

Sunya Tangsri 2007: Stabilization of Solid Wastes in Landfill and Utilization of Stabilized Waste Matrix for Leachate Treatment by In-situ Aeration Method. Master of Engineering (Environmental Engineering), Major Field: Environmental Engineering, Department of Environmental Engineering. Thesis Advisor: Associate Professor Chart Chiemchaisri, D.Eng. 139 pages.

This study was conducted to examine the stabilization of old refuse (3 years old) in landfill lysimeters by in-situ aeration method. The experiment was conducted under 2 different conditions, i.e. wet and dry seasons, combining for 210 days. The changes in waste and leachate characteristics along the experimental period were studied. According to the experimental results, it was found that the lysimeters with aeration had total nitrogen in waste reduced by 80 %. Leachate recirculation with aeration could produce leachate with its characteristics close to those of matured leachate, i.e. BOD less than 30 mg/l, COD less than 300 mg/l and TKN less than 180 mg/l.

The stabilized waste matrix was then applied to the treatment of fresh leachate containing BOD of 2,000 - 4,000 mg/l, COD 3,000 - 5,000 mg/l, and TKN of 100 - 300 mg/l, under aerobic condition of 8.5 and 17.0 m³/h. It was found that the treated leachate had BOD less than 15 mg/l, COD less than 15 mg/l, and TKN less than 15 mg/l, accounted for removal efficiencies of more than 90 % at hydraulic loading rate of 20 - 40 l/m³ of solid wastes/d.

Sunya Tangsri
Student's signature

Chart Chiemchaisri
Thesis Advisor's signature

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