

Assessing contaminant availability and fate in water and sediments

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 concentrations, 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 polydimethylsiloxane (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. Danny D. 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”. In 2012 he helped found and currently chairs the International Society of Water Solutions, a society focused on industrial water management.

His research is focused on the fate, transport and management of contaminants in the environment and the sustainable management of water resources. Current interests include the assessment of bioavailability of mercury and hydrophobic organics in sediments and their in-situ remediation. He has also evaluated the impacts of coastal flooding, e.g. during hurricanes, on contaminant mobility and availability. His water resources work has included water management for hydraulic fracturing for shale gas and oil and the efficient allocation of water resources, particularly in the face of drought. He has authored or edited six books and more than 150 journal articles and book chapters. Research support as a principal investigator has totaled more than \$30 million.