

Summer 2023 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 on the Apply page to confirm your eligibility before applying.

Applications close at midnight on Sunday January 29, 2023.

Project title: Investigating sources and pollution prevention strategies to address compounds of environmental concern (CECs) entering Metro Vancouver's wastewater

Project Background & Overview:

In recent years, awareness of compounds of environmental concern (CECs) has gained momentum globally and regulatory bodies worldwide are beginning to understand the risks to aquatic life and human health. Trace-level concentrations have been found in surface waters around the world, including here in Metro Vancouver. One of the main entry pathways for CECs to the environment is through wastewater effluent. Metro Vancouver's Liquid Waste Services department is proactively establishing strategies for managing CECs that pose uncertain risks to the environment and public health. In support of these efforts, the Source Control Program is analysing sources to better develop potential pollution prevention strategies to address discharges of CECs to the region's wastewater system.

CECs enter wastewater from a variety of sources and pathways such as consumer products, industrial processes, and material coatings. Examples of CECs include perfluorinated compounds (e.g., PFAS), flame retardants, pesticides, active pharmaceuticals and surfactants. Gaining a better understanding of sectors that use and discharge CECs to Metro Vancouver's wastewater will help identify source control efforts, reduce the risks CEC pose to the environment and improve ecological resiliency in the face of climate change.

The adverse effects of this CECs are not yet fully understood; evolving research indicates they are persistent in their environment, bioaccumulative and can be toxic. Many CECs may also act as endocrine disruptors which can alter an organisms' hormone levels and pose risks to reproductive cycles, neurological systems and physical development. As climate change intensifies, aquatic ecosystems and habitats are increasingly vulnerable to environmental stresses. The region is expecting more extreme weather with increased heavy rain events which can lead to flooding and system overflows that release wastewater contaminants into receiving waterbodies. Further efforts to develop pollution prevention initiatives for CECs will help

alleviate the cumulative stresses on aquatic ecosystems and improve the region's climate resiliency.

Project description

This project seeks to identify potential residential, commercial and industrial sources that discharge CECs into the wastewater system and compile research of best practice pollution prevention strategies for different sectors. The primary sources of CECs entering the region's wastewater are largely unknown, therefore this project will add value to Metro Vancouver's existing efforts by identifying significant dischargers and will inform development of appropriate source control strategies to minimize discharge of CECs.

Aquatic ecosystems are vulnerable to increased environmental stress due to changing climate hazards. Increases in extreme weather events will intensify the risk of flooding and system overflows which raises the potential for contaminants to enter the environment. By identifying sources of CECs and researching management strategies, this work will help to reduce risk of contaminated discharge, minimize the overall burden felt by aquatic species and their habitats, and thereby improve ecological resiliency in the face of climate change.

The Scholar's findings will directly be used by the Source Control Program in ongoing effort to better understand CECs and develop pollution prevention strategies. Recommendations will also be shared with CEC Working Group members within the Liquid Waste Department. The Scholar will have the opportunity to collaborate with this multi-disciplinary team with expertise in source control policy, residuals management, environmental monitoring, and wastewater treatment.

Project scope

This Project will include desktop research to identify significant sources of CECs in Metro Vancouver's wastewater. Through this work, the Scholar will investigate industrial, commercial and residential activities that contribute CECs into wastewater discharges, identify priority sectors and research best practices to inform Metro Vancouver's future management efforts.

Key questions the Scholar will explore in this work include:

- What are the significant sources of CECs to Metro Vancouver wastewater?
- What are the relative contributions of CECs from different sectors across Metro Vancouver?
- How are other jurisdictions addressing CECs, and what are some best-practice source control strategies to help inform Metro Vancouver's next steps in managing CECs.
- How can Metro Vancouver prioritize existing source control efforts to better protect receiving waters?

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The Scholar's work will include 3 parts:

1. **Conduct a literature review of the sources and reported discharge concentrations of CEC to wastewater.** (25% of total project hours)

In completing this task, the Scholar will investigate specific sectors that discharge CECs to wastewater. Research findings will identify industrial, commercial and residential activities that discharge CEC contamination and the reported discharge concentrations from literature.

The Scholar will organize findings in an excel database and create a resource library which will serve as reference resources to help the Source Control Program focus future pollution prevention efforts.

Source Control Program staff will assist the Scholar to prioritize an initial list of CECs to research and will work with the Scholar to define the fields of the database. The Scholar will have the opportunity to use the MV Library.

2. **Identify priority sectors discharging CECs to wastewater in Metro Vancouver.** (50% of total project hours).

In completing this task, the Scholar will develop a database of potentially significant commercial sources and industries to focus source control efforts in Metro Vancouver.

The completed database will summarize information about significant residential, commercial and industrial sectors that discharge CECs to wastewater, provide a breakdown of businesses located in Metro Vancouver for each priority sector, detail the type(s) of CECs associated with each sector, and estimate the relative contributions of CECs discharged to wastewater.

Source Control Program staff will help the Scholar define the fields of the database and will provide the necessary business directory data.

3. **Conduct jurisdictional review of best practice management strategies.** (25% of total project hours)

In completing this task, the Scholar will research between 3-5 jurisdictions and summarize how they are managing CEC discharge from different sectors. The review should include successfully implemented regulations, standards, education initiatives and/or on-site requirements of industry and/ or residents.

Source Control Program staff will assist the Scholar in selecting relevant jurisdictions to profile and provide guidance on review topics.

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Deliverables

- Excel database(s) summarizing:
 - o Literature review findings on the sources
 - o Reported or estimated discharge concentrations of CECs to wastewater
 - o Significant dischargers of CECs
 - o Industries to prioritize source control efforts in Metro Vancouver
- Resource library of literature reviewed
- Written report (10 - 15 pages maximum) summarizing methodology and key findings from each task.
- Final report (or executive summary) for the online [Scholars Project Library](#)

Time Commitment

- This project will take 250 hours to complete
- This project must be completed between May 1 to August 15, 2023
- The Scholar is to complete hours between 9 am and 5 pm, Monday to Friday, approximately 17 to 20 hours per week.
- The Scholar is encouraged to present project findings to Metro Vancouver's Source Control Program and CEC Working Group.

Required/preferred Skills and Background

- Excellent research and writing skills
- Demonstrated interest in sustainability
- Strong analytical skills
- Ability to work independently
- Deadline oriented
- Project management and organizational skills
- Demonstrated experience in Excel and database development
- Experience in conducting literature reviews and research
- Demonstrated knowledge of CECs and/or environmental chemistry would be an asset
- Familiarity with or interest in wastewater, liquid waste management, toxicology, etc. would be an asset.

Applications close **midnight Sunday January 29, 2023**

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 23, 2023.

[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>