

Kinetics of Biological Methane Oxidation for Some Selected Composts and Landfill Cover Soil

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The microbial oxidation of methane in landfill cover soil highly contributes to reduced methane emissions from landfill sites. In previous studies, composts are used to promote methane oxidation since methane degradation rates in the landfill cover soils and composts can be expressed by biological kinetic parameters (K_m : V_{max}). In this study using two different compost materials and soil-compost mixtures at different moisture conditions, the biological kinetic parameters were measured. Compost samples with different water content were incubated under around 8% of CH_4 as initial concentration at 30°C. The results from all incubation experiments showed that for every material there was an optimum moisture content at which microbial oxidation of methane is highest. Three kinetics parameters were calculated to fully describe methane oxidation kinetic and also assess the effect of oxygen concentration on methane oxidation rate.

Keywords: Composts, Landfill Cover Soil, Biological Kinetic Parameters