

Unraveling the Multifaceted Roles of Dissolved Organic Carbon on Mercury Biogeochemistry

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Mercury is a neurotoxic pollutant that is transported atmospherically over regional and global scales and deposited on aquatic and terrestrial systems. The behavior of mercury in aquatic environments is intimately linked to interactions between mercury and dissolved organic carbon (DOC), which govern mercury transport, speciation, photo-chemical reactivity, and bioavailability. Advancements in the understanding of the multifaceted roles of DOC on mercury biogeochemistry are necessary to predict the implications of water management scenarios and landscape disturbances on contaminant fate. This presentation will highlight the applications of diverse analytical approaches to understand mercury-DOC interactions, and discuss how this information is used to inform water resource management. Demonstrations will include field studies of a mercury-impacted hydroelectric reservoir complex (Snake River, Idaho), managed subtropical wetlands (Florida Everglades), and subarctic wetlands (Alaska). Insights gained in these systems inform conceptual and quantitative models used to predict mercury fate.