

Comments and DNR Responses Natural Resources Board Order WY-23-19

January 21, 2022

This document presents a summary of public comments received on proposed rules affecting chapters NR 102, 105, 106, and 219 and other related regulations to add surface water quality criteria and analytical methods for poly- and perfluoroalkyl substances (PFAS) including PFOS and PFOA for the purpose of protecting public health as well as revisions to the procedures in the Wisconsin Pollutant Discharge Elimination System (“WPDES”) permitting program to implement the new water quality criteria.

OVERVIEW

The proposed PFOS and PFOA standard protects public health and recreational uses of surface waters by establishing criteria that contain both narrative provisions and numeric criteria. The narrative and numeric criteria interpret Wisconsin’s existing narrative standards under ss. NR 105.04(4m) and 102.04, Wis. Adm. Code, with regard to two toxic substances, PFOS and PFOA. The proposed rule defines levels of public health significance for the two types of PFAS based on preventing adverse effects from contact with or ingestion of surface waters of the state, or from ingestion of fish taken from waters of the state.

- For PFOS, the proposed level of public health significance is 8 ng/L for all waters except those that cannot naturally support fish and do not have downstream waters that support fish.
- For PFOA, the proposed levels of public health significance are 20 ng/L in waters classified as public water supplies under ch. NR 104, Wis. Adm. Code, and 95 ng/L for other surface waters.

Related to the proposed PFOS and PFOA standards, the proposed rule also includes assessment protocols that clarify when a surface water that contains levels of PFOS or PFOA above the criteria in the narrative standard should be listed on the state’s impaired waters list. Additionally, the proposed rule establishes WPDES permit requirements for PFOS and PFOA discharges to surface waters of the state, in ch. NR 106 – Subchapter VIII, Wis Adm. Code, including: the determination of the need for a PFOS and PFOA Minimization Plan based on data generation in a reissued permit, a general schedule for PFOS and PFOA Minimization Plan permit implementation procedures, and PFOS and PFOA Minimization Plan requirements. Finally, this rule adds specifications for the preservation and holding times of aqueous, biosolids (sludge), and tissue samples that will be analyzed for PFAS in ch. NR 219.

Opportunities for Public Participation and Input

Members of the public had many opportunities to participate in this rulemaking process, listed below:

- A comment period on the scope statement for the rule was held from October 28 to November 19, 2019 and the department held a preliminary hearing on the scope statement on November 12.
 - Thirty members of the public attended the preliminary hearing, and 5 members of the public provided testimony.
 - The department received written comments on the scope statement from 49 entities, representing over 1000 individuals.
- The department held 4 stakeholder group meetings between February and October 2020.
 - The first meeting was held in person at GEF2 in Madison on February 6. Sixty-eight individuals registered to attend.
 - The second meeting was held virtually on March 23 and had 160 attendees.
 - The third meeting was held virtually on August 27 and had 203 attendees. At this meeting, stakeholders heard presentations from 7 members of the public who provided input on implementation of the rule.
 - The fourth and final meeting was held virtually on October 10.

- The department conducted outreach during summer 2021 to several stakeholder groups on the proposed rule. Outreach to representatives of environmental groups and representatives of permittees and affected industries was conducted on June 28.
- A public comment period on the draft Economic Impact Analysis (EIA) was held from July 19 to August 18, 2021, during which the department received written comments on the draft EIA from 12 entities.
- The department provided an informational meeting on the proposed rule for tribal representatives on November 10, 2021. Representatives from the Midwest Tribal Energy Resources Association and the Oneida Environmental, Health, and Safety Division attended the meeting.
- A comment period on the proposed rule was held from October 21 to December 15, 2021 and the department held a public hearing on the proposed rule on December 10.
 - Eighty-one members of the public attended the hearing and 12 members of the public provided testimony.
 - The department received written comments on the proposed rule from EPA Region 5 and 46 entities, representing over 300 individuals.

ECONOMIC IMPACT ANALYSIS

A public comment period on the draft economic impact analysis (EIA) occurred from July 19 to August 18, 2021. The department received comments from 12 individuals and organizations on the EIA during this period.

Several comments were received during the public comment period. The following general categories of comments were received:

- Support for source reduction approach
- EIA should include costs related to pit trench dewatering and construction
- EIA should include additional costs associated with source investigation
- EIA should account for the benefits of regulations and/or the costs of inaction
- EIA should include costs associated with treatment if it is ultimately required

In response to these comments, the department updated the EIA to include source investigation costs tied to labor costs/staff time instead of estimating these costs based on mercury pollutant minimization plan costs. The EIA was also updated with more detailed sampling costs, tied to the first two years of pollutant minimization plan implementation to account for the higher anticipated costs during this timeframe.

These sampling costs were also updated to include the maximum cost reported to the department from 4 labs, in addition to the inclusion of shipping costs and sampling blanks. Furthermore, the EIA was updated to include leachate hauling costs. These changes increased the estimated maximum two-year costs from \$4,271,304 to \$9,268,046.

The EIA was not updated with additional treatment costs because costs associated with treatment were already included, but only for those businesses where data showed that treatment would likely be necessary. Pit trench dewatering and construction activities were already accounted for as well.

In response to the comments requesting that the department account for the benefits of regulations and/or the costs of inaction, a section was added to EIA Attachment B outlining these benefits. However, these benefits were not subtracted from the maximum 2-year compliance cost estimates because this estimate is required to be expressed as a gross, not net, cost.

LEGISLATIVE COUNCIL RULES CLEARINGHOUSE

The Legislative Council Rules Clearinghouse submitted comments on form, style and placement in administrative code; adequacy of reference; and clarity, grammar, punctuation and use of plain language. Changes to the proposed rule were made to address all recommendations by the Legislative Council Rules Clearinghouse, except for those discussed on the following pages.

PUBLIC COMMENTS AND EPA COMMENTS ON DRAFT RULE

A public comment period for the draft rule occurred from October 25 to December 15, 2021. A public hearing was held on December 10, 2021. There were 101 individuals that attended the hearing. Of those that attended the hearing, 22 registered in support of the draft rule, 2 registered in opposition of the draft rule, 49 registered as attending for information only, and 28 registered as “none of the above.” During the public comment period, the department received written comments from EPA and 46 additional entities, representing over 300 individuals. Of the public comments received, 29 expressed support of the draft rule, 2 expressed opposition to the proposed rule, and 15 expressed mixed sentiments. Those in support of the rule liked the source reduction as regulatory approach for reducing PFOS and PFOA in discharges, and wanted the department to immediately begin implementing the rule for public health protection. Those opposed to the rule were concerned about the costs, the scientific validity of the criteria and believed the department should wait until EPA promulgated criteria.

The following pages contain a summary of comments and the department’s responses.

Proposed Surface Water Quality Standards for PFOS and PFOA

Response to Comments

Board Order WY-23-19, relating to revisions to
Chapters NR 102, 105, 106, and 219, Wis. Adm. Code

January 21, 2022



Wisconsin Department of Natural Resources
101 S. Webster St., Box 7921
Madison, WI 53707-7921

Table of Contents

<u>Public Comment Period: Summary and Responses</u>	7
<u>Wisconsin Legislative Council Rules Clearinghouse</u>	7
<u>Surface water quality standards for PFOS and PFOA</u>	8
<u>Support for development of PFOS and PFOA standards</u>	8
<u>Regulating additional PFAS chemicals</u>	12
<u>Combining standards for PFOS and PFOA</u>	12
<u>Standards protective of wildlife</u>	13
<u>Numeric vs. Narrative Standards</u>	13
<u>“Lawfulness” of Standard Development</u>	14
<u>Waiting for EPA to Develop Standards</u>	16
<u>Health Effects of Exposure to PFOS and PFOA</u>	17
<u>Development of the PFOS Standard</u>	18
<u>Paired fish and water dataset and use of the ROC model</u>	18
<u>Input parameters: relative source contribution and body weight</u>	19
<u>PFOS Reference Dose</u>	20
<u>Development of the PFOA Standard</u>	20
<u>Revisions to Language Describing PFOA Standards in NR 102.04 (1m)</u>	20
<u>Use of EPA’s Incidental Ingestion Rate</u>	21
<u>PFOA Reference Dose</u>	22
<u>PFOA in fish</u>	22
<u>Comparison to Michigan’s PFOA Standards</u>	23
<u>Assessments</u>	24
<u>Permit Implementation</u>	24
<u>Pollutant Minimization Approach</u>	24
<u>Definitions</u>	25
<u>Sampling/Monitoring</u>	26
<u>PFAS Minimization Plan</u>	28
<u>Determination of Need and Reasonable Potential Analysis</u>	32
<u>PFOA and Mixing Zones</u>	36
<u>Reference to sludge and biosolids</u>	37
<u>Pretreatment and Waste Acceptance</u>	37
<u>Regulation related to pit trench dewatering and construction</u>	38

