

Southern Ontario Pub Night

“The importance of DOC in
metal ecotoxicology”
Dr. Scott Smith
Wilfrid Laurier University

When: Wed Mar 27th 2019 , 6:30 p.m. – 8:30 p.m.

Where: Shakespeare Arms
35 Harvard Rd., Guelph

Cost: \$2 members/\$4 non-members

Join us for an engaging talk, delicious food, cozy atmosphere
and fine brew!

Please RSVP to Erin Leonard
[leonarem@mcmaster.ca]

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Abstract

Metals can have potential negative environmental impacts if discharged at sufficient concentrations. Environmental legislation attempts to determine allowable effluent concentrations for appropriate protection of receiving waters. Determination of these values is an on-going challenge and research sponsored by governments, as well as industry, is moving towards improved regulatory criteria/guidelines based on sound multi-disciplinary science. This talk will focus on the importance of dissolved organic carbon (DOC) as a toxicity modifying factor that should be taken into account by permit writers and for metals risk assessment. Natural organic matter (NOM) binds metals and potentially decreases their toxicity; bioavailability-based toxicity prediction models, such as the Biotic Ligand Model (BLM), use DOC as an input to represent NOM. Case studies for Ag, Cu, Pb, Zn and Ni will be presented for NOM sources from Canada, Brazil and Australia. These examples will demonstrate the importance of including DOC in any risk assessment of metals in surface waters.

Biography

Dr. Scott Smith is a full Professor in the Department of Chemistry and Biochemistry at Wilfrid Laurier University in Waterloo, Ontario, Canada. His areas of expertise include nutrient removal and recovery, aquatic geochemistry with a focus on metal-organic matter interactions, and metal toxicology. Scott is an applied chemist who often collaborates with other scientists and engineers in industry and academia. For his paradigm shifting work on mechanism and modelling of chemically mediated phosphorus removal Scott was nominated for the 2015 Canadian national NSERC John C. Polanyi award. Scott's lab has made contributions towards the development of bioavailability approaches, such as the Biotic Ligand Model (BLM), to understand and predict metal toxicity in freshwater, wastewater and saltwater environments. Scott's main role in this collaborative work with toxicologist and physiologists has been his experimental determination of free metal ions by electrochemical and spectroscopic methods as well as the optical and chemical characterization of organic matter of diverse origin.