STATE OF WISCONSIN
DEPARTMENT OF ADMINISTRATION
DOA-2049 (R09/2016)

DIVISION OF EXECUTIVE BUDGET AND FINANCE
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ADMINISTRATIVE RULES
Fiscal Estimate & Economic Impact Analysis

1. Type of Estimate and Analysis	2. Date
☒ Original ☐ Updated ☐ Corrected	6/17/2021 - DRAFT

3. Administrative Rule Chapter, Title and Number (and Clearinghouse Number if applicable)
NR 809, Safe Drinking Water

4. Subject
Promulgation of new drinking water maximum contaminant levels for Per- and Polyfluoroalkyl Substances (PFAS) including Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA). Board order DG-24-19

5. Fund Sources Affected	6. Chapter 20, Stats. Appropriations Affected
☒ GPR ☒ FED ☐ PRO ☐ PRS ☐ SEG ☐ SEG-S	401 and 441

7. Fiscal Effect of Implementing the Rule

☐ No Fiscal Effect	☐ Increase Existing Revenues	☐ Increase Costs	☐ Decrease Costs
☐ Indeterminate	☐ Decrease Existing Revenues	☒ Could Absorb Within Agency's Budget	

8. The Rule Will Impact the Following (Check All That Apply)

☐ State's Economy	☒ Specific Businesses/Sectors
☒ Local Government Units	☐ Public Utility Rate Payers
	☒ Small Businesses **(if checked, complete Attachment A)**

9. Estimate of Implementation and Compliance to Businesses, Local Governmental Units and Individuals, per s. 227.137(3)(b)(1).
The department is seeking public comment to more fully assess the economic impact of implementation and compliance of the proposed revisions to ch. NR 809, Wis. Adm. Code. This draft Economic Impact Analysis uses potential monitoring and treatment cost ranges to predict the estimated one-time initial monitoring costs for all entities (Table 1).

The department's preliminary assessment estimates the initial monitoring cost for all systems to be $1.025 Million. Mitigation and monitoring costs are unknown.

10. Would Implementation and Compliance Costs Businesses, Local Governmental Units and Individuals Be $10 Million or more Over Any 2-year Period, per s. 227.137(3)(b)(2)?
☐ Yes ☐ No
Indeterminate. The department is seeking public comment to fully assess the economic impact of implementation and compliance with the proposed rule.

The department anticipates that municipalities will use the Safe Drinking Water Loan program to finance the cost of compliance. This is the regular practice of municipalities for such projects and is consistent with past experience for implementing similar regulatory changes. If municipalities secure funding for mitigation costs through the Safe Drinking Water Loan program, the compliance and implementation cost over any two years will be less than $10 million in any two years.

11. Policy Problem Addressed by the Rule
The objective of the proposed rule is to amend ch. NR 809, Wis. Adm. Code, to establish drinking water standards, referred to as Maximum Contaminant Levels (MCLs), for certain Per- and Polyfluoroalkyl substances (PFAS), including the contaminant compounds perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS). PFAS contaminants are human-made chemicals that are widespread and do not break down easily. PFAS contaminants are a threat to the environment and human health, including surface water and groundwater resources. PFAS in surface water and groundwater source that supplies Wisconsin's drinking water is a threat to public health, welfare, and safety. Establishing enforceable maximum contaminant levels for certain PFAS in drinking water is necessary to protect public

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Fiscal Estimate & Economic Impact Analysis

health. If MCLs are exceeded, a corrective action plan must be implemented to maintain protection of public health, welfare, and safety in drinking water.

Scientific studies show adverse health effects associated with exposure to PFOA and PFOS contaminants. Adverse health effects include an increase in cholesterol, liver damage, thyroid disease, and a decrease in fertility and birth weight. The EPA and international studies have classified PFOA and PFOS as possibly carcinogenic to humans.

12. Summary of the Businesses, Business Sectors, Associations Representing Business, Local Governmental Units, and Individuals that may be Affected by the Proposed Rule that were Contacted for Comments.

The proposed rule will affect the following entities:

- Municipal community water systems (cities, townships, sanitary districts).
- Other-than-municipal community water systems (mobile home parks, apartment buildings, condominium associations).
- Non-transient non-community water systems (small businesses with 25 or more employees that are not on a municipal source).
- Laboratories certified to perform PFOS and PFOA analysis in drinking water.