<u>Known waste sources of PFAS such as landfill leachate</u>	39
<u>Reference to Michigan’s guidance</u>	39
<u>Analytical Methods</u>	40
<u>Comments Received on Economic Impact Analysis (EIA) During Public Comment Period</u>	40
<u>EIA should include costs related to pit trench dewatering and construction</u>	40
<u>EIA should include additional costs associated with source investigation</u>	41
<u>EIA should include costs associated with treatment if it is ultimately required</u>	43
<u>Outside the scope of this rule</u>	44
<u>Economic Impact Analysis (EIA) Public Comment Period: Summary and Responses</u>	44
<u>EIA should include costs related to pit trench dewatering and construction</u>	44
<u>EIA should include additional costs associated with source investigation</u>	46
<u>EIA should account for the benefits of regulations and/or the costs of inaction</u>	48
<u>EIA should include costs associated with treatment if it is ultimately required</u>	49

Public Comment Period: Summary and Responses

(Comments received during public comment period: October 21-December 15, 2021)

Wisconsin Legislative Council Rules Clearinghouse

All Wisconsin Legislative Council Rules Clearinghouse (LCRC) comments were incorporated into the rule language as suggested, with the exception of those noted below.

Comment: In comment 2.b., the LCRC concurred the department has authority to adopt both narrative and numeric criteria, but suggested using consistent terminology with regard the criteria for PFOA and PFOS and to remove duplicative language within the existing generally applicable narrative toxic substance standard.

Response: Some changes made. The department agrees the PFOA and PFOS criteria are both narrative and numeric. The proposed criteria are an interpretation of the narrative standard in s. NR 102.04(1)(d), Wis. Adm. Code, with respect to PFOS and PFOA. The language in the introductory paragraph has been revised in response to this comment and some changes were made to the text in response to other public comments (e.g. reference to mixing zones). A primary reason for maintaining some of the duplicative language in the PFOS and PFOA standard is that the department wants to make it clear that the PFOS and PFOA narrative and numeric criteria are an interpretation of what constitutes “levels of public health significance” in the narrative toxic substances standard in s. NR 102.04(1)(d), Wis. Adm. Code, with respect to discharges of PFOA and PFOS.

In addition, to address the comments in both 2.b. and 2.c., the department moved the proposed criteria to subsection (8). Language throughout the analysis and rule text was also revised to be more consistent with regard to the expression of the criteria (both numeric and narrative).

Comment: In comment 2.h., the LCRC noted that s. NR 219.04 Table F note could be provided as a footnote to Table F, rather than a note.

Response: No change made. The department believes it is important to keep this text as a note instead of a table note, as it only provides a recommendation for the use of a final approved EPA method.

Comment: In comment 5.b., the LCRC recommends removing the amendment to ch. NR 105, stating that the purpose of the amendment is somewhat unclear.

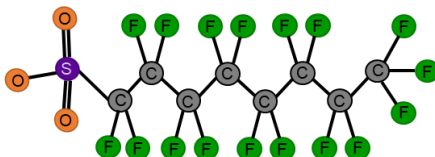
Response: No change made. The department believes it is important to keep the cross reference to the PFOA and PFOS criteria in ss. NR 102.04 and 105.04(4m), Wis. Adm. Code, to make it clear that exceedances of these levels are “deemed to have adverse effects on public health” under ch. NR 105, Wis. Adm. Code. In other words, additional calculations using the procedures in ch. NR 105, Wis. Adm. Code, are not necessary to protect public health.

Comment: In comment 5.c. the LCRC recommends the language in the definition of “new discharger” within SECTION 4, under the phrase “which has never received a finally effective WPDES permit for discharges at that site” could be modified for better clarity. For example, the phrase could be replaced with “for which no current or prior WPDES permit has taken effect”. Also, within that definition, the “and” preceding “that did not” should be removed.

Response: No change made. The language is consistent with and parallels that which is found in federal regulations with the exception of the August 13, 1979 date. See s. 227.14 (1m), Wis. Stats.

Comment: In comment 5.d. the LCRC states that the definition of “PFAS” should be modified to provide that PFAS means a perfluoroalkyl or polyfluoroalkyl substance, rather than a perfluoroalkyl and polyfluoroalkyl substance. Additionally, the molecular formula provided at the end of the definition should be modified to read “ C_nF_{2n+1} ”, rather than “ C_nF_{2+1} ”.

Response: Change made in part. The “and” was changed to “or.” However, the formula was not changed, as the “ $2n$ ” in refers to the fact that the structure of PFAS can be represented by some number of carbon atoms (C_n) which are each attached to 2 fluorine atoms (F_{2n}), except for the last carbon atom which is attached to 3 fluorine atoms (hence the “+1”). For example, as shown in the diagram below, because PFOS has an 8 carbon chain and a total of 17 fluorine atoms are attached to the chain, it is thus represented by the nomenclature: $C_8F_{17}SO_3$



Comment: In comment 5.h. the LCRC recommends s. NR 106.985 (2) (d) 1. and 2. establish generally parallel requirements relating to PFOS and PFOA. As such, these subdivisions could be rewritten to make more effective use of parallel language.

Response: No change made. While the language establishes generally parallel requirements the two were intentionally kept separate because the limit calculation procedures are different between compounds and to combine the requirements could cause confusion or misinterpretation of the requirement. However, this part of the rule was revised in response to other public comments regarding limit calculations for PFOS and PFOA.

Surface water quality standards for PFOS and PFOA

Support for development of PFOS and PFOA standards

These comments in support of this rule package were submitted during the draft EIA solicitation period.

Comments:

- League of Women Voters of Wisconsin and League of Women Voters of La Crosse Area both expressed support of the rule which focuses on reduction of PFAS sources, along with expressing support for implementing new surface water quality criteria.
- The Municipal Environmental Group – Wastewater Division supports the framework that’s utilized in the draft rule, but clarified that the department’s approach should result in actual PFAS reductions, avoid costly/time consuming process of obtaining variances. They feel the approach addresses PFOS/PFOA in scientifically-sound, expedient, cost-effective manner.
- The League of Wisconsin Municipalities is encouraged that the department has developed and introduced a framework supporting narrative standards, PMPs, and source reduction. They feel that this approach will actually remove PFAS and allows greater flexibility that are supported by science and cost effective. They also endorsed all of MEG’s comments.
- Madison Metropolitan Sewerage District feels that consistent rules and regulations provide clearly defined goal to attain, creates even playing field for all utilities, sets clear targets to use when looking to reduce compounds in operations. They are pleased with the department’s approach that relies on narrative standards, which reflects ubiquitous nature of compounds and benefits utilities by allowing source reduction as first option.

Response: The department has made note of the support of the above entities on behalf of their members.

The following comments in support of the proposed rule were received during the public comment period on the rule:

Comments:

- Wisconsin Paper Council (WPC) notes that states have responsibility to set water quality standards for their states. EPA has authority to publish national criteria recommendations, as it is proposing to do for PFOA and PFOS. However, states are authorized to adopt other scientifically defensible criteria that are different from EPA’s recommendations. The paper industry does not manufacture PFOA or PFOS or use them in the manufacturing process (phased out over a decade ago). The department has prepared a technical support document setting forth the scientific basis for its proposed surface water standards. In addition, WPC believes the pollutant minimization approach, in principle, is significantly better than an “end of pipe controls” approach because treatment costs are high (NCASI estimate). Consequently, the department should continue to advocate for EPA approval of its approach, regardless of EPA’s announcement that it plans to publish national recommendations.
- Seven members of the public stated that the department’s efforts to set standards for PFAS in our surface water are a starting point for cleaning up the contamination already out there and preventing more from occurring. PFAS pollution poses serious public

health risks for families across Wisconsin and threatens the treasured rivers, lakes, and streams that make our state special. No one should be forced to bear the financial and health burden of industrial pollutants contaminating our water resources in order to protect corporate profits. The proposed standards are informed by the best science available to protect public health and are in line with those put forward by other states.

