

## EEE Research Seminar

Date: November 15, 2022 at 10:30 AM

Location: POTR 234 (Fu Room)

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## Characterization and Quantification of Per- and Polyfluoroalkyl Substances in Landfill Gas from U.S. Landfills

### Abstract

The presence of per- and polyfluoroalkyl substances (PFASs) in landfill leachate is well established and likely represents a source of surface water contamination since PFAS are not attenuated in traditional wastewater treatment systems. In contrast to leachate, there has been little work on the release of PFASs from landfill gas (LFG). The overall objective of this research is to estimate the mass of (PFAS) that are present in landfill gas (LFG) in the U.S.

LFG samples were analyzed for PFAS by pulling samples through a sorbent tube, followed by analysis by thermal desorption gas chromatography coupled with mass spectrometry (TD-GC-MS). A total of 47 target, semi-quantitative, and suspect volatile PFAS from nine classes were analyzed including fluorotelomer alcohols (4:2-, 6:2-, 8:2-, and 10:2- FTOHs), C8 perfluorinated sulfonamides (N-MeFOSA, N-EtFOSA), and C8 perfluorinated sulfonamidoethanols (N-MeFOSE, N-EtFOSE). Suspect PFAS include the C2-C7 perfluorinated sulfonamidoethanols and 4-12:2-FTOHs based on prior ambient air studies at landfills and prior studies of PFAS in atmospheric samples. Data from 8 landfills showed that PFAS in the LFG sample is dominated by FTOHs with concentrations that were one to two orders of magnitude higher than concentrations reported in ambient air measurements above landfills in Canada and Germany.

As of June 2022, we have sampled 28 landfills twice representing 17 states including sites in arid (<51 cm), moderate (51-102 cm) and wet (>102 cm) regions of the U.S. as defined by the U.S. EPA in the mandatory greenhouse gas reporting rule. PFAS concentration data will be combined with estimates of U.S. LFG generation and emissions to estimate total PFAS fugitive emissions from U.S. landfills.

### Bio

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