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Assessment of Heavy Metal Pollution in Macrophytes, Water and Sediment of a Tropical Wetland System Using Hierarchical Cluster Analysis Technique

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Abstract: Heavy metal pollution in aquatic ecosystems is becoming a global phenomenon because these metals are indestructible and most of them have toxic effects on living organisms. Most of the fresh water bodies all over the world are getting contaminated thus declining their suitability. Therefore, monitoring and assessment of such freshwater systems has become an environmental concern. This study aims to elucidate the useful role of the cluster analysis to assess the relationship and interdependency of heavy metals (As, Pb, Cr and Cd) in macrophytes (*N. nucifera* Gaerth., *T. angustata* Bory & Chaub, *I. aquatica* Forsk.) , sediment, and water samples, during pre and post monsoon seasons of year 2009. The work was carried out in Varasda wetland, situated between 22°29'30.69″ N latitude and 72º 30' 30.23'' E longitude of Kheda district, Central Gujarat, India. According to the findings, Chromium (Cr) and Lead (Pb) metal contents form heavily polluted class. On the other hand, moderate and less polluted classes occurred due to the contents of Arsenic (As) and Cadmium (Cd) respectively for both seasons. During post-monsoon season, the contamination substantially increased after religious activities like idol immersion and due to heavy traffic on account of festive season. These metals have a marked effect on the aquatic flora and fauna which through bio magnification enter the food chain and ultimately affect the human beings.

Keyword: *Heavy metal, wetland, water pollution, Macrophytes, Hierarchical Cluster Analysis*

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