MUNICIPAL NPDES PERMITTING STRATEGY FOR PFAS

Guidance

Revised November 2024

Background

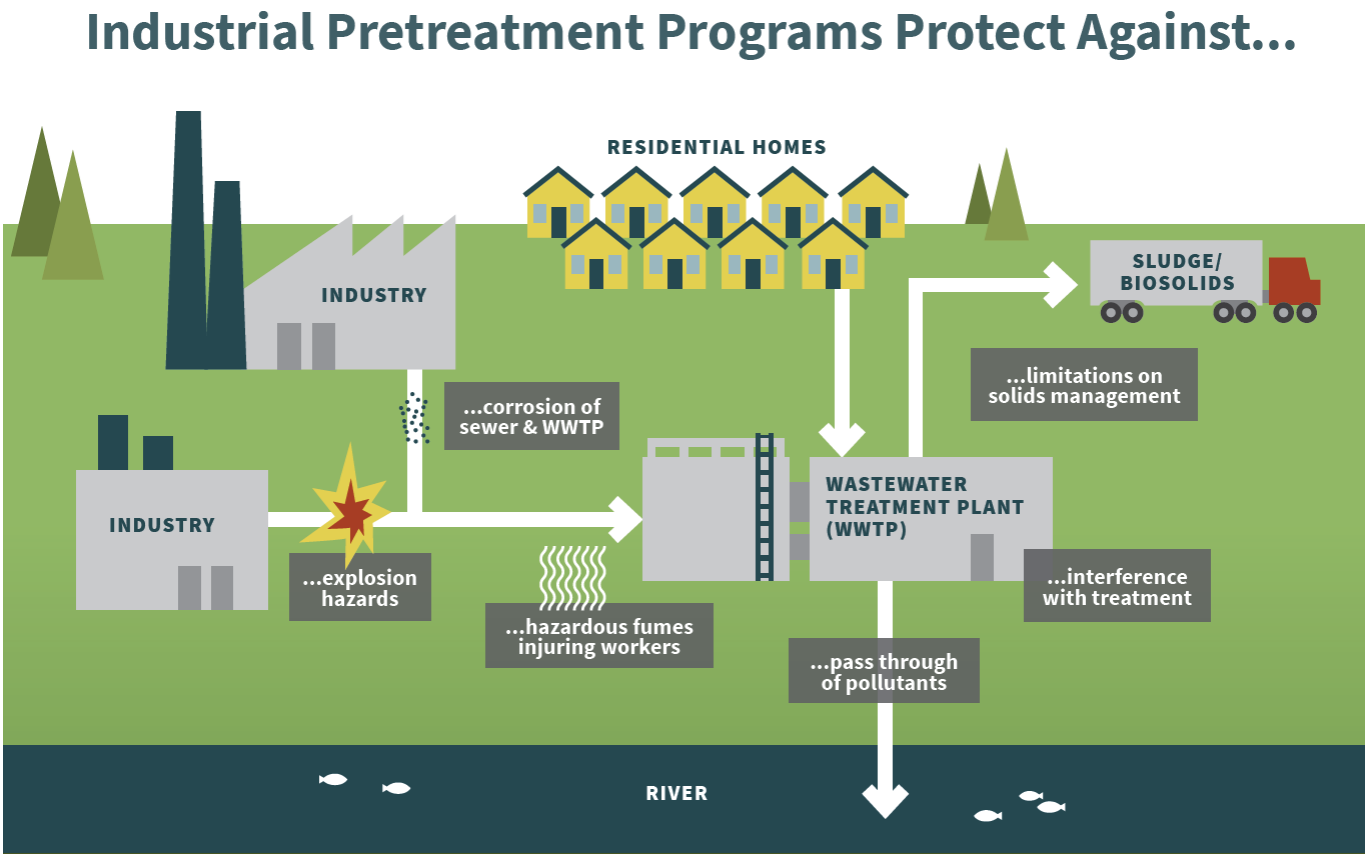
Perfluoroalkyl and polyfluoroalkyl substances (PFAS), also known as perfluorochemicals (PFCs), have been classified by the United States Environmental Protection Agency (USEPA) as emerging contaminants on the national level. Many PFAS are persistent, some bioaccumulate in the environment, and several are toxic to mammals and/or birds in laboratory tests. The toxicities of most PFAS have not been evaluated. Two perfluorinated compounds; perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA), have been the subject of the most toxicological work and environmental monitoring. Both compounds were manufactured intentionally, but they can also be generated as byproducts when other fluorinated compounds break down. Many products containing PFOS and PFOA were historically used in numerous industrial processes including metal plating, textile production and treatment, and specialty paper production. Other PFAS chemicals are still widely used today in industrial and consumer products. Industrial and domestic waste containing these compounds can enter the environment through municipal or private waste treatment systems, stormwater runoff, venting groundwater, or as atmospheric deposition via emissions. In addition, several PFAS are key ingredients in Aqueous Film-Forming Foam (AFFF). These foams have been used extensively in fire suppression training exercises at military bases nationwide as well as in emergency firefighting. In recent years PFAS have been detected in surface and groundwater near many military facilities. According to a USEPA November 2017 Technical Fact Sheet on PFOS and PFOA, most manufacturers in the United States voluntarily phased out production of PFOS and PFOA related chemicals from 2002 to 2015. Both PFOS and PFOA have been measured in surface waters across Michigan, and PFOS has been detected in most fish tissue samples from Michigan waters that have been analyzed for PFAS. More information on the USEPA's actions to address PFAS can be accessed at www.epa.gov/pfas.

