E2-28 Studies on some selected aquatic plants for heavy metal pollution

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Aquatic plants are known to absorb and accumulate heavy metals from the surrounding water medium in which they grow. Therefore aquatic plants have been used to monitor and control pollution levels in the environment.

The aquatic plants commonly growing in some selected waterways in the Colombo district, suspected to be polluted due to industrial and human activity were screened for the accumulation of chromium (Cr), cadmium (Cd) and lead (Pb). Surrounding the waterways, a toffee factory, an aluminium industry, a PVC manufacturing industry, a chemical industry and a cloth washing and dyeing plant are located. In addition, vehicle service stations, batteries and electronic instruments repairing stations, garbage dumping and land filling, used batteries, effluent from chemical stores, from oil tanks, from hotels and markets are also seen around the water bodies.

The study was conducted with Olu *(Nymphea pubescens)*, Hydrilla *(Hydrilla)*, Water Hyacinth *(Eichhornia crassipes)* and Salvinia *(Salvinia cuculata)*. The selected water bodies for the study were Boralasgamuwa lake, Kesbawa lake, Kohilawatte canal, Wellampitiya lagoon and Wellampitiya canal. The sampling of water and aquatic plants were done in the vicinity of the industrial and human activity. The collected water samples and the aquatic plants were analysed by Differential Pulse Anodic Stripping Voltametry (DPASV), which was found to be the most suitable method for the metal concentrations present. Analysis of the water samples (45 samples) showed that most of the five selected water bodies had a higher concentration of Pb (42-25 ppb) than Cd (10-39 ppb) and Cr (13-17 ppb). Analysis of aquatic plants showed that they had the potential to absorb and accumulate metal ions. The results clearly indicated that all the analysed plants had a greater potential for the accumulation of chromium ($\rightarrow$600 ppb - mean value for all the plants) compared to Cd ($\rightarrow$ 175 ppb). Hardly any Pb was detected in the plants, although the concentration of Pb was highest in the surrounding water. Water hyacinth showed the highest accumulation of Cr (mean value $\rightarrow$ 731 ppb) followed by hydrilla (645 ppb) and then by salvinia (629 ppb) and finally by Olu (468 ppb).

This study showed that all the five water bodies investigated were appreciably polluted with Pb, Cd and Cr due to industrial and human activity. The most interesting finding was the preferential absorption and accumulation of Cr from the surrounding water even though the growth medium had a higher concentration of Pb and Cd.