

Annual Summary for 2018 Research License No. 01 031 18N-M

Characterizing Iqaluit's Baseline Municipal Wastewater Containment Loadings to the Marine Environment

In Fall 2018 we successfully deployed passive samplers called o-DGT to gather data on water exposure for a suite of 34 pharmaceuticals typically found in municipal wastewater. A total of six sites were evaluated. These were Iqaluit's sewage lagoon, three sites at increasing distance from the lagoon outflow in Frobisher Bay, an up river site to be used as a reference site on Sylvia Grinnell River and in Geraldine Lake near the drinking water intake pipe for the town.

We observed no detection of compounds at any sites in Frobisher Bay. This indicates that these sites are seemingly well flushed by tides, with little to no exposure to any significant quantity of wastewater. There were also no detections in the Sylvia Grinnell and Lake Geraldine, which were our reference sites. We did detect several commonly used pharmaceuticals in the wastewater lagoon receiving municipal effluents. The compounds detected and the concentrations observed are similar to what has been seen in other Arctic communities, as well as other Canadian municipalities with similar treatment facilities. We compared the concentrations observed to known toxicity values and concluded that these compounds would not pose an acute or chronic risk to marine organisms at this time based on available data. The results of this first year of study were presented in Iqaluit in the spring as part of the Department of Fisheries and Oceans Baseline Monitoring Workshop. The findings have been prepared for peer-reviewed publication and raw data will be made available for any interested parties.

In Summer 2019 we will continue this work and include fluoro-compounds in our analyses, as well as microbial indicators of wastewater in the environment. These will be taken by grab sample of water at our monitoring sites. In Winter 2020 we will have a sampling program to better understand the movement of wastewater under ice.