



Contents lists available at ScienceDirect

Marine Pollution Bulletin

journal homepage: www.elsevier.com/locate/marpolbul



Bioremoval of trace metals from rhizosediment by mangrove plants in Indian Sundarban Wetland

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ARTICLE INFO

Article history:

Received 28 September 2016

Received in revised form 18 January 2017

Accepted 24 January 2017

Available online 7 February 2017

Keywords:

Phytoremediation

Mangrove

Trace metals

Sundarban mangrove wetland

ABSTRACT

The study accentuated the trace metal accumulation and distribution pattern in individual organs of 13 native mangrove plants along with rhizosediments in the Indian Sundarban Wetland. Enrichment of the essential micronutrients (Mn, Fe, Zn, Cu, Co, Ni) was recorded in all plant organs in comparison to non-essential ones, such as Cr, As, Pb, Cd, Hg. Trunk bark and root/pneumatophore showed maximum metal accumulation efficiency. Rhizosediment recorded manifold increase for most of the trace metals than plant tissue, with the following descending order: Fe > Mn > Zn > Cu > Pb > Ni > Cr > Co > As > Cd > Hg. Concentrations of Cu, Ni, Pb and Hg were found to exceed prescribed sediment quality guidelines (SQGs) indicating adverse effect on adjacent biota. Both index of geoaccumulation (I_{geo}) and enrichment factor (EF) also indicated anthropogenic contamination. Based on high (>1) translocation factor (TF) and bioconcentration factor (BCF) values *Sonneratia apetala* and *Avicennia officinalis* could be considered as potential accumulators, of trace metals.