

SPATIAL VARIATIONS OF SELECTED HEAVY METALS IN WATER AND SEDIMENTS IN BOLGODA LAKE, SRI LANKA

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Bolgoda lake, a water body in the Western province of Sri Lanka is used by the local community for various purposes including irrigation of agricultural areas, and fishery. Nevertheless it receives urban and industrial wastes from multiple sources. In the present study, spatial variations in the levels of five selected metals viz. lead, cadmium, chromium, copper and zinc in the water and sediments collected from twelve sampling locations of Bolgoda lake covering four main sites viz. Weeras Ganga (WG), North Lake (NL), Bolgoda Ela (BE) and South Lake (SL) were evaluated in order to assess the current pollution status of the lake. Samples were analysed by atomic absorption spectrometry using standard procedures.

Dissolved total metal levels in water (in $\mu\text{g L}^{-1}$) varied depending on the sampling location: lead 23.2-36.3, cadmium 6.1-12.6, chromium 3.9-61.4, copper 5.7-38, and zinc 11.6-35.1. No significant inter-site differences were however found with respect to lead and cadmium in water. The levels of other three metals in water in the four sites followed the decreasing order: chromium, BE > WG = NL = SL; copper, WG > NL = BE = SL; zinc, WG > BE, WG = NL = SL. The sediment associated metals in the lake (in $\mu\text{g g}^{-1}$ dry weight) showed irregular distribution of metal contamination reflecting many individual metal inputs: lead 6.5-759.4, cadmium 0.8-4.2, chromium 22.6- 214.8, copper 13.2-135.5 and zinc 58.2-227.6. Sediment bound metals in the four sites followed the decreasing order: lead, BE > WG = NL = SL; cadmium, WG > BE, WG = NL = SL; copper, BE > WG = NL = SL; and zinc, WG = BE = NL > SL. No significant inter-site difference was found with respect to the sediment bound chromium. The results revealed that of the four main sites of Bolgoda lake, overall pollution of these metals is comparatively low in the South lake.