

EXECUTIVE SUMMARY

Safe Drinking Water PFAS Rule 25 Pa. Code, Chapter 109

The Department of Environmental Protection (Department) proposes to amend Chapter 109 (relating to Safe Drinking Water) to read as set forth in Annex A. The proposed rulemaking would establish maximum contaminant levels goals (MCLGs) and maximum contaminant levels (MCLs) for perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) for community, nontransient noncommunity, and bottled, vended, retail, and bulk water systems.

Purpose of the Proposed Rulemaking

The purpose of the proposed rulemaking is to amend the Department's Safe Drinking Water regulations to: (1) set MCLs and MCLGs for PFOA and PFOS, two contaminants that are part of a larger group of perfluoroalkyl and polyfluoroalkyl substances (PFAS); (2) establish monitoring requirements for PFOA and PFOS for community, nontransient noncommunity, and bottled, vended, retail, and bulk water systems in order to demonstrate compliance with the MCLs; (3) establish sampling and analytical requirements and acceptable treatment technologies for achieving compliance with the proposed MCLs for PFOA and PFOS; and (4) provide for the increased protection of public health through implementation of the MCLs, routine compliance monitoring, and other provisions including public notification for MCL exceedances.

Safe drinking water is vital to maintaining healthy and sustainable communities. Proactively addressing PFOA and PFOS contamination in drinking water can reduce the incidence of illness and reduce health care costs. The benefits associated with reductions of PFOA and PFOS in drinking water arise from a reduction in adverse human health effects. Exposure to PFOA is associated with adverse developmental effects (including neurobehavioral and skeletal effects) and exposure to PFOS is associated with adverse immune system impacts (including immune suppression). Recent research suggests that the United States Environmental Protection Agency's (EPA) Combined Lifetime Health Advisory Level (HAL) for PFOA and PFOS is not sufficiently protective against adverse health effects. EPA has started the process of setting more stringent standards for PFOA and PFOS in drinking water, but that process is expected to take years to complete. For that reason, it is important that the Board act now to propose more protective standards for this Commonwealth, to protect the health of Pennsylvanians. Proper investment in public water system infrastructure and operations helps ensure a continuous supply of safe drinking water, enables communities to plan and build future capacity for economic growth, and ensures their long-term sustainability for years to come.

Summary of the Proposed Rulemaking

MCLGs and MCLs for PFOA and PFOS: Currently, PFOA and PFOS are not regulated in drinking water at the state or federal level, so there are no MCLs established for these contaminants. This proposed rulemaking sets the following MCLGs and MCLs:

Contaminant	MCLG (ng/L or ppt)	MCL (ng/L or ppt)
PFOA	8	14
PFOS	14	18

Monitoring requirements for PFOA and PFOS: Since these PFAS are not currently regulated in drinking water, there are no routine monitoring requirements at the state or federal level. The proposed rulemaking establishes initial, repeat, and reduced monitoring requirements for non-consecutive community water systems (CWS) and nontransient noncommunity water systems (NTNCWS), as well as for bottled, vended, retail, and bulk (BVRB) water systems. These routine monitoring requirements are necessary to demonstrate compliance with the MCLs set by this rule.

Sampling and analytical requirements and acceptable treatment technologies: To ensure the consistency and validity of sample results, the proposed rulemaking establishes requirements for sampling and analysis of water samples for PFAS. These include requiring sampling at each entry point during normal operation, sample collection by a properly trained collector, and analysis by an accredited laboratory, as well as establishing approved analytical methods, minimum reporting limits (MRLs), and analysis of performance evaluation samples. The proposed rulemaking also establishes acceptable treatment technologies for achieving compliance with the MCLs.

Protect public health: The proposed rulemaking will protect public health by setting lower limits for PFOA and PFOS in drinking water than current HALs established by EPA and by requiring routine monitoring at public water systems to ensure compliance with those lower standards. EPA has established a combined lifetime HAL for PFOA and PFOS of 70 parts per trillion (ppt). While HALs are not enforceable regulatory standards, the Department has the regulatory authority to require corrective actions if HALs are exceeded. However, current research suggests that the HAL for PFOA and PFOS is not sufficiently protective of public health. The MCLs set for PFOA and PFOS in this proposed rulemaking are more stringent than the HAL established by EPA. Since these PFAS are not currently regulated in drinking water under current state or federal regulations, the monitoring frequencies and other provisions in this proposed rulemaking are also more stringent than any federal requirements. The Department developed these MCLs and monitoring requirements to better protect public health, in accordance with the goals of Pennsylvania's PFAS Action Team.

- The MCLGs set by this rulemaking at § 109.202(a)(4)(ii) are based on the most current toxicological research available at the time the rule is proposed. Through a toxicology services contract, toxicologists at Drexel University conducted a thorough and independent review of federal and other states' work on MCLs, including the available research, data, and scientific studies. Based on this research, recommendations were made to the Department for MCLGs for select PFAS. MCLGs are non-enforceable levels based solely on health effects and do not take into consideration other factors such as technical limitations or cost; MCLGs are the starting point for determining MCLs.
- The MCLs set by this rulemaking at § 109.202(a)(4)(ii) were determined based on a cost-benefit analysis evaluating the percentage of improvement in health protection relative to the percentage of increased cost of implementation at various levels compared to EPA's HAL. The MCLs determined based on this process represent a 90% (for PFOA) and 93% (for PFOS) improvement in health protection, and a 253% (for PFOA) and 94% (for PFOS) increase in cost.
- The monitoring requirements for CWS, NTNCWS, and BVRB systems for PFOA and PFOS established by this rulemaking at § 109.301(16) and § 109.1003(a)(1)(xv) are necessary to demonstrate compliance with the MCLs. Monitoring requirements include

initial quarterly monitoring, reduced repeat monitoring where there are no detections, quarterly repeat monitoring where there is a detection or MCL exceedance, monitoring requirements for systems with treatment to remove PFAS, and confirmation samples to confirm an MCL exceedance.

