

Efficiency of sentinel organisms as biological monitors for heavy metal pollution in marine environment

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Monitoring heavy metal pollution in marine habitats using sensitive chemical instruments is not valuable. Heavy metals exist in aquatic environment as complexes or free ions. Only free ions are available for living organisms. Moreover, if the analysis with those instruments resulted in non-hazardous concentrations of metal pollutants in the studied areas, the results don't actually reflect the extent of heavy metal contamination in living organisms as the metal concentrations can be transferred and multiplied across the food chain from one consumer to the other. Some living organisms especially, molluscs, annelids are successfully used as biomonitors. They have the ability to detoxify metal pollutants and to store them within some organelles of their tissues several folds of the surrounding habitats, so that a bioaccumulation factor can be determined for each metal. Helminth parasites showed higher bioaccumulation of heavy metals rather than host. On the cellular level, copper and cadmium are stored within the lysosomes as electron lucent, or electron dense vesicles. Lead is stored in the form of granules or lipid droplets. The present work discusses the entry of heavy metals and detoxification mechanism in some marine invertebrates and storage within organelles of their digestive glands.

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