Meghan Swanburg

I am currently pursuing my Master of Applied Science with a focus on water resources. Water resources encompass a range of natural waters that occur on earth, such as oceans, lakes, rivers, and groundwater and have immeasurable value in terms of their ecosystems and human uses. I believe strongly in environmental stewardship and social equity and seek to bring about positive change in the world. Gaining knowledge in this area equips me with the tools needed to address the challenges and opportunities facing the world's water resources. The KC Irving Centre is a stunning building from which to draw inspiration from and provides many of the necessary equipment, resources, and supports needed for me to pursue knowledge in this area. I have three young children who are at times with me when I need to stop by the lab; it is a joy to see the wonder in their eyes as they walk through the hallways of the Irving Centre, encouraging their continued love of learning. My thesis research involves analyzing wastewater, so my kids also get a big kick out of that.

Collecting wastewater samples from the sewer system

Applying Wastewater Surveillance to a Small-Scale System in Nova Scotia

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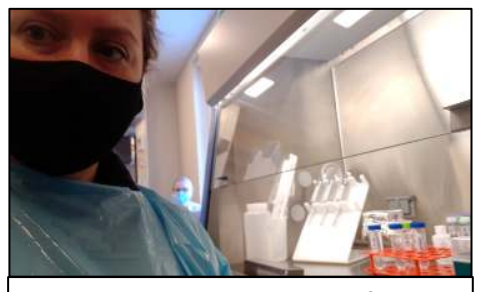

Analyzing wastewater samples for the SARS-CoV2 virus RNA in the Biological Safety Cabinet

Wastewater surveillance has been applied to uncover virus outbreaks, provide information on drug consumption and vaccination uptake, and assess collective exposure to environmental stressors such as environment and food toxins. Collecting wastewater for analysis of chemicals and viruses shed by humans provides an unbiased, cost-effective, real-time view of a community's health and can be a viable and important component of informing public health decisions. Research and applications of wastewater surveillance has surged in recent years to track trends in the SARS CoV-2 pandemic, yet the majority of applications worldwide occur in major urban centres with few applications conducted in rural and small-town areas.

In this study wastewater surveillance is applied in a small-scale wastewater system in Nova Scotia to test for the potential presence and abundance of the SARS-CoV2 virus and THC-COOH, a metabolite that is formed in the human body after cannabis is used. Grab, composite, and passive sampling methods are used to collect wastewater from the system and are analyzed with Real-Time Quantitative Polymerase Chain Reaction (q-PCR) to detect and quantify the presence of SARS-CoV2, and Liquid Chromatography–Mass Spectrometry (LC-MS) to detect and quantify the presence of THC-COOH. This study seeks to assess the ability for wastewater surveillance to detect virus presence and cannabis use in a small-scale wastewater system and identify key factors in the efficient, sustainable, and suitable application of wastewater surveillance in small communities to inform public health decisions.

For additional information, contact meghan.swanburg@acadiau.ca