The department will contact these groups for comments on the economic impact.

13. Identify the Local Governmental Units that Participated in the Development of this EIA.

The department will contact the League of Wisconsin Municipalities and the Wisconsin Counties Association.

14. Summary of Rule's Economic and Fiscal Impact on Specific Businesses, Business Sectors, Public Utility Rate Payers, Local Governmental Units and the State's Economy as a Whole (Include Implementation and Compliance Costs Expected to be Incurred)

The department will assess the economic impact of this rule to stakeholders, including small businesses in light of the comments received during the comment period.

Under the revised rules, the department will require testing at a frequency similar to other synthetic organic compounds having Safe Drinking Water Act MCLs. This testing would occur at least every six years but may be as often as every quarter for a small subset of public water systems, depending upon the levels of PFAS contaminants detected. This will affect approximately 2,000 public water systems. Currently, the cost of a sample analysis is $375 per sample.

<u>Monitoring</u>

Following the same monitoring frequency requirements for other synthetic organic compounds, PFAS monitoring will fall into four basic categories:

- Initial monitoring – One-time source water
- Routine monitoring – Entry Point (once every three years)
- MCL monitoring – (quarterly)
- Reduced monitoring – No detects (every six years)

At this time, Wisconsin does not have predictive occurrence data to identify the exact number of systems that will be on routine monitoring, quarterly monitoring, and reduced 6-year monitoring. The department will reassess this preliminary information in light of the comments received during the comment period and as additional data becomes available.

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ADMINISTRATIVE RULES
Fiscal Estimate & Economic Impact Analysis

Table 1. Estimated Wisconsin monitoring frequencies

Water System Type	**Number of Entry Point Samples**	**Initial All systems**	**Routine** Every 3 years	**MCL (20 ppt)**	**Reduced**
Community Water Systems	1,949	$682.2 thousand	Unknown	Unknown	Unknown
Non-transient Non-community water systems	981	$343.4 thousand	Unknown	Unknown	Unknown
Grand Total	2930	$1.025 Million	Unknown	Unknown	Unknown

The proposed initial monitoring schedule is as follows:

(a) Public water systems serving a population greater or equal to 50,000 [3 months after the rule becomes effective].
(b) Public water systems serving a population 10,000 to 49,999 [6 months after the rule becomes effective].
(c) Public water systems serving a population less than 10,000 [9 months after the rule becomes effective].

Impacted Stakeholders

Stakeholders that will be impacted by new PFAS safe drinking water requirements fall into two broad categories.

- Community water systems – Public water systems which serve at least 15 service connections used by year-round residents or regularly serve at least 25 year-round residents, including cities, some mobile home parks, apartment complexes, and subdivisions.
- Non-transient non-community – Public water systems that are usually smaller than community water systems but regularly serve at least 25 of the same people over 6 months per year, including schools and some small businesses.

Predicted MCL Exceedances

Wisconsin has not conducted a comprehensive study of potential PFAS levels in public wells. Without such data, for the purpose of this Economic Impact Analysis, the department at this time cannot predict the number of public water systems with MCL exceedances. This will be reassessed in light of the public comments received.

Several states have completed sampling programs that provide occurrence data that can be referenced for comparison (Appendix A). For example, the Michigan study of over 1,700 public water systems from 2017 – 2019 indicated 0.63 % of sampled systems exceeded the 20 ppt PFAS level for PFO, PFOA, or combined. However, this does not replace the need for Wisconsin specific occurrence data. Any parallels with this data will likely overestimate Wisconsin levels, as Michigan has more than four times as many known contaminated sites as Wisconsin (MI – 166, WI – 40). Other states' drinking water sampling efforts have shown approximately 1% to 2% of water systems with PFAS detections above 20ppt (Appendix A).

During the EPA's Unregulated Contaminant Monitoring Rule 3 (UCMR 3) from 2013 to 2015, the PFAS contaminants PFOA and PFOS were identified in the drinking water at several Wisconsin public water systems. Of the 90 systems that sampled during the UCMR 3 period for PFOA and PFOS in Wisconsin, three had detects and two had results over 20 for

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PFOA, PFOS, or combined (Appendix B). This ratio is similar to the national data from this sampling effort (Appendix B).

