

# Industrial Stormwater

## Per- and polyfluoroalkyl substance (PFAS) snow sampling guidance

Collecting stormwater for PFAS analysis is typically done using either a grab or sheet flow sampling method. However, PFAS snow sampling is an option for industrial facilities that vent or exhaust to rooftops, or sides of facility buildings, from areas of concern (AOC) identified within buildings where PFAS has historically been or currently is manufactured, processed, used, stored, and/or disposed of as part of a facility's industrial activities.

To ensure PFAS snow sampling is done in compliance with the Minnesota Pollution Control Agency's (MPCA) Industrial Stormwater (ISW) Program's 2025 National Pollutant Elimination Systems and State Disposal System (NPDES/SDS) General permit (Permit), a facility's responsible individual(s) shall follow this guidance document. When submitting the facility's PFAS sampling results to the MPCA, the permittee or its responsible individual(s) will certify that all items used during sampling and analysis were PFAS-free and were not contaminated with PFAS during the process of sampling and analysis.

## What is PFAS snow sampling

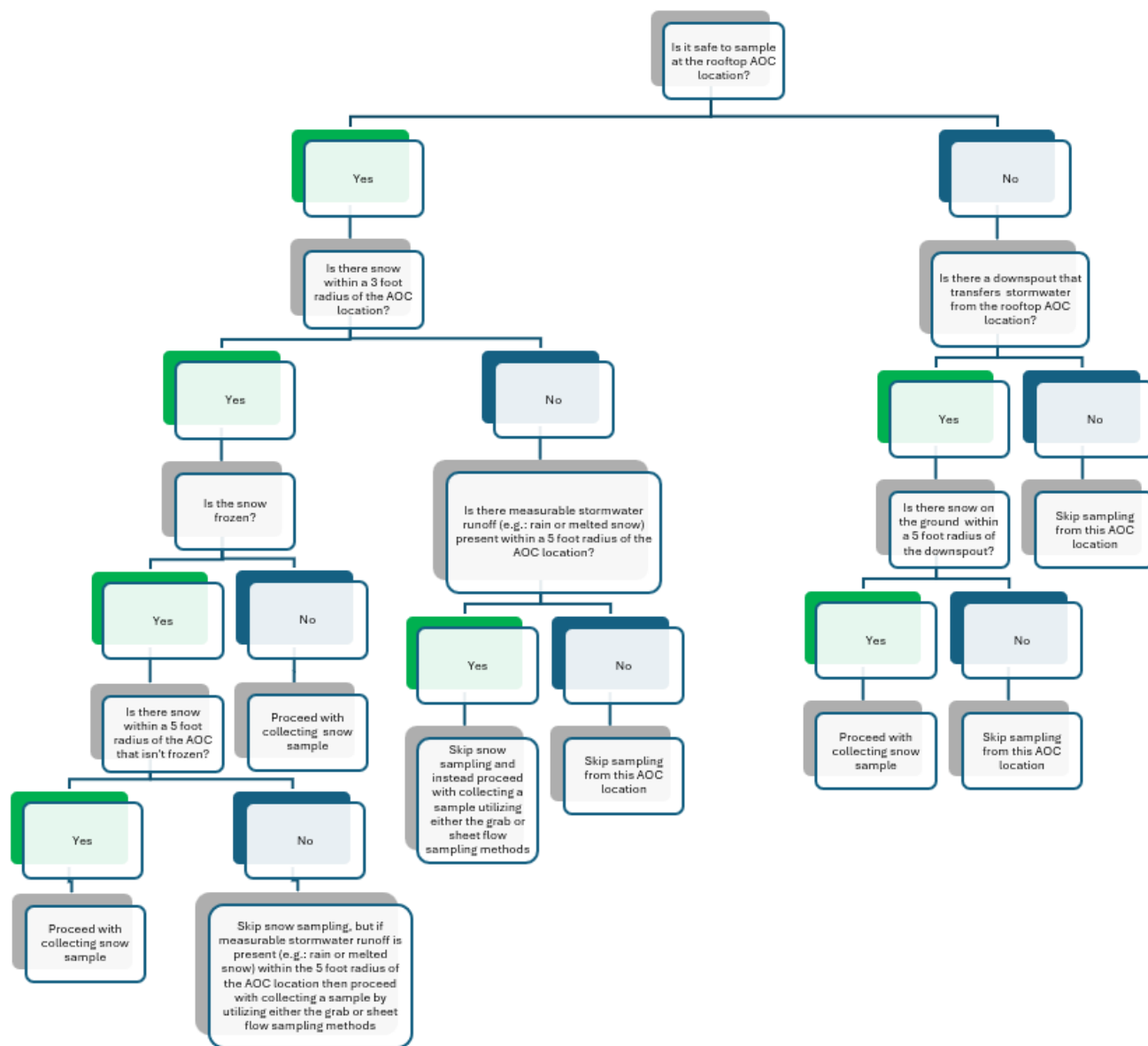
PFAS snow sampling is the process of collecting snow from an industrial facility's PFAS AOC location(s), such as vents or exhausts found on rooftops or sides of buildings, once a facility has received at least a three-inch accumulation of snow over a period of three weeks. Additionally, a PFAS snow sample must not be collected until 24 hours after a snowfall event has ended. A PFAS snow sample should be collected from within a three foot radius of an AOC location if the snow is not frozen solid; see flow chart below. After collection, the sample must undergo a melting phase in order to be analyzed as an aqueous sample. Analysis of the sample must be done in accordance with the U.S. Environmental Protection Agency's (EPA) Method 1633's requirements such as, but not limited to, sampling safety, proper preparation for sample collecting, preservation, storage, and holding times.

