From Drain to Data:
The Power of Wastewater Monitoring
For Disease Surveillance

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Seminar Details

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2:30pm – 4:00pm

UH Campus
Classroom & Business
Building
Room CBB 104

Online via Teams https://www.cive.uh.edu/research/beyer-distinguished-lecture

ABSTRACT: Wastewater represents a pooled sample of everyone who contributes to the waste stream. Wastewater samples can be collected and analyzed to reveal a multitude of information about a community's health and habits. The City of Houston started monitoring wastewater for SARS-CoV-2 in April 202, and has become one of the most advanced city-wide wastewater surveillance systems in the U.S. The system includes over 115 sampling sites ranging from wastewater treatment plants, life stations, and facilities such as preK-12 schools, nursing homes, shelters, and a jail. In addition to quantifying viral levels, SARS-CoV-2 genomes are amplified and sequenced and we developed novel computational pipelines for accurate and early detection of variants of concern and cryptic lineages in wastewater samples.

Our results show that viral loads in wastewater are strongly associated with cases and other surveillance metrics in the community at sewershed, zip code, and building levels. The information gleaned from wastewater is used to inform public health interventions in real-time and has become a key tool in the city's disease surveillance systems. Due to the efficacy of our SARS-CoV-2 surveillance system, we have expanded our wastewater monitoring program to include numerous other targets: influenza, respiratory syncytial virus (RSV), carbapenemase resistance, Candida auris, and mpox. In this talk, I will describe the Houston Wastewater Epidemiology system, from the analytical workflows to how the data is shared and used by public health officials and our vision for the future of wastewater disease monitoring.

BIOGRAPHY: Lauren Stadler is an Associate Professor of Civil and Environmental Engineering at Rice University. She earned a B.S. in Engineering from Swarthmore College, and an M.S.E. and Ph.D. in Environmental Engineering from the University of Michigan, Ann Arbor. Stadler is an environmental engineer whose research focuses on wastewater-based epidemiology environmental antibiotic resistance, wastewater and resource recovery, and environmental synthetic biology. She was named a "New Engineer to Watch" by the Water Environment Federation, a Gulf Research Program Early Career Fellow by the National Academies of Science, Engineering, and Medicine, and a Johnson & Johnson WiSTEM2D Engineering Scholar, and is an NSF Career awardee.