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Areas of Research:
Environmental Chemistry
Surface Water Quality
Pollutant Fate and Transport in the Environment
Stormwater Treatment and Nutrient Management
Biofuel Emissions Monitoring



“Produced Water Management: Integrating Treatment and Reuse”

Abstract

Oil and gas production is a water-intensive industry, requiring significant freshwater inputs and generating large volumes of return water (on average, around 10 barrels of water per barrel across the United States). This produced water often has high salinity (in some cases in excess of 200,000 mg/l) and contains a range of other compounds, including scale-forming and toxic metals, dispersed oil and dissolved hydrocarbons, naturally occurring radioactive materials, and production chemicals. At the same time, much U. S. oil production occurs in water-stressed areas, leading to an interest in produced water treatment and reclamation for beneficial uses. Produced water is best managed using an integrated approach that considers water use and waste generation at each step of oil and gas production and looks at recovery, treatment, reuse, and disposal as interrelated activities. This presentation will address targets for treated water quality based on the expected reuse, including oil and gas development, irrigation, and safe disposal. It will also address new methods being developed by KU researchers to treat or pretreat produced water, including selective removal of scale-forming cations using polyelectrolyte complexes and other precipitative processes and removal of dissolved hydrocarbons using fluidized beds of aerobic granular sludge. Integration of these methods into desalination or membrane processes will also be addressed. The feasibility of direct treatment of produced water will also be examined in the context of management strategies that could exchange higher-salinity produced waters for more treatable subsurface formation brines.

Tuesday, April 3rd, 2018 | 10:00 – 10:50AM
2 Eaton Hall (Spahr Auditorium)