WRF Webinar: EPA Meets the World: A Research Webinar: Understanding Pyrolysis for PFAS Removal
August 4th, 2022
Webcast Summary:

Overview:

PFAS Destruction: Overview on EPA-ORD's Recent Activities

Targeted and non-targeted methods for PFAS analysis
Focus on the presence of poly- and perfluoroalkyl substances (PFAS) in the environment has prioritized the need for validated analytical methods for research and regulatory applications. Measuring targeted PFAS in complex matrices such as soil, wastewater, biosolids, and biological tissue presents multiple analytical challenges. Additionally, research on PFAS treatment and destruction technologies has highlighted the importance of developing comprehensive and sensitive total organic fluorine and non-targeted analysis methods for PFAS characterization. This presentation discusses the targeted methods used at EPA's ORD for the quantification of PFAS in environmental samples as well as research efforts in non-targeted analysis of PFAS.

Targeted and non-targeted methods for PFAS analysis
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WRF PFAS Research Update
The Water Research Foundation has been conducting research into PFAS occurrence, fate, mitigation, treatment, destruction, and stakeholder communications for more than a decade. This presentation will address goals and findings from completed and ongoing WRF research projects related to PFAS in drinking water, source water, biosolids, and wastewater.

Understanding Pyrolysis for PFAS Removal
This research funded by the WRF aims to comprehensively study the performance and feasibility of a full-scale pyrolysis facility to process municipal solids as the feedstock, with a focus on its ability to remove/destroy per- and polyfluoroalkyl substances (PFAS). To achieve this goal, the following measurable objectives are identified:

- Determine the fate of PFAS throughout the entire unit processes
- Perform mass balances on metals and PFAS
- Develop energy balances around the system;
- Determine produced syngas quantity and quality; and,
- Compare the process life-cycle cost to conventional solids treatment and beneficial use or disposal technologies.

WRF Project 5111 - Studying the Fate of PFAS through Sewage Sludge Incinerators
Wastewater facilities regularly receive per- and polyfluoroalkyl substances (PFAS) contaminated influent flow. Certain PFAS partition to the solids generated during treatment. Only incineration offers the potential to destroy PFAS of all the commonly applied solids treatment technologies. Only sparse information can be found on the fate of PFAS through incineration process, and even less when considering sewage sludge incinerators (SSI). The data currently available suggests some PFAS destruction will occur through an SSI. The research presented here aims to better understand the extent of destruction through SSIs.

Presenter Biography Information

Dr. Tom Speth, PE
Dr. Tom Speth is an environmental engineer who has worked in the field of drinking water treatment research at the EPA for the past 35 years. He holds a B.S. in Chemical Engineering from Michigan Technological University, a M.S. in Civil/Environmental Engineering from Michigan Technological University, and a Ph.D. in Environmental Engineering from the University of Cincinnati

Mary Messec Smith; Research Program Manager at The Water Research Foundation
Mary received a Master of Science in Environmental Science & Engineering from the Colorado School of Mines. Before joining the Foundation as a Research Program Manager in 2010, she worked as the Security & Distribution System Lead at the Colorado Dept. of Public Health & Environment and as a Water Quality Investigator at Denver Water.

Dr. Jean Van Buren
Jean Van Buren received a bachelor's in chemistry from Cornell University and PhD in chemistry from UC Berkeley, where her research in an environmental engineering lab focused on oxidative water treatment of organic contaminants in groundwater, drinking water, and wastewater. She then completed a postdoc at University of Southern California, researching potable water reuse in the environmental engineering department. She joined the EPA as an ORISE participant in April 2022 and starts a federal position in August.

Derya Dursun; Senior Associate at Hazen and Sawyer
Dr. Dursun has over fifteen years of experience working on biosolids management. She has received her PhD from University of Delaware and has over forty publications in peer reviewed journals, conferences and coauthored book chapters. She is currently leading Applied Research activities for Hazen's Biosolids Practice Group.

Lloyd Wincell; Brown and Caldwell
Since graduating in 2005 from the University of Minnesota, Lloyd has spent seventeen years with Brown and Caldwell as an environmental engineer. Lloyd's work has focused solely on

wastewater treatment projects involving both industrial and municipal utilities. His specialties include wastewater liquids and solids process engineering. Recent solids process engineering includes PFAS fate, incineration optimization, energy recovery in solids processing, and emissions compliance.

WRF Webinar: Algal Bloom Response: Detection, Treatment, and Decision Support Systems
August 9th, 2022
Webcast Summary:

Overview:

Harmful algal blooms (HABs) are a growing concern for communities across the globe as they damage aquatic ecosystems, threaten water supplies via cyanotoxins, impose economic costs, and increase in frequency and intensity due to climate change. This webcast will look at different technological solutions to combat HABs. Presenters will touch on technologies found in WRF TechLink as well as one under investigation in an ongoing WRF project.

WRF Project
Development of the Autonomous Real-Time Microbial Scope (ARTiMiS) (5154)
Ameet Pinto, Carlton S. Wilder Associate Professor, Georgia Institute of Technology
The project seeks to develop the Autonomous Real-Time Microbial Scope (ARTiMiS) device for in situ and low-cost monitoring of HABs through (1) the development of a training dataset for algal species of relevance; (2) optimization of machine learning approaches to identify and quantify algal species; and (3) field testing of ARTiMiS at the pilot plant. The system will be deployed for monitoring HABs in the Detroit River.

Presenter Biography Information

Kole Peterson, US West Sales Manager, LG Sonic: MPC-Buoy
The MPC-Buoy system controls algae in large water surfaces by using real-time water quality monitoring and remote sensing to analyze current algae and to predict algal blooms. The technology is based on ultrasound, which can effectively control algae by using specific frequencies and amplitudes, and is environmentally friendly and safe for fish, plants, and zooplankton.

Mark Matthews, Founder & CEO, CyanoLakes: CyanoLakes
The CyanoLakes online application helps water authorities and utilities enhance their cyanobacteria and cyanotoxin management and emergency response plans with satellite remote sensing.

Jeremy Duguay, Application Scientist, LuminUltra Technologies
Quantifying adenosine triphosphate (ATP), the primary energy carrier for all forms of life, provides a direct measure of a sample's biological content. LuminUltra's 2nd Generation ATP testing platform is easy to use and can provide an active biomass concentration in mg/L to achieve superior bioreactor control. It has been tested for indirect monitoring of HABs.