



EFFECTS OF MERCURY ON HEALTH & THE ENVIRONMENT

What are the effects of mercury?

Mercury is a highly toxic heavy metal considered by WHO as one of the top ten chemicals or groups of chemicals of major public health concern.

Together with its various compounds, it has a range of severe health impacts, including damage to the central nervous system, thyroid, kidneys, lungs, immune system, eyes, gums and skin. Victims may suffer memory loss or language impairment, and the damage to the brain cannot be reversed. There is no known safe exposure level for elemental mercury in humans, and effects can be seen even at very low levels. Fetuses, newborn babies and children are amongst the most vulnerable and sensitive to the adverse effects of mercury. As it is transported around the globe through the environment, its emissions and releases can affect human health and the environment even in remote locations.

How is mercury used and why is it present in our environment?

Mercury is a naturally occurring element. It can be released to the environment from natural sources – such as weathering of mercury-containing rocks, forest fires, volcanic eruptions or geothermal activities – but also from human activities. Of the estimated 5500-8900 tons of mercury currently emitted and re-emitted each year to the atmosphere, only about 10 per cent is accounted to be from natural sources¹.

Due to its unique properties, mercury has been used in various products and processes for hundreds of years. Currently, it is mostly utilised in industrial processes that produce chlorine and sodium hydroxide (mercury chlor-alkali plants) or vinyl chloride monomer for polyvinyl chloride (PVC) production, and polyurethane elastomers. It is extensively used to extract gold from ore in artisanal and small-scale gold mining. It is contained in products such as electrical switches (including thermostats), relays, measuring and control equipment, energy-efficient fluorescent light bulbs, batteries and dental amalgam. It is also used in laboratories, cosmetics, pharmaceuticals, including in vaccines as a preservative, paints, and jewellery.

Mercury is also released unintentionally from some industrial processes, such as coal-fired power and heat generation, cement production, mining and other metallurgic activities such as non-ferrous metals production, as well as from incineration of many types of waste.

Once released, mercury persists in the environment where it circulates between air, water, sediments, soil and biota in various forms. Mercury can be transported long distances in the atmosphere. It can also be incorporated by microorganisms and converted to methylmercury, and then concentrated up the food chain.

How are we exposed to it?

Exposure to mercury occurs mainly through ingestion of fish and other marine species contaminated with methylmercury, its most toxic and bio accumulative form. People may also be exposed to elemental or inorganic mercury through inhalation of mercury vapour during occupational activities or spills or through direct contact from mercury use.

¹ UNEP, Global Mercury Assessment 2013; Sources, Emissions, Releases, and Environmental Transport



Mercury and human health

GENERAL EXPOSURE



Large predatory fish



Vegetables from contaminated soils



Cosmetics, Soaps



Use and damage of products containing mercury (e.g. compact fluorescent lamps, batteries, medical devices)



Waste

OCCUPATIONAL EXPOSURE



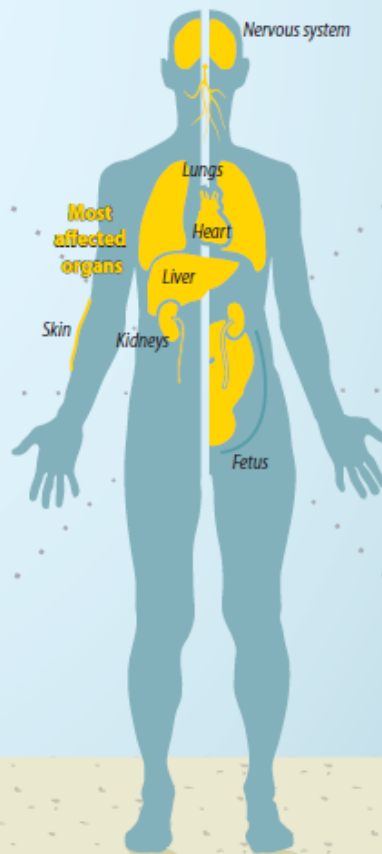
Manufacturing of products containing mercury (e.g. compact fluorescent lamps, batteries, medical devices)



