

Rattanawalee Lerdthanakit 2006: Leachate Treatment by Coagulation and Activated Carbon Adsorption Process. Master of Engineering (Environmental Engineering), Major Field: Environmental Engineering, Department of Environmental Engineering. Thesis Advisor: Mr. Pipat Pooripanyakun, M.Eng. 208 pages.
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The objective of this research was to study the efficiency of leachate treatment by coagulation and activated carbon adsorption process. The testing of leachate treatment by coagulation process with three types of coagulant: aluminum sulfate, ferricchloride and polyaluminumchloride found that the efficiency average to remove color turbidity suspended solids and COD were at 90.55-95.02%, 91.65-93.63%, 90.22-91.61% and 51.42-63.75% respectively. This result showed that the efficiency treatment of three types of coagulant differed insignificantly. Therefore, aluminum sulfate was selected as the best appropriate coagulant due to the low price. For activated carbon adsorption process overflow rate at 0.02, 0.03 and 0.04 $\text{m}^3/\text{m}^2\text{-min}$ with the depth of the activated carbon layer 0.2, 0.5, 0.8 m, it was found that the overflow rate 0.02 $\text{m}^3/\text{m}^2\text{-min}$ with the depth of the activated carbon layer 0.8 m gave the best efficiency to remove color turbidity suspended solids and COD were at 60.48%, 67.19%, 74.62% and 81.31% respectively. The combination of the use of aluminum sulfate as coagulant with the activated carbon adsorption process at the overflow rate of 0.02 $\text{m}^3/\text{m}^2\text{-min}$ with the depth of the activated carbon layer 0.8 m had the efficiency to remove color turbidity suspended solids and COD were at 95.93-99.92%, 96.87-97.75%, 92.68-94.87% and 83.81-98.13% respectively. This leachate treatment was allowed by the effluent of Thai Industrial standard and Industrial Estate Authority of Thailand (IEAT) standard. The cost of this treatment process was 1,118.49 bahts/ m^3 .

The result of the research showed that the pretreatment by the coagulation process before conducting the activated carbon adsorption process will reduce suspended solids in leachate and increase the life span and the capacity of carbon adsorption. Hence, to complete leachate treatment, the combination of coagulation process and the activated carbon adsorption process should be used in landfill of Pathumtani Municipality.

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