## Safety protocol for PFAS snow sampling

**The following safety protocol shall always be followed while undertaking PFAS snow sampling.**

- The facility is responsible for the individual(s) it puts in charge of completing all of its PFAS monitoring requirements. If snow sampling is to be collected on the rooftop of a facility, then the facility is responsible for allowing its individual(s) to have access to its rooftop to complete PFAS snow sampling. Every individual that is allowed access to the roof of a facility shall follow all facility safety requirements and Occupational Safety and Health Administration (OSHA) requirements including, but not limited to, OSHA 1910.28 (b) (13) "Occupational Safety and Health Standards: Walking-Working Surfaces: Duty to have fall protection and falling object protection: Work on low-slope roofs".
- Every individual that is allowed access to the roof of a facility must physically look where the edge of a roof is located and must always be body and positionally aware of how their position and body movements could cause a fall hazard.
- Every individual that is allowed access to the roof of a facility must be aware of their environment before sampling begins.
- Every individual that is allowed access to the roof of a facility must physically look down and be aware of pipes, debris, snow, ice, and other possible hazards while on a rooftop.

- Every individual that is allowed access to the roof of a facility must dress appropriately for cold weather and non-emergency weather events (i.e., snowing, light rain, etc.) using PFAS compliant clothing.
- Every individual that is allowed access to the roof of a facility shall reduce load carrying of any supplies, coolers, or objects that would otherwise impede the ability to safely protect oneself from fall hazards.
- Every individual that is allowed access to the roof of a facility may decline, at any time, to go on a rooftop to sample if they deem it is unsafe. If deemed unsafe then follow the flowchart below:



## Required supplies

Prior to collecting any PFAS stormwater samples, the facility is responsible for completing a PFAS monitoring plan that meets the requirements contained in the MPCA's Industrial Stormwater 2025 Permit.

The facility is responsible for contacting a Minnesota Department of Health (MDH) accredited laboratory or another MPCA-approved accredited lab to supply it with necessary PFAS-free sampling supplies and to complete the analysis of the facility's PFAS snow samples. The facility is responsible for supplying any remaining necessary PFAS-free sampling supplies the accredited laboratory is unable to provide.