Municipal wastewater treatment plants (WWTPs) do not use or produce PFAS as part of their treatment process but rather receive it as contaminated wastewater discharged into the sanitary sewer system from manufacturing and industrial facilities, commercial operations, and residential households. Although the source of PFAS in municipal wastewater is from upstream discharges, WWTPs become a critical control point in reducing the discharge of PFAS into the environment.

In February 2018, the Michigan Department of Environment, Great Lakes, and Energy (EGLE) launched the Industrial Pretreatment Program (IPP) PFAS Initiative, requiring all WWTPs with either federal- or state-required IPPs to determine whether they may be passing through PFAS to surface waters and reduce and eliminate any sources if found. For municipal WWTPs, the majority of significant PFAS sources were metal finishers, contaminated sites associated with industries or activities which historically used PFAS, and landfills that accepted industrial wastes containing PFAS. As indicated above, chemical manufacturers in the United States voluntarily stopped making PFOS

and PFOA years ago; however, these chemicals may still be manufactured in other countries and imported. Industries were prohibited from using PFOS-containing chemicals in chromium electroplating tanks in September 2015, but these persistent chemicals have been found in factories years after they were used. Other industrial sources of PFAS to WWTPs include centralized waste treaters, paper manufacturing/packaging, commercial industrial laundries, and chemical manufacturers. For more information on the PFAS sources identified by WWTPs with IPPs, see WRD's *Michigan IPP PFAS Initiative: Identified Industrial Sources of PFOS to Municipal Wastewater Treatment Plants.*

Conventional treatment at WWTPs does not effectively remove PFAS if it is discharged to the sewer system. Instead, PFAS may be passed through WWTPs to lakes, streams, and groundwater, as well as accumulate in residuals at the WWTP which can impact management of solids from the treatment process. To protect municipal treatment plants and the environment, the Industrial Pretreatment Program (IPP) requires industrial facilities that discharge to WWTPs to use pretreatment techniques and management practices to reduce or eliminate the discharge of harmful pollutants to sanitary sewers. The following figure below shows why the IPP is an important regulatory requirement to protect health, safety, and the environment.



Municipalities without an IPP or industrial users can also be impacted by PFAS discharges. Common nondomestic users within communities such as car washes, dry cleaners, carpet cleaners, as well as schools, medical and commercial complexes have been identified as potential sources. Nondomestic cleaning of PFAS containing products such as clothing, carpet, and furniture as well as floor cleaning, floor stripping, and refinishing activities may occur at these facilities and could be contributing PFAS to

the WWTP. Some WWTPs accept domestic septage which has shown to have PFAS concentrations that may impact the WWTP. Sites contaminated by firefighting foams or former industrial and automotive manufacturing sites with PFAS-contaminated groundwater have also been found to be sources for WWTPs if they discharge or have groundwater infiltration to the sanitary sewer. In addition, for some facilities, the breakdown of precursor chemicals and/or the cycling of PFAS within the WWTP collection and treatment systems may be impacting the facility's effluent and residuals.

PFAS Regulatory Criteria

The State of Michigan's Part 4, Water Quality Standards (WQS) (Part 4 Rules), promulgated under Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), includes a narrative method to develop surface water quality values protective of human health and aquatic life. On August 2, 2000, the USEPA approved this revision to Michigan's Part 4 Rules, including Rule 57 (R 323.1057), Toxic Substances. As of November 2024, Water Quality Values (WQV) exist for five PFAS: **PFOS**, **PFOA**, perfluorobutanesulfonic acid (**PFBS**), perfluorohexanesulfonic acid (**PFHxS**) and perfluorononanoic acid (**PFNA**). PFOS is considered a bioaccumulative chemical of concern (BCC). For more information about WQVs, see the Rule 57 Water Quality Values webpage.

