Ruwini Weerasekara 2008: Effect of Solid Waste Disposal Conditions on Leachate Characteristics in Tropical Landfill. Masters of Engineering (Environmental Engineering), Major Field: Environmental Engineering, Department of Environmental Engineering. Thesis Advisor: Associate Professor Chart Chiemchaisri, D.Eng. 127 pages.

This research was carried out to determine the effect of solid waste disposal conditions and operation conditions on organic and nitrogen leaching from municipal solid waste landfill operating in the tropics. Several factors were considered including waste composition, compaction density, effect of plastic, rainfall intensity, leachate re-circulation and containment of leachate in the waste cell. The study was conducted using laboratory scale lysimeters. Commingled solid wastes from Nonthaburi province were used, whereas tropical condition was simulated by varying rainwater addition to the lysimeters. The precipitation rate was varied at 35, 50, 75 and 100% of maximum rainfall intensity. The bioreactor landfill was operated with leachate re-circulation on weekly basis. The internal storage (saturated) condition was also studied in attempt to minimize discharging leachate off the landfill site.

The experimental results revealed that the organic and nitrogen pollutant load increased with increasing rainfall intensity in low compaction waste(open dump waste) as well as sanitary landfill waste(high compaction waste). With leachate re-circulating operation, pollutant leaching from the lysimeter was found lower than conventional landfill operation as organic concentration in leachate was partially stabilized during the re-circulation. The total organic pollutant load in submerged lysimeter was considerably higher than conventional operation, but it could be retained in the waste cell.

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