

Food Safety Hazard: Heavy Metals



Characteristics/description

Among the chemicals included are lead, arsenic and mercury.

Source

Contamination of food by heavy metal occurs mainly through air, water and soil pollution, often due to industrialization. Heavy metals do not degrade and are not destroyed. They generally do not break down into less harmful constituents, accumulating where they are released. Contamination may occur due to irrigation with contaminated water, fertilizers, metal-based pesticides, industrial emissions, transportation, etc. Heavy metals are taken up from contaminated soil and water by plants, fish and domestic agriculture species (chickens, goats, etc.). Construction, mining, smelting, electronics, welding and hazardous waste workers are likely to have increased exposure.

Effects on humans

Toxic metals can bioaccumulate in the body and in the food chain leading to multiple organ deficits to include neurological and kidney damage. Some signs of acute poisoning can be confusion, numbness, nausea, vomiting, coma and death.

Treatment for patients

Illness may result from both acute and chronic exposure to heavy metals. Supportive therapy targeted at the damaged organ system is recommended, with detoxification via chelating agent treatment effective in some patients. The diagnosis of chronic heavy metal poisoning relies on having known exposure and positive results on approved tests that are specific to each metal. Some are tested for in urine, and some are tested for in blood samples. There is no single screening test for all heavy metals.

Risk reduction strategies

- Identify and remove the source of heavy metal exposure. Trace potential routes of contamination in the food chain and address them, as feasible.

Key links

Agency for Toxic Substances & Disease Registry Toxic Substances Portal, ToxFAQs:
<http://www.atsdr.cdc.gov/substances/index.asp>

U.S. Environmental Protection Agency information on health effects of toxic heavy metals:
<http://www.epa.gov/mercury>; <http://www.epa.gov/lead>