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Hazardous Effect of Mercury on Aquaculture and Human Health †

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Abstract: Mercury(Hg) is regarded as one of the most toxic heavy metals, and its exposure poses an enormous threat to the environment and human system, causing widespread ecological repercussions. Mercury may enter the water bodies naturally, but anthropogenic activities, particularly industrial discharges, increase the Hg level. Once Hg is released into the aquatic environment, it undergoes multifaceted transformations via microorganisms that convert it into methylmercury(MeHg), a potent neurotoxin that has a remarkable effect on aquatic species and leads to bioaccumulate and biomagnify to unsafe levels in the food chain. Fish, being highest in the aquatic food web, collect larger levels of MeHg by bioaccumulation, which induces physiological and hematological changes, damages the reproductive and respiratory system, and even affects the fish's survival. In humans, the primary route of Hg exposure is through ingestion of aquatic-based food, which gets easily absorbed by the gastrointestinal wall and transverse placental and blood-brain barrier, resulting in neurological, reproductive, cardiovascular, and genetic disorders. This review paper addresses the toxicological effect of Hg on aquatic organisms and is associated with the effect of Hg toxicity on humans. It can help researchers and public officials assess health risks and choose the best course of action for restoration efforts of ecosystems, thereby preserving human health.

Keywords: mercury; environment; toxicity; fish; food chain; human health.

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Conflicts of Interest

The authors declare no conflict of interest.