INC 2 BRIEFING PAPER SERIES

Mercury Air Pollution

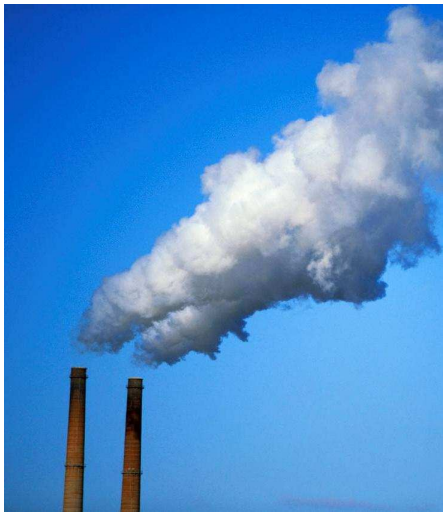
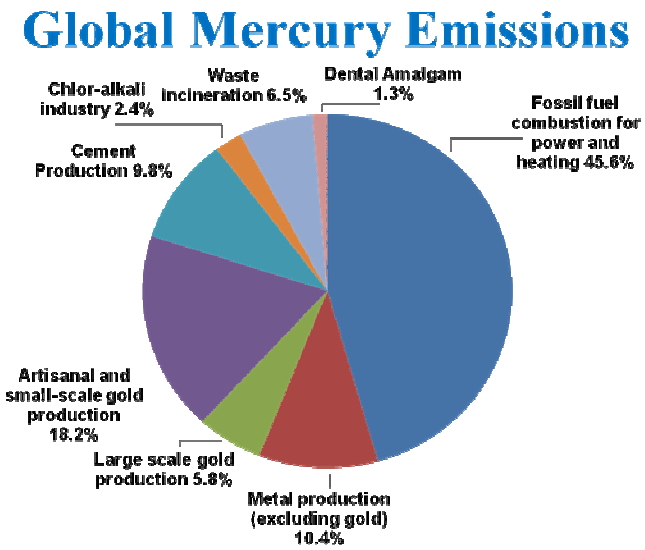


Photo from http://blogs.sfweekly.com/thesnitch/smokestack.jpg

Mercury, as an element, occurs naturally in the environment. However, since the industrial revolution, human activities have contributed substantially to the global pool of mercury pollution. Mercury emitted to the atmosphere can travel long distances, far from its sources of emission. Once in the environment, mercury can be transformed into methyl mercury, which biomagnifies in the food chain. As a result, even in places like the Arctic Circle, with no direct sources of mercury pollution, mercury contamination is reaching dangerous levels in the bodies of marine mammals and fish that are part of the global food supply.



Arctic Monitoring and Assessment Programme/United Nations Environment Programme Chemicals Branch, Technical Background Report to the Global Atmospheric Mercury Assessment, Requested by UNEP Governing Council decision 24/3, 2008, Table 3.13.

Sources of Mercury Air Emissions

Burning of fossil fuels is the major source of mercury air emissions from human activities worldwide. Coal, natural gas and other fossil fuels contain mercury as a natural impurity. A significant amount of mercury is released into the atmosphere and environment from coal-burning power plants, industrial boilers, and residential heating units. Metal ores and limestone also contain naturally-occurring mercury, which can be emitted during metal smelting and refining, and cement manufacturing. Mercury is also intentionally added to certain products, and is released to air when these products are incinerated.

Treaty Solutions

The mercury treaty should include binding measures to reduce the emissions of mercury to air, focusing on major sources such as fossil fuel production and combustion, metal ore smelting and refining, cement manufacturing and waste incineration. The treaty should require best available techniques, as well as promote best environmental practices, to control emissions for both new and existing emissions sources. Controlling existing

facilities as well as new facilities is necessary to reduce emissions, given the long active life of many industrial facilities; for example, one cement plant in Montana, USA, just celebrated its 100th birthday[1]. Emissions from existing facilities in the four major source categories (see table below) were estimated to be about 1356 metric tons in 2005[2]. Expected economic growth is estimated to bring annual emissions from these four sectors to 1771 t/yr by 2020; emissions controls could reduce these annual mercury emissions from existing and new sources to about 790 t/yr, a reduction of nearly 1000 metric tons.

Mercury Emissions (metric tons)					
	Fossil Fuel Burning	Metal Refining	Cement	Waste Incineration	Total from these sectors
2005	880	252	189	35	1356
2020 status quo	1201	252	283	35	1771
2020 extended controls	545	155	83	7	790
AMAP/UNEP, 2008. Technical Background Report to the Global Atmospheric Mercury Assessment. Arctic Monitoring and Assessment Programme/UNEP Chemicals Branch. 159 pp.					

The effectiveness of emissions controls should be monitored using Continuous Emissions Monitoring Systems (CEMS) (see the companion ZMWG factsheet on this topic).

[1] Malby, A. "Cementing a Century: Trident Plant marks 100 years," The Belgrade News Sept 24, 2010.

[2] AMAP/UNEP, 2008. Technical Background Report to the Global Atmospheric Mercury Assessment. Arctic Monitoring and Assessment Programme/UNEP Chemicals Branch. 159 pp.