(233)

Removal of heavy metals and nutrients from wastewater using *Salvinia molesta* and *Lemna gibba*

Abeywardhana, M.L.D.D.[1]*, Bandara, N.J.G.J. [1], Rupasinghe, S.K.L.S.[2]

[1]*Department of Forestry and Environmental Science, University of Sri Jayewardenepura, Sri Lanka*
[2] *National Water Supply and Drainage Board, Ratmalana*
*dnudilini@gmail.com

As a result of industrialization and population growth, wastewater generation is increased worldwide. Heavy metals and excessive Nitrogen and Phosphates in industrial and municipal wastewater impose detrimental effects on environment and human health. The treatment of wastewater prior to release to water bodies is a vital necessity. Phytoremediation is an economically viable and eco-friendly plant based technique used to clean up contaminated water. The potential of aquatic macrophytes in removal of nutrients and heavy metals in wastewater is revealed by several studies. *Eicchornia* spp., *Pistia* spp., *Salvinia* spp., *Azolla* spp. and Duckweeds have shown their capacities in the removal of nutrients and heavy metals from wastewater in many studies. The aim of this study was to investigate the heavy metal (Cr, Cu and Fe) and nutrient removal efficiencies of *Salvinia molesta* and Duckweeds (*Lemna gibba*) from industrial wastewater in an operational period of seven days. The samples were analyzed for Nitrates, Nitrites, ammonia Nitrogen, Phosphates and heavy metals at 24 hour intervals. Biological oxygen demand, Chemical oxygen demand and total kjeldhal Nitrogen were analyzed at 7 day intervals. According to the results, the average Total Nitrogen removal efficiencies of *S. molesta* and *L. gibba* are 73.34% and 62.18% respectively. The average Total Phosphate removal efficiencies of *S. molesta* and *L. gibba* are 72.63% and 77.28% respectively. The average Cr, Cu,Fe, Ni and Pb removal efficiencies of *S. molesta* are 81.66%, 69.81%,65.26%,66.39% and 74.85% respectively. The average Cr, Cu, Fe, Ni and Pb removal efficiencies shown by *L. gibba* are 86.99%, 69.77%, 73.10%, 61.87% and 85.74% respectively. The results show that these two species are suitable candidates for polishing wastewater prior to release to water bodies.

*Key words***:** *Phytoremediation, lemna gibba, Salvinia molesta*

Proceedings of the 22ⁿᵈ International Forestry and Environment Symposium 2017 of the Department of Forestry and Environmental Science, University of Sri Jayewardenepura, Sri Lanka

45