Job Description

Job Title:	Water Treatment Researcher
Department:	Civil & Environmental Engineering
Reports To:	Peter M. Huck
Jobs Reporting:	None
Salary Grade:	USG 7
Effective Date:	January 2019

Primary Purpose

The Water Treatment Researcher will work at the Natural Sciences and Engineering Research Council (NSERC) Industrial Research Chair in Water Treatment, which is a research group in the Department of Civil and Environmental Engineering externally funded by industry partners and NSERC. The incumbent will conduct research and manage research projects under the supervision of the Research Associate Professor employed by the NSERC Chair and as directed by the NSERC Chairholder. Research projects will be in the area of corrosions control of drinking water systems, but will also include other research projects in the area of drinking water treatment. In addition, the Water Treatment Researcher will train and provide guidance to undergraduate research assistants, co-op students, and graduate students in their research projects. The Water Treatment Researcher will also manage lab facilities including health and safety aspects, maintain lab equipment, and order supplies. The incumbent will also provide support for Chair activities including interactions with industrial partners and information dissemination.

Key Accountabilities

Conducting research and managing research projects

- Design, plan and perform drinking water research studies with guidance from supervisor and under the general direction of the Chairholder. This includes bench- and pilot-scale research studies. Research projects are assigned by the Chairholder.
- Research projects will be mainly in the area of corrosion control in drinking water systems, and will involve both laboratory work at the university and on-site work at industry partner facilities.
- Experimental work will include designing experiments, setting up test systems, using established analytical methods and implementing analytical methods, conducting experiments, documenting and evaluating results.
- Bench and pilot–scale studies will include planning and modifying/building experimental set-ups with guidance from the supervisor and under the general direction of the Chairholder. This will include sourcing and ordering parts and working with staff and contractors as required.
- Pilot–scale studies will include the operation and management of work on-site at industry partner facilities with guidance from the supervisor and under the general direction of the Chairholder. This will include travel to the site, operation and maintenance of pilot equipment, sampling and shipment of samples to project collaborators, sample analysis, data collection and data management, and quality control and quality assurance procedures.
- With the input of the supervisor, complete required safety and risk assessment forms and standard operating procedures for assigned research projects.
- Train and oversee undergraduate and graduate students who are assisting with the research projects. This would include working with or assisting graduate students (advise on methods and procedures, provide information and expertise, assist with equipment and supplies acquisition, etc.)
- Day-to-day supervision of co-op students (one student per term)

- Interact with industry partner representative as required for the execution of assigned research projects.
- Document, summarize and interpret results obtained from experiments (including appropriate statistical analyses).
- Prepare reports/summaries for project and industry collaborators with input from supervisor.
- Present research findings at conference and meetings.
- Participate in the preparation of refereed manuscripts and conference presentations related to the research projects and research projects of graduate students. This entails co-authorship as appropriate.

Managing and Maintaining Lab Facilities incl. Health and Safety Aspects

- Conduct health and safety inspections in the labs assigned to the NSERC Chair. This includes reporting of unsafe conditions/practices to supervisor, testing of the eyewash and emergency shower stations and inspection of first aid and spill kits.
- Ensure that all Chair laboratory users, including graduate, undergraduate and co-op students, visiting scholars, post-docs and others, have completed the required health and safety training as outlined on the department website and the UW safety office website.
- Facilitate organization of lab space and regular lab clean-up days for NSERC Chair lab users.
- Maintain lab equipment as required, for example pH-meter and other probes, UV/Vis spectrophotometer, flow cytometer, florescence spectrometer, fluorescence microscope, ultrasonic bath etc.
- Teach NSERC Chair laboratory users common techniques and the appropriate use of equipment as required by their research projects. This is in addition to the lab orientation and lab training course offered by the department technicians.
- Co-ordinate ordering of lab supplies and equipment.

Managerial Support for NSERC Chair Activities

- Assist with NSERC Chair research dissemination activities including organizing of annual Partner Information Day for industry partners, updating NSERC Chair website and coordinating conference contributions and travel.
- Interact with NSERC Chair industry partners on collaborative research projects. For example, coordinate on-site sampling, obtain data sets from project collaborators, and schedule and prepare for research meetings with industrial partners.
- Assist with the hiring of undergraduate research assistants (URAs) and co-op students for the Chairholder and the supervisor as required. This would include preparing and conducting performance evaluations for co-op students; preparing job descriptions and interviewing for hiring co-op students.

**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

- Bachelor's degree in Chemical or Civil Engineering; MASc an asset

Experience

- Several years of laboratory-based research experience, preferably in a drinking water related context. This should include the use of standard laboratory equipment.

- Some experience in conducting pilot-scale research

Knowledge/Skills/Abilities

- Background in water treatment
- Knowledge of corrosions control in drinking water systems
- Knowledge of standard lab procedures
- Excellent analytical, and problem-solving skills
- Attention to detail
- Strong organizational and communication skills required
- Ability to work independently with only minor supervision
- Ability to prioritize, manage conflicting priorities, and deadlines
- Proficient in the use of Microsoft Word, Excel, Outlook, and PowerPoint

Nature and Scope

- **Contacts:** Internal contacts with supervisor, and Professor heading the research group to receive guidance and general direction, interacts with graduate and undergraduate students, and lab technicians; supervises one co-op student per term; External contacts: interacts frequently with staff or industrial partners as it relates to research projects.
- **Level of Responsibility:** The incumbent will be required to produce high quality research results. The position directly supervises one co-op student per term. It also requires an awareness of student activity in the lab and the ability to recognize an unsafe condition/practice.
- **Decision-Making Authority:** Establishes own priorities as it relates to research project execution. Will identify issues in research projects, propose solutions and after consultation with supervisor will resolve problems. This includes for example trouble shooting of experimental and pilot plant set-ups.
- **Physical and Sensory Demands**: Attention to detail required, will involve some lifting of heavy objects and use of hand tools.
- **Working Environment:** Laboratory and pilot-plant based work with some time spend in an office environment, will involve handling chemicals, will require driving on a frequent basis (approx. 1-2 times per week). The work within pilot-plant setting involves extended non-regular work hours. The pilot-plant is located at the basement of a full-scale water treatment plant. Protective personal equipment must be worn while conducting work at the pilot and the work environment requires reasonable endurance.