**Supplies required for sample collection at each AOC location at a facility:**

- Enough PFAS-free sampling bottle sets to meet the number of facility AOC locations the facility's responsible individual(s) will be collecting samples from.
  - A PFAS-free sampling bottle set consists of one 1-gallon sized sealable bag, three 500 mL bottles labeled with a facility AOC location name and a sequential number (e.g., AOC 1 Sample 1 for both 500 mL bottles), and two 60 mL bottles labeled with a facility AOC location name and a sequential number.
- Extra PFAS-free gallon sized sealable bags.
- Several sets of nitrile gloves, which must be PFAS-free, clean, and powderless.
- A clean cooler to contain and maintain samples within the same temperature changes required in Method 1633.

**Supplies required for blank preparation:**

- One Trip Blank set.
  - A Trip Blank bottle set consists of two bagged 500 mL bottles pre-filled with PFAS-free water provided by the MDH accredited laboratory. The set must be sealed at the laboratory and must remained sealed while out in the field.
- Enough Field Blank sets to meet the number of AOC locations that exist at the facility.
  - A Field Blank bottle set consists of two empty 500 mL bottles with one corresponding 1-liter high-density polyethylene (HDPE) bottle filled with PFAS-free water.

## Sampling preparations

**Avoid Contamination**

It's important that all individuals involved in sampling for PFAS avoid contamination, and the facility's responsible individual(s) must refer to the EPA's Method 1633 for guidance. The facility's responsible individual(s) may also refer to the MPCA's PFAS sampling guidance (p-eao2-27) for further information on how to avoid PFAS contamination, which includes, but isn't limited to, the following when sampling:

- Do not wear waterproof, stain proof, or other treated clothing while handling samples or sample media.
- Do not handle fast food packaging or other food packaging (including compostable plates, bowls, etc.) prior to or during handling of samples or sample media.
- Other items to avoid include, but are not limited to:
  - Teflon (PTFE)
  - Anything with fluoro or perfluoro in the name. For example:
    - Ethylene tetrafluoroethylene (ETFE)
    - Fluorinated ethylene propylene (FEP)
    - Polyvinylidene fluoride (PVDF)

**When preparing the Trip Blanks:**

- Wear a clean pair of PFAS-free and powderless nitrile gloves.
- Verify the prefilled bottles in the Trip Blank set are completely sealed without opening them.
- Label bottles as Trip Blanks and indicate them in the COC form.
- Place and keep the bottles in the cooler that's going out into the field.
  - The Trip Blank bottles must stay within the same temperature changes required by Method 1633.
- Properly dispose of used PFAS-free and powderless nitrile gloves.

**When preparing Field Blanks per AOC location:**

- Wear a clean pair of PFAS-free and powderless nitrile gloves.
- Once out in the field:
  - Fill one Field Blank set (two PFAS-free 500 mL empty bottles) with the PFAS-free water stored in the 1-liter HDPE bottle.
  - Label bottles as Field Blanks and with the facility's Area of Concern (AOC) location name (e.g., AOC 1 NE building vent) and indicate them in the COC form.
  - Place and keep the bottles in the cooler with the Trip Blanks while sampling.
    - The Field Blank bottles must stay within the same temperature changes required by Method 1633.
- Repeat the above steps at each of the facility's AOC locations.
- Properly dispose of used PFAS-free and powderless nitrile gloves.

## Snow sampling procedure

**When to collect a PFAS snow sample:**

A snow sample may be collected from within a three-foot radius of the facility's vent or exhaust once a facility receives at least a three-inch accumulation of snow over a period of at least three weeks. A snow sample must not be collected immediately after a snowfall event, and at a minimum, the facility's responsible individual(s) shall wait 24 hours to collect a snow sample after a snowfall event. The snow should be easy to collect and not hardened or turned solid due to freezing temperatures. If the snow within the three-foot radius is hardened, then the responsible individual(s) should determine if the snow within a five-foot radius of the vent or exhaust is softer and take the snow sample from there.