- Two members of the public stated that we must act now to prevent further exposure and support the proposed rule; PFAS have been found in communities including Madison and Marinette, and the EPA has not moved quickly to list PFAS chemicals to the Clean Water Act, Clean Air Act, RCRA or Superfund, and states must move forward ahead of federal progress to control PFAS pollution.
- One member of the public noted that the PFAS problem in lakes, soil and waterways not only impacts every single human, it also impacts our wildlife. This commenter has neighbors who go fishing in Madison lakes almost every day and weekend bringing home the fish to prepare for meals. This commenter asserted that the department should be concerned about PFAS levels in fish that citizens catch and eat and regulate PFAS.
- Kayla Furton, Peshtigo Town Board Supervisor, stated strong support of strict Surface Water Standards for PFAS as a first step since these limits would give the department the tools the agency needs to limit discharges of PFAS into nearby lakes, rivers and streams. Limiting PFAS in surface waters would also help mitigate additional exposure pathways such as swimming in contaminated waters or consuming contaminated fish or deer. Protecting the environment also protects local economies, property values, and human health.
- Another member of the public stated that the department should not wait for federal (EPA) standards to be established. The citizen supported the rule proposal to for source reduction as a first step toward reducing the levels of PFOS and PFOA. The citizen was also concerned with the potential impacts of the concentration of PFAS at publicly owned treatment works (POTW) and their ability to remove these substances before discharge to surface waters and land application of solids. The responsibility to remove these substances from wastewater delivered to these facilities must not be their total responsibility. These rules must require the identification, monitoring and reduction of the sources discharging to the wastewater system before it reaches the POTW.
- Lake Waubesa Conservation Association and Yahara Lakes Association support the proposed standards. It is important for Wisconsin to be a leader and take a proactive position on surface water quality standards and not wait for federal level standards. Failure to quickly adopt state standards will only result in further accumulation of these harmful pollutants in the Yahara chain of lakes, making it more difficult to restore these waters.
- Hon. Satya Rhodes-Conway, Mayor of Madison, expresses support for the proposed administrative rule to establish health-based standards for PFAS in surface water. As bioaccumulants, PFAS in surface water can lead to concentrations of PFAS in fish that

are linked to concerning human health impacts. Protecting public health is a critical role of the public sector, and the Wisconsin Department of Natural Resources plays an important role in protecting communities from pollution by setting standards. She supports the priority of addressing PFAS at its source rather than treating contaminated water downstream.

- Midwest Environmental Advocates support the proposed narrative surface water criteria with numeric thresholds for PFOS and PFOA as a modest but crucial step to mitigate the public health and environmental risks of PFAS pollution in Wisconsin. Establishing surface water quality standards fulfills the department's statutory commands and public trust obligations under Chapter 281. The proposed rule is a moderate regulatory effort that will result in an overall benefit to Wisconsinites. The proposed rule will provide benefits to communities in need of environmental justice. The proposed rule minimizes compliance costs while achieving public health protections over time.
- River Alliance of Wisconsin supports the proposed criteria. Wisconsin needs to act on PFAS to protect public health and the environment. This rule and the other rule packages on drinking water and groundwater are small steps in the right direction. While US EPA may start to act in some of these areas Wisconsin must *not wait*. The design of the Clean Water Act intends states to move to regulate substances in the manner appropriate for their conditions which Wisconsin has done consistently over the years and should continue to do so. This rule is in line with what neighboring states are doing.
- Three Wisconsin family physicians stated strong support for the department's efforts to set standards for PFAS in our state's surface, expressing the opinion that they pose a serious public health risk for our citizens. They threaten the rivers, lakes, and streams that make our state so treasured by our citizens and support our vast tourism industry. The proposed standards are supported by the best science and must be implemented.
- Wisconsin Conservation Voters (WCV) stated that Wisconsin is home to 84,000 miles of river and over 15,000 lakes. Our surface water is one of the state's biggest treasures, yet we are not taking the necessary steps to protect it. Across the state, uncertainty surrounding PFAS contamination is bringing into question whether it's safe to eat fish from our streams, swim in our rivers, and drink the water from our lakes. Wisconsinites living with poisoned water are not responsible for the pollution that contaminated it. And yet, our elected officials have not done the work to stop the pollution. WCV supports the proposed standards because:
 1. PFAS are one of the most serious threats to our surface water, and in turn are having a profound impact on our public health.
 2. Those responsible for PFAS surface water pollution must be the ones who are first-and-foremost expected to address it, so they approve that source reduction is included as an important first-step preventative measure for reducing levels of PFOS and PFOA.
 3. We cannot wait for the federal government. Standards for PFOS and PFOA are needed today, as an important first step toward tackling the larger issue.

- Six members of the public urged the department to set state level standards for these unregulated chemicals as quickly as possible. Having PFAS standards protects our economies, properties and the health of residents.

Response: Comments noted. The department appreciates commentors' support of this rulemaking effort.

Regulating additional PFAS chemicals

Comment: The Sierra Club, Midwest Environmental Advocates and several members of the public expressed the opinion that Wisconsin should immediately set surface water standards for additional PFAS chemicals, such as all the PFAS that are currently regulated in drinking water, noting that Massachusetts, Maine and Vermont set a drinking water limit of 20 parts per trillion for the sum of 5 or 6 PFAS chemicals (PFOS, PFOA, PFNA, PFHpA and PFHxS in Massachusetts), as well as the fact that other states have additionally set limits for PFBS, PFBA, PFHxA, PFPeA, and GenX.

Response: The department conducts a Triennial Standards Review (TSR) every 3 years to identify water quality standards issues of high public interest. The 2021-2023 TSR identified setting water quality standards for additional PFAS chemicals as a high priority. In the next few years, the department plans to evaluate the sufficiency of existing toxicology data for other PFAS that could support development of standards.

Combining standards for PFOS and PFOA

Comments: Clean Wisconsin and one member of the public expressed the opinion that the surface water standards should include a combined PFOA + PFOS standard to align with the proposed drinking water and groundwater standards recommended by the Department of Health Services to reflect the similar health impacts of the two chemicals.

Response: The proposed surface water quality standards differ somewhat from the proposed drinking water Maximum Contaminant Levels (MCLs) and groundwater standards mainly due to the difference in exposure scenarios. Drinking water MCLs apply only to the ingestion of finished (treated) drinking water. Groundwater standards protect the health of private well owners assuming that the level of PFOS and PFOA in groundwater is what will be consumed. Since these are protecting direct consumption of known amounts of PFAS, it is appropriate to be abundantly cautious and have a combined standard, even though the toxicology studies are of single chemicals. However, surface water standards are not based on the same assumptions and are based on different exposure routes (i.e., fish consumption).

The department's sampling data indicates that PFOA is regularly detected in surface water, so ingestion (whether incidental during recreation or intentional consumption of drinking water) is the most important exposure route to protect for this compound. In

order to provide extra protection for the quality of water used as a source of drinking water, it is appropriate to apply a public health significance threshold for PFOA that is consistent with the proposed drinking water standard for PFOA to public water supply waters.

Conversely, the department's sampling data confirms that fish consumption is the predominant exposure scenario to protect against for PFOS as it rarely shows up in surface water at elevated levels but is regularly detected in fish tissue in amounts that warrant fish consumption advisories. The 8 ng/L significance threshold for PFOS prevents accumulation of PFOS in fish tissue to unsafe levels for ingestion by humans, and is not correlated directly to human health impacts. In other words, the department does not expect adverse human health effects from ingestion of 8 ng/L PFOS directly. So, in summary, there are separate public health significance levels for these two PFAS in surface waters because we are protecting different exposure routes.

Standards protective of wildlife

Comments: Citizens for Safe Water Around Badger would like to see, in addition to risk reduction for human health, an analysis that documents that the proposed surface water standards are also protective of other species that consume fish and/or aquatic invertebrates.

