
Heavy Metal Contents in Surface Sediments of Kalametiya Lagoon, Sri Lanka and Heavy Metal Uptake by *Typha angustifolia* L., A Wetland Sedge

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Heavy metal pollution in aquatic ecosystem causes severe threats to all types of entities. Sediments act as a sink and a carrier of heavy metals in aquatic environment. Available data on heavy metal concentrations of Kalametiya lagoon sediments and associated vegetation are limited. Therefore, this study was aimed at studying heavy metal contents in surface sediments of Kalametiya lagoon and to assess the phytoremediation capacity of wetland sedge *Typha angustifolia* L. Surface sediment (0–15 cm) and *Typha* plant samples were collected from 36 different grid points across Kalametiya lagoon in March 2019. Both samples were subjected to a total digestion (i.e. microwave digestion with conc. HNO₃ and HCl) and analyzed by using ICP-MS to examine the heavy metal contents of arsenic (As), cadmium (Cd), chromium (Cr), lead (Pb), and mercury (Hg). In addition, a questionnaire survey was conducted to investigate the possible sources of the heavy metals studied. The results showed that mean value of heavy metals concentrations except Hg were lower than threshold effect levels (TEL) and Hg may reach to potential effect level (PEL) in near future. Higher accumulation of heavy metals Cr, Pb and As was observed in the lagoon outlet while lower concentrations in the inlet of Kalametiya Lagoon. The mean heavy metal contents in the sediments of Kalametiya lagoon decreased in the following order Cr (1.849-3.252 ppm) > Pb (0.137-0.347 ppm) > As (0.075-0.104 ppm) > Hg (0.002-0.425 ppm) > Cd (0.004-0.009 ppm). The sedge, *Typha* took up heavy metals in the following order: Cr > Pb > As > Cd > Hg. Industrial sewage, river suspended sediments and agrochemicals such as fertilizers, pesticides are identified as the possible sources for the heavy metal loads. Presently, it is highly recommended to detour the water inflow channel to avoid the accumulation of toxic heavy metals.

Keywords: Aquatic environment, Kalametiya lagoon, Phytoremediation, Spatial distribution, Typha angustifolia