineration, cement, steel and chlor-alkali production, gold and other metals mining, cremation, landfills and other sources such as secondary smelting operations and industrial inorganic chemical production.

Once released, mercury persists in the environment where it circulates between air, water, soils and biota in various forms. Once deposited, the form can change (by microbes) to methyl-mercury, a particularly hazardous form that concentrates up food chains, especially the aquatic food chain. Most people are primarily exposed to methyl-mercury through the diet, especially fish, and to elemental mercury due to dental amalgams and occupations (such as small-scale mining). Other sources of exposure include skin-lightening creams, mercury used for ritualistic purposes and in traditional medicines, and mercury spills in the home.

Fish are a valuable, nutritious component of the human diet. Mercury is a major threat to this important food supply. Elevated mercury levels have been measured in numerous fish species throughout the world. The highest levels are found in large predatory fish. Humans who consume significant amounts of contaminated fish may be at risk. Also, wildlife that rely on fish as a large part of their diet, such as otters, eagles, seals and some whales, often have elevated mercury levels.

Pakistan's Scenario:

Major consumers of mercury in Pakistan are chlor-alkali industries, hospitals, research labs, tube lights, barometers, catalysts and pigments, cells for caustic soda and chlorine production, dental amalgams, electrical instruments casting, laboratory reagent, manometers, medicines, mercury vapor lamps, metal plating, photography, synthetic silk, solder tanning and dyeing textile production, thermometers and is used in boilers/turbines for electricity generation. Chief chemical species in use of these industries include elemental mercury, mercurous chloride, mercuric chloride and mercuric sulfate.

Major sources of mercury risk exposure to population of Pakistan are mining and extraction of copper, gold, coal, cement crude steel and iron. The country's total production capacity is 14.7 Mt/yr of clinker and 15.4 Mt/yr of cement. State Cement

Corp. of Pakistan is the largest cement manufacturer in the country with a capacity of 1.85 Mt/yr. Bestway Cement Ltd. and Saadi Cement Ltd. are producing 1.04-Mt/yr facility. The main units included: Dalmia Cement Factory in Karachi, Associated Cement Companies (ACC) Wah & Rohri, Railway Workshop at Mughalpur Lahore, Rock & Sea Salt processing units, Textile units and other small units. Around Lahore, Gujranwala, Daska, Sialkot, Wazirabad, etc. there are a number of small manufacturers producing engineering goods such as machine tools, diesel engines (5-50 HP), surgical instruments, oil expellers, fans, cinema projectors, machinery parts and components etc. The Saindak mine is located 560 kilometers (km) west of Quetta, in Balochistan, is producing 1.5 t/yr of gold, and 2.8 t/yr of silver. Resources at Sandak were estimated to be 412 Mt at 0.4% copper

Hospitals also serve as a potential source for mercury risk to population. Hospitals produce various types of wastes ranging from ordinary to toxic and hazardous waste. In Pakistan around 250,000 tons of medical waste is produced annually from all health care facilities, imparting a bad impact on the environment by contaminating land, air, and water. Hospital waste of 15 tons is produced in Punjab per day at a rate of 1.18 kilograms /day/bed. As there are 250 hospitals with a total capacity of 41,000 beds in the Punjab, the size of the problem is obvious.

Mercury, its compounds and substances containing mercury are disposed off either in wastewater or sent to landfills. There is no environmentally sound management of mercury regarding its use and disposal. An extensive research work is needed to assess the status and reduce the exposure risk of mercury in Pakistan.

UNEP Governing Council decisions 23/9 and 24/3 calls for work to be facilitated on the promotion and development of inventories of mercury uses and releases. UNEP has taken initiatives to mitigate this problem. In this regard, UNEP had initially selected six countries including Pakistan in the Asia Pacific region to identify and quantify the mercury releases in Pakistan. On the basis of the mercury inventory project, UNEP has ultimately selected three countries in this region including Pakistan for the mercury waste project.

Objectives

The main objective of this workshop will be to discuss the management of the Mercury Waste in Pakistan while protecting the interests of all vulnerable sectors in the country. Specific objectives are:

- Review and analysis of the national mercury inventory data.
- Exchange of information with national stakeholders to prioritize mercury waste sources and sectors.
- Development of a national mercury waste management plan.
- Identification of possibilities for Environmental Sound Management (ESM) application in selected sources / sectors.
- Sampling and analysis of relevant environmental and human samples.
- Develop the basic data about the inventory of mercury and mercury products in

Pakistan

- Identify the mercury exposure resources in the country
- Identify the groups of people at more risk
- Create awareness in the general public regarding the toxicity of mercury
- Attempt the replacement of mercury containing commodities
- Develop strategies to reduce the risk of mercury exposure