



610/E2

Comparison of atmospheric deposition of heavy metals in Kandy and Puttalam areas in Sri Lanka using moss (*Hyophila involuta*) as a bioindicator: Short term study

K G Jayalath, M P Deeyamulla* and R C L De Silva
Department of Chemistry, University of Kelaniya, Kelaniya

Atmospheric deposition of five heavy metals (Cu, Pb, Ni, Cr and Cd) using moss *Hyophila involuta* as a bioindicator was investigated in the Puttalam and Kandy areas, which belong to two different climatic and geographical zones in Sri Lanka.

In this study native moss species (*Hyophila involuta*) were collected from fourteen sampling points in Puttalam and twenty sampling points in Kandy. Monthly sampling was carried out from February to April 2013 and the heavy metal contents of moss samples were analyzed by Atomic Absorption Spectrophotometry (AAS).

The atmospheric deposition of heavy metal concentration in all sampling sites is given by dry weight of moss and the ranges of heavy metals are Cu (11.20 $\mu\text{g/g}$ – 55.84 $\mu\text{g/g}$), Pb (4.90 $\mu\text{g/g}$ – 22.91 $\mu\text{g/g}$), Ni (6.20 $\mu\text{g/g}$ – 16.18 $\mu\text{g/g}$), Cr (6.60 $\mu\text{g/g}$ – 27.93 $\mu\text{g/g}$) and Cd (0.44 $\mu\text{g/g}$ – 2.58 $\mu\text{g/g}$) in Kandy and Cu (8.24 $\mu\text{g/g}$ – 21.28 $\mu\text{g/g}$), Pb (0.73 $\mu\text{g/g}$ – 10.38 $\mu\text{g/g}$), Ni (4.86 $\mu\text{g/g}$ – 13.63 $\mu\text{g/g}$), Cr (4.97 $\mu\text{g/g}$ – 21.68 $\mu\text{g/g}$) and Cd (0.01 $\mu\text{g/g}$ – 1.00 $\mu\text{g/g}$) in Puttalam respectively.

According to the short term data collected, heavy metal pollution in Kandy is higher than that of Puttalam. Also the results considerably indicate higher values of Cu and Pb in Kandy compared to other metals. Detected concentrations of heavy metals in *Hyophila involuta* at different sampling stations were usually influenced by urban, industrial, and traffic activities of the areas and consequently it can be used for source identification of pollution.

Keywords: Atmospheric deposition, bioindicator, heavy metal, mosses, Sri Lanka.

Acknowledgements: Financial assistance from HETC-QIG W3 project