

Ekachai Karunsathichai 2011: Reduction of Methane Production Potential of Solid Wastes by Leach Bed Reactor. Master of Engineering (Environmental Engineering), Major Field: Environmental Engineering, Department of Environmental Engineering. Thesis Advisor: Associate Professor Chart Chiemchaisri, D.Eng. 121 pages

The purpose of this research is to reduce methane potential of solid wastes by leach bed reactor. Water leaching is the first part of integrated organic waste treatment system which consists of waste leaching and leachate treatment and recycling unit. The objective of this waste treatment is to stabilize organic wastes prior to landfilling.

The experiment was conducted to determine optimum water leaching rate, re-circulation pumping pattern and effect of aeration on organic waste leaching. From the experimental results, it was found that an application of 50 l/d or 6.25 l/kg waste.d water leaching rate could reduce methane production potential up to 68% when compared to untreated wastes. Appropriate water re-circulation pattern was 4 hours pumping followed by 4 hours resting period which helped promoting hydrolysis reaction. An application of aeration during water leaching also accelerated waste stabilization and increased organic leaching from solid wastes and therefore yielding treated wastes with lowest methane production potential.

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Thesis Advisor's signature