

Monitoring PFAS in Community Public Water Systems

DRINKING WATER PROTECTION SECTION

Background

The Minnesota Department of Health (MDH) is responsible for ensuring safe drinking water for all Minnesotans. As the primacy agency for the federal Safe Drinking Water Act (SDWA), MDH protects drinking water through regular testing of community public water systems (CPWSs or “systems”) for contaminants. CPWSs serve at least 25 people or 15 service connections (i.e. 15 buildings served) year-round. CPWSs include municipalities (cities) as well as some manufactured home parks, college campuses, prisons, and long-term care facilities.

MDH has been assessing the potential health impacts of perfluoroalkyl substances (PFAS) in groundwater in Minnesota since 2002. MDH and the Minnesota Pollution Control Agency (MPCA) have a long history of working with people in the East Metro to protect them from the health effects of PFAS in their groundwater. MDH began sampling community public water systems for PFAS in 2006. Much of this sampling has taken place in the East Metro and in areas where aqueous film-forming foam (AFFF) was used, such as airports and military bases.

Our approach to PFAS monitoring



MDH has taken a strategic approach to PFAS monitoring in drinking water. This approach focuses on: addressing potential public health risks near sites known to have nearby sources or disposal of PFAS; understanding how PFAS moves through the environment; and characterizing drinking water vulnerability to PFAS. MDH uses past monitoring results and current scientific evidence to inform this monitoring approach. This approach allows MDH to use its resources efficiently and target areas with public health risk.

MDH has conducted PFAS monitoring through several activities, as described below.

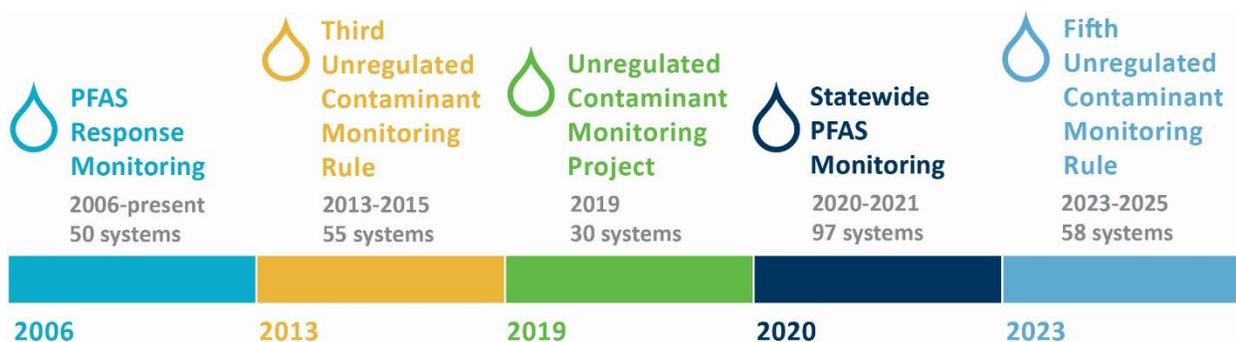


Figure 1. Timeline of PFAS monitoring activities

Figure shows number of CPWSs newly sampled for PFAS compounds in each activity. In addition, some systems were resampled in subsequent monitoring activities.

Monitoring activities for PFAS in drinking water

PFAS Response Monitoring (2006-present)

MDH has been monitoring systems with PFAS detections since 2006. MDH has conducted ongoing sampling at 13 CPWSs in the East Metro and near AFFF sites. Sampling at these CPWSs takes place on a quarterly to biennial basis, depending on detections and levels of PFAS. MDH normally collects samples at the entry point (the point where water enters the distribution system; usually the treatment plant but sometimes a well). MDH sometimes also collects samples after each treatment filter to monitor filter performance. Overall, approximately 250 samples are collected each year at these 13 CPWSs through ongoing sampling.

Additionally, MDH has sampled 37 other CPWSs for PFAS which are not in the East Metro or near AFFF sites. These CPWSs are sampled for PFAS in conjunction with their routine monitoring schedules.

