

## Persistent and emerging water quality issues in Canada

**Dr. Hugh J. MacIsaac**, Professor and Director, NSERC Canadian Aquatic Invasive Species Network, Great Lakes Institute for Environmental Research, University of Windsor.

Canada is fortunate to have amongst the greatest access to freshwater on the planet. Despite this, a series of persistent and emerging quality issues affect Canada's water supplies. In this presentation, I will review key problems and faculty who work to address and resolve these issues. Cultural eutrophication has returned as a serious problem in two large lakes - Erie and Winnipeg. The problem in Lake Erie is related to series of interacting stressors, including agricultural changes in application of fertilizer in the watershed, enhanced episodic rainfall patterns, and greater retention and in-lake cycling of phosphorus owing to invasive mussels. Debate in Lake Winnipeg has centred on whether enhanced productivity results from high levels of phosphorus or nitrogen.

In Northern Alberta, a series of recent studies reported enhanced mercury and polycyclic aromatic hydrocarbon levels in areas adjacent to areas exploited for bitumen production. The advent of nanoparticle-coatings on clothing has increased concern about the fate of these particles in aquatic systems. Pharmaceutical and personal care products may not be adequately treated in sewage treatment plants, raising the prospect of unintended targets in receiving waters. In addition to these and other chemical pollutants, aquatic systems in Canada are responding to other potent stressors including climate change and introduction of alien invasive species which greatly complicate our understanding of how aquatic ecosystems operate.