Assessing contaminant availability and fate in water and sediments

ABSTRACT
Sediment contaminants, including hydrophobic organics such as PAHs and PCBs and metals such as mercury, are influenced by a variety of processes, including sorption related sequestration, transformation and degradation, that limit their availability and control their mobility and fate. Bulk solids concentration, the universal regulatory standard, does not address these differences in availability and mobility and provides a misleading indicator of exposure and risk. Porewater concentrations are increasingly used to provide a better indication of the availability and effects. Over the past several years we have developed and tested an in-situ profiling solid phase microextraction (SPME) passive sampler using polydimethylsilxane (PDMS) for the assessment of interstitial water concentrations of hydrophobic organics and diffusion gradient in thin film devices (DGT) for mercury and methyl mercury. The use, interpretation and limitations of these devices will be evaluated and compared to other approaches for monitoring exposure and risk to contaminated sediments.

BIOGRAPHY
Dr. Reible is the Donovan Maddox Distinguished Engineering Chair at Texas Tech University. Previously he was the Bettie Margaret Smith Chair of Environmental Health Engineering in the Department of Civil, Architectural and Environmental Engineering and the Director of the Center for Research in Water Resources at the University of Texas in Austin. He holds a PhD in Chemical Engineering from the California Institute of Technology. He is a Board Certified Environmental Engineer, a Professional Engineer (LA) and in 2005 was elected to the National Academy of Engineering for the “development of widely used approaches for the management of contaminated sediments”.

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Professor Danny Reible, PhD, PE, BCEE, NAE
Donovan Maddox Distinguished Engineering Chair
Department of Civil & Environmental Engineering
Professor of Chemical Engineering
Professor of Civil and Environmental Engineering
Texas Tech University

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