

## Concurrent Sessions Track: Technical 2

**Tuesday, October 15, 2019**

**1:00 pm to 2:00 pm**

### **Evaluation of Chemicals of Emerging Concern at Rest Areas and a Land Application Site**

*Sara Heger*

Contaminants of emerging concern (CEC), including pharmaceuticals and personal care products are continuing to be found in increasing concentrations throughout the environment. The deposition of human waste into septic systems has created a mechanism for CEC concentration and dispersal. The consequences on human health from CECs is unknown. There is a precedent for concern as many pharmaceuticals are designed to be effective at low doses and, even at low concentrations, have been found to harm aquatic biota. The full ability for septic systems to disperse CECs is still in question. This study seeks to understand the preponderance of CEC distribution surrounding five rest area septic systems owned and operated by the Minnesota Department of Transportation and one land application site using septage from local sources. These public systems likely have increased CEC deposition due to a larger user population as compared to a system servicing a single-family home. Effluent, soil and groundwater samples were taken from each rest area. In addition, untreated septage, soil and groundwater samples were taken from the land application site. A broad list of CECs was chosen based on current literature. After lab analysis the occurrence and concentration of CECs were compared against sites and sample sources. The resulting information laid out distribution and concentration patterns corresponding to each site and source. Information garnered from this analysis will allow for a basis of future inquiries with greater precision and efficiency in sampling and analysis.



**Tuesday, October 15, 2019**

**2:00 pm to 3:00 pm**

### **Subsurface Fates of Contaminants from Onsite Septic Systems**

*Sergio Abit*

On-Site Sewage Facilities (OSSF) are designed to treat key pollutants in wastewater before effluent is released to the environment. While the complete removal of pollutants is ideal, OSSFs are mainly designed to reduce the concentration of certain pollutants to levels that pose very minimal risk when the effluent is ultimately dispersed. This means that when treated effluent eventually find its way to the soil treatment area (STA), it will still have pollutants like nitrogen, phosphorus, pathogenic bacteria, and other pollutants. The decision related to where and how to disperse treated effluent to the environment largely depends on soil properties at the STA. Whether the pollutants in the effluent are sorbed, transformed, and/or rendered immobile will largely depend on the treatment ability and capacity of the soil. This talk will start with a discussion about the negative effects of key pollutants in OSSF effluents. It will then be followed with detailed discussions about the fates in the soil of nitrogen, phosphorus, pathogenic bacteria, and emerging contaminants. At the end of the talk, participants are expected to have a better understanding of the fates of OSSF pollutants in the soil and to gain an improved appreciation of the ability of the soil to accomplish treatment.

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**Tuesday, October 15, 2019**

**3:30 pm to 4:30 pm**

**Embracing Change- A Look at a Risk Based  
Approach to Regulating Onsite Decentralized  
Reuse**

*Joelle Wirth*

Across the United States, and around the world, water utilities are facing pressure from population growth, variable climate, water scarcity, floods and droughts and are looking

towards water reuse as a solution. Public understanding of our water resources is vital in the acceptance of nontraditional water supplies such as onsite wastewater systems for reuse. This presentation will provide an overview of water reuse, what efforts are being proposed in the United States and an introduction to a Risk Based Approach to regulating onsite decentralized reuse systems.