

Phattharamas Thiemngeon 2010: Investigation of Optimum Condition for the Treatment of Stabilized Leachate by Chemical Coagulation and Filtration. Master of Engineering (Environmental Engineering), Major Field: Environmental Engineering, Department of Environmental Engineering. Thesis Advisor: Associate Professor Chart Chiemchaisri, D.Eng. 77 pages.

This research aim to investigate appropriate operating condition for stabilized leachate treatment by coagulation and sand filtration. In the study was divided into 2 parts. In the first part, appropriate pH, ferric chloride and polymer dose in chemical coagulation were investigated. It was found that pH of 6 was optimum for coagulation, whereas 1.5 g/L FeCl₃ and 0.01 g/L polymer (anionic) were effective to eliminate suspended solids, turbidity, COD and color by 97%, 99%, 84%, and 95% respectively. The second part, optimum condition for chemical coagulation coupled with sand filtration was studied. The results show that in-line coagulation by adding FeCl₃ and polymer before sand filtration improved the efficiency of sand filter. Optimum dosage of 1.2 g/L FeCl₃ in sedimentation tank followed by in-line coagulation using 0.3 g/L FeCl₃ and 0.01 g/L polymer was found. This condition provided a better result because the entrapped particles in sand filter is larger than those in sedimentation tank and sand filter could trap the particles better along the depth of filter. The stabilized leachate pretreatment by coagulation and filtration under optimum condition followed by membrane filtration gave highest removal efficiencies of COD, turbidity, suspended solid and color at 74%, 93%, 99% and 93% respectively. The chemical pre-treatment also reduce the clogging on microfiltrate membrane.

Student's signature

Thesis Advisor's signature