

# SUSTAINABILITY SCHOLARS PROGRAM

## Summer 2020

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 February 2, 2020.**

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## Research project title: Evaluating and Reducing Microplastics in Metro Vancouver Wastewater Treatment

### How will this project make a contribution to regional sustainability?

This project contributes to Metro Vancouver's Integrated Liquid Waste and Management Plan Goal 1: Protect Public Health and the Environment.

### Project description

Over the last decade, microplastics (plastic particles < 5 mm) and their potential impacts to terrestrial and aquatic ecosystems have become a global concern. Microplastics come from many sources, including the breakdown of larger plastic products, residual from some industrial processing, microbeads in personal care products, and laundering of synthetic fabrics. These particles are synthetic and are not effectively degraded by Wastewater Treatment Plants (WWTPs). Although WWTPs are effective at removing a large amount of microplastics from the liquid waste stream, a large proportion of particles are retained in residual biosolids. The current industry standard throughout North America is to land-apply the majority of biosolids as fertilizers.

Metro Vancouver would like to conduct a desktop literature review to gather existing information on all potential sources of microplastics in WWTP influent, assess the efficacy of existing treatment strategies and technologies to remove microplastics from the solids stream (biosolids), and summarize any and all potential environmental effects of microplastics in land-applied biosolids.

### The purpose of the project is:

Part 1 of this project will examine existing literature to evaluate major sources of microplastics in WWTP influent, potential environmental effects of microplastics in land-applied biosolids and strategies and technologies for their removal.

Part 2 will involve comparing the major sources of microplastics in influent from Part 1 and cross referencing with the list of existing Waste Discharge Permit holders within Metro Vancouver jurisdiction to identify potential dischargers of microplastics.

Outline the scope of project, including how Metro Vancouver will use the Scholar's work:

1. Conduct a review of existing literature to determine:
  - What are sources of microplastics in the wastewater stream;
  - What are the reported concentrations of microplastics in wastewater influent, effluent, and biosolids;
  - What treatment strategies/technologies are effective at removing microplastics in biosolids;
  - What are the fate and transport of microplastics after land-application of biosolids;
  - Are there potential environmental effects of microplastics from land-applied biosolids;
2. Cross-reference information from the literature review with the list of Waste Discharge Permit holders within the Metro Vancouver jurisdiction to identify potential dischargers of microplastics.
  - Identify key point and non-point sources of microplastics within the region.

The Scholar's work is the first step in an innovative multiyear project to assess the sources and identify possible solutions to an emerging contaminant of environmental concern. Metro Vancouver will use the Scholar's work to assess source control strategies and treatment technologies that prevent microplastics from entering the wastewater stream and ultimately terrestrial and aquatic ecosystems. The Scholar will have the opportunity to collaborate with a multi-disciplinary team from Metro Vancouver's Liquid Waste Services, with expertise in biosolids management, environmental monitoring, WWTP technologies and laboratory processing.

**Project Deliverables: (Please use bullet points where possible.)**

- Draft final report summarizing the findings, for review by Metro Vancouver.
- Final report for Metro Vancouver's internal use.
- Create a PowerPoint presentation summarizing the findings, and deliver presentation to Metro Vancouver staff (if time allows).
- Executive Summary for the UBC Sustainability Scholars online project library.

**Time Commitment**

- This project will take **250** hours to complete.
- This project must be completed between May 4 and August 14, 2020.
- The scholar must be available to attend mandatory meetings: Kick off meeting, preliminary Table of Contents, monthly progress and draft report meetings, and final presentation. All meetings to take place at Metro Vancouver Head Office in Burnaby. Scholar must also be available for check in phone call meetings at the beginning of each month.

**Required/preferred Skills and Background**

- Excellent research and writing skills
- Demonstrated interest in sustainability
- Familiarity with research methodologies and survey techniques
- Strong analytical skills
- Ability to work independently
- Deadline oriented
- Project management and organizational skills
- Demonstrated experience in Scientific literature research and review
- The scholar will be expected to use their own laptop
- The Scholar must be able to attend meetings at Metro Vancouver head office in Burnaby.

Applications close **midnight Sunday February 2, 2020.**

Apply here: <http://sustain.ubc.ca/scholarsapply>

Contact Karen Taylor at [sustainability.scholars@ubc.ca](mailto:sustainability.scholars@ubc.ca) if you have questions

## Useful Resources

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>

The Centre for Student Involvement & Careers will host a resume & cover letter webinar tailored for graduate students on Tuesday, January 21, 2020 from 12:00-1:30. Registration will open approximately two weeks before the webinar, and can be accessed at Careers Online.