Response: At the beginning of the department's consideration of PFAS standards, we reviewed published literature to determine what levels of PFOS and PFOA cause health effects in humans, aquatic life, and wildlife that rely on aquatic life. Review of available data indicated that humans are the most sensitive to PFOS and PFOA exposure – that is to say, aquatic life and wildlife can be exposed to much higher amounts of PFOS and PFOA and not show negative health effects compared to amounts that cause negative health effects in humans. Thus, for this first effort to reduce the discharge of PFOS and PFOA to surface water, it was appropriate to prioritize human health protection because protecting humans will also protect less sensitive groups of organisms. The department has added some text to the technical support document (TSD) to clarify this.

Numeric vs. Narrative Standards

Comments: The PFAS Regulatory Coalition states that setting numeric standards—as opposed to the thresholds proposed in this rule, which are based on narrative standards—requires a more extensive analysis based on the best available science, scientific literature review, established procedures for risk assessment and management, state policy, scientific peer review, and public input. The proposed thresholds did not undergo the more rigorous process for adoption of numeric standards.

Response: In establishing the proposed criteria, the department used different methodologies than have typically been used for establishing numeric criteria for toxics in ch. NR 105, Wis. Adm. Code, but that doesn't mean they are less scientifically

defensible. They will require EPA approval and are supported by comparable levels of scientific literature review, risk assessment and management, state policy, scientific peer review and public input as the department would have conducted to calculate numeric criteria. The rulemaking process followed was the same, as well.

“Lawfulness” of Standard Development

Comment: Wisconsin Manufacturers & Commerce, Wisconsin Civil Justice Council, Wisconsin Water Alliance, and Midwest Food Products Association (hereafter WMC, et al.) expressed the opinion that the department was acting “unlawfully” in developing water quality standards for PFOS and PFOA because it did not follow the procedures based on the GLI (40 CFR part 132) outlined in ch. NR 105, Wis. Adm. Code, because the department is adopting more stringent values than adjacent states, and because they believe that the department’s recommendations have not undergone peer review.

Response: Under 40 CFR § 132.4(h)(1), states are permitted to apply an alternative methodology or procedures acceptable under 40 CFR part 131 when developing water quality criteria. Furthermore, under 40 CFR § 132.4(i), states are permitted to adopt numeric or narrative water quality criteria, or water quality values, that are more stringent than criteria or values that would be derived from application of the methodologies set forth in 40 CFR part 132. 40 CFR s. 131.11 also establishes requirements that Wisconsin must follow when promulgating criteria. Additionally, in EPA’s written comments on the proposed criteria for PFOA and PFOS, they acknowledged that a different methodology may be used from the methodology in 40 CFR 132. Finally, s. NR 105.02(2), Wis. Adm. Code, specifically states that the department may use other methods for calculating criteria. Thus, although the department provides rationale for choosing to use, or choosing not to use, specific parameters (i.e., bioaccumulation factors, fish consumption rates, and body weights) in other sections of this response document, the department feels that these concerns are summarily addressed by the provisions in 40 CFR § 132.4(h)(1) permitting the department to use alternative methodologies.

Additionally, as mentioned in the response to the comment above, the methods used by the department to develop these criteria have most certainly undergone peer review. With regard to the PFOS criterion, the science that is contained within the Great Lakes Consortium Best Practices document was reviewed and approved by health departments in member states and the province of Ontario, and the ROC curve analysis method is endorsed as part of EPA’s Causal Analysis/Diagnosis Decision Information System under the Predicting Environmental Conditions from Biological Observations toolbox (<https://www.epa.gov/caddis>). This method was also used in Utah DEQ’s technical support document to assess model fit for headwater nutrient criteria (approved by EPA) and to assess impairment decisions in Vermont DEC’s water quality criteria for lakes. With regard to the PFOA criteria, EPA’s determination of incidental ingestion underwent extensive peer review as part of the development of recreational water quality criteria and swimming advisories for harmful algal blooms, while the source of the PFOA toxicity

value (Kieskamp et al. 2018) was itself a peer-reviewed scholarly journal article that incorporated models and data from additional peer-reviewed scholarly journal articles.

Finally, if this rule package is passed by the Natural Resources Board and the Wisconsin State Legislature it will subsequently be subject to review by the EPA as part of their own approval process. As we have developed the criteria, the department has maintained close contact with personnel from EPA's Region 5 office as well as EPA Headquarters.

Comment: WMC, et al. expressed the opinion that the department was violating State Statute 281.15 because the department is calculating values for PFOA that are more stringent than needed to protect the designated use and because economic costs were not considered in the development of the criteria. WMC, et. al. also expressed concern that the department did not use EPA's reference dose (RfD) for PFOA and calculated their own value for PFOA. WMC, et. al. also expressed concern that the department did not use exposure factors specified in ch. NR 105 for PFOS and PFOA.

Response: The standards calculated by the department for PFOA are appropriate to protect the public health and welfare designated use, specifically protecting the most sensitive population of Wisconsinites: children. Children consume more water during recreation and have a lower body weight, so their level of exposure to pollutants via incidental ingestion can be higher than an adult's. Using the standard formula in ch. NR 105 to calculate PFOA criteria would not allow for the incorporation of child-specific exposure factors for body weight and water consumption rate, but s. NR 105.02(2), Wis. Adm. Code, does allow alternative methods of calculation. Further, the department respectfully disagrees with the parameters that WMC, et. al. chose to use to calculate PFOA criteria using the formula in ch. NR 105, Wis. Adm. Code. WMC, et. al. utilized EPA's 2016 RfD (which doesn't reflect the most current toxicity studies), the adult exposure factors that ch. NR 105, Wis. Adm. Code, prescribe, a bioaccumulation factor based on Michigan's 2011 criteria derivation (which has its own issues that are discussed later in this document), and a relative source contribution of 80%. This obviously generated PFOA criteria that are quite different from the department's proposed standards. However, as noted above, the department has authority to deviate from ch. NR 105, Wis. Adm. Code, procedures and believes that protecting the health of children does not violate our statutory requirement under s. 281.15, Wis. Stats.

With regard to specific exposure parameters, the department used the Acceptable Daily Intake (ADI) of 2 ng/kg/day for deriving the PFOA standard because it represents the most current studies of human health impacts, and to be consistent with the toxicity basis of the proposed PFOA MCL—both are protective of water ingestion. As noted above, the proposed PFOA standards are designed to protect children. Thus, the body weight and water consumption rate selected by the department are the EPA-sanctioned exposure factors for children. An ADI was not part of the derivation of the PFOS standard. The proposed standard for PFOS is based on preventing a one-meal-per-month fish consumption advisory. PFOS fish consumption advice levels, as determined by DHS and the department, are based on the Great Lakes Consortium for Fish Consumption Advice Best Practices document that does utilize EPA's RfD for PFOS. And although the surface

water criterion for PFOS is associated with a level of PFOS in fish tissue, the department is not setting limits on fish consumption frequencies with this rule. Finally, the department used a 100% relative source contribution for both PFOS and PFOA standards, reflecting the conclusion from our data showing that we can expect PFOA exposure from surface water to be almost exclusively via water ingestion, and PFOS exposure from surface water to be almost exclusively via fish consumption.

As for costs, the department did consider potential costs in the development of the criteria. For example, the department considered the potential cost of compliance with a possible PFOS criterion that, if calculated using ch. NR 105, Wis. Adm. Code, procedures, would have been at the background levels seen in department sampling of ambient water. The department identified an alternative method that it used to calculate PFOS criteria that is still protective of public health and scientifically defensible, but which is estimated to have a lower economic impact. Additionally, the Economic Impact Analysis provides an extensive analysis of costs.

Waiting for EPA to Develop Standards

Comment: WMC, et al. asserts that because EPA is in the process of developing surface water quality standards for PFOS and PFOA, the department should stop this rulemaking effort. Conversely, as noted above, the Wisconsin Paper Council recommends that the department should continue to advocate for EPA approval of its approach, regardless of EPA's announcement that it plans to publish national recommendations. Many citizens and other groups have commented that Wisconsin cannot afford to wait for the EPA to act and that the department must move forward with these standards in order to protect public health.

Response: The department is encouraged that EPA plans to develop water quality standards to protect human health, but this action will not occur for several years. In the meantime, some facilities will continue to discharge PFOS and PFOA at elevated levels. The department believes it is critical to begin immediately working with WPDES permitted facilities now to identify those that are discharging elevated levels of PFOA or PFOS and to begin working with these facilities on source reduction activities that will eliminate or significantly reduce the contaminants and protect public health. It is especially important with PFOS, a bioaccumulating substance that is building up in fish in Wisconsin's surface waters.

