

Summer 2022 Sustainability Scholars Program Internship Opportunity

The UBC Sustainability Initiative (USI) is pleased to offer current UBC graduate students the opportunity to work on funded sustainability internship projects. Successful candidates work under the mentorship of a partner organization, and are immersed in real world learning where they can apply their research skills and contribute to advancing sustainability across the region.

- Visit the [Sustainability Scholars Program website](#) to learn [how the program works](#) and to [apply](#).
- Be sure to review the [application guide](#) to confirm your eligibility before applying.

Applications close at midnight on Sunday January 30, 2022.

Research Project Title: Assessing the viability of innovative testing methods to monitor bacteriological activity in the water supply system.

Project Background & Overview:

A study is proposed to assess alternative testing methods for confirming the overall bacterial activity within the water supply system. Overall bacterial concentrations within the treated transmission system may impact free chlorine residual effectiveness, increase the formation of biofilms and produce taste and odour issues. Current microbiological laboratory testing involving traditional methods take considerable time to generate results (e.g., Heterotrophic Plate Count (HPC) analysis). New testing technologies are emerging (e.g., Adenosine Triphosphate (ATP) method) that provides more rapid results. ATP is an energy carrying molecule found in all living cells and the concentration of ATP can provide an indication of biomass quantity in a laboratory or field setting within minutes. This information will be of benefit to systems operations in managing water quality issues.

Project description

As part of this study, the Scholar will conduct a review of available background information on the current HPC method used by the Microbiological Laboratory compared to the potential alternative ATP method for the determination of bacterial density in the water supply system.

Microbial methods used in determining overall microbial growth differ in the turn-around times for testing results. Results from some methods may take 24 hours and others up to several days depending on the practices employed. These methods are non-specific to a particular bacterial species as they provide a general snapshot of the population of microorganisms. With this information, a utility is able to be proactive in addressing potential water quality issues.

The ATP method uses ATP as a risk assessment indicator of the microbial quality of the water. This information, that is quickly available through ATP methods, can assist in operational decisions pertaining to maintaining water quality.

Metro Vancouver currently employs the Heterotrophic Plate Count (HPC) method for the determination of biomass within the regional transmission and member jurisdiction distribution systems. The current test requires traditional microbiological practices, which include the use of plated media, maintained at a set incubation temperature and times. The test is complete after 5 days.

The purpose of this study is to compare the HPC and ATP methods and determine whether a change in practice is beneficial and practical.

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The results of the study may be presented to our member jurisdictions and the regional health authorities to provide information regarding the change and reporting. The change in microbial methods may impact the overall water quality throughout the region by addressing water quality issues sooner, or ideally before they arise.

Project scope

- A review of the current methodology for determining the overall general population of microorganisms in treated water.
- A summary of the utilities in Canada and the United States that are currently using the ATP method, including results and validation data (if available).
- A comparison of the technical merits of the HPC and ATP methods, including:
 - the pros and cons of each method
 - a cost comparison
 - recommendations on the most suitable method for the Metro Vancouver context.
- The final report will summarise the research and knowledge learned and provide recommendations on pursuing a potential change in methodology and laboratory operations.

Note: The Scholar will have to sign a non-disclosure agreement upon receipt of the current Metro Vancouver method for HPC analyses.

Deliverables

- A final report (or executive summary) will be required for the online public-facing [Scholars Project Library](#).
- A presentation and final report summarising the research will be required for Metro Vancouver staff.

Time Commitment

- This project is expected to take 250 hours to complete and must be completed by August 12, 2022.
- The scholar is to complete hours between 9 am and 5 pm, Monday to Friday, approximately 17 to 20 hours per week.
- A schedule of monthly meetings will be submitted at a later date. A mid-term update will be required to provide a status update.

Required/preferred Skills and Background

- Excellent research and writing skills
- Demonstrated interest in sustainability
- Familiarity with research methodologies and survey techniques
- Statistical analysis
- Strong analytical skills
- Ability to work independently
- Deadline oriented
- Project management and organizational skills
- Comfortable interacting with strangers to conduct public/in person surveys
- Familiarity preparing feasibility studies
- Experience with financial modelling and analysis
- Demonstrated background in science
- Strong technical competencies will be required to maintain a technical dialogue with Quality Control staff.

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Applications close **midnight Sunday January 30, 2022**

Apply here: [Click here to apply](#)

Contact Karen Taylor at sustainability.scholars@ubc.ca if you have questions

Useful Resources

We are holding a special **resume preparation workshop for prospective Scholars** on January 19. [Click here for details and to register.](#)

Below are some links to useful resources to help you with your resume and cover letter (there are many more online). Some of these resources also provide information on preparing for your interview.

<https://students.ubc.ca/career/career-resources/resumes-cover-letters-curricula-vitae>

<https://www.grad.ubc.ca/current-students/graduate-pathways-success>

<https://www.grad.ubc.ca/cover-letter-cv-resume-templates-ubc-career-services>