

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



Thursday, March 27<sup>th</sup> 2025, 3:30-4:30pm

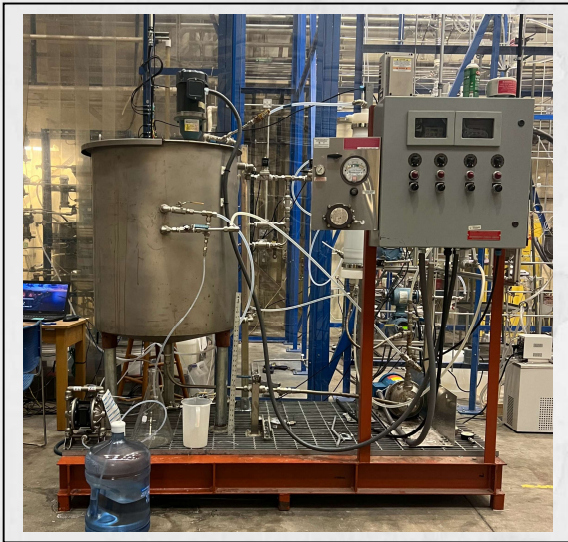
Zoom Link: <https://utexas.zoom.us/j/94105241294>

## Evaluation of a Novel Integrated Ceramic Membrane/Hollow Fiber Membrane Contactor Process for Produced Water Reuse

Julia McGuire

Current MS in Sustainable Systems

Advisor: Dr. Lynn Katz



As threats posed by water scarcity grow more severe across the world, the need for beneficial reuse of produced water is becoming increasingly apparent. This study evaluates the performance of a proposed membrane treatment process designed to treat produced water to achieve reuse, therefore contributing to the circular water economy. The treatment process integrates two membrane technologies: a hollow fiber membrane for oil recovery via a selective oil permeation process, and a ceramic membrane for removal of suspended solids. This research primarily focuses on bench and pilot-scale evaluation of the ceramic membrane performance under varying operating conditions and feed water compositions, while implementing integration of the two membrane technologies. This work looks to highlight the potential for membrane technologies as an effective and efficient treatment option for produced water reuse.

## Assessing the Link between Water System Violations and Public Health Outcomes

Gautam Kunwar

Current PhD student in Environmental and Water Resources Engineering

Advisor: Dr. Lina Sela

Ensuring safe drinking water remains a critical concern in the U.S., where many community water systems (CWSs) frequently fail to meet drinking water standards, raising significant concerns about water safety and contributing to waterborne illnesses. Despite extensive research on health-based (HB) violations as indicators of waterborne diseases, there is a lack of studies directly linking HB violations to health incidences. This study addresses this gap by examining the association between HB and non-health-based (NHB) violations in CWS and emergency department visits (EDVs) for waterborne gastrointestinal diseases across Texas from 2016 to 2022. This study uses Poisson regression to evaluate these associations while adjusting for CWS features, such as size, ownership, population served, and social indicators, such as the Social Vulnerability Index and urban population percentage. The findings meet expectations, showing a positive association between HB and NHB violations and EDV rates. However, these are having significantly less contribution compared to other covariates. Whereas, as expected, privately owned CWS with surface water source are positively associated with increased EDV rates. As the first study to directly link water violations to public health outcomes, these findings offer new insights that could help policymakers design more effective interventions, particularly for smaller systems where violations are more prevalent.