- This rulemaking also establishes MCL exceedances for PFOA and PFOS as chronic health-based violations requiring Tier 2 public notification and includes health effects language at § 109.411(e)(1)(ii) and (iii) to include in notices for MCL exceedances of PFOA or PFOS.

Affected Parties

Complying with this rule will result in some cost increases to public water systems (PWSs) in Pennsylvania, which may be passed on to the customers they serve. This proposed rulemaking will be applicable to all 3,117 CWS, NTNCWS, and BVRB PWS in Pennsylvania. However, 219 of these systems are consecutive systems (i.e., purchasing finished water from another PWS) and would not be required to conduct monitoring unless the selling system fails to monitor as required. Of the remaining 2,898 non-consecutive systems: 1,732 are CWSs; 1,070 are NTNCWSs; and 96 are BVRBs. A total of 1,519 are small water systems, serving a population of less than or equal to 3,300 persons.

The estimated costs for this proposed rulemaking include treatment costs and compliance monitoring costs.

- Treatment Costs:
 - The average capital cost for using either granular activated carbon (GAC) or ion exchange (IX) treatment is estimated at \$3,370,735 per MGD per EP with an average annual treatment operation and maintenance (O&M) cost of \$163,818 per MGD per EP.
 - Annualized over 20 years at a 4% interest rate, the estimated average annual capital cost for either GAC or IX treatment is \$248,025 per MGD per EP.
 - Estimated annual performance monitoring costs = \$616 per sample per EP x 36 samples = \$22,176 per EP
 - It is estimated that 7.4% or 280 of the 3,785 EPs will require treatment to meet one or both proposed MCLs.
 - Table 1 shows the total estimated annual treatment costs, including treatment capital costs, treatment O&M costs, and performance monitoring costs.

Table 1. Total Estimated Annual Treatment Costs

Estimated average annualized treatment <i>capital</i> costs (per MGD per EP)	\$248,025
Estimated average annual treatment <i>O&M</i> costs (per MGD per EP)	\$163,818
Estimated average annual treatment <i>capital + O&M</i> costs (per MGD per EP)	\$411,843
Estimated annual <i>performance monitoring</i> costs (per EP)	\$22,167
Estimated # of EPs (of 3,785) that require treatment for one or both MCLs	280
Total estimated average annual treatment <i>capital + O&M</i> costs (per MGD)	\$115,316,040
Total estimated annual <i>performance monitoring</i> costs	\$6,206,760

- The treatment cost estimates in Table 1 may be overestimates, for several reasons:
 - (1) these estimates are based on the MCL exceedance rates from the occurrence data, which may overestimate the exceedance rate for the other PWSs in Pennsylvania that were not sampled, because the occurrence data sampling predominately targeted sites near potential sources of PFAS contamination;
 - (2) treatment for PFOA and PFOS is the same, so EPs exceeding both MCLs would not be required to install two different treatment systems; therefore, the estimated percentage of EPs requiring treatment is less than the combined percentage of EPs exceeding either MCLs in the occurrence data; and
 - (3) systems with MCL exceedances may have several options to address the contamination aside from installing treatment, including taking contaminated sources offline, making operational changes such as blending sources, or using alternate sources of supply (developing new sources or using purchased sources from a new interconnect).
- Compliance monitoring costs:
 - Using an average estimated cost of \$616 per sample, Table 3 summarizes the overall cost estimates for compliance monitoring costs in each of the first four years of rule implementation.

Table 2. Compliance Monitoring Costs

	Total # EPs	Quarterly Initial EPs	Annual Repeat EPs	Quarterly Repeat EPs	Quarterly compliance monitoring cost	Annual compliance monitoring cost	Total yearly compliance monitoring cost
Year 1	1885	1885	0	0	\$4,644,640	\$0	\$4,644,640
Year 2	1900	1900	1227	658	\$6,302,579	\$755,915	\$7,058,495
Year 3		0	3122	663	\$1,633,878	\$1,923,090	\$3,556,969
Year 4		0	3785	0	\$0	\$2,331,560	\$2,331,560

- The compliance monitoring cost estimates in Table 2 may be overestimates for the following reasons:
 - (1) these estimates are based on the MCL and MCLG exceedance rates from the occurrence data, which may overestimate the exceedance rate for the other PWSs in Pennsylvania that were not sampled, because the occurrence data sampling predominately targeted sites near potential sources of PFAS contamination;
 - (2) some systems were assumed to conduct annual repeat monitoring in each year following the initial monitoring, but this overestimates the repeat monitoring requirements and costs after the initial monitoring because, for EPs where initial monitoring results do not detect PFOA or PFOS, the frequency of repeat monitoring will be reduced from annual to once every three years; and
 - (3) potential for compliance monitoring cost savings include discounts for multiple samples, discounts for fewer analytes than included in the method, no analysis of field blank if all method analytes are not detected in sample, and sample collection by the water system.

Outreach (Advisory Committee/Stakeholder Consultation)

The pre-draft proposed rulemaking was presented to the Public Water System Technical Assistance Center (TAC) Board on July 29, 2021 for review and comment. The TAC Board supports the Department moving forward to present a proposed rulemaking to the Environmental Quality Board. No additional detailed comments were provided by the TAC Board.

Recommendation

The Department recommends adoption of this proposed rulemaking. A 60-day public comment period is also recommended with 3 public hearings.