A Healthy Recreational Hub? How About PFAS Contamination in the San Marcos River?

HEDGE
Hwang Eco-friendly Development for Green Environment

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San Marcos River

Recreational functions are vital to the local economies, community well-being, and ecosystem health.

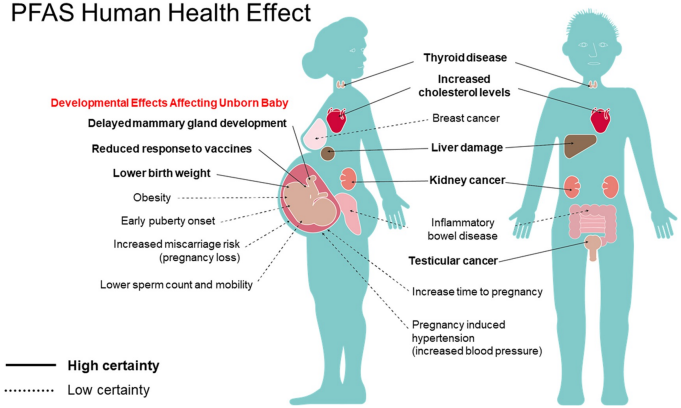


Per- and Polyfluoroalkyl Substances (PFAS)

→ Emerging Contaminants, Forever Chemicals

→ Threats to Humans and Ecosystems

PFAS Human Health Effect



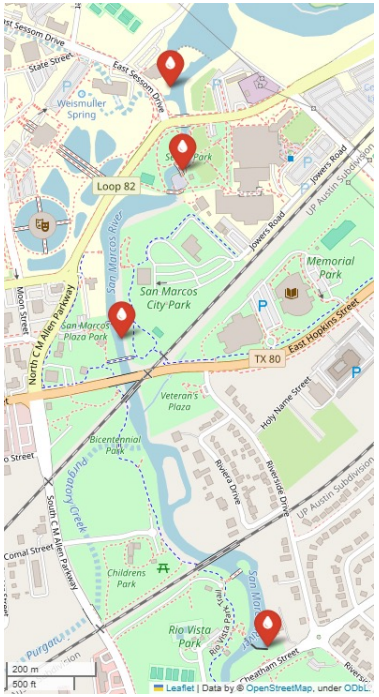
Lyu et al. (2022) https://doi.org/10.1029/2021RG000765

Research Question

Are PFAS present in the most heavily used section of the San Marcos River, where residents and visitors engage in water-based recreation and social gatherings?

Approach

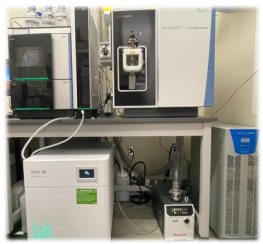
Four Locations known for Good Water Quality and Intense Recreational Use



Biweekly Sampling



LC-MS/MS for PFAS Analysis



Results



Conclusions

- All 17 targeted PFAS were detected in the upper segment of the San Marcos River, at heavily used recreational waters in the region.
- Although average concentrations of PFOA and PFOS were below the USEPA MCL of 4 ng/L, elevated concentrations were occasionally observed for PFOA at 16.5 ng/L and PFOS at 9.1 ng/L for PFOS.
- However, average concentrations of PFOA and PFOS were higher than the Draft Human Health Criteria Concentrations of PFOA at 0.0009 ng/L and PFOS at 0.06 ng/L.

Future Plan

- An AI-Driven Early-Warning System for Recreational River Contaminant Exposure Risk through Integrated Water Quality Monitoring and Human Mobility Analytics



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