Whole Site Methane Emissions: Estimate Methods and Measurement Techniques

Session chair: Kurt Spokas

The determination of the whole landfill emission rate is vital for regulatory and research purposes. This is directly linked to bio-cover designs and new technology implementation on reducing the overall methane and non-methane organic compound (NMOC) surface emission rates from landfills. Without a methodology to quantify the reduction in the emissions from the whole landfill site, the amount of the regulatory credit will be difficult to determine. Outside of the regulatory framework, whole landfill emission rates are needed to investigate spatial and temporal variability in emissions as well as the major environmental factors controlling gas flux across the site.

The overall purpose of this session will be to discuss the options in measurement and methodologies to assess whole landfill emission rates. This will be accomplished through 5 individual presentations as well as small group discussions following the presentations of both theoretical approaches and actual field measurements.

Questions:

a. What is the current knowledge on the variability and accuracy of whole landfill emission estimates?
b. How do we correctly use current methodologies to assess the entire landfill site emission? (e.g. geospatial models, co-kriging, micrometeorological methods)

Session Time:

Total Time: **2.5 hours**

Format Details:

The session chair will arrange discussion items for each talk prior to the meeting, with the presenters being contacted by the chair prior to the meeting for their input.

Large group discussion period (5 minutes) will follow each presentation – mainly to address specific technical questions on presentation.

At the end of all presentations, small 'break-out' groups will be formed to discuss the current research needs. There will be identified discussion leaders that will be arranged by the session chair prior to the meeting. Each discussion leader will report back to the session chair the findings of their group or key notions to be formulated into a final summary to be published on the web site.

Tentative Schedule:

0:00 – 0:10 Introductory Remarks – Layout of Session and Discussion sessions (K. Spokas)

0:10 – 0:25 Speaker: **H. Scharff** (Netherlands)
"Comparison of methane emission models and methane emission measurements"

0:25 – 0:30 Large Group Discussion – Questions to Speaker 1

0:30 – 0:45 Speaker: **C. Graff** (USA)
"Examination of Numerical Errors in Geospatial Analysis of Flux Chamber Measurements"

0:45 – 0:50 Large Group Discussion – Questions to Speaker 2

0:50 – 1:05 Speaker: **T. Laurila** (Finland)
"Continuous, area-averaged greenhouse gas flux measurements on a landfill using micrometeorological methods"

1:05 – 1:10 Large Group Discussion – Questions to Speaker 3

1:10 – 1:25 Speaker: **M. Yamada** (Japan)
"Measurement of surface temperature distribution for estimating whole surface methane emission from landfill"

1:25 – 1:30 Large Group Discussion – Questions to Speaker 4

1:30 – 1:45 Speaker: **J. Berger** (Germany)
"Methane oxidation in a landfill cover with capillary barrier – recommendations for real-scale applications"

1:45 – 1:55 Large Group Discussion – Questions to Speaker 5

1:55 – 2:30 Smaller group discussion at conclusion of presentations