



# THESIS DEFENSE

April 15th, 2026



9:00 AM

Lily Hall 2-425

## Lysimeter assessment of per- and Polyfluoroalkyl Substance leaching in a First-time Biosolids-Applied Field Plot

Per- and polyfluoroalkyl substances (PFAS) are persistent environmental contaminants found worldwide in water, soils, and living organisms. One pathway for PFAS release into the environment is the land application of municipal biosolids, which are widely used to amend agricultural soils. This field-based study evaluates the early-stage vertical transport of PFAS following a first-time, single application of biosolids to pastureland. Soil and pore water samples were collected over one year to track the transport and transformation of different PFAS compounds to depths of up to 1.2 m.

Results reveal contrasting behaviors among PFAS classes, with more mobile compounds exhibiting deeper transport through the soil profile. Over time, the transformation of PFAS precursors increased the presence of mobile PFAS in pore water, highlighting potential risks to groundwater. Comparisons with a long-term biosolids-amended site further indicate that repeated biosolids applications can lead to greater PFAS accumulation within agricultural systems.

These findings underscore the need to better evaluate biosolids management practices in the context of PFAS mobility and long-term environmental risk.



## Angelly Guarin

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### BIO

Angelly Guarin earned her B.Sc. in Environmental Engineering from Universidad Nacional de Colombia. Her research focuses on the fate and transport of per- and polyfluoroalkyl substances (PFAS) in agricultural systems and their implications for environmental management and decision-making.

### Committee:

Dr. Linda S Lee

Dr. Laura Bowling

Dr. Charles Schaefer

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