

VERTICAL PROFILE DISTRIBUTION AND ACCUMULATION OF HEAVY METALS IN MANGROVE SEDIMENTS (PICHAVARAM), SOUTHEAST COAST OF INDIA

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Abstract

Four sediment cores were collected from Pichavaram mangroves, Southeast coast of India and the accumulation of nine heavy metals in fine-grained sediments are evaluated. Vertical distribution of trace metals in the sediments have been modified to a great extent by diagenetic processes, which has also regulated their distribution indicating different patterns. A significant increase in the deposition of Zn, Pb, Cr, Co, Fe and Mn was observed in the surface sediments. Fe-normalized Enrichment Factors (EFs) of trace metals were calculated based on crustal trace element abundances. The EF was typically >1 for Cd, Pb, Co and Cr indicating that these elements are highly enriched and other metals such as Ni, Cu, and Mn shows no enrichment or depletion. Pichavaram mangroves receive considerable quantity of pollution loads from anthropogenic sources such as industrial, domestic and fishing activities in recent times, indicating high concentration of metals in the top few layers of the sediments. This increase is attributed to the increased erosion from soil materials, inputs from intensive agriculture, aquaculture practices and changes in the landuse pattern.

Keywords: Mangroves, Heavy metals, Core sediments, Enrichment factor, Landuse pattern.