



## MN Biosolids PFAS Strategy Implementation

May 14, 2025

# Agenda

- Strategy refresher
- Implementation materials
  - Biosolids and PFAS: Facts for MN Landowners and Farmers
  - Biosolids PFAS Results Notification
  - Biosolids and PFAS Sampling, Analysis, and Reporting Guidance
  - Biosolids PFAS Sampling and Analysis Plan
- Questions



# 2024 Legislation

- Minnesota Sessions Laws 2024 – Chapter 116, Article 2, Section 27
- Develop a strategy on PFAS in biosolids applied to land by December 31, 2024
- Implement the strategy in permits afterward



# Final biosolids strategy

Tier	PFOA or PFOS level measured in biosolids	Wastewater treatment facility requirement
Tier 4	$\geq 125$ $\mu\text{g/kg}$ / $\text{ppb}$	<ul style="list-style-type: none"> <li>Land application is not allowed</li> <li>Notify MPCA w/in 10 days</li> <li>Initiate source identification and reduction work by generating, submitting and implementing a PFAS PMP within 180 days. If a PFAS PMP has previously been created, the facility must expedite the implementation of the existing plan</li> <li>Sample wastewater effluent and have it analyzed for PFAS</li> <li>Additional site-specific requirements may be necessary</li> </ul>
Tier 3	51 – 124 $\mu\text{g/kg}$ / $\text{ppb}$	<ul style="list-style-type: none"> <li>Notify farmer and landowner prior to land application</li> <li>Initiate source identification and reduction work by generating, submitting and implementing a PFAS PMP within 180 days. If a PFAS PMP has previously been created, the facility must expedite the implementation of the existing plan</li> <li>Report the land application rate to MPCA</li> <li>Reduce rate to 1.5 dry tons per acre or provide an alternative risk mitigation strategy</li> </ul>
Tier 2	21 – 50 $\mu\text{g/kg}$ / $\text{ppb}$	<ul style="list-style-type: none"> <li>Notify farmer and landowner prior to land application</li> <li>Initiate source identification and reduction work by generating, submitting and implementing a PFAS PMP.</li> <li>Report the land application rate to MPCA</li> </ul>
Tier 1	$\leq 20$ $\mu\text{g/kg}$ / $\text{ppb}$	<ul style="list-style-type: none"> <li>Communicate with landowner and/or farmer that PFAS sampling was conducted</li> </ul>

# Next steps





# Biosolids and PFAS: Facts for MN Landowners and Farmers

- Education for Landowners and farmers
  - What are biosolids
  - What are PFAS and how do they get into biosolids
  - What is the MPCA doing to reduce PFAS in biosolids
  - How much PFAS are in biosolids
  - Should biosolids be applied



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## Biosolids and PFAS

### Facts for Minnesota Landowners and Farmers

The Minnesota Pollution Control Agency (MPCA) has a strategy to understand where and what types of per- and polyfluoroalkyl substances (PFAS) are being discharged to municipal wastewater treatment facilities (WWTFs) and how much is contained in the resulting biosolids. This will allow landowners and farmers, if different than the landowners, to make more informed decisions related to application of biosolids on their land.

### What are biosolids?

Biosolids are nutrient-rich organic materials generated during the treatment of domestic wastewater at municipal WWTFs. Biosolids can be land applied after undergoing additional treatment and testing to minimize risk to human health or the environment. Land applying biosolids has benefits like providing organic matter and nutrients to soil, reducing the amount of organic waste going to landfills and incinerators, and lessening the use of petroleum-based human-made fertilizers. About 20% of the biosolids generated in Minnesota are land applied on cropland or used in reclamation projects, such as mine reclamation and pond decommissioning projects. Biosolids land application occurs on less than 0.1% of cropland in Minnesota.

State and federal regulations set strict requirements on land application of biosolids to reduce the risk to human health and the environment. There are limits on the allowable concentration of certain metals and restrictions on where, when, and how much can be applied. There are prohibitions on applying near homes, wells, lakes, wetlands, and on steep slopes. WWTFs must have trained and certified personnel overseeing this work. Each site must be reviewed and approved by the MPCA before biosolids can be land applied.

Learn more about [land application of biosolids](#).