Third Unregulated Contaminant Monitoring Rule (UCMR 3) (2013-2015)

Every five years, the U.S. Environmental Protection Agency (EPA) implements the Unregulated Contaminant Monitoring Rule (UCMR). The purpose of UCMR is to collect data from across the country on contaminants that may be present in drinking water. EPA uses this data to decide if the contaminants occur at frequencies and concentrations high enough to be regulated in the future.

The third round of UCMR, UCMR 3, required monitoring for 21 contaminants, including six PFAS compounds, between 2013 and 2015.

UCMR 3 included all CPWSs serving more than 10,000 people and some systems serving 10,000 or fewer people. In Minnesota, 84 CPWSs were sampled; 55 of these were sampled for PFAS for the first time. MDH detected PFAS compounds at five CPWSs: Oakdale, Bemidji, Hastings, Woodbury, and Cottage Grove. Following the detections, MDH worked with these CPWSs to conduct additional monitoring and discuss options for treatment.

Perfluorobutanoate (PFBA) was not included in UCMR 3 sampling. PFBA is the most commonly detected PFAS compound. The number of systems with PFAS detections in UCMR 3 may have been higher if PFBA had been one of the included contaminants.

Unregulated Contaminant Monitoring Project (UCMP) (2019)

In this project, MDH tested for unregulated contaminants in drinking water sources across the state. The contaminants in this project were selected based on detection in previous monitoring studies and public health interest. The project was funded by the Environment and Natural Resources Trust Fund (ENRTF) and received additional funding from the Clean Water Fund.

MDH collected PFAS samples from 46 CPWSs that were either using surface water as a drinking water source or were potentially impacted by wastewater. Samples were analyzed for 30 PFAS compounds. Through this project, we collected samples from 30 systems that had not been previously monitored for PFAS.

Statewide PFAS Monitoring (2020-2021)

Funding from the U.S. Environmental Protection Agency (EPA) and Clean Water Fund will allow MDH to conduct PFAS sampling in 2020-2021.

In 2020, MDH will collect samples from CPWSs with PFAS detections or with wells that may be vulnerable to nearby sources of PFAS. MDH will resample approximately 30 CPWSs near AFFF sites. MDH has previously collected PFAS samples at many of these PWSs, but improved analytical methods will allow MDH to detect lower levels of PFAS than was previously possible.

In 2021, MDH will sample for PFAS at randomly selected CPWSs across the state. More samples will be collected in urban areas and vulnerable geologic settings. Approximately 125 CPWSs will be sampled, 97 of which have not been previously sampled for PFAS.

MDH will conduct follow-up monitoring based on detections in the previous year and in MPCA source inventory investigations.

Fifth Unregulated Contaminant Monitoring Rule (UCMR 5) (2023-2025)

The fifth round of UCMR, UCMR 5, is expected to include PFAS compounds. EPA analytical method 533 will be used, which includes 25 PFAS compounds, including PFBA. Additionally, current analysis methods have lower reporting limits than were possible in earlier monitoring activities.

UCMR 5 will include all CPWSs serving more than 10,000 people. Systems serving populations between 3,300-10,000 will also participate if there is sufficient funding and lab capacity. Depending on funding and capacity, approximately 180 CPWSs will be included in UCMR 5. Of these 180 CPWSs, 58 will be sampled for PFAS for the first time.

PFAS MONITORING IN CPWSs

Table 1. About monitoring activities for PFAS in drinking water.

