



618/E2

Assessment of atmospheric metal pollution in Battaramulla using high-volume air sampler and *Hyophila involuta* biomonitor

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Atmospheric heavy metal deposition of Cr, Cu, Ni and Pb was monitored at Battaramulla area using a high volume air sampler and moss biomonitoring, in parallel, and the results obtained from two techniques were compared. The level of heavy metal deposition was recorded during 10 weeks from September 2013 to November 2013 using moss *Hyophila involuta* as a biomonitor and high volume air sampler (Ecotech 2000 model). Weekly sampling of moss was carried out during 10 weeks and the high volume air sampler (70 m³/hr flow rate, 24 hrs) was operated once a week to collect the ambient air using glass fiber filters. The atmospheric deposition of heavy metals in moss samples is given as µg of heavy metals in 1 g of dry weight of moss and the ranges of heavy metals in moss were Cu (45.10-74.65) µg/g, Pb (21.98-45.27) µg/g, Ni (25.65-62.90) µg/g and Cr (13.18-33.15) µg/g. Ranges of heavy metal concentration in filter papers, given as ng of heavy metal per 1 m³ exposure area of the atmosphere, were Cu (9.30-20.47) ng/m³, Pb (1.81-4.90) ng/m³, Ni (4.26-13.67 ng/m³) and Cr (4.32-10.89) ng/m³. The amount of heavy metals in filter papers in ng/m³ and moss in µg/g were compared from September 2013 to November 2013. Graphs were plotted between amount of metal in moss (µg/g) and amount of metal in filter paper (ng/m³) and the correlation was obtained. When considering the linear correlation, high R² values were obtained for Cr, Cu, Ni and Pb. This higher correlation suggests that moss biomonitoring can be used as an alternative method for direct monitoring of heavy metals in ambient air.

Keywords: Moss, heavy metals, biomonitoring, correlation, air sampling