

Microbial Characterization and Quantitative Microbial Risk Assessment (QMRA) of Ontario Source Waters

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Collaborators:

Various drinking water treatment plants from
across Ontario.

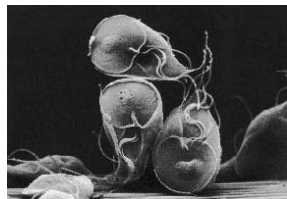
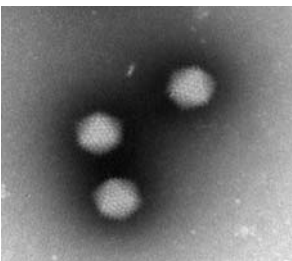
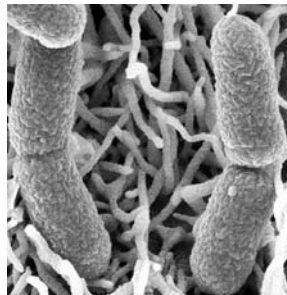
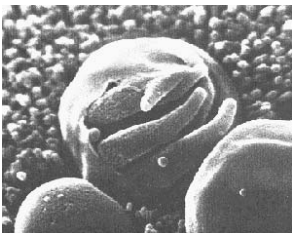
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Current drinking water regulations in Ontario are centered on implementation of monitoring programs to provide alerts when treatment failures have occurred. This approach leads to reactive measures that are mobilized, in most cases, after the water has reached the consumer. This important limitation is well recognized and has led to increasing interest from regulatory agencies worldwide in development of risk-based tools for assessment of drinking water treatment strategies.

Health Canada has developed a Drinking Water Risk Assessment Model that can be used to perform quantitative microbial risk assessment (QMRA) on individual water treatment systems with respect to pathogens that occur in the source waters of those systems. QMRA can be used to evaluate current treatment practice and also as an invaluable tool for design and optimization of water treatment processes. The greatest limitation that currently exists to applying QMRA to treatment plants in Ontario is a lack of data for pathogen concentrations in source waters.

This research fills that knowledge gap for drinking water treatment plants in Ontario through a sampling program to quantify source water concentrations of *Giardia*, *Cryptosporidium*, *Escherichia coli*, and enteric viruses. The data that is collected will be used to perform quantitative microbial risk assessment (QMRA) for each plant, allowing calculation of the potential overall disease burden attributable to ingestion of the treated water produced.



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