Note: Minimum Reporting Levels under UCMR 3 - PFOS = 40 ppt, PFOA = 20 ppt

Mitigation Costs

The three main options for mitigating PFAS in drinking water are to: 1) drill a new well that is not affected by PFAS, 2) abandon the affected source, or 3) install treatment. The department assumes that smaller systems would most likely drill a new well, while larger community systems would install treatment, or abandon contaminated sources if possible. Treatment costs for PFAS depend on the type of treatment being used, maintenance costs, and the amount of water being treated. Estimates for municipal systems typically range between $1 million and $150 million dollars (appendix C). A new well at a small system is estimated to average $11,000.

Economic Impact

The estimated cost of promulgating a PFAS MCL cannot be determined at this time and this Economic Impact Analysis will be reassess in light of public comments received during the public comment period. The department anticipates that first-year costs would be much higher than ongoing costs due to initial monitoring costs (Table 2) and mitigation of initially discovered systems with a PFAS exceedance.

Table 2. Estimated economic impact

Cost	One-time Cost	Annual costs after 1st year
Monitoring	$1.025 Million	Unknown
Mitigation	Unknown	Unknown
Total Estimate	Unknown	Unknown

The department expects that municipal systems installing treatment will receive Safe Drinking Water Loan program funding to cover this one-time expense. The typical loan period for one of these loans is 20 years; thus, the estimated treatment costs would not be as significant on an annual basis.

The initial monitoring cost which is known for all systems is estimated to be $1.025 Million.

Impact on Local Government:

This cannot be determined without improved data, however potential monitoring and treatment cost ranges can be used to predict these expenses as new data is available on PFAS occurrence rates.

Public Utility Rate Payers:

Any cost to utility rate payers will be compliance and implementation costs that may be passed on from local government units. At this time, the department cannot anticipate if any of the compliance and implementation cost of local government units will be passed on to utility rate payers. The department will solicit information from community water systems on the impact of their compliance and implementation cost of this rule on public utility rate payers.

Impact on State Economy and Fiscal Impact:

The department does not anticipate an adverse impact of this rule to the state's economy.

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ADMINISTRATIVE RULES
Fiscal Estimate & Economic Impact Analysis

The department anticipates additional staff time will be required to manage the additional workload with respect to monitoring follow-up, and treatment evaluation and approval. The department anticipates that an additional FTE position for a Water Supply Specialist will be required to absorb the additional workload created by this rule. Using the median hourly rate for a Water Supply Specialist ($35.09), including fringe and indirect benefits, at a total hourly rate of $52.037, we estimate the cost of hiring additional staff to be $108,238 per year

15. Benefits of Implementing the Rule and Alternative(s) to Implementing the Rule

The economic benefits of the avoided cost of impacts on human health may greatly outweigh the costs of treating the water or drilling a new well.

The PFOA and PFOS standards in the proposed rule are based on recommendations from the Wisconsin Department of Health Services (DHS). In making its recommendations, DHS considers health-based guidance values from national and international agencies, scientific literature, and studies with significant scientific certainty. For carcinogenic substances, DHS uses the cancer risk level established in ch. 160, Wis. Stat.

According to U.S. EPA study[1], the documented adverse health effect of PFOA and PFAS include:

- Developmental effects to fetuses during pregnancy or to breastfed infants (e.g., low birth weight, accelerated puberty, skeletal variations)
- Cancer (e.g., testicular, kidney)
- Liver effects (e.g., tissue damage)
- Immune effects (e.g., antibody production and immunity)
- Thyroid effects and other effects (e.g., cholesterol changes).

The data on these adverse effects and its link to PFOA and PFAS in Wisconsin are unknown at this time. The department will solicit information from the DHS on these adverse effects and any data that may be available.

The department will continue to review and consider public comment and literature on the economic impacts of the adverse health effect of PFAS and PFOA.

1.United States Environmental Protection Agency. Drinking Water Health Advisories for PFOA and PFOS. https://www.epa.gov/ground-water-and-drinking-water/drinking-water-health-advisories-pfoa-and-pfos#:~:text=These%20studies%20indicate%20that%20exposure,)%2C%20liver%20effects%20(e.g.%2C

16. Long Range Implications of Implementing the Rule

The long-range implications of this rule will be the same as the short-range implications of protecting human health.

