

WATER QUALITY IMPROVEMENT USING SELECTED PLANT BIOMASSES

A dissertation submitted to the
Faculty of Science and Technology, UvaWellassa University
in partial fulfilment of the requirements for the award of the Degree of
Bachelor of Technology

by

ROBERT RAMIYA

**Faculty of Science and Technology
UvaWellassa University, Sri Lanka**

OCTOBER 2012

ABSTRACT

The continuing increase in global population has increased the demand for freshwater supply. One important factor affecting freshwater availability is associated with socioeconomic development, and another factor is the general lack of sanitation and waste treatment facilities in high-population areas of developing countries. The major water quality issues are removal of heavy metals, increased amounts of salts concentration, high turbidity, hardness, water-borne pathogens and noxious and toxic pollutants. Human health is still at substantial risk due to poor quality of drinking water. Treating polluted water mainly available for drinking is a costly process. Using locally available natural coagulants are suitable, easier, and environment friendly options for water treatment. This research was carried out to determine the effectiveness of plant biomasses commonly available which are to treat polluted water. Heavy metals, turbidity, hardness and conductivity were determined. *Moringa oleifera* shows more than 50 % of metal removal and the highest percentage removal was achieved for Arsenic (As^{5+}) and Iron (Fe^{3+}) 83.49% and 85.86% respectively. Banana peel and corn do not show very high percentages of heavy metal removal. Their heavy metal removal percentages were low as less than 10%. For the turbidity experiment, the percentage absorption of turbidity of *Strychnos potatorum* and *Moringa oleifera* were 86.31% and 72.52% respectively. Absorption percentage of hardness high in *Moringa oleifera* (82.34%), and in *Strychnos potatorum* (50.80 %). Absorption efficiency is increasing with the increasing dosage of biomass. Highest conductivity absorption (40.22 %) was achieved in *Strychnos potatorum*. And *Zea mays* (Corn) also removing 25.56% of conductivity. *Moringa oleifera* seeds and *Strychnos potatorum* can be used to treat the polluted water.

Key words- Treating polluted water, Plant biomasses, Heavy metal, Turbidity, Hardness, Conductivity