Environmental and Water Resources Engineering, and the Center for Water and the Environment Seminar Series Presents:

Thursday, April 3rd 2025, 3:30-4:30pm, ECJ 1.324

Zoom Link: https://utexas.zoom.us/j/94105241294

Imperative Science for Health-Related Water Microbiology

Dr. Joan Rose

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Abstract

Contamination of drinking water and recreational waters remains the most significant issue throughout the world. The global threats are immense and seem to be growing including ancient diseases such as cholera and new emerging pathogens. The link between water security and food security has also highlighted the need for better science at this interface. Advances in genomics research, technologies, mathematics and earth sciences all point to the way forward. To address the major challenges in protecting and managing water resources we will need to invest in characterization of our water microbiological communities, understand risk and address resilience under global change. Our global community will continue to work toward achieving sustainable safe water working in four key areas: i. New water genomics technology to explore the water microbiome. ii. Mapping and monitoring to connect climate and earth systems to microbial distributions. iii. Innovative engineering solutions for microbial water safety and iv. Quantitative microbial risk assessment.

Background

Joan is an international authority on water microbiology, water quality, and public health safety. As a Professor in the Departments of Fisheries and Wildlife and Crops and Soil Sciences at Michigan State University, she holds the Homer Nowlin Chair in Water Research and is the Director of the MSU Water Alliance. Joan, together with her water detectives, are developing new genetic analytics to study waterborne health threats. Water quality studies today tend to focus on the indicators of pathogens, but Joan's work targets actual threat agents such as viruses, mapping water quality and health risks in waterways throughout the world. Joan is a pioneer in the emerging science of viral metagenomics – sequencing virus DNA in water sources, discharges and shipping ballast using next-generation high-throughput technology. Her global activity includes investigation of waterborne disease outbreaks and the study of water supplies, treatment, and reclamation. Her applied research interests include study of microbial pathogens in recreational waters and climatic factors impacting water quality.

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