

Pilot Plant Development and Operation for Drinking Water Treatment Optimization

Principal Investigators:

Dr. Robert C. Andrews, University of Toronto

Collaborators:

Peterborough Utilities Commission

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The identification of new contaminants, emerging regulations and public demand for improved water quality has resulted in unprecedented water treatment challenges for the drinking water industry across North America. In order to meet these challenges, the Peterborough Utilities Commission has completed the infrastructure and baseline testing of a new state-of-the-art pilot plant designed to improve the quality of drinking water, reduce operational costs, while also serving to minimize the impact of water treatment on the environment.

The pilot plant represents a scaled-down version of the conventional Peterborough water treatment plant, which includes coagulation, flocculation, sedimentation and dual media filtration. The pilot plant consists of two parallel streams; one mimics the existing full-scale treatment process, while the other is used to examine processes that may lend to treatment optimization. The pilot plant plays a key role in allowing Peterborough to conduct trial studies involving a wide range of initiatives ranging from alternative treatment and operating protocols and their impact on water quality to the training and education of staff.

The initial stages of research are focusing on coagulation optimization in order to improve the stoichiometry of water treatment at the plant. A primary objective is to reduce operational costs and sludge formation associated with coagulation, flocculation, and sedimentation processes. The work also dictates conducting water quality analyses that focuses on the formation of disinfection by-products (DBPs) and specifically the impact that a reduction in total organic carbon (TOC) will have on the formation of trihalomethanes and haloacetic acids. The initial phase this project will play an important role in reducing costs and environmental impacts while serving to improve water quality for consumers.



University of Toronto Department of Civil Engineering, 35 St. George Street, Toronto, ON, Canada M5S 1A4

For more information on the Drinking Water Research Group contact:

Dr. Robert Andrews
andrews@civ.utoronto.ca
416-978-5399

Dr. Susan Andrews
sandrews@civ.utoronto.ca
416-946-0908

Dr. Ron Hofmann
ron.hofmann@utoronto.ca
416-946-7508

Jennifer Lee
jenwy.lee@utoronto.ca
416-946-0302