

Surangkanang Tumrat 2013: The Effective Removal of Formaldehyde in Wastewater by the Mixture of *Typha Angustifolia* Adsorbent and Soil as Growing Materials in the Grass Filtration Treatment System. Master of Science (Environmental Science), Major Field: Environmental Science, Department of Environmental Science. Thesis Advisor: Associate Professor Kanita Tungkananurak, M.Sc. 72 pages.

This aim of this research was to develop an effective adsorbent to enhance the removal efficiency of formaldehyde in wastewater by the grass filtration treatments system. Dried *Typha Angustifolia* and *Typha Angustifolia* charcoal were used as adsorbent. A batch experiment were conducted and the effecting parameters of adsorbent dosage, removal time and the ratio of adsorbent to soil on formaldehyde removal from 20mg/L of the formaldehyde solution were investigated. The results of dried *Typha Angustifolia* and *Typha Angustifolia* charcoal 53.84% and 71.74% of formaldehyde were removed respectively at 3 and 4 g of adsorbent dosage respectively and 60 and 45 min of removal time respectively.

A continuous flow experiment was performed and found that the suitable ratio by weight of *Typha Angustifolia* charcoal to soil was 8:400 for obtaining the percent removal of formaldehyde at 97.99% and no desorption after 5 days. In addition, the filtrated lysimeter techniques experiment with 40L of 20 ppm of the synthetic wastewater and growing *Typha Angustifolia* was carried out in square plastic tank size 51x51x54 cm that packed with gravel 7cm, coarse sand 3 cm, fine sand 2 cm and *Typha Angustifolia* charcoal with soil(8:600) found that 98.36% of formaldehyde were removed. Therefore, the mixture of *Typha Angustifolia* charcoal and soil has a high potential for utilizing as growing material in the grass filtration wastewater treatment system for removal of formaldehyde.

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