Not only is it important to implement PFOS and PFOA source reduction activities now for public health protection reasons, but implementing source reduction or elimination activities now are likely less expensive in the long run compared to the costs of additional remedial actions that will be necessary in the future if the state waits for EPA. PFOS and PFOA will continue to be discharged from some facilities or operations at elevated levels if defined criteria and a reasonable regulatory scheme are not established. In addition, promulgating the criteria for PFOS and PFOA now, provides clarity and consistency for the regulated community with regard to interpretation of the narrative toxic standard and

application of this narrative prohibition to dischargers with elevated levels of PFOS and PFOA.

Health Effects of Exposure to PFOS and PFOA

Comment: The 3M Company expressed the opinion that epidemiological research does not support a relationship between exposure to PFOS and PFOA and human health impacts.

Response: This comment is outside the scope of this rule as the Departments of Health Services and Natural Resources are not using the results from epidemiological studies as the basis for surface, drinking, or groundwater standards for PFOS and PFOA. However, regardless of the suitability of this assertion relative to this rulemaking process, the department respectfully disagrees with the 3M Company that epidemiological studies do not support health effects.

The Agency for Toxic Substances and Disease Registry's (ATSDR) 2021 Toxicological Profile for Perfluoroalkyls (<https://www.atsdr.cdc.gov/toxprofiles/tp200.pdf>) explicitly states that the available epidemiological studies suggest associations between perfluoroalkyl exposure and several health outcomes. While they also note that cause-and-effect relationships have not been established for some health outcomes, lack of cause-and-effect relationships simply indicates that science has yet to determine a mechanism of action; it does not mean that exposure to PFOS or PFOA does not cause adverse health effects.

Furthermore, the National Institutes of Environmental Health Sciences (<https://www.niehs.nih.gov/health/topics/agents/pfc/index.cfm>) also indicates that the research conducted to date reveals possible links between human exposures to PFAS and adverse health outcomes, including altered metabolism, fertility, reduced fetal growth and increased risk of being overweight or obese, and reduced ability of the immune system to fight infections.

Also noted in the ATSDR 2021 Profile is the fact that epidemiological research conducted on populations employed at DuPont's Washington Works facility in West Virginia and 3M's Cottage Grove facility in Minnesota have indicated probable links between PFOA exposure and the incidence of certain types of cancers. Additionally, the International Agency for Research on Cancer concluded that PFOA is possibly carcinogenic to humans (<https://monographs.iarc.who.int/wp-content/uploads/2018/06/mono110-01.pdf>), and EPA concluded that there was suggestive evidence of the carcinogenic potential of PFOA and PFOS in humans.

Development of the PFOS Standard

Paired fish and water dataset and use of the ROC model

Comment: The Wisconsin Paper Council, the PFAS Regulatory Coalition, and WMC, et al. expressed a desire for additional descriptive information about the fish and water samples that were analyzed for PFOS and summarized in Appendix A, and expressed the opinion that the paired fish and water dataset was not adequately described in the TSD, which prevented thorough analysis of the use of the ROC model. They also expressed the opinion that it was inappropriate to average PFOS concentrations by species prior to analysis and that not enough water samples were collected. WMC, et. al. expressed confusion regarding why the department included data from Minnesota.

Response: The PFOS water quality standard corresponds to a target fish tissue concentration used to issue fish consumption advisories. Fish consumption advisories are set based on the arithmetic average concentration of a pollutant in fish tissue, not the individual fish, to encompass the range of exposure concentrations to which a fish consumer might be exposed. Thus, to assess the fish consumption advisory level at a given water concentration, the department elected to average each species' concentration in order to reflect the way that concentrations are analyzed from a fish consumption standpoint. With regard to the concern that the ROC model would generate different results if it were run on using PFOS data from individual fish, the department re-ran the ROC analysis using individual fish tissue values and the point where specificity and sensitivity met was still 8 ng/L. This information has been added to the TSD. The department also added more detail to the paired fish and water data presented in Appendix A of the TSD and included an explanation of why fish data was averaged for this analysis to the main body of the TSD.

With regard to the concern that not enough water samples were taken, it is important to recall that individual fish may exhibit a wide range of location and habitat preferences within a waterbody at seasonal and sometimes daily time scales. To represent average conditions to which an individual fish might be exposed, on large river systems water samples were taken at a few locations and averaged, whereas on lakes water samples were taken from the middle of a lake. The dataset used by the department for the PFOS standard contains 35 sample sites from WI and MN where at least 3 PFOS samples were taken at the same location during the same year (open water season). Within-year water samples display relatively little variation; over 70% of the waterbodies sampled have a percent range of less than 50% (percent range = maximum PFOS value minus the minimum PFOS value, divided by the mean PFOS value). This demonstrates a fairly small variation between the range of samples within a waterbody, relative to the mean, that were collected during the year the fish were collected. And while the department agrees that three samples is generally a small number to determine the overall temporal variation in PFOS in any given waterbody, it does indicate that fish living in that water were exposed to at least that concentration of PFOS during the year it was collected. The department acknowledges that it did not indicate that the water PFOS concentrations reported in Appendix A of the TSD often represented multiple water samples averaged together; this information has been added to the TSD to rectify this omission.

Finally, given the very similar aquatic ecosystem types and fish species present between WI and MN, it makes good scientific and financial sense to leverage data collected by our neighbors in the analysis instead of using a smaller dataset (leading to increased uncertainty). Using MN samples allowed the department to increase our original dataset of 458 fish samples from 27 waterways to 2005 fish samples from 95 waterways. The department does not expect the mechanisms or the magnitude of the relationship among PFOS in water and fish tissue to be different across the border in MN.

Input parameters: relative source contribution and body weight

Comment: Clean Wisconsin expressed that the decision to choose a RSC of 100% is not conservative, and that using an assumed body weight of 70 kg in the calculations results in a standard that could result in children being exposed to PFOS in excess of the acceptable daily intake level.

Response: As mentioned in the TSD, the department analyzed several datasets of PFOS in fish and water samples in order to determine the exposure route(s) of concern when calculating criteria for PFOS and PFOA. The department also reviewed the Great Lakes Consortium’s assessment of relative source contribution, and using this information paired with our own analysis determined that an RSC of 100% for PFOS is protective of public health.

With regard to the assumed body weight, inherent in that assumption is that a 70 kg adult will consume an average fish meal size of 8 oz (or 227 g) and that people with lower body weights will consume less fish per meal on average, and so for a given meal frequency the fish consumption rate in g/day is lower for smaller people. For example: it is generally recommended that a 35 kg person consume an average fish meal of 4 oz (or 114 g), which translates to a consumption rate of 16 g/day at a meal frequency of 1 meal/week. Substituting 35 kg and 16 g/day into the equations shown below from Appendix B of the TSD results in the same maximum concentration of approximately 50 ppb for the up to 1 meal/week consumption frequency that the department is protecting with this standard.

$$Fish\ consumption\ rate_{1\ meal/week} = meal\ size\ (g) \times \frac{Meals}{Year} \times \frac{Year}{365\ days} = 114 \times \frac{52}{365} = 16\ \frac{g}{day}$$

$$Max.\ PFOS\ conc_{.1\ meal/week} = \frac{RfD\ \left(\frac{\mu g}{kg\ day}\right) \times BW(kg)}{FCR\ \left(\frac{g}{day}\right)} = \frac{(2 \times 10^{-2}) \times 35}{16} = 0.044\ ppm \approx 50\ ppb$$

PFOS Reference Dose

Comment: The 3M Company expressed the opinion that because EPA’s noncancer toxicity reference dose is meant solely to inform a drinking water exposure pathway, the department should not rely on that reference dose to inform fish consumption frequencies.

