

HEAVY METAL CONTAMINATION STATUS IN SURFACE SEDIMENTS OF BATTICALOA LAGOON, SRI LANKA

A.M.N.M. Adikaram^{1,*}, H.M.T.G.A. Pitawala², H. Ishiga³ and D.T. Jayawardhane⁴

¹*Department of Physical Sciences, Faculty of Applied Sciences, SEUSL.*

²*Department of Geology, Faculty of Science, University of Peradeniya, Sri Lanka*

³*Department of Geosciences, Graduate School of Sc. & Eng., Shimane University, Japan*

⁴*Department of Forestry and Env't.Sc., Sri Jayawardhanapura University, Sri Lanka*

**Corresponding Author – e-mail: maduryaa@gmail.com*

Batticaloa lagoon is the largest lagoon of Eastern Sri Lanka, considered to be a polluted marine environment because of the rapid development since 2009 after the end of civil war in Sri Lanka. The catchment of lagoon water body comprises industrial, agricultural and urbanized discharges. Therefore, the present study made an assessment of the geochemical status and provides background information of the Batticaloa lagoon. Surface sediment samples of 34 locations were analyzed for 13 heavy metals (As, Cr, Cu, Nb, Ni, Pb, Sc, Sr, Th, V, T, Zn, Zr). Enrichment factors and geo-accumulation indices were used to assess the contamination levels. Standard sediment quality guidelines were referred for the quality inspections. The enrichment factor and geo-accumulation indices of sampling sites near the lagoon mouth indicate high concentrations of Zr and As. Nevertheless As has enriched in sediments, the concentration is below the sediment quality standards. However, Zr content strongly exceeds the sediment quality standards. High enrichment of Zr might have been due to the marine influence and sea currents that are passing the mineral sand deposits of North Eastern Sri Lanka. Igeo values of sampling sites indicate moderate contamination status for Cr, Th, V and Y for most of the sediment sampling sites and low contamination status for Cu, Sc and Zn. Sediment quality standards point out exceeded values of Zr and Th for almost all sites and Sc and V for most of the sites. Further, sediments of paddy channel associating sampling sites have above values of Cr, Cu, Ni and Zn for standards. The results of this study indicate heavy metal enrichments and spatial distribution in lagoon sediments are due to both natural and anthropogenic activities of the area.
