

Job Description

Job Title:	Environmental Microbiology Technician
Department:	Civil and Environmental Engineering
Reports To:	Principle Investigator (Monica B. Emelko)
Jobs Reporting:	None
Salary Grade:	USG 5
Effective Date:	May 2019

Primary Purpose

Provides support to the members of the Water Science, Technology & Policy Research Group (Water STP Group) by assisting with sample collection, processing, and data analysis being performed in field, pilot plant, and laboratory settings.

Key Accountabilities

Field work (located in the Harris Drinking Water Plant in Toronto)

- Organize and prepare to conduct filter tests and collect water samples in consultation with the Principle Investigator (PI), Dr. Monica Emelko, and/or Dr. William B. Anderson.
- Travel to and from a scaled down drinking water treatment plant located at the Harris Water Treatment Plant in Toronto. A driver's license is required.
- Measure or record data for some water characteristics on the sample day.
- Spike inactivated (dead) *Cryptosporidium* oocysts into filters.
- Collect water samples prior to drinking water filters, during filtration, and in treated water for analysis in labs at the University of Waterloo.

Training and Health & Safety

- Complete required safety training as directed by UW Health and Safety.
- Attend departmental safety meetings.
- Be aware of and adhere to procedures to neutralize/treat and dispose of liquids and supplies.

Laboratory work

- Filter collected water samples using a vacuum filtration unit.
- Stain filter membranes to prepare to count microorganisms.
- Prepare collected samples and/or membrane filters for immediate analysis or storage.
- Record all sample information in electronic databases for QA/QC.
- Anticipate stock levels and initiate ordering procedures for lab supplies from system suppliers and using Unit4.

**All employees of the University are expected to follow University and departmental health and safety policy, procedures and work practices at all times. Employees are also responsible for the completion of all health and safety training, as assigned. Employees with staff supervision and/or management responsibilities will ensure that assigned staff abide by the above, and actively identify, assess and correct health and safety hazards, as required.*

Required Qualifications

Education

- BSc in Biology
- Valid G class driver's license.

Experience

- Some familiarity with tests to identify algae, cyanobacteria, and/or protozoan (oo)cysts.
- Previous field work experience considered an asset.
- Familiarity with quality assurance and control methods considered an asset.
- Experience with spiking pilot drinking water filters with inactivated protozoans or bacteria an asset.

Knowledge/Skills/Abilities

- Excellent written and verbal communication skills.
- Working knowledge of Microsoft Office programs.
- Understanding basic microscopy and ability to work with a microscope for several hours/day is necessary.
- Capacity to learn proper and safe use of equipment including, but not limited to: field equipment (zeta potential analyzers, pumps, etc.), vacuum filtration units, centrifuge, autoclave, microscopes, and fume/biosafety hood.
- Awareness of cleaning techniques and products in a microbiology lab setting.
- Ability to respond to unexpected events when running experiments including math associated with flow and calculations to determine removals through filters.

Nature and Scope

- **Contacts:** Internally, communicates with, and takes direction from, the PI Dr. Monica Emelko and and collaborator Dr. William B. Anderson. There will be interactions with others using the microbiology lab or in the autoclave and glassware preparation space (graduate and undergraduate students, and departmental lab technicians). Externally, the incumbent will need to establish and maintain a good working relationship with a drinking water pilot plant operator and other drinking water treatment plant employees connected with the project. S/he will have to communicate with suppliers to obtain quotes for supplies and participate in research group meetings.
- **Level of Responsibility:** Responsible for assisting with laboratory and fieldwork tasks as assigned by senior personnel following University of Waterloo policies and guidelines.
- **Decision-Making Authority:** The incumbent attends meetings with the principle investigator and other members of the research group to review sampling plans to ensure proper execution of field-based sample collection, processing, and analysis. Identifies potential issues and brings them to the attention of senior personnel.
- **Physical and Sensory Demands:** Approximately biweekly travel to a pilot-scale drinking water treatment plant located at the Harris Water Treatment Plant in Toronto to conduct experiments and collect samples for transport back to the University of Waterloo. The incumbent must be comfortable with driving about 200 km on the 401 on sample days. Walking, bending, lifting, and moving objects and water samples up to about 25 lbs are required in the plant and in our labs. The use of a microscope requires concentrated use of eyes for potentially hours at a time.
- **Working Environment:** The incumbent will work primarily in the University of Waterloo Water STP group laboratories (DWE rooms 2407, 2407A) and other shared laboratory areas within the same building. The pilot plant and laboratory settings are both indoors. An occasional long day may be required on sample days. The microscope is located in a dimly lit lab.