Response: The department respectfully disagrees with the 3M Company’s interpretation of EPA’s 2016 PFOS Health Advisory guidance document. It is true that EPA’s Health Advisories only apply to exposure scenarios involving drinking water as they incorporate exposure parameters specific to drinking water. However, an oral reference dose simply estimates the level of daily exposure to a pollutant that is likely to be without an appreciable risk of deleterious effects during a lifetime. Crucially, oral reference doses are not specific to the medium by which a pollutant is orally consumed. In section 1.3.1.1.4. of EPA’s 1993 [Reference Dose \(RfD\): Description and Use in Health Risk Assessments document](#), they state: “...In general, the U.S. EPA's position is that the potential for toxicity manifested via one route of exposure is relevant to considerations of any other route of exposure, unless convincing evidence exists to the contrary. Consideration is given to potential differences in absorption or metabolism resulting from different routes of exposure, and whenever appropriate data (e.g., comparative metabolism studies) are available, the quantitative impacts of these differences on the risk assessment are delineated.” In the case of PFOS, the department is not aware of any comparative metabolism studies that have been conducted to quantify the impacts of oral exposure via water or a protein source such as fish tissue. Thus, it is reasonable to apply the same reference dose used to derive a drinking water health advisory to ingestion via other routes of oral exposure such as fish consumption.

Comment: Clean Wisconsin encourages the department to explain why the reference dose for PFOS used in its analysis is different than the allowable daily intake identified by DHS in its recommendation for a PFOS groundwater standard and adopted by the department in its drinking water PFOS standard.

Response: The department selected a PFOS reference dose for surface water based on the analysis contained within the Great Lakes Consortium for Fish Consumption Advisories’ PFOS Best Practice document, which assumes that the immune benefits of eating fish counteract some of the immune risks of PFAS exposure. The department added additional text to the Technical Support Document to convey this information.

Development of the PFOA Standard

Revisions to Language Describing PFOA Standards in NR 102.04 (1m)

Comment: Midwest Environmental Advocates expressed the opinion that the department should revise and divide paragraph NR 102.04(1m) into subsections (a), (b), and (c) to better reflect the intentions of the department. Subsection (a) should remain the same. Subsection (b), however, states that the justification for both the PFOA criterion for discharges to public water supplies and the PFOA criterion for discharges to all other waters are “[i]n order to protect against adverse public health impacts from the incidental consumption of surface waters associated with

recreational activities in the water.” This is incorrect as applied to the public water supply criterion. That criterion is proposed to protect against public adverse health impacts from the intentional consumption of surface waters through public water supplies. Thus, subsection (b), as it now stands, should be divided into subsections (b) focused on incidental ingestion and (c) focused on intentional consumption of drinking water.

Response: The rule language was revised to reflect this comment, although it should also be noted that the entirety of this text was relocated to s. NR 102.04(8), Wis. Adm. Code, in response to a comment from the Legislative Council Rules Clearinghouse, and the text was further revised to remove language stating that PFOA criteria applied in mixing zones in response to comments from several entities. See the section titled “PFOA and Mixing Zones” for more information.

Use of EPA’s Incidental Ingestion Rate

Comment: The 3M Company expressed the opinion that the department’s incidental ingestion rate was inappropriate because it was developed in support of EPA’s Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin. They also expressed the opinion that the department should not rely on EPA’s Human Health Methodology because a) it is over two decades old, and b) because the 2000 Methodology states that EPA generally believes that the amount of incidental ingestion is negligible and will not have any impact on the chemical criteria values representative of both drinking water and fish ingestion.

Response: EPA’s determination of incidental ingestion, while developed during the course of harmful algal blooms (HABs) criteria/advisory values, is unrelated in and of itself to any specific pollutant or toxin. It is simply a measure of how much surface water is incidentally ingested during recreation by various age groups, and therefore can be applied to a criterion, value, or threshold for any pollutant that could be incidentally ingested during recreation. The 3M Company also erroneously attributes EPA’s sampling recommendations as being related to ingestion rate when in fact they are related to assessing a waterbody for attainment of the HABs criteria/need for a swimming advisory.

The department respectfully disagrees that the age of this guidance document is related to its usefulness in determining human health protections. The methodology recommended by this document continues to be used by states and the EPA as they develop water quality standards for the protection of human health. Further, EPA’s inclusion of incidental ingestion rates in water quality criteria that are protective of recreation is not a deviation from the 2000 Methodology. This point has previously been addressed by EPA in their [response to comments](#) on the HABs criteria/advisory values: “The 2000 AWQC Methodology default approach is to use drinking water ingestion rates to estimate ingestion exposure. In that guidance, the EPA explains that incidental ingestion is not added to the drinking water rate because it is negligible *compared to drinking water ingestion* [emphasis added]. The EPA used available reliable data on incidental ingestion while recreating to derive recreational AWQC/SA for the cyanotoxins. Using the

drinking water consumption rate would not be representative of a recreational exposure scenario.”

PFOA Reference Dose

Comment: The 3M Company and WMC, et al. expressed the opinion that Kieskamp et al. (2018) is an inappropriate study to use as the basis for a PFOA reference dose (RfD) because it is not a toxicity study and because it focused on impacts of water consumption on a pregnant/lactating mother while the public health significance threshold for PFOA in public water supplies incorporated exposure factors corresponding to young children.

Response: The department respectfully disagrees with the claim that Kieskamp et al. (2018) is not valid because it is not a toxicity study. Pharmacokinetic modeling is a widely used way to account for differences in absorption and distribution of compounds (i.e., volume of distribution, half-life, and clearance rates) between animals and humans. In their 2016 Health Effects Supporting Document for PFOS, EPA states that “because of the complexities of the pharmacokinetic differences between animals and humans and across animal species, the average serum values are a superior point of departure for RfD derivation, rather than the external doses in the studies.” Furthermore, EPA relied on pharmacokinetic modeling to derive human equivalent doses (HEDs) from various animal studies for the purposes of PFOS and PFOA RfD derivation.

The paper by Kieskamp et al. (2018) combines two previously peer-reviewed pharmacokinetic models of developmental exposure to PFOA (one that models mouse exposure and one that models human exposure) and incorporates data from a previously peer-reviewed mouse toxicity study – the same study relied upon by EPA to derive their RfD for PFOA – to determine HEDs for infants exposed to PFOA through gestation and breastfeeding. In fact, the authors explicitly state “...we used pharmacokinetic models of gestation and lactation in mice and humans to derive potential HEDs for PFOA based on fetal/child dosimetry...These HEDs can be used to develop health-based toxicity values and drinking water equivalent values (DWELs) based on fetal/child dosimetry.”

With regard to the exposure factors for the PFOA criteria, the department is endeavoring to protect the most sensitive populations from PFOA exposure and has therefore elected to retain the exposure parameters specified by s. 160.13(2)(c), Wis. Stats., and used by DHS when developing their drinking water MCLs.

PFOA in fish

EPA Comment: EPA Region 5 Standards Section noted that while the department can use a different methodology to derive surface water standards, it must provide justification for how the methodology that was used, including the decision to not incorporate fish consumption, is consistent with the methodology provided in 40 C.F.R. Part 132, appendix C.

Response: The department conducted an assessment of PFOA occurrence in surface waters and fish taken from surface waters and determined that ingestion of surface waters

is the exposure route of concern, as PFOA was detected in only 2% of MN and WI fish samples analyzed for PFAS between 2006-2020. Nonetheless, the department endeavored to preliminarily calculate a statewide PFOA bioaccumulation factor (BAF) as part of this rulemaking effort. But because PFOA was detected in so few fish samples, the department was not confident in calculating a statewide BAF from the MN and WI dataset and thus conducted a literature search to gather additional data on PFOA BAFs. Using the additional data from the literature search in conjunction with data from WI and MN waters, the department calculated a statewide PFOA BAF of 40 L/kg. If the department were to calculate water quality criteria according to the GLI procedures and using the BAF of 40 L/kg, the resulting value for non-public water supplies would be 138 ng/L.

However, the department elected to maintain its current approach for several reasons. First, as previously stated the department is confident that exposure via surface water ingestion contributes to the majority of exposure. Second, the department has elected to use child-specific exposure parameters (i.e., body weight and water ingestion rates) to derive the proposed PFOA criterion because children consume more water per kg than adults and because PFOA exposure has the potential to adversely affect development, and the GLI procedures (codified in ch. NR 105, Wis. Adm. Code) specify adult-specific exposure parameters. Finally, even with the additional data from the literature there is an overwhelming amount of uncertainty in the calculated BAF due to the number of fish samples without detectable levels of PFOA, which would lead to an estimate of exposure to PFOA via fish consumption in which the department would have little confidence. Ultimately, the department's alternative methodology provides better protection for children than the methodology provided in 40 C.F.R. Part 132, appendix C or ch. NR 105, Wis. Adm. Code. The department has added an explanation of why it did not incorporate fish consumption into the PFOA standard to the Technical Support Document (TSD).

