

PHD STUDENT OPPORTUNITY



ARCTIC WASTEWATER TREATMENT AND HUMAN HEALTH RISK STUDY

Domestic wastewater treatment in Northern regions of Canada presents significant challenges. Conventional mechanical wastewater treatment plants are typically not an appropriate technology in these regions. Passive wastewater treatment systems are widely used for management of wastewater generated from small communities. As wastewater is discharged and treated within open environmental systems, there is potential for pathogen transmission to both human and ecological receptors. Humans, fish and wildlife travel through the terrestrial and marine effluent disposal area, providing exposure mechanisms through direct contact, or the ingestion of contaminated fish and game.

Dalhousie University is currently conducting a 4-year research program, in collaboration with the Government of Nunavut (GN), focused on assessing the treatment performance of lagoon-wetland systems used for municipal wastewater management. Within this research, we are measuring, and developing models for, enteric bacteria persistence and transport within these types of systems.

A well-funded PhD opportunity exists to more fully examine the potential human health risks associated with the use of open, passive systems for wastewater treatment. The overall goal of the work is to develop a quantitative modeling approach for characterizing health risks from an ecohealth perspective. The work may include a baseline health study using survey and interview methods, as well as monitoring and modeling techniques to study the interactions of people and the environment.

The ideal candidate will have a Masters' degree in epidemiology, health sciences (health risk assessment), medical geography or related discipline; experience conducting primary research; and a sincere interest in working to improve the health status of Canada's northern peoples. Previous experience in multivariate modeling, geographic information systems (and global positioning systems), as well as experience in conducting community-based research (interviews, surveys) are considered beneficial.

The work will be conducted at the study site in Coral Harbour, NU located on Southhampton Island in the northern reaches of Hudson's Bay (64° 11' 36" N, 083° 21' 34" W) in collaboration with faculty in the Department of Process Engineering and Applied Science, and Environmental Science (Health Geomatics Laboratory). The project will require travel and work in remote arctic communities for extended periods of time (2-4 weeks typically).

Applicants are encouraged to consult the Department of Biological Engineering graduate program website ([http://biologicalengineering.dal.ca/Graduate Studies and Research/](http://biologicalengineering.dal.ca/Graduate%20Studies%20and%20Research/)) or the Interdisciplinary Ph.D. website (<http://idphd.grad.dal.ca/index.php>) for eligibility requirements and deadlines. Direct inquiries can be emailed to Dr. Rob Jamieson (JAMIESRC@dal.ca) or Dr. Daniel Rainham (daniel.rainham@dal.ca).

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