

## Project Dashboard

Potential Impacts of New Perfluorinated Compounds on Arctic Char (148914)

### Proposal Status: Conformity Determination Issued

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#### Project Overview

Type of application: **New**

Proponent name: Paul Jones

Company: University of Saskatchewan

#### **Schedule:**

Start Date: 2018-09-01

End Date: 2018-10-31

Operation Type: Seasonal

#### **Project Description:**

Perfluorinated chemicals (PFCs) became recognized as contaminants of concern at the turn of the 21st century. Due to national and international regulations, production and release of several of the most significant PFCs such as PFOS and PFOA have decreased. Currently 87 chemicals that can degrade to PFOS are banned in Canada. One major source of PFCs to the environment is Aqueous Film Forming Foams (AFFFs) used in fire-fighting are commonly found associated with transportation and defence facilities or airports. Newer formulations of firefighting AFFFs contain in excess of 40 PFCs for which little is known about bioaccumulation and potential effects. In this proposal potential environmental and toxicological effects of the 'novel' PFCs, most commonly found in AFFFs, and as yet unregulated in Canada will be assessed. The assessment will be based on toxicity of PFCs to early life stages of 2 salmonid species, rainbow trout and Arctic char, and will look at biochemical and transcriptomic changes caused by PFC exposure. Since, in mammals, serum albumin (SA) is known to bind certain PFCs and so greatly modify their pharmacokinetics and thus toxicity, we will investigate the binding of PFCs to salmonid SA. Data will be used to generate toxicity reference values (TRVs) for these compounds. The assessment will also be based on measurement of target PFCs in environmental media and biota from Canada's north. Concentrations of novel PFCs in the environment will be compared to thresholds for apical adverse effects on salmonid reproduction and TRVs developed based on reproduction. Project Objectives 1.Measure per- and polyfluorinated compounds (PFCs) in water, sediments and tissues of Arctic char at multiple locations in the Canadian Arctic. 2.Conduct a preliminary hazard assessment by comparing concentrations of PFCs measured in Arctic char eggs and tissues to Threshold Relative Values (TRVs) derived in our parallel laboratory-based studies. Methodology: We have initiated preliminary consultation with the Ekaluktutiak Hunters and Trappers Organization via Solomon Amuno (NIRB). We are interested in collaborating with this group for Arctic char sampling from different lakes and rivers around Cambridge Bay. We have also made contact with the local fish processing plant to collect additional Arctic char samples for the project. Our goal is to have local fishermen collect

the Arctic char samples for us. We will need to collect water samples and sediment samples from the same locations as the collected fish, and we would expect that we would collect these samples with local fishermen guides. Cambridge Bay was selected as it is a prominent northern community with an airport that would have tested firefighting AFFFs. Since there is a strong possibility that these AFFFs have released PFCs into the nearby water bodies, we expect that water, sediment and fish samples from this area will contain PFCs. We will use cutting edge analytical equipment to measure the PFCs in the collected samples and determine if there is any possible risk to the community.

#### **Personnel:**

Persons: 3

Days: 5

#### **Project Map**

#### **List of all project geometries:**

ID	Geometry	Location Name
4229	polyline	Cambridge Bay

#### **Planning Regions:**

Qikiqtani

#### **Affected Areas and Land Types**

Inuit Owned Surface Lands

Municipal

Settlement Area

#### **Project Land Use and Authorizations**

#### **Project Land Use**

Scientific Research

Scientific Research

#### **Licensing Agencies**

DFO: [Fish for Scientific Purposes Permit](#)

NRI: [Scientific Research Licence](#)

#### **Other Licensing Requirements**

No data found.

#### **Material Use**

#### **Equipment**

Type	Quantity	Size	Use
Ponar Grab Sampler	1	<1 cubic foot	Used to collect sediments from lakes and the ocean
Kemmerer Water Sampler	1	<1 cubic foot	Used to collect water samples from lakes and the ocean

#### **Fuel Use**

Type	Container(s)	Capacity	UOM	Use
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No records found.

#### **Hazardous Material and Chemical Use**

<b>Type</b>	<b>Container(s)</b>	<b>Capacity</b>	<b>UOM</b>	<b>Use</b>
Methanol	2	4	Liters	Methanol is used as a solvent to wash sampling equipment between samples. All MeOH waste is collected and returned to the laboratory for disposal via the University waste handling system

#### **Water Consumption**

<b>Daily Amount (m<sup>3</sup>)</b>	<b>Retrieval Method</b>	<b>Retrieval Location</b>
0	Kemmerer bottle	Several Lakes and Cambridge Bay

#### **Waste and Impacts**

##### **Environmental Impacts**

The activities proposed will not produce any measurable environmental effects. We will collect < 5kg of sediments and <20L of water and any waste generated will be returned to the University for disposal.

##### **Waste Management**

<b>Waste Type</b>	<b>Quantity Generated</b>	<b>Treatment Method</b>	<b>Disposal Method</b>
No data found.			