

M-SCTE - Metals speciation and contamination in inter-tidal region of a tropical estuary, India

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Distribution of trace metals in sediments is an important area of research in environmental pollution studies. The aim of the present work was to study and determine the concentration of metals (Fe, Mn, Cu, Pb, Co, Zn and Cr) in the intertidal sediment, comprising of mudflat and mangroves of an estuary. The metal contamination in the sediment was evaluated by applying index of geo-accumulation (Igeo) and Enrichment factor. Results showed that concentrations of Fe and Zn in the sediment of mudflat and mangrove regions were only slightly higher than or equal to their background values, while concentrations of the remaining elements were significantly higher than their background values. Further, based on Igeo, Mn, Cu, Pb, Co in the mudflat core and only Mn in the mangrove core was in moderately polluted class. As the mudflat core showed some degree of pollution, analysis of the selected trace metals among various geochemical phases of the sediments, was carried out using a sequential extraction technique. The speciation pattern of Mn and Zn were associated with the carbonate and Fe-Mn oxide fractions while the other elements showed higher percentages in the residual phase. However, there were also some concentrations in the exchangeable and bound to carbonate fractions although these were less significant. The results indicated that contamination due to Mn and Zn might pose a potential risk to water column under disturbance of sediment. Findings of this study provide valuable information about metal contents in sediments from different sub-environment of the estuary.

Biography

G. N. Nayak has completed his Ph.D at the age of 29 years from Karnataka University, India. He is the dean of faculty of life sciences & environment at Goa university, India. He has published more than 49 papers in reputed journals and serving as one of the vice presidents of Indian association of sedimentologists. Co-author Ms. Lina Fernandes is a Ph.D. student, submitted her thesis for consideration of award of Ph.D. degree. She has to her credit more than 6 papers in reputed journals.

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