**How to collect a PFAS snow sample at each AOC location:**

- Wear a clean pair of powderless nitrile gloves.
- Using one of the three 500 mL bottles, scoop snow into one 1-gallon bag from the top of the snow and progress downward until the 1-gallon bag is filled to its maximum sealable capacity.
  - Samples must be taken from within a three-foot radius around the dedicated sampling sites (e.g., building vents or exhaust). If the snow within the three-foot radius is frozen then refer to the flowchart above.
  - Take a picture of the sample area. If possible, the camera device should record the AOC location's GPS coordinates.
  - In the sample log, record notes of any impurities witnessed within the AOC location area while filling the 1-gallon bag.
  - See appendix A - Sample log page.
  - Once filled, seal the 1-gallon bag and label it with the facility's AOC location name and the sequential number that was indicated on the 500 mL bottle used to scoop the snow sample.
  - Place the used and empty 500 mL bottle in its own 1-gallon bag and seal it.
  - Store the sealed 1-gallon bag of snow and the 1-gallon bag containing the 500 mL bottle in the cooler containing the Trip and Field blanks and indicate them in the COC form.
- Properly dispose of the used powderless nitrile gloves.
- Repeat the above steps at each of the facility's AOC locations.

**Post collection:***Melting phase*

The snow collected must undergo a melting phase in order to be analyzed as an aqueous sample.

- Wear a clean pair of PFAS-free and powderless nitrile gloves.
- Visually verify that all samples have remained sealed.

- In a clean and dry area, set the sealed 1-gallon bags of snow up in a manner to prevent them from rolling or spilling while melting. Ensure that the lip of each bag is raised up above the rest of the bag.
- Ensure the temperature of the room the samples are held in is between 68° and 72°F until snow has melted completely to a liquid phase. Do not heat the sample.
- Properly dispose of the used powderless nitrile gloves.
- Repeat the above steps for each set of facility samples.

#### *Decanting phase*

This step is to be performed once the PFAS snow sample has completely turned into a liquid.

- Wear a clean pair of PFAS-free and powderless nitrile gloves.
- Gently homogenize and decant part of the liquid into two 500 mL bottles labeled AOC location name and a sequential number.
- Upon filling, screw caps on the bottles and verify they're thoroughly and tightly sealed.
- Decant the remaining sample liquid into two 60 mL bottles that are labeled with the AOC location name and a sequential number.
- Place the filled and tightened bottles in a new clean PFAS-free bag, label the bag with the AOC location name and a sequential number, and seal the bag tightly.
- Place the samples in a cooler.
- Properly dispose of the used powderless nitrile gloves.
- Repeat the above steps for each set of facility samples.

#### *Post decanting phase*

- Wear a clean pair of powderless nitrile gloves.
- Place all coolers containing PFAS samples and Field and Trip Blanks into a refrigeration unit to drop the samples' temperatures to 0°-6°C.
- Properly dispose of the used powderless nitrile gloves.
- Once samples have reached 0°-6°C, put on a clean pair of powderless nitrile gloves and pack coolers with ice and prepare for shipping. Samples must be shipped with sufficient ice to maintain the sample temperature at or below 6°C during transport for a period of at least 48 hours in case of shipping delays.
- Properly dispose of the used powderless nitrile gloves.

#### *Shipping phase*

- Ensure all samples are properly and securely stored while awaiting shipping, which includes protecting the samples from light and maintaining the samples' temperatures between 0°-6°C.
- Provide overnight shipping to MDH accredited laboratory. The facility must also be able to track its samples while in transit.
- Request that the laboratory contact the facility's responsible individuals upon receiving the shipped samples and to confirm that the samples' temperatures were between 0°-6°C upon receipt.

#### *Analysis phase*

This step is to be performed at the MDH accredited laboratory.

- Analysis of a facility's samples must be completed per the requirements of the EPA's Method 1633.
- The laboratory must provide the facility with results for all forty PFAS analytes contained in the EPA's Method 1633.

## **More information**

For more information about industrial stormwater visit the MPCA's industrial stormwater webpage at <https://www.pca.state.mn.us/business-with-us/industrial-stormwater>. The MPCA's ISW Program may be contacted at [iswprogram.pca@state.mn.us](mailto:iswprogram.pca@state.mn.us).

## Appendix A -PFAS snow sample log

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