

Stuck in the muck: Historical insights into emerging contaminants from sediment cores

While many studies on the presence and fate of emerging contaminants have been performed over the past 15+ years, these compounds have been in use for decades. Information about past use provides insight into long term impacts on aquatic systems. Sediment cores provide information about historical use and processing of emerging contaminants. Using cores collected from a lakes with varying degrees of wastewater impact, the records of various antibacterial and antibiotic compounds are analyzed. For triclosan, the levels observed in sediments track with increasing use in a variety of consumer products. The reaction products formed from the chlorination of wastewater and photolysis are also captured in the cores. For antibiotic/antibacterial chemicals used in human and veterinary medicine, sediments also capture the dates of introduction and usage patterns of the chemicals. Quaternary ammonium compounds, used in many consumer products, are also captured in sediment cores. The results provide insight into where efforts should be focused to minimize the introduction of antibiotic/antibacterial chemicals into the environmental.

William Arnold is a Distinguished McKnight University Professor and the Joseph T. and Rose S. Ling Professor and Associate Head of the Department of Civil, Environmental, and Geo-Engineering at the University of Minnesota. His research focuses on the fate of organic chemicals in natural and engineered aquatic systems. He received his S.B. in Chemical Engineering from MIT (1994), M.S. in Chemical Engineering from Yale (1995), and Ph.D. in Environmental Engineering from the Johns Hopkins University (1999). He then joined the U of MN faculty. He has won both the AEESP Frontiers in Research Award and Outstanding Publication Award.

