

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

there any state or federal regulations pertaining to PFAS and biosolids. Alternative methods of biosolids management, which include landfilling and incineration, are also not without challenges.

Learn more about [PFAS and health](#).

What is the MPCA doing to reduce PFAS in biosolids?

The only way WWTFs can reduce PFAS in biosolids is to reduce the PFAS entering the wastewater treatment system. WWTFs can collect PFAS samples within the sanitary sewer system, use that data to pinpoint sources, then work with those sources to reduce or eliminate the products they're using that contain PFAS. 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. In the future, this will be required of more WWTFs. These activities are time consuming and expensive but, along with PFAS product bans like Amara's Law, are proven to effectively decrease PFAS.

Starting September 1, 2025, all WWTFs that land apply biosolids must collect one sample per year and test the biosolids for PFAS prior land application. Based on the concentration of PFOS and PFOA in the biosolids, WWTFs are required to undertake certain actions that increase in stringency as the concentration increases. The WWTF is prohibited from land applying the biosolids if the concentration of either PFOA or PFOS is at or above 125 ppb.

Requiring PFAS sampling to understand if biosolids contain elevated levels of PFAS is an important first step. This effort, as well as additional sources of information, including the U.S. Environmental Protection Agency's (EPA) Risk Assessment of Pollutants in Biosolids, when final, will inform future actions pertaining to biosolids and PFAS.

And more broadly, Minnesota's state agencies are undertaking short- and long-term efforts to manage PFAS and protect families and communities. While it's necessary to manage and clean up PFAS that are already in our environment, PFAS pollution can only be stopped through restrictions or bans on the use of PFAS.

Learn more about [PFAS treatment technologies](#).

Learn more about [Minnesota's PFAS Biosolids Strategy](#).

Learn more about [what Minnesota is doing about PFAS](#).

How much PFAS are in biosolids?

Each WWTF receives its own blend of wastewater from its local industries, commercial businesses, and homes, so the types and concentrations of PFAS are unique to each WWTF. The EPA and most states do not require PFAS testing, but a handful of states have required it for several years. Based on those efforts, we expect low levels of PFAS in the majority of the biosolids in Minnesota. But until there is PFAS data for all biosolids, we can't be certain.

Starting September 1, 2025, in Minnesota, WWTFs must communicate with landowners and farmers (if different than the landowner) about the availability of PFAS data for biosolids intended to be land applied. Because PFAS testing is expensive, wasn't previously required, and until recently wasn't widely available from environmental laboratories, it's unlikely that your WWTF has PFAS data for previous land application.

Having this information can help farmers and landowners make more informed decisions about their land, but until the science advances, we still don't know precisely what concentration of PFAS in biosolids may cause risks.

Learn more about [Michigan's evaluation of PFAS in wastewater and biosolids](#).

Should I apply biosolids to my field?

In some instances, in other states, farms have been impacted by biosolids containing large concentrations of PFAS. These situations were caused when a WWTF received wastewater that contained elevated levels of PFAS from an industry. These have been significant, but not common occurrences. At this time, we don't have evidence of this occurring in Minnesota.

Until more is known about PFAS and how it moves in the environment, we don't know precisely how much PFAS in biosolids may cause risks to human health or the environment. There are many factors that are still being studied including the impact of local environmental conditions, soil type, farming method, type of crop, plant uptake, etc. The information we learn from this effort, as well as additional sources of information, including the U.S. Environmental Protection Agency's (EPA) draft Risk Assessment of Pollutants in Biosolids, will help to inform future MPCA actions pertaining to biosolids and PFAS.

And, while biosolids are a potential source of PFAS to our lands, it is not the only one. We're continuing to learn more about products that contain PFAS and how PFAS moves in our environment. To that end, the Minnesota Department of Agriculture is leading efforts regarding pesticide products that contain intentionally added PFAS.

Additionally, the states of Maine and Michigan have compiled PFAS resources for farmers. Some of these resources might be of interest to farmers and landowners in Minnesota.

Learn more about [EPA's Draft Sewage Sludge/Biosolids Risk Assessment for PFAS](#).

Learn more about [Minnesota Department of Agriculture's work on PFAS and pesticides](#).

Learn more about [Maine's work regarding PFAS and agriculture](#).

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How can I learn more?

If you have questions about PFAS in the biosolids you're considering applying to your land or what your WWTF is doing to reduce PFAS, your WWTF staff are the best source of information.

Much work is being done by researchers, states, and the federal government to better understand PFAS. The links above will direct you to much more information.

If you have questions about the requirements for land application of biosolids or the Minnesota Biosolids Strategy, please reach out to the MPCA at 800-657-3864.