

Saowapak Pholjaroen 2013: The Effective Treatment of Dyes in Doi Tung Textile Wastewater by Utilizing a Mixture of Lignite Fly Ash Adsorbent and Soil for Growing Material in Grass Filtration Treatment System. Master of Science (Environmental Science), Major Field: Environmental Science, Department of Environmental Science. Thesis Advisor: Associate Professor Nipon Tungkananuruk, Ph.D. 84 pages.

This research was to study the adsorption optimum condition for removal of dyes by using lignite fly ash in order to increasing the efficiency of grass filtration and wetland treatment system. From the batch experiment, the results demonstrated the average highest removal percentage of nine dyes of Doi Tung textile factory (Yellow LS-RN, Yellow LS-4G, Orange LSB, Red LS-BN, Blue LS-3R, Black G, Navy LS-G, Turquoise H-GH and Br.Blue G) from the synthetic wastewater contained with each of a dyes at 10 mgL^{-1} , 50 ml. by 2 gram of lignite fly ash at pH 7 and contact time 4 hr. was 99.41% and 45.84% for Doi Tung textile factory wastewater. The adsorption isotherm could explain by Langmuir isotherm. Furthermore, the continuous flow experiment was studied and found that the suitable ratio by weigh of lignite fly ash to soil was 1:15 for obtaining the average removal of dyes at 99.54% and no desorption after 5 days. In addition, the filtrated lysimeter techniques experiment with 20 L of 10 ppm of the synthetic wastewater and growing *Typha Angustifolia L.* and *Vetiveria zizanioides* was carried out in square plastic tank size $51 \times 51 \times 54$ cm. that packed with gravel 7 cm., coarse sand 3 cm., fine sand 2 cm. and mixed lignite fly ash with soil 1:15 and found that 99.41% and 98.08% respectively of dyes were removed. Therefore, the mixture of lignite fly ash and soil has a high potential for utilizing as growing material in the grass filtration treatment system.

Student's signature

Thesis Advisor's signature

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