SECTION E2

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Moss (*Barbula* sp.) as a bioindicator of monitorning heavy metal air pollution around Sapugaskanda industrial area in Sri Lanka

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The moss *Barbula sp*., a species found to absorb heavy metals from atmospheric deposition more effectively compared to some other moss species found in Sri Lanka, was used as a bioindicator for the estimation of atmospheric heavy metal deposition around the industrial area of Sapugaskanda (Kelaniya, Sri Lanka), which includes an oil refinery, an industrial zone and three power plants. Background level was determined from the data obtained from two remote sites, Kosmulla (Sinharaja boarder village) and Nikapitiya (Kegalle) distance greater than 100 km from the study area where anthropogenic influence is very low. For comparison purpose a site close to the Fort railway station was selected as an urban area. Atomic Absorption Spectrophotometry (AAS) determined bioaccumulation of heavy metals (Pb, Ni, Cu, Cd and Cr) in moss during six months of period from August 2006 to January 2007.

Heavy metal concentrations measured in all the sampling sites during six months period is given in μg/g dry weight. Generally, the highest values were measured close to the sources. For Pb and Cu the results showed very similar patterns with extremely high values in the immediate surroundings of the industrial area. Ni showed somewhat different pattern, but still pointing to local pollution source. The highest Pb concentration was recorded close to the A1 road and Kelanithissa power plant where fossil fuel combustion is very high. The levels of metals at distance of about 8 km from the industrial site were still higher than in background samples. In general, the heavy metal concentrations in moss reflect the sources of emissions characteristic of the areas in which they occur and hence effects of the major pollution sources located in industrial zones could be readily detected on the basis of moss analysis.

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