PFAS	HNV[1] (drinking) (ng/L) [2]	HNV[1] (nondrinking) (ng/L)	FCV[1] (ng/L)	AMV[1] (ng/L)	FAV[1] (ng/L)
PFOS	11	12	140,000	780,000	1,600,000
PFOA	66	170	880,000	7,700,000	15,000,000
PFBS	8,300	670,000	24,000,000	120,000,000	240,000,000
PFHxS	59	210	-	-	-
PFNA	19	30	-	-	-

[1] The Human Noncancer Value (HNV) is a surface water concentration that is protective against non-cancer adverse effects for people recreating in the water. The Aquatic Maximum Value (AMV) is the highest concentration of a substance to which an aquatic community can be exposed briefly without resulting in adverse effects, whereas the Final Chronic Value (FCV) is the highest concentration of a substance to which an aquatic community can be exposed for a long period of time without experiencing adverse effects. The Final Acute Value (FAV) is the value applied directly at the end of an effluent point source for EGLE discharge permitting purposes.

[2] nanograms per liter (ng/L) is equivalent to parts per trillion (ppt)

(-) Aquatic Life Values for PFHxS and PFNA are currently under development

The State of Michigan's Part 8, Water Quality-Based Effluent Limit Development for Toxic Substances (Part 8 Rules), of the NREPA is used to establish toxic substance water quality-based effluent limits (WQBELs) for point source discharges that are protective of the designated uses of the surface waters of the state. While concentrations of all five chemicals have been detected in influent and/or effluent at some WWTPs, PFOS has been found in higher concentrations in wastewater effluent relative to its WQV and has been the controlling analyte for this strategy.

Goal

The goal of the municipal NPDES permitting strategy is to reduce or eliminate the discharge of PFAS, at municipal WWTPs using National Pollutant Discharge Elimination System (NPDES) permits. During permit re-issuance, EGLE will review all available WWTP effluent data to determine whether effluent limits for PFAS are necessary to protect water quality. An evaluation will be made to determine if the discharge causes, has the reasonable potential to cause, or contribute to an exceedance of the WQBELs. The Part 8 Rules and the *Water Resources Division (WRD) Guidance for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) Reasonable Potential Evaluations memorandum* specify how reasonable potential is calculated. Variables include PFAS results and number of samples. Data sets that are not robust (less than 10 samples) result in a more conservative estimate of potential effluent quality. NPDES permits are now being issued, with PFAS effluent limits with schedules, as appropriate, if PFAS concentrations in WWTP effluent have not been sufficiently reduced and it is determined reasonable potential exists to exceed the WQBELs.

Groundwater discharges are regulated under a separate initiative. To learn more about WRD's strategy for groundwater discharges, see WRD's *Compliance Strategy for Addressing PFAS from Public and Private Municipal Groundwater Discharges.* Industrial and stormwater discharges that either discharge directly to surface waters (e.g., lakes, streams, county drains) or to separate storm sewer systems are also addressed under a separate strategy. To learn more about WRD's strategy for these types of discharges, see WRD's *Compliance Strategy for Addressing PFAS (PFOS/PFOA) From Industrial Direct Discharges and Industrial Storm Water Discharges*.

Categorization of Facilities With PFAS

Under the municipal permitting strategy, EGLE determines appropriate permit requirements by categorizing WWTPs into "Bins," based on the following: whether they have an IPP, whether they are a USEPA major (design flow ≥1 million gallons per day (MGD)) or minor facility, reasonable potential to exceed the WQBELs, PFOS and PFOA biosolids data, and identified significant sources. WWTPs are categorized as Bin 1.1, 1.2, 2.1, 2.2, 3.1, 3.2, 3.3, as outlined in the following table.

Bin	WWTP Type	Sources Present	Effluent has Reasonable Potential to Exceed WQBEL	PFOS and/or PFOA Biosolids Data > Biosolids Mitigation Criteria (µg/kg) [1]
1.1	IPP and Non-IPP USEPA major	No	Yes[2] or No	No
1.2	Non-IPP minor	No	No	No
2.1	IPP	Yes	No	No
2.2	IPP	Yes	No	Yes
3.1	IPP	Yes	Yes	Yes or No
3.2	IPP or Non-IPP	Unknown	Yes	Yes
3.3	Non-IPP	Unknown	Yes	No

[1] micrograms per kilograms (µg/kg) is equivalent to nanograms per gram (ng/g) and parts per billion (ppb)

[2] Reasonable Potential due to limited data set

PFAS Monitoring and Reporting Requirements

In summary, facilities categorized as indicated above will have the following monitoring and reporting permit requirements. EGLE reserves the right to make case by case best professional judgment decisions as necessary.

