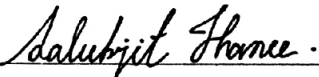
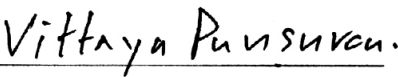


Salukjit Thanee 2006: Quantitative of Phenolic Compounds in Treated Pulp and Paper Mill
Wastewater after Adsorption by Activated Carbon. Master of Science (Environmental Science),
Major Field: Environmental Science, College of Environment. Thesis Advisor: Associate
Professor Vittaya Punsuvan, Ph.D. 147 pages.
ISBN 974-16-2809-9

The purpose of this research was to determine the adsorption capacity of activated carbon made from rubber wood in reducing color, COD and the content of phenolic compounds. The concentrations of activated carbon used in the experiment were 0.05, 0.10, 0.20 and 0.50% (W/V) and the wastewater effluent after treatment with activated sludge from pulp and paper factory was used in order to find the equilibrium point. The result showed that the optimum condition was 24 hour of adsorption time. The adsorptive capacity (K) of color and COD were 3.0965 and 0.0807 respectively. The constant values of $1/n$ were 0.8621 and 1.6833 respectively.

The analytical result from determination of adsorption capacity showed that 24 hours of adsorption time and 0.50% (W/V) of activated carbon. This condition removed 88.3707 % of color, 81.4583 % of COD. The result from gas chromatography – mass spectrometry (GC-MS) identify chemical compounds before adsorption were Isobutyl Isobutyrate, Butyl Butyrate, Isovanillic Acid, Dibutyl Phthalate, E – Icosane, Dioctyl Phthalate respectively. The GC-MS explained that wastewater from pulp and paper factory consisted of two chemical sources, one from extractive and additive agent and another from degraded lignin. The chemical compounds from extractive and additive agent were Isobutyl Isobutyrate, Butyl Butyrate and E – Icosane. The chemical compounds from degraded lignin were Dioctyl Phthalate, Dibutyl Phthalate and Isovanillic Acid. These chemical compounds contributed brown color of wastewater effluent that related in reducing COD and color to 44.50 mg/L and 53.34 ADMI Unit. The adsorption capacity of COD and color were 81.4583 % and 88.3707 %. The adsorption removed all of these compounds; E – Icosane, Isovanillic Acid and Dioctyl Phthalate. The color left about 11.6293% came from Dibutyl Phthalate, Isobutyl Isobutyrate and Butyl Butyrate. The experiment result could reduced color to accepted and wastewater effluent passed effluent standard of department of industrial works.


Student's signature

 30, Oct, 2006
Thesis Advisor's signature