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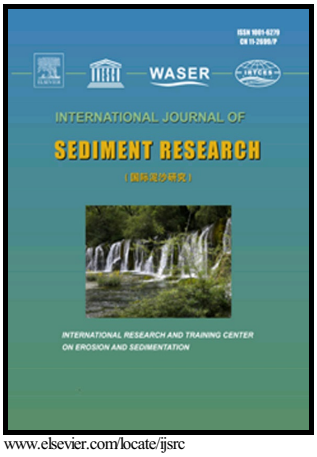

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Assessment of heavy metal pollution from the sediment of Tupilipalem Coast, southeast coast of India

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Abstract

Sediment from twelve stations was sampled from the Tupilipalem Coast, southeast coast of India, and the presence of a set of heavy metals was established including iron (Fe), manganese (Mn), chromium (Cr), copper (Cu), nickel (Ni), lead (Pb), zinc (Zn) and cadmium (Cd). The heavy metals were assessed by factor analysis, the results of which showed positive and/or negative correlations among Fe, Mn, Cr, Cu, Ni, Pb, Zn, and Cd. Factor analysis also indicated that heavy metals in the sediments of the study area have different natural and anthropogenic sources. Similarly, a sediment pollution assessment was done using the Geoaccumulation Index (Igeo), Enrichment Factor (EF), and Pollution Load Index (PLI). The Geoaccumulation Index indicated that the surface sediment of the Tupilipalem Coast was extremely contaminated with Fe, Mn, Cr, Cu, Ni, Pb, and Zn. The calculation of enrichment factors showed a significant enrichment with respect to Pb, Zn, and Cd and a moderate enrichment with Cr, Cu, and Ni. The falling trend of average contents' enrichment factors is Cd> Pb> Zn> Cu> Cr> Ni> Mn> Fe. The PLI values of the Cd show higher (>1) values due to the influence of distinct external sources like agricultural runoff, industrial activities, and other anthropogenic inputs. Ninety two percent of heavy metals under study