

Review Article

Environmental mercury contamination in China:
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Abstract

This review article focused on the current status of mercury (Hg) contamination in different ecological compartments in China, and their possible environmental and health impacts, focusing on some major cities. Mercury emission from non-ferrous metals smelting (especially zinc smelting), coal combustion and miscellaneous activities (of which battery and fluorescent lamp production and cement production are the largest), contributed about 45%, 38% and 17%, respectively, to the total Hg emission based on the data of 1999. Mercury contamination is widespread in different ecological compartments such as atmosphere, soil and water. There is evidence showing bioaccumulation and biomagnification of Hg in aquatic food chains, with higher concentrations detected in carnivorous fish. In terms of human exposure to Hg, fish consumption is the major exposure pathway for residents living in coastal cities such as Hong Kong, but inhalation may be another major source, affecting human health in areas with severe atmospheric Hg, such as Guiyang City (Guizhou Province). The first case study indicated that after closure of the acetic acid plant 20 years at Songyuan City (Jilin Province), 16.7% of residents' hair still contained Hg concentration in excess of 1 mg/kg (the reference dosage value, RfD set by USEPA). The second case study indicated that the male residents of Hong Kong who consumed more than four or more meals of fish per week tended to contain higher Hg in their hair, which was linked to their subfertility. There is also increasing evidence showing that skin disorders and autism in Hong Kong children are related to their high Hg body loadings (hair, blood and urine), through prenatal methyl Hg exposure. There seems to be an urgent need to identify the sources of Hg, speciation and concentrations in different ecological compartments, which may lead to high body loadings in human beings. Adverse health effects of residents living in places with a higher background level of Hg, due to long-term exposure to chronic levels of Hg through oral intake should not be overlooked.

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Keywords: Mercury; China; Sources; Ecological compartment; Exposure; Health

Contents

1.	Introduction	109
2.	Sources of Hg contamination in Chinese cities	109
2.1.	Mercury emission from metal smelting industry	109
2.2.	Mercury emission from coal combustion	110
2.3.	Mercury emission from other sources	110
3.	Mercury levels in different ecological compartments	110
3.1.	Mercury levels in air	110
3.2.	Mercury levels in soil	112
3.3.	Mercury levels in river	113

[☆] “Capsule”: mercury contamination in different ecological compartments in China has potential adverse health effect to populations with high fish consumption and people living near power plants.^{*} Corresponding author.*E-mail address:* mhwong@hkbu.edu.hk (M.H. Wong).