Modeling Microbial Degradation of Volatile Organic Compounds. (S01-spokas082326-Poster)

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Abstract:

A better understanding is needed into the mechanisms of methane and VOC oxidation to achieve an accurate model representation of the attenuating effect of microbial oxidation occurring during gaseous transport through soils. This is of particular interest in the gaseous transport occurring through a landfill cover soil. Traditional modeling of methane oxidation has been treated as a sink in the convection-dispersion equation (CDE). These methods have relied on first order degradation or other kinetic models (Michaelis-Menton or Monod). Another way of handling oxidation will be presented through the use of collision algorithms. Modifications have been made to a calibrated heat and gaseous transport model (CHAIN-2D) to account for the microbial oxidation both kinetically and through soil collision parameters. The results of these different oxidation algorithms will be compared to field and laboratory data collected from a landfill site in France. Results on the effect of the oxidation on soil pH will also be presented as another potential

limiting factor to methane oxidation.

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