### What are PFAS and how do they get in biosolids?

PFAS, a group of more than 5,000 human-made chemicals, have been used widely throughout the United States in industrial processes and in consumer products since the 1940s. PFAS are commonly found in firefighting foam, chrome plating, cookware coatings, waterproofing on clothing and carpet, and food wrappers. Some PFAS, including Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) which are commonly found in biosolids, have been phased out of production in the United States and are no longer approved for use. Even though they have not been produced in the United States for years, these PFAS are still found in legacy products and as a result, in biosolids.

WWTFs do not generate or use PFAS to treat wastewater. They receive PFAS in the wastewater discharged to them from industries, commercial businesses, and homes. Conventional wastewater treatment does not remove PFAS and technologies to remove PFAS from wastewater are not affordable for municipalities, so PFAS may be present in treated wastewater and biosolids.

The Minnesota Department of Health has studied a number of PFAS and determined that exposures at certain levels can have negative health impacts. Actual risks depend upon many factors that aren't all fully understood at this time. PFAS has been found to build up in the tissue of fish which has led to consumption advisories in some waterbodies. Studies are underway to determine the impact of PFAS on animals, animal products, and crops. The potential human health risk of PFAS exposure due to biosolids land application is not known nor are

Minnesota Pollution Control Agency  
651-296-6300 | 800-657-3864 or use your preferred relay service | [info.pca@state.mn.us](mailto:info.pca@state.mn.us)

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Available in alternative formats

# Biosolids PFAS Results Notification Template

Date:

Farmer Name / Landowner Name:

Address

City, State, Zip code

Subject: Biosolids Land Application Information and PFAS Results

(WWTF Name) is preparing to apply biosolids on land you own and/or farm. In 2024, the Minnesota Pollution Control Agency (MPCA) was directed by the 2023-2024 Minnesota (MN) Legislature to develop a strategy for testing PFAS in Biosolids intending to be land applied in MN. As a result, the [MN Biosolids PFAS Strategy](#) (Strategy) was developed. As part of the Strategy, starting September 1, 2025, all Wastewater Treatment Facilities (WWTFs) that land apply biosolids must collect one biosolids sample per year, analyze it for per and poly-fluoroalkyl substances (PFAS), and share this information with the landowner and farmer, if different than the landowner. The intent of this letter is to provide background information on PFAS, examples of on-going PFAS work in Minnesota, nation-wide PFAS efforts, the test results for our biosolids, and PFAS contacts and resources.

## Background

PFAS, a group of more than 5,000 human-made chemicals, have been used widely in industrial processes and in consumer products since the 1940s. PFAS are commonly found in firefighting foam, chrome plating, cookware coatings, waterproofing on clothing and carpet, food wrappers, and potentially agricultural products like pesticides. Some PFAS, including perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) which are commonly found in biosolids, have been phased out of production in the United States and are no longer approved for use. Even though they have not been produced in the United States for years, these PFAS are still found in products that are still in use or as legacy compounds at industrial facilities.

## Minnesota's Efforts

WWTFs, like ours, do not generate or use PFAS to treat wastewater. Instead, PFAS is received through the collection system in wastewater discharged from industries, commercial businesses, and homes. Conventional wastewater treatment does not remove PFAS and technologies to remove PFAS from wastewater are not currently affordable for municipalities. As a result, PFAS are often found in treated wastewater and biosolids.

The only way to reduce PFAS coming to our WWTF, is to reduce the PFAS entering our treatment system. Finding and reducing or eliminating PFAS sources is referred to as source identification and reduction work. This work is encouraged by the MPCA. In 2022, eighty-three WWTFs throughout Minnesota voluntarily committed to efforts to identify and reduce PFAS coming into their facilities from commercial and industrial sources. Under the Strategy, more WWTFs will be doing this type of work. Starting in 2025, the Strategy requires that, in addition to this notification, WWTFs that land apply biosolids, will need to take actions to identify and reduce sources of PFAS depending on the concentration of PFAS in the biosolids. These activities take time and additional resources, but along with PFAS product bans like Amara's Law, are proven to effectively decrease PFAS.

