

Wachirapon Boondouylarn 2014: Tertiary Treatment of UASB Treated Effluent of Elastic Rubber Factory by Coconut Shell Charcoal Adsorption in Combination with Grass Filtration System and Constructed Wetland. Master of Science (Environmental Science), Major Field: Environmental Science, Department of Environmental Science. Thesis Advisor: Associate Professor Nipon Tungkananuruk, Ph.D. 75 pages.

Effluent from UASB treatment of elastic rubber factory have a problem of yellow-brown color and high COD. Therefore, this research was to investigate the improvement efficiency of a grass filtration system and constructed wetland by using coconut shell charcoal as adsorbent. The batch experiments were carried out and found that coconut shell charcoal 4 g. per 50 ml of wastewater and 3 hr. of contact time gave the maximum removal percentage of color was 44.21 and COD was 95.77. Moreover the adsorption model fit to Freundlich Isotherm more than Langmuir isotherm. The ratio by weight of coconut shell charcoal to soil at 1:50 was the suitable ratio. From the continuous flow experiments revealed that the grass filtration treatment system had a higher color and COD removal efficiency than the constructed wetland. Furthermore, the filtrated lysimeter technique were conducted to simulate the constructed wetland and the grass filtration system by using the suitable ratio of coconut shell charcoal and soil as growing material and growing *Cyprinus alternifolius* and *Vetiveria zizanioides*. The results were found that the grass filtration system with growing *Vetiveria zizanioides* had the highest removal efficiency of color and COD percentage at 88.89 and 66.67 respectively.

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Student's signature

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Thesis Advisor's