

World Congress on

ENVIRONMENTAL TOXICOLOGY AND HEALTH

July 11-12, 2018 Sydney, Australia

Identification of toxic metal deposition in food cycle and its associated public health risk

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Food chain contamination by heavy metals has become a critical issue in recent years because of their potential accumulation in bio systems through contaminated water, soil and irrigation water. Industrial discharge, fertilizers, contaminated irrigation water, fossil fuels, sewage sludge and municipality wastes are the major sources of heavy metal contamination in soils and subsequent uptake by crops. The main objectives of this project were to determine the levels of minerals, trace elements and heavy metals in major foods and beverages consumed by the poor and non-poor households of Dhaka city and assess the dietary risk exposure to heavy metal and trace metal contamination and potential health implications as well as recommendations for action. Heavy metals toxicity depends on several factors including the dose, route of exposure and chemical species, as well as the age, gender, genetics, and nutritional status of exposed individuals. Because of their high degree of toxicity, arsenic, cadmium, chromium, lead and mercury rank among the priority metals that are of public health significance. These metallic elements are considered systemic toxicants that are known to induce multiple organ damage, even at lower levels of exposure. This review provides an analysis of their environmental occurrence, production and use, potential for human exposure and molecular mechanisms of toxicity and carcinogenicity.

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