## National Efforts

On a national level, the EPA, along with most states do not require PFAS testing. However, a handful of states have mandated it for several years. The MPCA expects to see low levels of PFAS in the majority of the biosolids in Minnesota based on other states' efforts and studies. Human health risks and environmental impacts are being evaluated currently. Our understanding is that more information about PFAS is needed. Requiring PFAS sampling to measure the amounts of concentration of PFOS and PFOA in the biosolids to understand if biosolids contain elevated levels of PFAS is an important first step that WWTFs like ours are taking. While some PFAS compounds are linked to health impacts, the potential human health risk of PFAS exposure due to biosolids land application is not completely known nor are there any state or federal regulations pertaining to PFAS and biosolids. The MPCA will use the information learned from this effort, as well as additional sources of information, including the U.S. Environmental

## Results

Sampling, analysis and reporting of biosolids that are intended to be land applied are required once per cropping year. Analysis has recently been completed for our biosolids. Our most recent test results are analyzed using EPA Method 1633A and reported in parts per billion (ppb).

Parameter	Value	Units	Date
PFOS		ppb	
PFOA		ppb	

Presently, if either PFOS or PFOA in biosolids is greater than or equal to 125 ppb, the MPCA considers them industrially impacted and land application is prohibited. This is not a risk-based value, as one does not exist at this time, but an indication that the biosolids are industrially impacted. PFOA or PFOS concentrations under 125 ppb are still currently allowed to be land applied.

# Biosolids PFAS Sampling, Analysis and Reporting Guidance

A guide to sampling, analyzing, and reporting on PFAS in biosolids that are intended to be land applied in Minnesota.

Content was developed collaboratively based on EPA Method 1633A, the Minnesota Pollution Control Agency's [Guidance for Per- and Polyfluoroalkyl substances \(PFAS\): Sampling](#) and from other state's resources and programs that have already begun to sample biosolids for PFAS. The guidance was also reviewed by an independent third-party.



# PFAS Sampling and Analysis Plan (SAP)

- Facility Name
- Facility Address
- Sample Description
  - Including historic or typical percent solids
- Sample Location
- Sampling Frequency/Planned Sample Dates
- Sampling Procedure
- Sampling Labeling Protocol
  - Description of how you are naming your samples
- Staff performing the sampling
- Analytical Laboratory Name
- Shipping Requirements

# Sample Location and Type

- Sample Location
- Sample Type
  - Grab
  - Grab composite
  - Storage type
    - Storage pads/drying beds/reed beds
    - Storage tanks
    - Biosolids from Septic tanks

Storage Type	Sampling technique
Storage Pads/Drying Beds/Reed Beds	At least ten (10) grab samples from different locations and depths of equal amounts should be collected. These grab samples should then be thoroughly mixed to form the composite sample. From this thoroughly mixed sample, place the required amount of sample volume into the sample container provided by the lab for the biosolid sample. All sampling equipment, including the mixing container, should be PFAS-free. (See Equipment Section below)
Storage Tanks	It is highly recommended that storage tanks are mixed for at least 24 hours prior to sampling. While the tank is still mixing, collect four sample aliquots over the next 24-hour period. For each of the four grab composites, fill a single lab-provided container or other suitable collection container and empty it into a suitable mixing container large enough for the four grab composite samples. Repeat this process three more times, targeting collecting equal amounts of sample for each composite. Mix the contents of the mixing container and collect and fill a single sample container to submit to the lab as the sample. Make sure to indicate on the lab chain of custody this is a "composite" sample and indicate start and end time/date. NOTE: cover (if feasible) and refrigerate the contents of the mixing container between each composite interval.
Biosolids from Septic Tanks	The MPCA will be working directly with facilities that need to sample biosolids from septic tanks. This section will be updated as more is learned about best procedures and techniques for obtaining representative samples from these systems.

# Frequency

- Frequency Class A/B
  - Starting Sept 1, 2025
  - Once per cropping year
  - Permittees may choose to do additional samples
  - MPCA may request additional samples
- Frequency EQ Biosolids
  - Starting Sept 1, 2025
  - Quarterly Sampling



# Sampling Equipment

- PFAS Free materials
  - HDPE
  - Polypropylene
  - Silicone
  - Stainless steel
  - Nylon
  - PVC
  - Acetate
  - Cotton



- HDPE
- Polypropylene bottles w/Teflon®-free caps
- Note: Glass containers should not be used for water, leachate and other liquids since PFAS can stick to glass. LDPE should be avoided as well.





