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An Overview: Heavy Metal Contamination in Groundwater and its Effects on Human Body †

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Abstract: Heavy metals are metallic elements with relatively high density and are toxic or poisonous even at low concentrations. There are many sources like an eruption of volcanoes, breakdown of rocks containing metals, human activities like mining, mineral evacuation, and agricultural practices that lead to the contamination of water by heavy metals. Contamination of heavy metals in the water supply system is a global concern as heavy metals like arsenic, mercury, lead, cadmium, zinc, copper, and chromium are carcinogenic in nature. Some of these heavy metals are necessary to sustain life, but after a specific lethal volume, they are toxic for humans and underwater life. Since Heavy metals are not easily degradable by the biological and chemical processes, they accumulate in the water for a longer period of time, causing health deterioration. These metals can cause serious effects with varied symptoms depending on the nature and quantity of the metal administrated. Humans could be exposed to heavy metals mainly in three ways ingestion, inhalation, and dermal. Every metal has unique signs and symptoms that tell about the initial exposure of the toxicant; they affect the respiratory system, digestive system, renal system, dermal effects, ocular system, developmental effects, carcinogenic effects, and many more. Therefore, it is necessary to reduce the toxicity of heavy metal contamination from the water system. Several methods have been used to remove heavy metals from contaminated water. They include chemical precipitation, ion exchange, adsorption, membrane filtration, reverse osmosis, solvent extraction, and electrochemical treatment.

Keywords: heavy metal; environmental toxicity; lethal dose; contamination; carcinogenic.

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Conflicts of Interest

The authors declare no conflict of interest.