17. Compare With Approaches Being Used by Federal Government

The process for the proposed amendment to ch. NR 809, Wis. Adm. Code, to establish certain MCLs for PFAS, including PFOA and PFOS standards, is consistent with the process for establishing rules for other drinking water contaminants regulated under the federal EPA Safe Drinking Water Act, specifically Title 40 - Protection of the Environment; Chapter 1 - Environmental Protection Agency; Subchapter D - Water Programs. The department has a primacy agreement with the EPA to implement the Safe Drinking Water Act.

As a result of the PFOA and PFOS findings from EPA's UCMR 3 national monitoring of public water supply systems (Appendix B), the EPA issued a PFOA and PFOS Health Advisory Level (HAL) in 2016. The PFOA and PFOS HAL was established based upon laboratory animal and epidemiological human studies indicating adverse health effects related to PFOA and PFOS exposure. Adverse health effects included developmental effects of fetuses during pregnancy or to breastfed infants, cancer, liver effects, immune effects, and thyroid effects, and other health effects.

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Fiscal Estimate & Economic Impact Analysis

In February 2019, the EPA released a Per- and Polyflouralkyl Substances (PFAS) Action Plan. One of the four primary actions in the PFAS Action Plan is initiating steps to evaluate the need for an MCL as part of the Safe Drinking Water Act. The EPA is evaluating criteria to propose a national drinking water regulatory determination for PFOA and PFOS. The EPA is highlighting key PFOA and PFOS information gathered to date and additional data needs. The EPA issued a final determination in January 2021 that they will establish an MCL for PFOA and PFOS. This federal regulatory process will take several years and will not take effect in Wisconsin until three years after the EPA establishes the federal MCL.

18. Compare With Approaches Being Used by Neighboring States (Illinois, Iowa, Michigan and Minnesota)

Other surrounding states have promulgated or proposed PFAS maximum contaminant levels (MCLs) or established Health Based Guidance Levels.

Illinois has proposed PFAS maximum contaminant levels for the following contaminants:

PFBS - 140,000 parts per trillion
PFHxS - 140 parts per trillion
PFNA - 21 parts per trillion
PFOA - 21 parts per trillion
PFOS - 14 parts per trillion
Total PFOA and PFOS - 21 parts per trillion

Iowa implements EPA's PFAS Health Advisory Level (HAL) for combined PFOA and PFOS at 70 parts per trillion.

Michigan has promulgated PFAS maximum contaminant levels for the following contaminants:

PFOA - 8 parts per trillion
PFOS - 16 parts per trillion
PFNA - 6 parts per trillion
PFHxS - 51 parts per trillion
PFBS - 420 parts per trillion
PFHxA - 400,000 parts per trillion
GenX - 370 parts per trillion

Minnesota has established the health based guidance levels for the following PFAS contaminants:

PFOA - 35 parts per trillion
PFOS - 15 parts per trillion
PFHxS - 47 parts per trillion

19. Contact Name	20. Contact Phone Number
Adam DeWeese	(608) 264-9229

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Fiscal Estimate & Economic Impact Analysis

ATTACHMENT A

1. Summary of Rule's Economic and Fiscal Impact on Small Businesses (Separately for each Small Business Sector, Include Implementation and Compliance Costs Expected to be Incurred)

The costs for small businesses can be estimated by using the costs presented above, removing large municipality costs, and assuming replacement or abandonment of wells will be the preferred mitigation option. Small businesses likely represent approximately 70% of the public water systems that could be subject to the proposed MCLs, so the initial monitoring costs should be approximately $700 thousand. The department will continue to assess mitigation costs in light of public comment received during the public comment period.

2. Summary of the data sources used to measure the Rule's impact on Small Businesses

The data sources used to predict the economic impact on small businesses include the typical cost of drilling a new well in Wisconsin based on data obtained by the department ($11,000), and the PFAS occurrence data detected in the neighboring state of Michigan.

3. Did the agency consider the following methods to reduce the impact of the Rule on Small Businesses?

☒ Less Stringent Compliance or Reporting Requirements
☒ Less Stringent Schedules or Deadlines for Compliance or Reporting
☐ Consolidation or Simplification of Reporting Requirements
☐ Establishment of performance standards in lieu of Design or Operational Standards
☐ Exemption of Small Businesses from some or all requirements
☐ Other, describe:

The department will allow for monitoring waivers to reduce the frequency of required monitoring at public water systems with no detection levels of PFAS.

