IWRSP

The University of Texas at San Antonio
UTSA Earth and Planetary Sciences
College of Sciences

Seminar Presentation by:

Dr. Claire Ong

PhD,

on
Friday, November 10, 2023
4:00 P.M

Occurrence and Distribution of PFAS in the Contributing Zone of the Edwards Aquifer, Texas

Biography

Claire Ong is a recent graduate of the University of Houston, with a BSc and PhD in Geology. Her graduate research focused on the origin and characterization of organic compounds in varying environments, ranging from sublacustrine vent fluids to fluvial. She currently works as a Physical Scientist.

Link to access meeting via Zoom:

https://utsa.zoom.us/j/92399998954?pwd=T2lpOVJ1MjFMZFRZWUdRc0Vna1RiUT09

Meeting ID: 923 9999 8954
Passcode: 18365556

Abstract

This study examines the distribution, temporal variations, and sources of per- and polyfluoroalkyl substances (PFAS) in water bodies within the Comal Springs, Guadalupe River (GR), San Antonio River (SR), and Cibolo Creek watershed, which is in recharge zone of the Edwards Aquifer and encompasses two wastewater treatment plants (WWTP). Sampling was conducted over a two-year period to assess PFAS concentrations and investigate spatial and temporal patterns. In the surface water samples analyzed, ΣPFAS is 1659.92 ng/L (n = 78) with a mean total concentration of 22.57 ng/L. 20 PFAs were analyzed, including 8 PFCAs, 4 PFSAs, 3 FTS, 2 PFECAs, and 2 PFESAs. The highest concentrated compounds were PFOS, PFPeA, PFBA, and 8:2 FTS. Correlation analysis indicated a positive correlation for PFHxA and PFHpA, 8:2 FTS and PFDA, and PFBS and PFHxA, suggesting possible AFFF impact on the samples. No spatial pattern was detected for FTS, PFECAs, or PFESAs. In the Cibolo Creek watershed, PFCA and overall short-chain compounds decrease in composition downstream in the rural sampling sites, while the opposite pattern is observed in urban sampling sites. Short-chain compounds are at a minimum during summer months, with a two-fold increase during winter and spring months. No temporal patterns were seen in individual compounds, but total concentrations did increase up to 2.6 times at the start of a rainfall event compared to a period of no rain or a period of consistent light rain. The results of this study will provide insight into temporal and spatial variations and patterns for both legacy and emerging PFAS to assist in understanding possible aquifer contamination through impacted surfaces.