

Akaprapa Sukadjasakul 2012: Dyes Removal from Doi Tung Development Project
Textile Wastewater Utilizing Adsorbent from Water Hyacinth and *Cyperus corymbosus*
Rottb. Master of Science (Environmental Science), Major Field: Environmental
Science, College of Environment. Thesis Advisor: Associate Professor
Nipon Tungkananuruk, Ph.D. 132 pages.

This research was to study the effectiveness of adsorbent from Water Hyacinth and *Cyperus corymbosus* Rottb. in removing dyes from mixed standard dyes solution and textile wastewater from Doi Tung Development Project. Nine reactive dyes were used e.g. 6% Super Black G, 2% Turquoise H-GN, 2% Yellow LS-4G, 2% Yellow LS-R-01, 2% Orange LS-BR, 4% Navy LS-G, 2% Red LS-B, 2% Blue LS-3R and 2% Br.Blue LS-G. The experiment was conducted in order to figure out the optimum treatment in batch experiment. The studied factors were pH (4-8), mixing speed (0-200 rpm), shaking time (15-120 min.), contact time (0-240 min.) concentration of mixed standard dyes solution (10-80 mg/L) and amount of adsorbent (1-5 g). The results demonstrated the average highest adsorption efficiency of dyes in mixed standard solution by adsorbent from Water Hyacinth at 76.21% (or 0.953 mg/g of adsorbent) under the condition pH 4, adsorbent weight 2 g, shaking speed 50 rpm, shaking time 30 min, contact time 90 min and concentration of mixed standard dyes solution 50 mg/L, while adsorbent from *Cyperus corymbosus* Rottb. can remove only six dyes (2% Yellow LS-4G, 2% Yellow LS-R-01, 4% Navy LS-G, 2% Red LS-B, 2% Blue LS-3R and 2% Br.Blue LS-G) and gave the average percentage of adsorption at 56.14% (or 0.374 mg/g of adsorbent) under the condition pH 7, adsorbent weight 3 g, shaking speed 50 rpm, shaking time 15 min, contact time 30 min and concentration of mixed standard dyes solution 40 mg/L. The adsorption mechanism of adsorbent from Water Hyacinth was conformed to the Langmuir isotherm and adsorbent from *Cyperus corymbosus* Rottb. was conformed to the Langmuir and Freundlich isotherm. The removal performance of dyes in textile wastewater from Doi Tung Development Project by adsorbent from Water Hyacinth and *Cyperus corymbosus* Rottb. were 56.48% and 31.95% average adsorption respectively.

Student's signature

Thesis Advisor's signature