Department of
Chemical and Environmental Engineering

2014—2015 Seminar Series

Friday, February 6, 2015
9:10—10:00 AM
WCH 205/206

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Pesticide processing and organic matter composition in prairie pothole wetlands

The prairie pothole region in the upper Midwest U.S. is an ecosystem threatened by agricultural activities, energy extraction, and climate change. The close proximity of the prairie pothole wetlands in the region present both a threat to native species and an opportunity to manage pesticide laden runoff. This talk will explore the reactivity of pesticides in the sediment (with sulfide) and water column (via photolysis) in wetlands. The results from the pesticide degradation studies lead into the possibility of predicting the reaction rate constants of radical driven processes via computational chemistry and the exploration of sulfur chemistry of the organic matter via X-ray absorption near edge spectroscopy and ultra high resolution mass spectrometry.

BioSketch: William Arnold is 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. 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. His research focuses on the fate of organic chemicals in natural and engineered aquatic systems. Specific research areas include studying the kinetics, pathways and mechanisms of anthropogenic chemical reactions that occur at surfaces or via photochemical processes; evaluating mass transfer effects on reaction rates; developing new remediation/containment techniques; and using computational chemistry techniques to predict and/or explain experimental observations.