Artisanal and small-scale gold mining



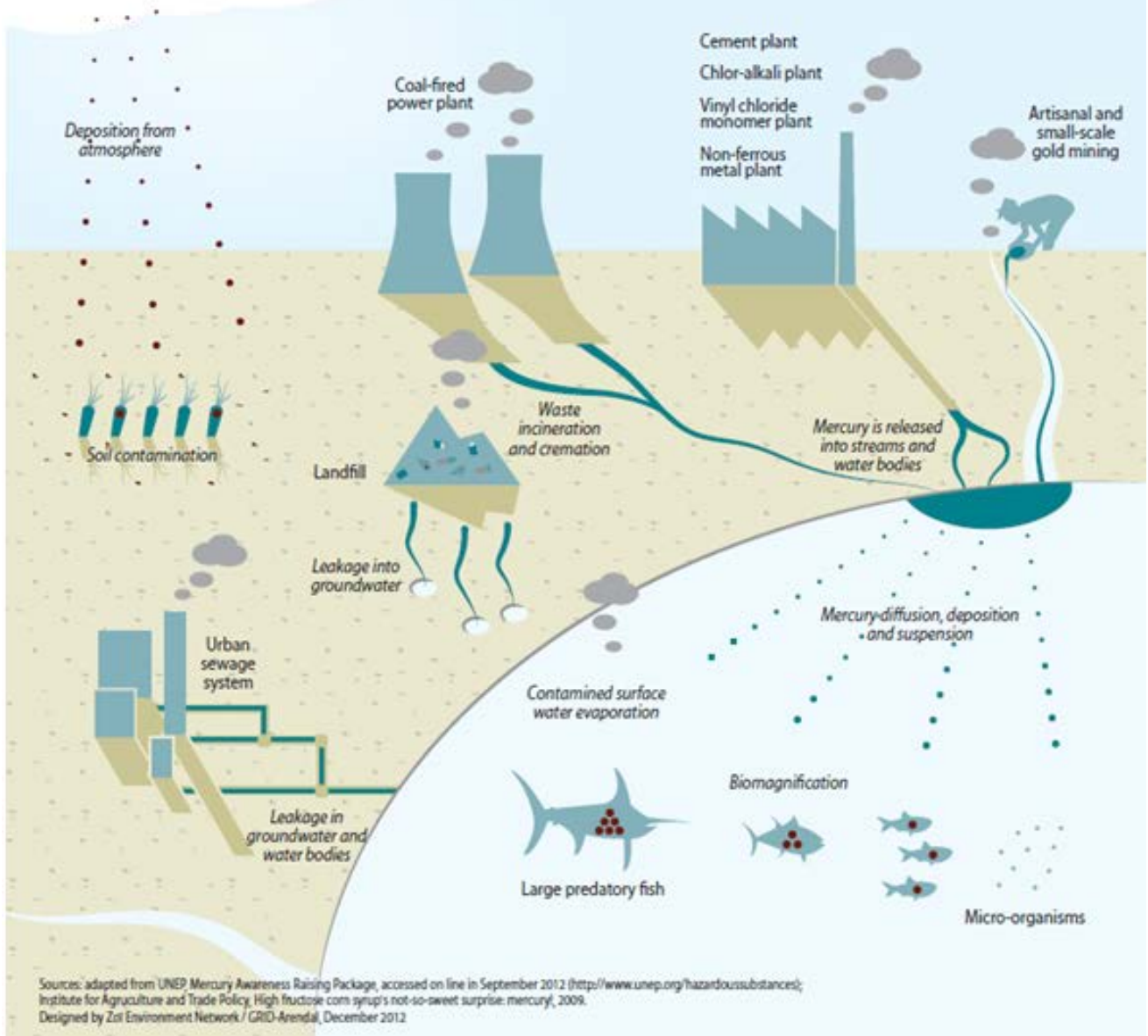
Industry (e.g. Chlor-alkali industry, cement production, metal production)



Source: adapted from WHO, *Toward The Tipping Point*. WHO-HCW Global Initiative to Substitute Mercury-Based Medical Devices in Health Care, 2010; UNEP, *Mercury Awareness Raising Package*, accessed on line in September 2012 (<http://www.unep.org/hazardoussubstances>).
Designed by Zor Environment Network / GRID-Arendal, December 2012



How mercury can enter our environment





Mercury in food and products

