



**Geology & Environmental Science
University of Pittsburgh**

**Spring 2024
Colloquium Series**

SARAH FAKHREDDINE

Assistant Professor of Civil and Environmental Engineering
Carnegie Mellon University

Unforeseen Threats to Water Quality During Managed Aquifer Recharge

Population growth and climate variability highlight the need to enhance freshwater security and diversify water supplies. Subsurface storage of water in depleted aquifers is increasingly used globally to alleviate temporal disparities in water supply and demand often caused by variability of wet and dry periods. Managed aquifer recharge (MAR) stores excess water supplies during wet periods via infiltration into shallow underlying aquifers or direct injection into deep aquifers for recovery during dry periods.

While MAR projects can enhance local water availability, introduction of recharge water alters the native biogeochemical and hydrological conditions of the receiving aquifer, potentially mobilizing toxic, naturally occurring (geogenic) contaminants from sediments into groundwater where they pose a much larger threat to human and ecosystem health. Arsenic poses a particular challenge at MAR sites due to its ubiquity in subsurface sediments and toxicity at trace concentrations. A strong understanding of the underlying biogeochemical processes can be used to design engineering approaches that protect water quality and ensure the long-term viability of water management strategies like MAR.

Bagels, donuts, and coffee
available in **SRCC 219**
before the talk!

**January 25, 2024
Thaw 104 @ 4:00PM**