

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, stored, and/or disposed of as part of a facility's industrial activities.

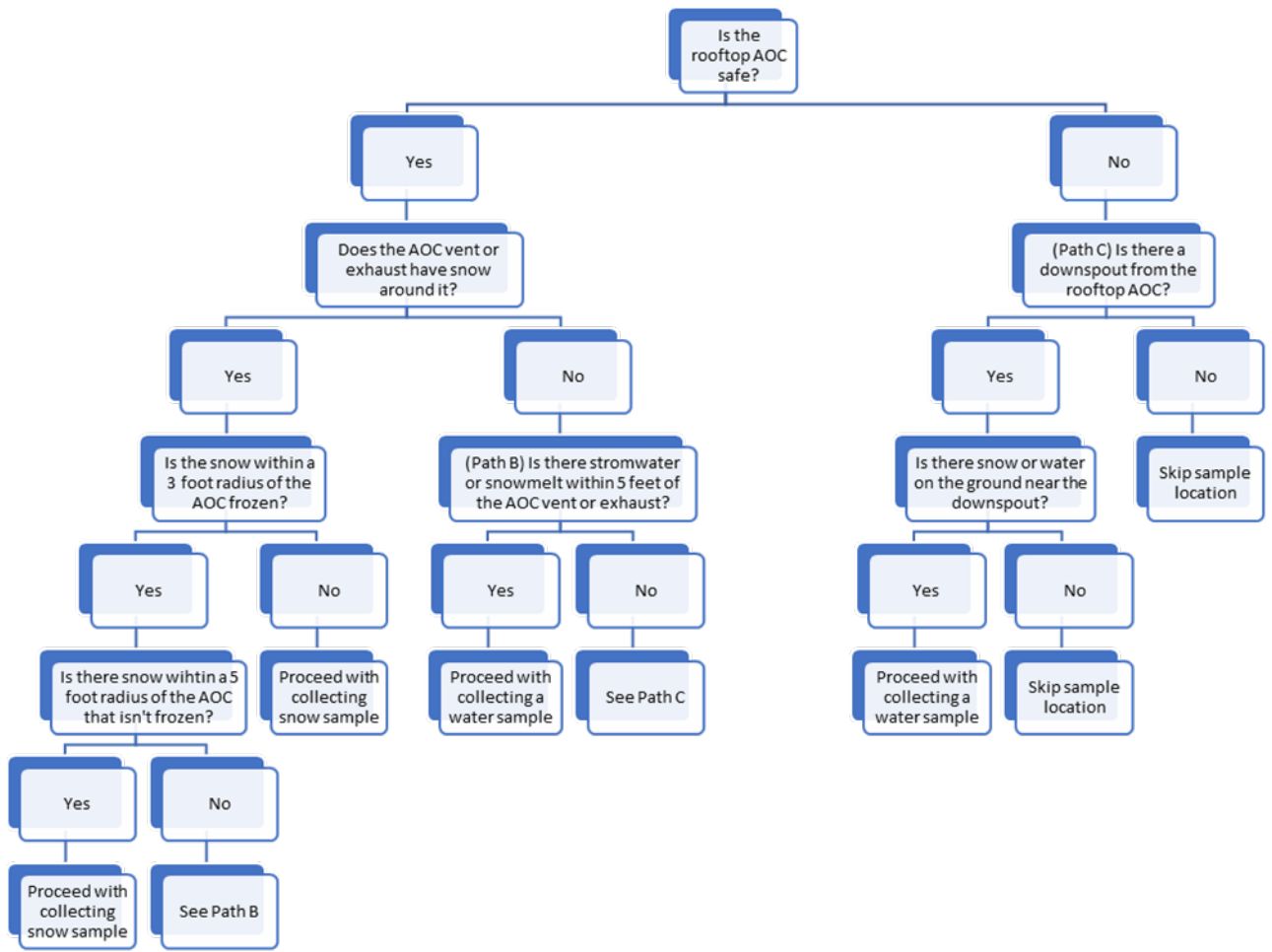
To ensure snow sampling is done in compliance with the Minnesota Pollution Control Agency's (MPCA) Industrial Stormwater (ISW) Program's 2025 NPDES/SDS General permit (Permit), a facility is responsible for contacting and hiring a Minnesota Department of Health (MDH) accredited laboratory to collect and analyze its PFAS snow samples. The laboratory must certify that all items used during sampling and analysis are PFAS – free and have not been contaminated with PFAS at any point during the process of sampling and analysis.

The following provides guidance on how individuals from a MDH accredited laboratory shall conduct PFAS snow sampling. Those individuals must be familiar with the U.S. Environmental Protection Agency's (EPA) Method 1633 requirements such as, but not limited to, sampling safety, sampling collection and preparation, preservation, storage, and holding times. Analysis of both snow and stormwater samples must be completed in accordance with Method 1633.

Safety Protocol for PFAS Snow Sampling

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

- The facility is responsible for allowing MDH accredited laboratory individuals contracted to complete its PFAS snow sampling to have access to its facility's rooftops. Every individual that is allowed access to the roof of a facility shall follow ALL facility safety requirements and 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.
- Any 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

The MDH accredited laboratory is responsible for providing all necessary PFAS-free sampling supplies, and it must certify that all items were maintained in a manner which prevented them from becoming contaminated with PFAS. Those individuals must obtain the current version of the MPCA's chain of custody (COC) form and fill out the form while conducting PFAS snow sampling at the facility. The completed COC form must be made available to MPCA staff within 72 hours of a request.

The facility is responsible for providing the MDH accredited laboratory with a copy of its PFAS Monitoring Plan and informing the laboratory of where its AOC for sampling are located at the facility.

Supplies required for sample collection at each area of concern (AOC) location at a facility:

- Enough PFAS – free sampling bottle sets to meet the number of facility AOC locations the laboratory individual(s) will be collecting samples from.
 - A PFAS – free sampling bottle set consists of one 1 – gallon sized sealable bag, three 500ml bottles labeled with a facility AOC location name and a sequential number (e.g., AOC 1 Sample 1 for both 500ml bottles), and two 60ml 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 500ml 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 500ml 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. Those individuals must refer to the EPA's Method 1633 for guidance on how to avoid contamination, along with 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 500ml 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:

PFAS snow sampling may be conducted once a facility has received at least a three-inch accumulation of snow over a period of three weeks. PFAS snow sampling must not be completed immediately after a snowfall event.

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

- Wear a clean pair of powderless nitrile gloves.
- Using one of the three 500ml 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 a three-foot radius away from 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. The camera device must 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 500ml bottle used to scoop the snow sample.
 - Place the used and empty 500ml 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 500ml 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:

These steps are to be performed at the MDH accredited laboratory.

Melting Phase

- 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 degrees F until snow has melted completely to a liquid phase.
- 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 at the accredited laboratory after the PFAS snow sample has completely turned into a liquid phase.

- Wear a clean pair of PFAS – free and powderless nitrile gloves.
- Gently homogenize and decant part of the liquid into two 500ml 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 60ml 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

Analysis Phase

Once all samples reach 0-6°C, put on a new pair of powderless nitrile gloves and analyze the samples per the requirements of 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 and by contacting the stormwater hotline: 651-757-2119 or 800-657-3804 (non-metro only).

Appendix A – PFAS Snow Sample Log

Date	Facility Name	Local Name of AOC Location	GPS Lat	GPS Lon	Sampling Notes
Example 12/01/2024	ISW Facility	AOC_001 NE Corner Vent	44.9566	-93.0843	Sediment present