

Microplastics and Associated Contaminants in Snow

Pathways to the Canadian Arctic in Yukon and Nunavut

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Purpose The purpose of this project is to measure microplastics and contaminants such as PFAS and OPE in snow in the Arctic

Why? This data will help us understand how contaminants are transported and deposited in the Arctic. Investigating these pathways is important to enact measures to reduce Arctic contamination

How will the data be reported? We will report the type, size, and amount of plastics in snow. We will use the concentrations of PFAS and OPE in snow to see if there is relationship with plastic.

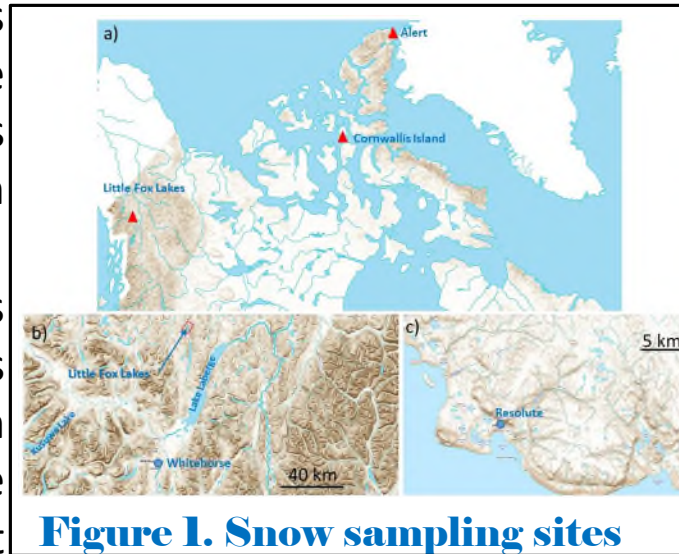


Figure 1. Snow sampling sites



Figure 2. Peter Amarualik sampling snow in Resolute in May 2021

Teaching Kids About Plastic Pollution

We've developed activities and teaching materials for kids to learn about plastic in the environment! More info here: amila.desilva@ec.gc.ca

From plastic to microplastic
Plastics in the environment are exposed to many factors that lead to making the material weak and brittle. Forces can then lead to breaking and shattering, or "fragmenting", the material resulting in microplastics. Some other physical forces can be heating and cooling, freezing and thawing, and wetting and drying. Microplastics are defined as being less than 5µm in size. About the size of a pencil eraser! These can be called secondary microplastics. Plastics that are already smaller than 5 µm, such as microbeads and pellets or nurdles, are called primary microplastics.

Colouring Activity
This is a fun activity for children to learn about plastic pollution. They can color the polar bear and the plastic pieces. The polar bear is made of paper and the plastic pieces are made of paper. The children can use the plastic pieces to make a polar bear. This is a fun activity for children to learn about plastic pollution.

1. A strong wind blows a plastic water bottle down the street. What type of plastic is the water bottle likely made from?
a) PET d) LDPE
b) PP e) HDPE
c) PVC

2. The wind tossed and tumbled the water bottle in to the local creek. Reach the end of the maze to find out what could happen to a plastic water bottle over time as it makes it's way down the creek and then spends the rest of it's life in the ocean.

Which Chemicals?

PFAS are poly- and per-fluoroalkyl substances. They are very persistent chemicals that are used to make coatings that can be applied to materials to make them water-repellant and stain-repellant. They are also used in specialized applications like fire-fighting foams.

OPE are organophosphate ester substances. They are used to make plastics. They are also used as flame retardants in building materials.

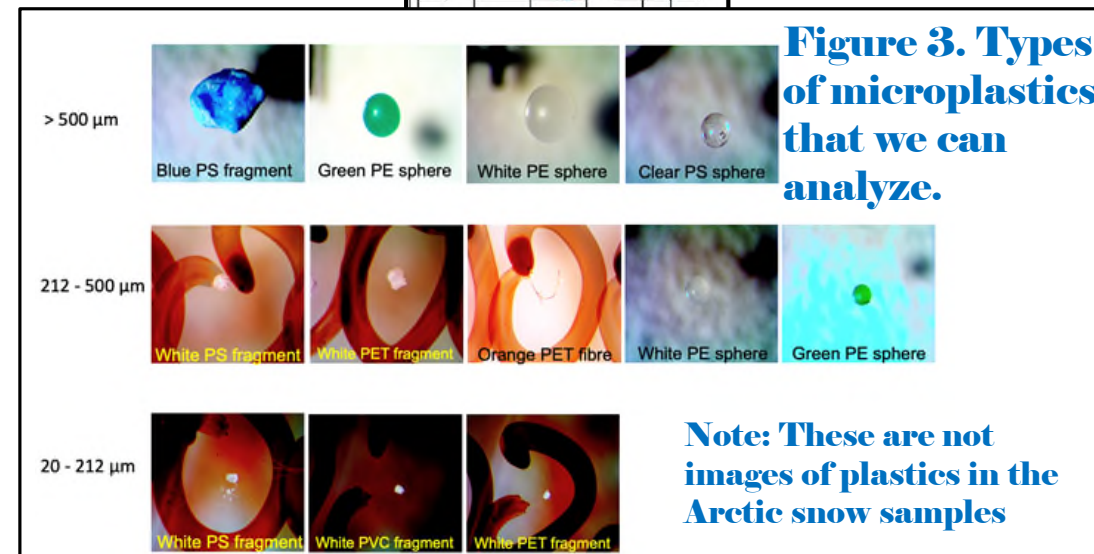


Figure 3. Types of microplastics that we can analyze.

Note: These are not images of plastics in the Arctic snow samples

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