Anupong Kumlue 2014: Elastic Rubber Factory Wastewater Treatment by Grass Filtration System and Constructed Wetland with Utilizing Coconut Shell Charcoal Adsorbent as Growing Material. Master of Science (Environmental Science), Major Field: Environmental Science, Department of Environmental Science. Thesis Advisor: Associate Professor Kanita Tungkananuruk, M.Sc. 79 pages.

The purpose of this research was to investigate the improvement efficiency of a grass filtration system and constructed wetland for elastic rubber factory wastewater treatment by using coconut shell charcoal adsorbent to remove a variety of organic compounds. From batch experimental results, it was found that starting with an initial COD concentration of 3,840 mg/l 50 ml and 4 g coconut shell charcoal, the maximum color and COD reduction percentaqe were achieved at 79.16 and 55.01 respectively for 4 hr of removal time and 77.67 and 62.32 respectively for 4 days of removal time. Furthermore, adsorption mechanism was conformed to both Freundich and Langmuir Isotherm and the suitable ratio by weight of charcoal to soil was 1:50. The continuous flow experiment was conducted to simulate the filtrate layers of a grass filtration system and constructed wetland system which the top layer was the mixed of charcoal and soil. The results revealed that the treatement efficiency of a grass filtration system had similar to constructed wetland. Therefore, the filtrated lysimeter technique was investigated by using both a grass filtration system and constructed wetland which comparative study which were treatment plants (*Cypernusalternifolius* and *Vetiveriazizanioides*) and growing materials (mixed of charcoal and soil and soil only). The results showed that COD of treated effluent from all experimental units were less than the standard effluent quality control of industry (120 mg/l). The maximum percent removal of color and COD achieved from the grass filtration system which growing *Cypernusalternifolius* in mixed of charcoal and soil were 91.32 and 76.68 % respectively.

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