A STOCHASTIC MODEL OF LANDFILL LEACHATE AND GAS PRODUCTION INCORPORATING WASTE HETEROGENEITY

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ABSTRACT

Landfills are complex environments and present many modeling difficulties. Attempts to develop models that reflect these complexities generally involve the use of large numbers of spatially dependent parameters. The major drawback with this approach is that these parameters cannot be properly chatacterised. An alternative method is presented which couples a simplified microbial degradation model with a stochastic hydrological and contaminant transport model through the use of travel time distributions. This allows the complex effects of spatial heterogeneity within the landfill to be represented, along with other key variables. Illustrative examples of the model's output are presented to demonstrate the effects of heterogeneity on leachate and gas generation.