

Pawida Niyomtong 2013: Dyes Removal in Textile Wastewater from Doi Tung Development Project Using the Mixture of Macadamia Shell and Soils as Growing Materials in the Constructed Wetland Wastewater Treatment System. Master of Science (Environmental Science), Major Field: Environmental Science, Department of Environmental Science. Thesis Advisor: Associate Professor Kanita Tungkananuruk, M.Sc. 125 pages.

This research, macadamia shell from macadamia production of Doi Tung Development Project which is quantities large waste and difficult to eliminate were used as dyes removal adsorbent in Doi Tung textile effluent. The utilized adsorbents 4 types were macadamia shell, macadamia charcoal and macadamia shell and macadamia charcoal by sodium chloride treatment. Batch experiment were performed to investigate the suitable condition for removal of 9 dyes from Doi Tung Development Project (Yellow LS-R-01, Yellow LS-4G, Super Black G, Navy LS-G, Orange LS-BR, Blue LS-3R, Red LS-B, Br.Blue LS-G and Turquoise H-GN) in 50 ml. of 20 mg/L. of the dyes synthetic wastewater. The results demonstrated that four types of adsorbent had the same suitable condition at 16 g. of adsorbent dosage, pH 7 and contact time 10 hours, while macadamia charcoal treated with sodium chloride gave the best dye removal at 31.58 % and 54.45 % for Doi Tung textile factory effluent. The adsorption mechanism of adsorbent was conformed to the Langmuir adsorption isotherm and the optimum ratio of adsorbent (macadamia charcoal treated with sodium chloride) to soil was 1:5 by weight to remove dyes at 95.75 %. The continuous flow experiment was performed for the constructed wetlands system model of the King's Royally Initiated Leam Phak Bia Environmental Research and Development Project by using glass column size 5.8x37 cm. that containing with gravel, fine sand, coarse sand and mixing soil with adsorbent, the removal percentage were 96.31 for the synthetic wastewater and 68.45 for Doi Tung textile factory effluent. Furthermore, the filtrated lysimeter technique was carried out in square plastic tank with size 51x51x54 cm. that containing the growing material with growing *Cyperus Corymbosus Rottb* and *Typha Angustifolia*. The results that 96.63 % (for *Cyperus Corymbosus Rottb*) and 96.16 % (for *Typha Angustifolia*) of dyes were removed.

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Student's signature

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Thesis Advisor's signatur