Bin	Effluent Limit	Effluent Monitoring	Option for Monitoring Frequency Reduction	Pollutant Minimization and Source Evaluation Program	Corrective Action Plan	Status Report Requirements
1.1	No	4x/5-yr Permit Cycle OR 3x Annual[1]	Yes, if 3x Annual Effluent Monitoring	Yes, if triggered[3]	No	Annual, if triggered[3]
1.2	No	No	NA	No	No	No
2.1	No	Quarterly	Yes	Yes, if triggered[3]	No	Annual
2.2	No	Quarterly	Yes	Yes	No	Annual
3.1	Yes	Monthly	Yes	No	Yes	2x annual
3.2	No	3x Annual **OR** Monthly[2]	Yes	Yes	No	Annual
3.3	No	3x Annual OR Monthly[2]	Yes	Yes, if triggered[3] if 3x Annual Effluent Monitoring Yes, if Monthly Effluent Monitoring	No	Annual, if monthly monitoring OR Annual, if triggered[3]

[1] 3x Annual monitoring required if there is reasonable potential to exceed WQBEL due to limited data set.
[2] Monthly monitoring will be required if robust data set indicates reasonable potential to exceed WQBEL.
[3] Pollutant Minimization and Source Evaluation Program requirements will be triggered if effluent exceeds WQBELs OR biosolids PFOS and/or PFOA concentrations exceed the mitigation criteria during permit cycle

Pollutant Minimization and Source Evaluation Program for PFAS

A Pollutant Minimization and Source Evaluation Program will require facilities to identify and eliminate or reduce sources of PFAS and at a minimum include:

- A nondomestic survey to identify PFOS, PFOA, PFBS, PFNA, and/or PFHxS sources, including landfills, contaminated sites, metal finishers, pulp and paper manufacturers, centralized waste treaters, chemical or paint manufacturers, leather tanning operations, domestic or industrial septage disposal sites, commercial operations such as laundries, dry cleaners, car washes, schools, carpet cleaners, and medical and commercial complexes.
- Investigation of areas for potential groundwater or stormwater inflow/infiltration associated with existing and/or former PFAS sources and sites and facilities where Aqueous Film-Forming Foam (AFFF) is stored and/or has been deployed.

- A monitoring plan to sample locations identified in the nondomestic survey, contributing municipalities (if applicable), within the various WWTP operations (if applicable), and a schedule for conducting the sampling.
- Actions to eliminate, reduce, and/or control sources.
- Facilities will be required, at a minimum, to submit reports annually detailing the progress of the Pollutant Minimization and Source Evaluation Program. These annual status reports will be reviewed by EGLE staff and additional work required if needed. EGLE may require an increase in monitoring frequency due to PFOS effluent variability or exceedance of the WQBEL based on data submitted to EGLE and/or if the facility has been reclassified into a higher bin category.

Corrective Action Plan for Final Effluent Limits for PFAS

WWTPs with approved IPPs and PFAS effluent limits will be required to continue their work to identify and eliminate or reduce sources of these pollutants and at a minimum:

- Develop and implement a local limit for the PFAS with an effluent limit and evaluate the need for a local limit for the other PFAS with WQVs.
- Submit 2x annual status reports that document progress made in control of PFAS.
- At least 7 months prior to the permit effluent limit effective date, submit for approval a written certification the facility will be able to meet the final effluent limits for the applicable PFAS.
- If the WWTP cannot certify compliance with the effluent limit(s), then submission of a Corrective Action Plan is required at the specified due date in the permit.

PFAS Data Reporting Requirements

Facilities with PFAS effluent monitoring will be required to submit the complete laboratory analysis in the MiEnviro Portal using the *PFAS POTW Effluent Monitoring Report* form. This will be in addition to the required reporting of DMRs for the PFAS analytes with effluent limits. Until one or more analytical methods for PFAS are promulgated by the USEPA in 40 CFR Part 136, the complete laboratory analysis of each PFAS sample shall constitute the first 28 analytes identified on the PFAS POTW Effluent Monitoring Report form. Following USEPA promulgation of one or more analytical methods for PFAS, the complete laboratory analysis of each PFAS sample shall constitute all analytes targeted by the method.