Proceedings of the 9th World Congress on Civil, Structural, and Environmental Engineering (CSEE 2024)
London, United Kingdom – April 14-16, 2024
Paper No. ICEPTP 149
DOI: 10.11159/iceptp24.149

Mercury Transfer in the Marine Food Chain Rationalizing Safe Consumption of Seafood

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Extended Abstract

Recent years witnessed the deleterious effect of mercury (Hg) transfer from seafood in humans through seawater to secondary consumers in the marine ecosystem [1-2]. Multiple inputs of industrial, domestic, and recreational pollutants caused heavy problems to the marine environment [3]. The Kuwait Bay from the Arabian Gulf caters the commercial seafood catch to the residents of Kuwait Thus, quality assurance of the marine environment is pivotal for economic feasibilities [4]. This study focussed on the (a) trace trophic transfer of Hg from primary producer to primary and secondary consumers in the marine environment, (b) validated Hg concentrations in biota from pollution interests' loci (c) validated BAF in selected species of interests and (d) recommended remedial measures to seafood consumers. This study selected eight Kuwait Coast sites. Marine species were exposed to Hg for 96 h and 30 d in experimental tanks containing seawater. A direct mercury analyzer (DMA-80) with the least detection limit of 0.0015 ng/g was used for this purpose. Hg concentrations were in the sequence of *Lunella coronata* > phytoplankton > *Acanthopagrus berda* > *Portunus pelagicus* > seawater > zooplankton at Sites III>IV>VI>V>I>VIII>VII>II, irrespective of the summer and winter seasons, respectively. Bioaccumulation factor (BAF) of Hg >1 in the analysed species except zooplankton and in seawater at 0.6 ng/L-1.2 ng/L concentrations indicated the probable transfer of Hg to other species labelling positive biomagnification whereas, the Hg value <1 was considered as the occurrence of trophic dilution for a given species [5]. Thus, Hg from industrial effluent evidenced Hg accumulation in the marine ecosystem. As Hg is a perilous pollutant, their transfer from the seawater and accumulation in higher trophic organisms are of importance and pose a risk to humans who consume such Hg-contaminated seafood.

References

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