

Session at the 3rd Intercontinental Landfill Research Symposium

Fate of Organic Compounds in Landfills

Session chair:

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Landfills receive municipal solid waste and other types of waste which contain different organic compounds, such as aromatic hydrocarbons (originating from solvents and oil products), chlorocarbons (solvents), fluorocarbons (from insulation foam), brominated flame retardants and others. The received organic compounds have very different physical-chemical properties and degradability, which will govern the fate of the compound in the landfill. The potential emission of such compounds may lead to different environmental impacts ranging from global warming and ozone depletion to human health risks, and there is a need for a better understanding of the factors controlling the emission of the non-methane organic compounds from landfills both as components of gas and leachate.

The session aims at discussing typical content of organic compounds in gas and leachate and the important processes governing the fate of different organic compounds: sorption onto the solid waste, dissolution into the leachate, colloid transport, volatilization into the gas phase or degradation in the waste body or in soil covers. Investigations on the different processes should be presented as well as integrating mathematical models. The session should discuss research needs to better understanding the fate of organic compounds in landfills.

Questions:

- a. What is the current knowledge on the processes controlling fate of organic compounds in landfills?
- b. What are the major research needs and how do we meet the needs in respect to research methodology?

Session Intro

Peter Kjeldsen

Environment & Resources DTU

Technical University of Denmark

Denmark

Fate of organic compounds in landfills – state-of-the-art

Peter Kjeldsen

Environment & Resources DTU

Technical University of Denmark
Denmark

Discussion 10 minutes

Break 15 minutes

Presentations (20 minutes each + 10 min extra): 90 minutes

Factors controlling the bioavailability of toluene sorbed to municipal solid waste components

Mort A. Barlaz
Department of Civil, Construction and Environmental Engineering
North Carolina State University Raleigh, NC, USA

Degradation of the fluorocarbon CFC-11 in landfills

Yutaka Dote
Department of Civil and Environmental Engineering
Miyazaki University
Miyazaki, Japan

Trace organic compounds in landfill gas produced during the decomposition of refuse and individual waste components

Mort A. Barlaz
Department of Civil, Construction and Environmental Engineering
North Carolina State University Raleigh, NC, USA

Modelling of phthalate esters biodegradation in landfill conditions

Vasily A. Vavilin
Water Problems Institute of the Russian Academy of Sciences
Moscow, Russia

Break 20 minutes

Panel discussion 30 minutes

TOTAL time 210 minutes = 3½ hour