Comparison to Michigan's PFOA Standards

Comment: The Wisconsin Paper Council and WMC, et. al. note that Wisconsin's proposed thresholds are more stringent than Michigan's PFOA values for drinking and non-drinking water. WMC, et. al. also requests that the department add more information to the Board Order related to comparison with adjacent states' criteria. As mentioned previously in this document, WMC, et. al. also used parameters from Michigan's derivation to calculate their own PFOA criteria and expressed concern that these were different from the department's proposed standards.

Response: The state of Michigan derived their water quality values for PFOA in 2011 (formally published in 2014) with the information that was available at the time. Their values incorporate a reference dose (RfD) based on effects on liver weight and is higher than RfDs that have been subsequently developed based on developmental or immune effects which occur at lower doses. Michigan currently uses a lower RfD, developed by ATSDR, as the basis of their Health-Based Drinking Water Value for PFOA.

In derivation of their 2011 surface water values, Michigan also incorporated a bioaccumulation factor (BAF) of 4 L/kg based on an experimentally derived bioconcentration factor (BCF). Calculating a BAF using a BCF is a method that is less preferred and less accurate compared to the method of calculating a BAF using field-measured data from fish and water samples according to 40 CFR part 132. During the course of this rulemaking effort, as part of preliminary numeric criteria calculations, the department calculated BAFs for PFOS and PFOA based on field-measured data. As mentioned above, the BAF calculated for PFOA was 40 L/kg, which is higher than the experimentally derived value used by Michigan in 2011. The department has added information to the Board Order related to comparison with adjacent states and to the TSD related to calculation of a PFOA BAF.

Please see the section titled “‘Lawfulness’ of Standard Development” for the department’s response to WMC, et. al.’s PFOA criteria derivation.

Assessments

Comment: The Wisconsin Paper Council noted that while the rule language provides measures for determining if a waterbody is impaired for PFOS or PFOA, it does not provide what information is necessary to demonstrate that the surface water has reached attainment and will be removed from the impaired waters list. They requested that the department include in the rule the information necessary to demonstrate attainment.

Response: The department does not typically include the process of delisting in rule language as it is understood that if the water is not impaired (i.e., the criteria are not exceeded more than once in every three years) the water has attained its designated use. Delisting methodology is contained in Wisconsin’s Consolidated Assessment and Listing Methodology (WisCALM), which can be found at <https://dnr.wisconsin.gov/topic/SurfaceWater/WisCALM.html>, and is available for public comment every two years.

Permit Implementation

Pollutant Minimization Approach

Comment: The Wisconsin Paper Council believes the department’s proposed focus on “pollutant minimization” is a much better approach than pursuing an “end of pipe” controls approach.

Response: Comment of support noted.

Comment: The PFAS Regulatory Coalition supports source reduction and pollutant minimization measures as a cost-effective long-term solution to reducing PFOA and PFOS in Wisconsin's surface waters and urges the department to eliminate the unnecessary effluent limit requirements. If the department expects that that vast majority of dischargers will be able to meet the criteria through the pollutant minimization approach outlined in the proposed rule, then there will be no added benefit, in terms of water quality, of requiring effluent limits at the end of the 84-month permit.

Response: Where a WPDES permitted discharge has the reasonable potential to cause or contribute to the exceedance of a water quality standard, 40 C.F.R. § 122.44(d)(1)(i) requires the permitting authority to establish WQBELs in the permit. Pursuant to s. 283.31 (3), Wis. Stats., WPDES permits must contain terms and conditions to comply with water quality standards. Therefore, removing the effluent limitation provisions would violate state and federal statutory and regulatory requirements.

Comment: WMC, et al. commented that to the extent that the department seeks to lawfully impose surface water criteria for PFOA and PFOS, the coalition prefers the use of PMPs as opposed to so-called "end of pipe" controls in cases where discharge concentrations may have a reasonable potential to exceed a water quality based effluent limit (WQBEL) calculated for a facility.

Response: Support for source reduction approach noted.

Definitions

EPA Comment: EPA Region 5 Permits Section stated that the definition for "Best Management Practices" is not consistent with the 40 C.F.R. § 122.2 definition.

Response: For the purpose of the proposed subchapter, the term "Best Management Practices" was removed and the term "source reduction activities" will be used instead. PFOA and PFOS source reduction activities are a subset of Best Management Practices.

EPA Comment: EPA Region 5 Permits Section stated that the definition for "New discharger" is not consistent with the 40 C.F.R. § 122.2 definition. Like the draft definition of "New source," the definition of new discharger should state that it has the meaning specified in s. NR 106.117.

Response:

The reason the new discharger definition does not state "has the meaning specified in s. NR 106.117," is because the s. NR 106.117, Wis. Adm. Code, language references the commencement of discharges of pollutants prior to **August 13, 1979**. The department updated the language to reference the effective date of the proposed rule, as was done for definitions of "new discharger" in Wisconsin's phosphorus rule (s. NR 217.11(3), Wis. Adm. Code) as well as in the Wisconsin's rules for mercury (s. NR 106.145(4)(b), Wis. Adm. Code). Other than this date, the language parallels that of 40 C.F.R. §122.2. The

department believes that the use of the rule's effective date as the threshold date for classification of dischargers as "new" is appropriate because, otherwise a discharger who began discharging in 1980, for example, would be ineligible for a compliance schedule and would need to cease discharge until the PFOA or PFOS standard could be met. This seems to be inconsistent with past implementation of new water quality standards.

Sampling/Monitoring

Comment: The Wisconsin Paper Council requests that the sampling provision under proposed s. NR 106.98(2)(d) be modified to only require monitoring if the discharge exceeds the applicable PFOS or PFOA standard contained in proposed s. NR 102.04(1m). This is the approach the department takes for dischargers covered under s. NR 106.98(2)(e). In addition, the Wisconsin Paper Council requests that the provision in proposed s. NR 106.98(2)(d) which requires at least monthly monitoring be modified to provide that monitoring will not be required more frequently than monthly.

Response: The provision in s. NR 106.98(2)(d) is consistent with the language in sub. (2)(c). The purpose in monitoring is to evaluate levels of PFOA and PFOS over a period of time and to evaluate variability regardless of industry type. The permittee and the department can discuss the length of time for monitoring at the time of permit reissuance. Alternatively, a permittee can sample PFOA and PFOS prior to permit reissuance and submit data in the application for reissuance to demonstrate that monitoring is not necessary.

Comment: The Wisconsin Paper Council requests the word "may" in s. NR 106.98(3)(b) be changed to "shall".

Response: The language will remain as a discretionary provision, as it was intended to provide flexibility to take into consideration a facility's effluent variability over time and with significant modifications to the treatment process or influent loadings. This would be especially important if effluent quality changed during a permit term, and the department needed to modify the permit.

Comment: The Wisconsin Paper Council noted that proposed s. NR 106.985(2)(d)(4) provides that the department may require continued monitoring for PFOS and PFOA even though a WQBEL is not required in the permit. This provision should be eliminated. There is no need for continued monitoring in this instance. If there is no WQBEL, there is no reasonable potential to exceed the thresholds, and therefore monitoring should not be required.

Response: Effluent quality is not stagnant and tracking effluent variability over time is important for purposes of ensuring continued effectiveness of source reduction activities. For example, there can be changes in effluent quality when facility treatment processes are updated or there are changes to influent quality. Furthermore, if the implemented source reduction actions are considered ongoing management activities vs. one-time permanent actions that eliminate PFOA or PFOS altogether (i.e. discontinuation of a

known PFOA/PFOS source) then monitoring may be needed to ensure the ongoing management actions continue to result in reductions.

Comment: The Wisconsin Paper Council commented that for primary and secondary industry PFAS minimization plans, any methods used for source identification or other purposes must use matrix-specific, EPA-validated analytical methods. Note monitoring requirements in proposed s. NR 106.99(1)(d) and (4)(c), and s. NR 106.995(2).

Response: The department agrees with use of EPA-validated, matrix-specific analytical methods for source identification and monitoring as part of PMPs.

Comment: The Milwaukee Metropolitan Sewerage District had a specific comment regarding proposed s. NR 106.98(2), which requires both influent and effluent sampling in all cases. The District believes only effluent sampling will provide the initial critical information and the value of initial influent sampling is uncertain. The District requests the department amend the proposed regulations to require influent sampling only after effluent sampling shows concentrations high enough to require a PFAS minimization program.

