

Thesis Title Lead Removal From Wastewater by Using Adjusted
Eichhornia crassipes (Mart.) Solms.

Name Sung Wesarujtragul

Degree Master of Science (Environmental Technology)

Thesis Supervisory Committee

 Krisana Teankaprasith M.S.(Env. Health)

 Komol Sivaborvorn Dr.P.H. (Env. H. Science)

 Chaovayut Phornpimolthape M.S.I.E.(. Operations Research)

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Abstract

The objective of this study was to determine the efficiency of *Eichhornia crassipes* (Mart.) Solms (Water hyacinth) in removing lead from wastewater at various flow rates and using filter columns of various heights. Water hyacinth in this study was treated with formaldehyde and sulfuric acid. The treated water hyacinth was packed in two glass columns of 2.5 cm diameter at a height of 30 and 60 cm. Non-treated wastewater from a battery factory, naturally precipitated for 2 days, was used as a water sample. This water sample was adjusted to a pH of around 5-6 and was continuously run through each column with a flow rate of 10, 20 and 30 ml/min. Filtrate samples were collected every hour for 7 hours and analyzed for lead content by means of Atomic Absorption Method.

The results indicated that treated water hyacinth could remove lead from wastewater. The effectiveness of removal depended on the flow rate of wastewater and the height of water hyacinth in the treatment columns. That is, when the flow rate of wastewater increase, the efficiency of removal decreased. At flow rates of 10, 20 and 30 ml/min with a column height of 30 cm, the average efficiency of lead removal was 95.29 %, 95.03 %, and 94.62 % respectively. Furthermore, when the height of water hyacinth in the treatment columns increased, the efficiency of lead removal increased. The highest percentage lead removal was

98.81 % with a flow rate of 10 ml/min and a 60 cm high treatment column. The lowest percentage was 93.08 % with a flow rate of 30 ml/min and a 30 cm high treatment column.