

Minnesota biosolids PFAS strategy

Fact sheet

The 2023-2024 Minnesota Legislature directed the Minnesota Pollution Control Agency (MPCA) to develop and begin implementing a strategy to test for per- and polyfluoroalkyl substances (PFAS) in biosolids that are applied to land. The goal of Minnesota's Biosolids PFAS Strategy (Strategy) is to ensure protection of human health while retaining the benefits of biosolids applied to land.

Background

Municipal Wastewater Treatment Facilities (WWTFs) treat wastewater from industries, commercial businesses, and homes that can contain PFAS. Biosolids are nutrient-rich organic materials generated during the treatment of domestic sewage at WWTFs. Because biosolids are a byproduct of treating wastewater that contains PFAS, biosolids may contain PFAS.

When applied to land, PFAS in biosolids has the potential to move in the landscape due to precipitation and other environmental factors. If PFAS levels in the biosolids are high, it could potentially contaminate soils, surface and groundwater, and/or be absorbed by crops.

Applying biosolids to land has many benefits that include providing organic matter and macro and micronutrients to soil, carbon sequestration, providing an economical way to manage biosolids, and conserving landfill space. About 20 percent of the biosolids generated in Minnesota are applied to land, mostly to agricultural lands but also for reclamation projects. Biosolids are applied to less than 0.1 percent of land that grows crops in Minnesota.

Before being applied to land, biosolids are treated to minimize the potential for odors, destroy pathogens, and reduce the potential to spread disease. Treatment processes differ at each WWTF which results in various forms of biosolids such as liquids, cakes, or dried pellet-like products. State and federal requirements prohibit applying biosolids near homes, wells, lakes, wetlands, and on steep slopes. Each site must be reviewed and approved by MPCA before biosolids can be applied to the land.

Ongoing research by the MPCA, the U.S. Environmental Protection Agency (EPA), and others is seeking to understand the potential risk to human health and the environment. That research includes understanding how much PFAS is in biosolids and the potential impact to people and the environment. There is currently not a human health standard for PFAS in biosolids.

Strategy Facts

- The 2023-2024 Minnesota Legislature directed the MPCA to develop and begin implementing a strategy to test for PFAS in biosolids that are intended to be applied to land.
- The MPCA will require PFAS monitoring for biosolids that are intended to be applied to lands. This will begin in Fall 2025.
- A reference to the Strategy will be added to water discharge permits (NPDES/SDS) issued to municipal WWTFs as they are reissued.
- MPCA will continue to evaluate this Strategy and make adjustments, as appropriate.
- The Strategy framework mirrors efforts in other states.

We expect that most biosolids will have low amounts of PFAS. However, in other states where biosolids have been tested for PFAS a small number of samples showed elevated levels. The high levels were due to discharges from an industry that used PFAS in its process. In these cases, reducing the source of PFAS from the industry lowered the amount of PFAS in the biosolids. Sampling is foundational, as identifying how much and what types of PFAS are in biosolids is key to understanding the potential risk to human or environmental health. Sampling also helps identify the source(s) of the PFAS in biosolids and measure the effectiveness of actions to reduce PFAS in biosolids, and sampling informs decisions about how to manage biosolids.

Biosolids strategy

The Strategy applies to all WWTFs that intend to apply biosolids to land and includes sampling and response actions based on sample results. The Strategy is designed to complement current requirements applicable to managing biosolids and ongoing efforts to reduce PFAS in municipal wastewater.

The Strategy mirrors efforts in other nearby states. The Strategy may be revised as the science evolves and as we learn more about PFAS in biosolids in Minnesota. Days before finalizing this Strategy, EPA published a biosolids risk assessment. Due to the timing, this Strategy does not reflect the content of that risk assessment, but the MPCA will continue to evaluate this Strategy and make adjustments, as appropriate.

Sampling requirements

Starting in fall 2025, all WWTF intending to apply biosolids to agricultural land or used for reclamation projects must collect at least one sample of their biosolids and test it for PFAS each year. The results from this sample must be received prior to biosolids being applied to land. The sample must be a representative sample of biosolids that are to be applied to land and must be analyzed for 40 PFAS compounds using draft EPA Method 1633A. Detailed sample collection requirements and guidance will be provided. The MPCA will work with WWTFs on their facility-specific sampling plan.

Response actions based on sample results

Based on biosolids sample results, WWTFs will be required to complete the actions described below. As National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) permits are reissued, the Biosolids section of the permit will contain a reference to the Strategy. Until the Strategy is included in NPDES/SDS permits, the MPCA will work with individual WWTFs to ensure that follow up actions are completed.

Tier	Amount of PFOA or PFOS measured in biosolids (µg/kg)	WWTF requirement
Tier 4	≥ 125	<p>Biosolids are considered industrially impacted</p> <p>Land application is not allowed, arrange for alternative management of biosolids</p> <p>Notify and provide results to the MPCA</p> <p>The WWTF must sample its wastewater plant effluent and have it analyzed for PFAS, if not already required</p> <p>Create and implement a PFAS source reduction pollutant management plan (PMP) or expedite efforts of an existing PMP</p> <p>Site specific requirements may be necessary</p>
Tier 3	51 - 124	<p>Notify and provide results to the MPCA, farmer, and landowner</p> <p>Create and implement a PFAS PMP or continue implementing an existing PFAS PMP</p> <p>Reduce rate to 1.5 dry tons per acre or propose an alternative risk mitigation strategy</p> <p>Report the land application rate to the MPCA</p>
Tier 2	21 - 50	<p>Notify and provide results to the farmer and landowner</p> <p>Create and implement a PFAS PMP or continue implementing an existing PFAS PMP</p> <p>Report the land application rate to the MPCA</p>
Tier 1	≤ 20	<p>Notify the landowner and farmer that PFAS results are available on request</p>

Exceptional Quality (EQ) Biosolids

Biosolids produced as EQ Biosolids are sold in bags and containers for domestic use. These products are held to higher standards for metal concentrations and must meet specific pathogen and vector attraction reductions options. Facilities that wish to obtain or maintain the EQ designation for biosolids must have a sum of perfluorooctanic acid (PFOA) and perfluorooctane sulfate (PFOS) of 20 micrograms per kilogram (µg/kg) or less. Compliance with this threshold must be demonstrated with quarterly sample results. If the combined sum of PFOA and PFOS is 21 µg/kg or greater, the facility must follow recommendations in the appropriate Tier above on approved land application sites or arrange for alternative management of the biosolids.