# PPE and Field Clothing

Best Practice	Avoid
<b>Field Clothing and Personal Protection Equipment</b>	
Well-laundered clothing, defined as clothing that has been washed six or more times after purchase, made of synthetic or natural fibers (preferable cotton)	New clothing
Cotton Clothing	Water resistant, waterproof, or stain-resistant clothing, materials, or equipment; avoid ANY clothing laundered using fabric softener.
Powderless nitrile gloves (changed between each sample collection)	
Boots made with polyurethane and polyvinyl chloride (PVC)	Tyvek®, Gore-Tex™, <u>Hostaflon®</u> , <u>Tefzel®</u> , <u>Neoflon®</u>
	Boots containing Gore-Tex™
*NOTE: Brand names are included for illustration only, and do not imply endorsement of the product.	

# Other Sampling Considerations

- Sun and Insect Protection
  - Both may be made with PFAS
  - Apply in staging area if needed.
  - Wash hands and use new gloves after
- Personal Care Products
  - Avoid or limit use on the day of sampling and for 24 hours before sampling
- Food Packaging
  - Only bottled water and hydration drinks in staging area



# Other Sampling Considerations

- Avoid:

- Waterproof field books
- Plastic clipboards, binders, spiral notebooks
- Post-It® Notes
- Chemical (blue) ice packs
- Regular/thick size markers
- Decon 90

- Avoid:

- New Clothing
- Water resistant, waterproof, or stain-resistant clothing, materials, equipment
- Clothing laundered with fabric softener
- Tyvek®, Gore-Tex™, Hostaflon®, Tefzel®, Neoflon®

# Sampling Protocol

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Wash hands/use new gloves each sample location

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Collect PFAS Sample first. Then other samples.

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Only open bottles immediately prior to sample collection

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Fill container no more than  $\frac{3}{4}$  full

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Collect a grab composite sample based on storage type

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Decontaminate reusable equipment

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Bottles should be capped immediately

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Double bag sample container

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Within 15 minutes, place sample(s) in cooler with ice

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Deliver to lab as soon as possible

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- **Field blanks:** Field blanks are an indicator of potential contamination from sampling efforts. A field blank may be collected with each sample and shipped to the laboratory.
- **Equipment blanks:** Equipment blanks are used to verify that sampling equipment has not been contaminated or contains detected PFAS. It is a volume of rinse water that is PFAS free that is moved through or passed over the sampling equipment and then analyzed.
- **Field sample duplicates:** Sample duplicates measure the variability in results based on possible variations in sampling and analysis. Sample duplicates may be run with the first sample and for every 20 samples thereafter.



- Method 1633A
  - MPCA acknowledges that labs may be in transition for accreditation for 1633 to 1633A
    - Will accept 1633 for labs working towards 1633A
- Reporting limit (RL)
  - Do not report method detection limit
  - Should be in dry weight basis
  - At or below 20 ppb
- Method limitations
  - Acknowledge that challenges exist with biosolids with low percent solids

# Reporting

Results	Submittal Timeline (Upon Receipt of Lab Report)
Tier 4: PFOA or PFOS concentrations $\geq 125$ $\mu\text{g/kg}$	Notify the MPCA within 10 days Submit the EDD and lab sheet within 30 days
Tier 3: PFOA or PFOS concentrations 51-124 $\mu\text{g/kg}$	Submit the EDD and lab sheet within 30 days
Tier 2: PFOA or PFOS concentrations 21-50 $\mu\text{g/kg}$	Submit the EDD and lab sheet within 30 days
Tier 1: PFOA or PFOS concentrations $\leq 20$ $\mu\text{g/kg}$	Submit the EDD and lab sheet within 30 days
Exceptional Quality (EQ) Biosolids	Submit the EDD and lab sheet within 30 days

The data are required to be reported to the MPCA for storage in the EQUIS database. Permittees should send both the lab report (PDF) and an EDD via email to [municipal.wastewater.pfas.mpca@state.mn.us](mailto:municipal.wastewater.pfas.mpca@state.mn.us).

# Questions

[municipal.wastewater.pfas.mpca@state.mn.us](mailto:municipal.wastewater.pfas.mpca@state.mn.us)