

## **DOER research determines per- and polyfluoroalkyl substances in sediment elutriates are unlikely to cause toxicity in dredging evaluations**

*ERDC Environmental Laboratory researchers published the first study testing potential toxicity of PFAS in elutriates or in PFAS released from sediment to the water column. No toxicity was observed in any of the test species as the PFAS concentrations measured in the elutriate were well below concentrations known to cause toxic effects. This work suggests there is little concern that environmentally relevant PFAS concentrations will cause water column toxicity during dredging operations.*

As per- and polyfluoroalkyl substances (PFAS) contamination continues to draw attention from both the public and regulators, managing PFAS in dredged material is a growing concern. However, there is a lack of information available for sediment managers and natural resource professionals to understand the potential risk that PFAS transfer from sediment to the water column may pose to aquatic organisms and ecosystems during dredging activities. Indeed, we were not aware of any other published studies investigating potential toxicity associated with the release of PFAS from sediments into the surrounding water. To address this data gap, we generated elutriates from both field-collected and spiked sediments, representing both PFAS concentrations typical of contaminated sites and PFAS concentrations reported at only the most contaminated sites (e.g., fluorotelomer production facilities). Sediment elutriates are used to determine the potential for toxicity during dredging discharges during the short period sediments remain suspended in the water. Acute toxicity tests of these elutriates were then conducted following standard elutriate guidance used in routine dredged material testing under the United States' Clean Water Act and the Marine Protection, Research, and Sanctuaries Act.

The toxicity tests indicated no adverse effects on survival in 48- or 96-hour exposures to either estuarine or freshwater test species, suggesting that dissolved PFAS releases into the water column during dredging events are unlikely to cause acute toxicity to organisms in the water column. Partitioning of PFAS between sediment and water were within the range reported in literature, with values increasing with carbon chain length of the PFAS analytes and with salinity.

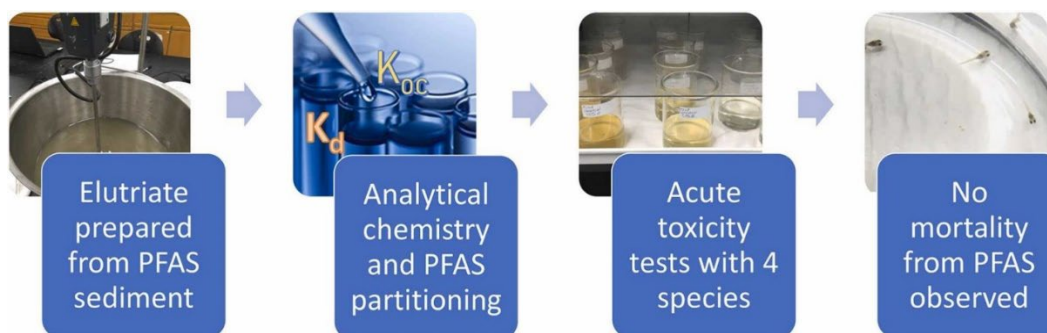


Figure 1. Graphical abstract summarizing the study.

The project was funded by the Dredging Operations and Environmental Research program (DOER, RT-21-06). The Environmental Laboratory co-authors were Paige Krupa, Gui Lotufo, Jonna Boyda, Nicolas Melby and Ashley Kimble.

Citation: Krupa, P. M., Lotufo, G. R., Boyda, J., Melby, N. L., & Kimble, A. N. (2025). Toxicity of Per-and polyfluoroalkyl substances in elutriates prepared with estuarine and freshwater sediments. *Ecotoxicology and Environmental Safety*, 290, 117483.

Link: <https://doi.org/10.1016/j.ecoenv.2024.117483>

Funding: Dredging Operations and Environmental Research program (DOER, project RT-21-06)

SoNs: 1865 PFAS in dredged material: Sediment and aquatic toxicity and bioaccumulation; 2271 PFAS in dredged material: addressing concerns and data gaps

POC: Paige Krupa, Research Biologist, Environmental Laboratory (EPR branch),  
[paige.m.krupa@usace.army.mil](mailto:paige.m.krupa@usace.army.mil)