

Uptake, Bioaccumulation, Partitioning of Lead (Pb) and Cadmium (Cd) in Aquatic Organisms in Contaminated Environments

Abstract.

Cadmium (Cd) and Lead (Pb) are non-essential heavy metals that, though they occur naturally, they are classified as toxic pollutants when they are released especially from unnatural occurrence through human activities. Though Pb and Cd have been studied widely concerning their human health impacts, much interest has been expressed in recent years to also understand their environmental impacts. The acute and chronic effects of Pb and Cd to benthic organisms largely depend on their speciation form. Specific speciation forms of Pb and Cd, if present in aquatic ecosystem as contaminants, can cause acute or chronic toxicity to benthic organisms and fish. However, the level of toxicity is determined by physico-chemicals parameters which, among others, include solubility, alkalinity, salinity and organic matter content. Once within organisms, Pb and Cd partitioning in various organs depends on established physiological mechanisms for pollutant regulation, homeostasis, and detoxification. Moreover, these metals can enter into the food chains within the aquatic ecosystems which offer favourable possibilities for biomagnification of the pollutants. In a contaminated aqueous environment, organisms show a certain tolerance to various metal exposure levels. Thus, some adverse effects are reversible once exposure levels i.e., environmental concentrations, decrease.

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