Pascharaporn Kanyapasit 2014: Wastewater Treatment of Thai Fermented Rice Noodle Factory by Utilizing Coagulation - Flocculation in Combination with the Grass Filtration System and the Constructed Wetland of The King's Royally Initiated Laem Phak Bia Environmental Research and Development Project. Master of Science (Environmental Science), Major Field: Environmental Science, Department of Environmental Science. Thesis Advisor: Associate Professor Kanita Tungkananuruk, M.Sc. 105 pages.

The Thai fermented rice noodle production processes produced large amount of wastewater that containing high organic substances and acidity. Therefore, the effluent from Thai fermented rice noodle factory is one of the aquatic environmental problem. The aim of this research was to reduce color, turbidity and COD by coagulation – flocculation combine with natural treatment From jar test experiment, the results revealed that at pH 8 of 1L wastewater and using the alum solution 18 ml gave the better removal efficiency than, using lime solution. Moreover, the adsorption efficiency by coconut shell charcoal for improveing the natural treatment was done. The batch experimental results showed that this charcoal could remove color, turbidity and COD and the adsorption behavior comformed with Langmuir and Freundich isotherm. The continuous flow experiment was also investigated to determine the removal efficiency of the filtration layers with the top layer was mixture of coconut shell charcoal and soil in ratio by weight of 1:60 and treated wastewater similar to the grass filtration system and the constructed wetland. From the grass filtration system, the removal efficiency percentage of color, turbidity and COD were 93.65, 97.56 and 91.26 respectively that results were higher than the constructed wetland system. In addition, the filtrated lysimeter technique was conducted in the same manner as continuous flow experiments and growing *Typha angustifolia* and *Cyperus Corymbosus*. The results were found that *Typha angustifolia* had higher efficiency than *Cyperus Corymbosus*. and the removal efficiency at 95.95, 95.81 and 97.60 respectively were achieved.

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