4. Describe the methods incorporated into the Rule that will reduce its impact on Small Businesses

The proposed rule spreads out the schedule for monitoring to reduce the initial impacts to public water systems as a whole:

(a) Public water systems serving a population greater or equal to 50,000 [3 months after the rule becomes effective].
(b) Public water systems serving a population 10,000 to 49,999 [6 months after the rule becomes effective].
(c) Public water systems serving a population less than 10,000 [9 months after the rule becomes effective].

Public water systems may also apply for a waiver to reduce the frequency of monitoring. The department will consider the following criteria for granting a waiver:

(a) Whether a contaminant has been used.
(b) Whether previous analytical results show PFOA or PFOS.
(c) The proximity of the public water system to a potential point source of contamination.

5. Describe the Rule's Enforcement Provisions

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ADMINISTRATIVE RULES
Fiscal Estimate & Economic Impact Analysis

The enforcement process for this rule will be the same as other MCLs in ch. NR 809, Wis. Adm. Code. The department will issue a notice of violation with the expectation that a corrective action be implemented according to a schedule spelled out in a consent order.

6. Did the Agency prepare a Cost Benefit Analysis (if Yes, attach to form)
☐ Yes ☒ No

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APPENDIX A
Other States Occurrence Data

State drinking water PFAS sampling program results

STATE	Number of systems sampled	Number of detections	Number >20ppt	%>20ppt
Ohio	1,478	67	18	1.22%
Michigan	1,754	70	11	0.63%
New Hampshire*	502	68	10	1.99%

*Note: New Hampshire sampling effort included additional PFAs contaminants besides PFOA and PFOS

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ADMINISTRATIVE RULES
Fiscal Estimate & Economic Impact Analysis

APPENDIX B
UCMR Data

National Data Summary

As part of the third Unregulated Contaminant Monitoring Rule (UCMR 3), the EPA required water systems to monitor for six PFAS. PFOS and PFOA were the most frequently detected PFAS; this is consistent with other reports on measured PFAS in finished drinking waters. During the UCMR 3 process, PFOS and PFOA were detected above the method reporting limit (40 and 20 ng/L, respectively) in drinking water in approximately 1.9% and 2.4% of Public Water Systems (PWSs), respectively.

WI Data Summary

As part of the EPA UCMR3 sampling, three systems had PFAS detections. Ninety systems were sampled. Two of these systems had levels of PFOA or PFOS above 20 ppt.

Number of Wisconsin Public Water Supply Systems with UCMR 3 PFAS Analytical Results				
System Population	# of Systems	System Size	# of Systems with PFAS Detections	# of Systems with NO PFAS Detections
PWS Population > 100,000	4	Large System	0	4
PWS Population > 10,000 and <99,999	71	Large System	1	70
PWS Population < 10,0000	15	Small System	2	13
Total	90		3	87

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ADMINISTRATIVE RULES
Fiscal Estimate & Economic Impact Analysis

APPENDIX C
Treatment Cost Examples

Reference Treatment Cost Examples

Facility	Treatment Capacity	Treatment Option	Capital Cost Estimate	Annual O&M Estimate
Cape Fear Public Utility Authority[1]	44 MGD	GAC	$46M	$2.7M
		IX	$46M	$2.1M
		RO	$150M	$4.7M
Brunswick County Public Utilities[2]	36 MGD	RO	$99M	$2.9M
		Ozone w/Biofiltration and GAC	$99M	$4.7M
		GAC w/IX and UV-AOP	$84M	$4.7M
Merrimack Village District (MVD)[3]	2.88 MGD	GAC	$3.6M to $4.3M	$0.13M to $0.27M
		IX	$4.4M to $5.1M	$0.12M to $0.19M
	1.44 MGD	GAC	$6.9M	$0.12M to $0.19M
		IX	$7.4M	$0.25M to $0.61M
	4.32 MGD	GAC	$10.9M	$0.24M to $0.43M
		IX	$12.2M	$0.52M to $1.4M
City of Portsmouth (Pease)[4]	1.67 MGD	GAC	$13M	$0.16M
West Morgan East Lawrence Water Authority[5]	8 MGD	GAC	$4M	$0.6M
		RO	$40M to $80M	N/A
Ann Arbor, MI[6]	22 MGD	GAC	N/A	$0.35M
Issaquah, WA[7,8]	0.36 MGD	GAC	$1M	N/A

Source: American Water Works Association