

Budsaya Makonglad 2012: Adsorption of Textile Dyes in Wastewater from The Doi Tung Development Project By Water Hyacinth Leaf Powder and Commercial Coconut Shell Carbon. Master of Science (Environmental Science), Major Field: Environmental Science, College of Environment. Thesis Advisor: Associate Professor Nipon Tungkananuruk, Ph.D. 148 pages.

The objective of this research was to study the feasibility of using water hyacinth leaf powder and commercial coconut shell carbon to adsorb dyes in textile wastewater from Doi Tung Development Project. Factors influencing dyes adsorption were studied as a function of pH, agitation rate, agitation time, contact time, concentration of mixed standard dyes solution and adsorbent dose. The results showed that only six dyes were adsorbed by the water hyacinth leaf powder at average adsorption of 55.43%. Under the optimal condition 1 g of adsorbent, pH 5, 100 rpm of agitation rate, 30 min of agitation time and 150 min of contact time, and 30 mg/L of mixed standard dyes solution, whereas commercial coconut shell carbon, nine dyes were adsorbed at average adsorption of 93.04% under the optimal conditions 5 g of adsorbent, pH 7, 50 rpm of agitation rate agitation time 60 min and contact time 30 min, and 40 mg/L of mixed standard dyes solution. The adsorption in batch process of water hyacinth leaf powder, and commercial coconut shell carbon was conformed with Freundlich and Langmuir isotherms respectively. Under these condition the average highest dyes removal efficiency in textile wastewater from Doi Tung Development Project by water hyacinth leaf powder and commercial coconut shell carbon were 69.65% and 43.34% respectively. Continuous experiments was conducted and found that 60 mL/min was the suitable flow rate for remove dyes by commercial coconut shell carbon. The break point of 373 g of commercial coconut shell carbon found to be 19.8 and 3.6 L. for mixed standard dyes solution and textile wastewater respectively. In addition field test, the batch experiment by using 200 g of water hyacinth leaf powder can remove dyes from 10 L. of the mixed standard dyes solution at 44.17% and from textile wastewater at 46.31%

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