



# FAMU-FSU Engineering

**FAMU - FSU COLLEGE OF ENGINEERING**  
**DEPARTMENT OF CIVIL & ENVIRONMENTAL ENGINEERING**

**Technical Awareness Group (TAG) Meeting No. 1**  
**Tuesday, December 20, 2022 2:00 – 2:40 pm Eastern Time**  
**Meeting location: Zoom**

**Project Title:** Fate of PFAS and Other Contaminants During Leachate Evaporation

**TAG Members:** Bruce Marvin (Geosyntec Consultants), Chao Zhou (Geosyntec Consultants), Claudia Mack (Geosyntec Consultants), Kevin Warner (Geosyntec Consultants), Terry Johnson (Waste Management Inc.), Sterling Carroll (Florida Rural Water Association), Joseph Dertien (Florida Department of Environmental Protection), Kerry Tate (Florida Department of Environmental Protection), Lauren J. Coleman (Florida Department of Environmental Protection), Owete S. Owete (Florida Department of Environmental Protection), Shanin Speas-Frost (Florida Department of Environmental Protection), Walsta Jean-Baptiste (Florida Department of Environmental Protection).

**Principle Investigator:** Youneng Tang

**In Attendance:** Mojtaba Nouri Goukeh (FAMU-FSU College of Engineering), Youneng Tang (FAMU-FSU College of Engineering), Chao Zhou (Geosyntec Consultants), Kevin Warner (Geosyntec Consultants), Sterling Carroll (Florida Rural Water Association), Kerry Tate (Florida Department of Environmental Protection), Owete S. Owete (Florida Department of Environmental Protection), Walsta Jean-Baptiste (Florida Department of Environmental Protection), Sarajeen Saima Hoque (FAMU-FSU College of Engineering), Dennis Ssekimpi (FAMU-FSU College of Engineering), Benhur Asefaw (FAMU-FSU College of Engineering), Ermias Gebrekrstos Tesfamariam (FAMU-FSU College of Engineering)

**Presentation by Mojtaba Nouri Goukeh:**

Mojtaba Nouri Goukeh (research assistant of this project) started the presentation at 2:00 PM. He introduced that leachate evaporation is one of the common leachate management methods, but the fate of various contaminants, particularly per- and polyfluoroalkyl substances (PFAS), during leachate evaporation is understudied. Based on three research questions, he introduced the three tasks in this project, including:

Task 1 – Determine the effects of leachate evaporation on the fate of PFAS and contaminants regulated by 40 CFR 445.11 during evaporation

Task 2 – Determine the distribution coefficients of PFAS = PFAS in gas emission due to evaporation/PFAS in leachate residue after evaporation

Task 3 – Determine the effects of reintroduction of the concentrated leachate residuals

He then presented the preliminary data obtained in Task 1. The focus of the data is gas chromatography–mass spectrometry (GC-MS)-based methods for measuring contaminants regulated by 40 CFR 445.11 ( $\alpha$ -terpineol, aniline, naphthalene, p-cresol, and phenol) and volatile PFAS. He further commented that aniline and  $\alpha$ -terpineol were detected in the first leachate sample.

**Group Discussion:**

Major questions, comments, suggestions, and discussion from the TAG:

- There is a question regarding the PFAS measurement methods. Answer from the research team: Volatile PFAS will be measured by GC-MS in the PI's lab, less volatile PFAS will be measured in a service lab.
- There are a couple of questions and discussion regarding the major difference between the evaporation ponds and the evaporators (enhanced evaporation). Answer from the research team: The temperature in the evaporators is usually much higher: >60 °C.
- There is a question, discussion, and suggestions regarding PFAS denaturization/destruction during the evaporation. Destruction of PFAS usually requires a temperature much higher than 60 °C. Therefore, most PFAS is not expected to be destructed during the evaporation. It is suggested to compare the concentrated leachate and the condensate to evaluate this possibility. It is also suggested to separate PFAS in the synthetic leachate experiments to help reduce the complexity.

The meeting was adjourned at 2:40 PM, minutes taken and submitted by Youneng Tang.