# EXECUTIVE SUMMARY

## Safe Drinking Water PFAS MCL Rule
## 25 Pa. Code Chapter 109

The Department of Environmental Protection (Department) recommends final-form amendments to 25 Pa. Code Chapter 109 (relating to Safe Drinking Water). This final-form 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, bottled, vended, retail, and bulk hauling water systems. The final-form amendments would also establish other requirements to demonstrate compliance with the MCLs, including monitoring requirements, analytical requirements, reporting and public notification requirements, and acceptable treatment techniques.

## Purpose of the Final Rulemaking

The purpose of the final-form 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, bottled, vended, retail, and bulk hauling 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 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) 2016 Combined Lifetime Health Advisory Level (HAL) for PFOA and PFOS, established in 2016, 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, and expects to publish a draft rulemaking by fall 2022 and a final rulemaking by 2023; however, even on that schedule, implementation of a federal rule would not begin until late 2026. 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 Final-Form 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 final-form 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 final-form 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 hauling (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 final-form rulemaking establishes requirements for sampling and analysis of water samples for PFOA and PFOS. These include requiring sampling at each entry point during normal operation and analysis by an accredited laboratory, as well as establishing approved analytical methods, minimum reporting limits, and analysis of performance evaluation samples by accredited laboratories. The final-form rulemaking also establishes acceptable treatment technologies for achieving compliance with the MCLs.

**Protect public health:** The final-form rulemaking will protect public health by setting enforceable limits for PFOA and PFOS in drinking water and by requiring routine monitoring at public water systems to ensure compliance with these standards. In 2016, EPA 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 2016 EPA HAL for PFOA and PFOS is not sufficiently protective of public health. The MCLs set for PFOA and PFOS in this final-form rulemaking are more stringent than the 2016 EPA 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 final-form 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 was 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 the 2016 EPA HAL. The MCLs determined based on this process represent a 90% (for PFOA) and 93%

(for PFOS) improvement in health protection, and as compared to a 253% (for PFOA) and 94% (for PFOS) increase in costs.

- The MCLs are predicted to have a significant economic benefit to Pennsylvania because the MCLs will reduce health care problems associated with PFAS. According to a benefits analysis conducted by Drexel University using the value transfer method to apply quantitative estimates of health care impact costs from one study site to another, it is estimated that PFAS contamination in drinking water may account for a total of $2 to $3.3 billion annually in Pennsylvania. The PFOA MCL of 14 ng/L alone is estimated to result in health care cost savings on average of $53 million annually.
- 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 final-form 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 compliance 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 businesses (i.e., privately or investor-owned water systems), serving a population of less than or equal to 3,300 persons.

The estimated costs for this final-form 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 entry point (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 *capital* costs (per MGD per EP) | $248,025 |
| Estimated average annual treatment *O&M* costs (per MGD per EP) | $163,818 |
| Estimated average annual treatment *capital + O&M* costs (per MGD per EP) | $411,843 |
| Estimated annual *performance monitoring* 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 *capital + O&M* costs (per MGD)** | **$115,316,040** |
| **Total estimated annual *performance monitoring* 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 2 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 the field blank if all method analytes are not detected in sample, and sample collection by the water system.

## Outreach (Advisory Committee/Stakeholder Consultation)

The draft final-form rulemaking was presented to the Public Water System Technical Assistance Center (TAC) Board on July 14, 2022, for review and comment. The TAC Board supports the Department moving forward to present this rulemaking to the Environmental Quality Board. No additional detailed comments were provided by the TAC Board.

## Public Comments

The proposed rulemaking was published on February 26, 2022, for a 60-day public comment period. Five virtual public hearings were held during the week of March 21, 2022. The Department received 3,560 public comments and testimony. The majority of comments received were supportive of the Department's efforts to set MCLs. However, many commentators recommended edits to the rulemaking, including setting lower MCLs for PFOA and PFOS, setting MCLs for more PFAS either individually or as a group, and more stringent monitoring requirements. There were also concerns about the sufficiency of the cost to benefit analysis, insufficient laboratory capacity, timing and overlap with federal requirements and standards, supply chain issues, and the scientific studies and data used to develop the rulemaking.

## Recommendation

The Department recommends adoption of this final-form rulemaking.