Activity	Years	Number of CPWSs newly sampled for PFAS ¹	Number of PFAS compounds included	CPWSs sampled
PFAS Response Monitoring	2006-Present	50	7	CPWSs with known nearby sources or disposal of PFAS
UCMR 3	2013-2015	55	6	All CPWSs serving more than 10,000 people Some CPWSs serving 10,000 or fewer
UCMP	2019	30	30	CPWSs using surface water CPWSs potentially impacted by wastewater discharge
Statewide PFAS Monitoring	2020-2021	97	23	Targeted and randomized selection of CPWSs statewide
UCMR 5	2023-2025	58	25	All CPWSs serving more than 10,000 people All CPWSs serving 3,300-10,000 if there is sufficient capacity and appropriations
Total CPWSs sampled for PFAS	2006-2025	290	Varied	

¹Number of systems that were not sampled for PFAS under previous sampling activities

Summary of PFAS monitoring scope

By 2025, MDH will have sampled approximately 290 of the 964 total CPWSs in Minnesota. This includes the CPWSs with the largest populations served, including Minneapolis, St. Paul, Rochester, Duluth, and Bloomington. Approximately 4 million people, or 92% of the population served by CPWSs, will be covered under MDH’s PFAS monitoring program by 2025.

PFAS MONITORING IN CPWSs

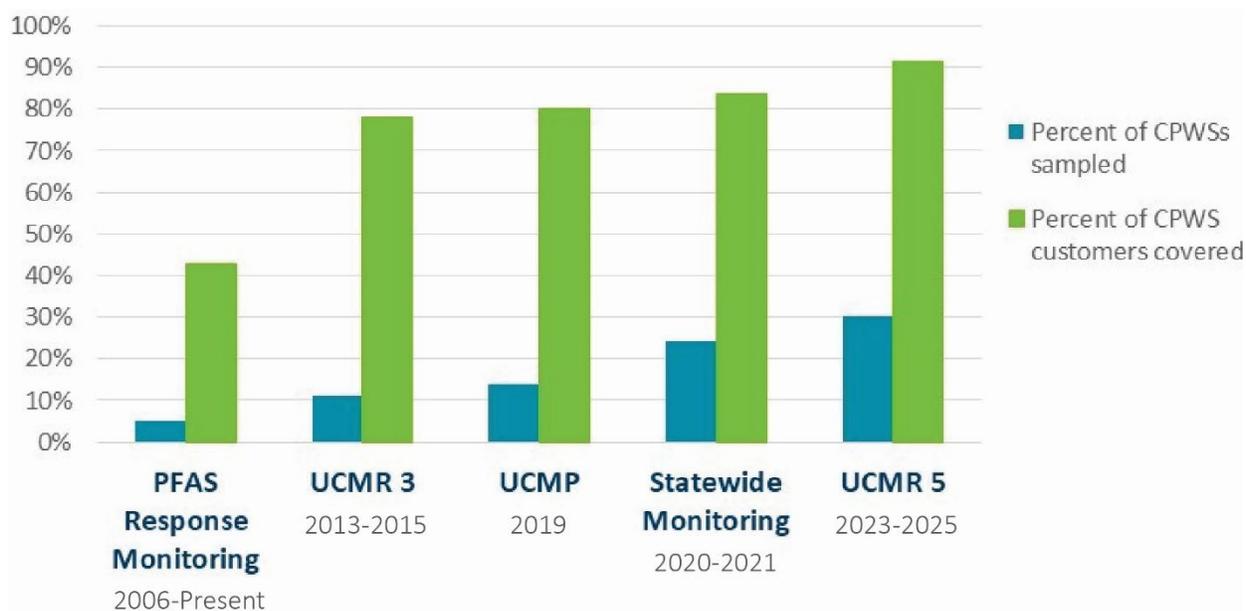


Figure 2. CPWSs and customers covered under PFAS monitoring projects

Percentages reflect cumulative systems and customers over time

After 2025, 674 CPWSs will be remaining for PFAS sampling. These 674 CPWSs provide drinking water to 8% of the population served by CPWSs. When we evaluate these CPWSs under MDH’s strategic approach to PFAS monitoring, we expect that they have a lower risk of PFAS contamination. These CPWSs are less vulnerable to PFAS contamination based on their geology, nearby land use, and nearby industrial activities.

MDH is pursuing additional resources to accelerate progress on PFAS monitoring and to reach all CPWSs and 100% of their population served before 2025.

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