Response: Rule change made. While influent monitoring is not necessary for determining RP, it can help characterize the fate and transport of the PFAS compounds once they enter the facility, as many PFAS precursor compounds may break down into terminal PFAS compounds such as PFOA and PFOS during the treatment process. Understanding presence of these precursors in influent and how they degrade in the treatment process is essential for proper source reduction. Therefore, inclusion of influent monitoring provides a good foundation to developing a more robust PMP. Updates were made to the language in s. NR 106.098(2), Wis. Adm. Code, to state that influent monitoring will be determined on a case-by-case basis.

Comment: WMC, et al. prefers “grab samples” over “composite samples” for the PFAS sampling methodology in proposed s. NR 106.995(1). To minimize the likelihood of contamination during the sampling process the department should eliminate the discretionary language and exclusively require grab samples when sampling for PFAS.

Response: The department recognizes that when sampling for PFAS, some permittees’ preferred sample type is “grab.” However, based on our experience, when the proper procedures are followed and appropriate equipment used, “composite samples” yield accurate, reliable results and have the additional benefit of capturing temporal variability in effluent quality. Furthermore, the inclusion of “composite samples” within the proposed rule language provides permittees flexibility based on their specific facility constraints. The department encourages all permittees to evaluate both sampling options and establish a standard operating procedure prior to taking samples.

Comment: WMC, et al. requests a minor wording revision to the last sentence of proposed s. NR 106.98(2) to remove the words “All of.” The sentence should read, “The following sample frequencies apply to each category of permitted dischargers.”

Response: The requested change has been made in the rule.

EPA Comment: EPA Region 5 Permits Section recommends that, rather than prescribing monitoring as a condition of a permit for the purpose of a future reasonable potential analysis, that the department instead revise its permit application forms such that data are supplied prior to public notice of the first permit to be issued after final adoption of amendments to ch. NR 106. We observe that effluent can be characterized by means of a sampling regimen that is shorter in duration than 24 months, with the only expectation being that the regimen produce data which are representative of the discharge.

Response: The department appreciates the recommendation. However, based on the department's experience, sampling conducted during the permit term and for a duration of 12 to 24 months provides representative data that results in a robust statistical dataset and that captures effluent variability that may occur over time, including between seasons. Due to the significant implications of reasonable potential determinations for PFOA and PFOS, the department maintains that considering potential effluent variability through the proposed sampling framework is important. Furthermore, the proposed rule as written does provide the department flexibility to evaluate reasonable potential prior to 24 months of data collection; see proposed rule s. NR 106.98(4), Wis. Adm. Code. No changes were made to the proposed rule based on this comment.

Comment: Midwest Environmental Advocates commented that the timeline for compliance may be too protracted in certain instances, particularly when it comes to delays in monitoring for known PFAS dischargers who have recently been reissued permits or will be reissued permits before the draft rule takes effect. In those instances, the department should consider amending the rule to allow permits to be modified instead of waiting until the first permit reissuance after the effective date of the draft rule.

Response: The staggered schedules for implementing water quality standards in permits is the typical approach used in the WPDES permit program. The department does not have the staff resources to modify large groups of individual permits immediately upon the effective date of the standard. This staggered schedule has also been reflected in the Economic Impact Analysis.

PFAS Minimization Plan

Comment: The Wisconsin Paper Council, American Forest & Paper Association, and the PFAS Regulatory Coalition request the term "PFAS Minimization Plan" instead be referred to the PFOS/PFOA Minimization Plan.

Response: To avoid confusion regarding the specific PFAS compounds regulated in proposed ch. NR 106, subchapter VIII, Wis. Adm. Code, the term "PFAS Minimization Plan" is replaced with "PFOS and PFOA Minimization Plan."

Comment: The Wisconsin Paper Council noted that s. NR 106.985(2)(a) indicates that a permittee shall submit an initial PFAS minimization plan to the department by the date specified

in the permit and sets forth that the department may approve, conditionally approve, or reject a proposed PFAS Minimization Plan. This provision should be amended to require the department to provide the permittee with a description of why the plan was rejected, and a description of what changes the department wants made to the plan.

Response: The language in s. NR 106.985(2)(a), Wis. Adm. Code, was updated in response to this comment to state that the department will notify the permittee of the rejection and provide a brief explanation for the rejection. The permittee shall submit an approvable plan within 30 days of department notification.

Comment: The Wisconsin Paper Council noted that proposed s. NR 106.985(2)(b) mostly deals with reporting to the department annually on PFAS pollutant minimization plan. This provision, however, also indicates a permittee “shall implement actions identified in the approved plan” within 12 months of department approval of the plan, and annually thereafter. It would be clearer to limit the scope of s. NR 106.985(2)(b) to reporting requirements. The reference to a 12-month implementation period is confusing and unnecessary and should be removed.

Response: The department appreciates the comment and agrees the provision is confusing. Other comments were received on this paragraph as well as paragraphs (c) and (d), requesting that the department provide clarity. Proposed s. NR 106.985(2)(b), Wis. Adm. Code, has been updated to include the requirement that a permittee shall begin implementation of an approved PFAS pollutant minimization plan on the effective date of the modified or revoked and reissued permit.

Comment: The Wisconsin Paper Council noted that given that PFOA and PFOS detections are not necessarily a result of use of PFAS, the department needs to recognize the challenges of identifying the source of, and addressing, any PFOS or PFOA detections. Only actions that can be reasonably implemented and obtain meaningful reduction in PFOS or PFOA should be taken as part of the PFAS minimization plan.

Response: Noted, the department looks forward to working with permittees to develop meaningful PFOS and PFOA minimization plans. No changes were made to the rule based on this comment.

Comments:

- The Wisconsin Paper Council noted that the department should allow permittees to obtain an extension to the 84-month period if the permittee demonstrates there is a declining trend in the amount of the relevant pollutant. Given the cost and uncertainty, allowing additional time for minimization activities and, allowing more time for natural attenuation to occur is a better option than requiring treatment.
- The PFAS Regulatory Coalition disagrees that the use of pollutant minimization plans should be limited to 84 months. Notably, the department has not provided an adequate justification for the 84-month cutoff on the pollutant minimization efforts, and there do not appear to be compelling reasons for time-limiting pollutant minimization efforts in favor of effluent limits.

Response: Typically, compliance schedules do not exceed beyond a 5-year WPDES permit term unless special circumstances are allowed by rule. The department evaluated the effectiveness of PMP implementation for mercury along with recent PFAS source reduction efforts implemented by Michigan and maintain 7 years is a reasonable amount of time to implement source reduction measures to achieve meaningful reductions. At some point the criteria will need to be met. Note: The department did add one extra month to the maximum time period for permit administration purposes.

Comment: The Wisconsin Paper Council believes it is critical that the department's efforts to address PFOA and PFOS do not hinder the paper industry's ability to be the world's largest recycler of wastepaper. Recycling has significant environmental benefits. It would be logistically unrealistic for the proposed pollution minimization plans to force recycle mills to sample various grades of paper for PFOS/A compounds and then choose to only use those grades with the lowest available PFOS/A concentrations.

Response: The general concept of a PFOS and PFOA minimization plan is to investigate sources and reduce or eliminate identified sources to the greatest extent practicable. The proposed rule as drafted would not require that a permitted mill only recycle wastepaper grades with the lowest PFOS/PFOA compounds for recycling. If using the lowest available PFOS and PFOA containing products is not feasible for any number of reasons (i.e. cost, availability, process limitations, etc.) then a facility would not be expected to switch based on PFOS and PFOA concentrations alone. This is the same concept currently being implemented by the department's mercury pollutant minimization programs. No changes were made to the proposed rule based on the comment.

Comment: The Wisconsin Paper Council requests the provision under proposed s. NR 106.99(3)(f) which provides that the PFAS minimization plan shall include "other activities that DNR, in consultation with the permittee, determines to be appropriate for the individual permittee's circumstance," is open-ended and should be eliminated. If the department keeps this provision in the rule, it is important that the consultation be meaningful.

Response: No changes were made to the proposed rule based on the comment. The department agrees that consultation is important. The intent of this provision is to allow for innovative approaches and not include an exhaustive list of measures within code.

Comment: Madison Metropolitan Sewerage District suggests the department compile, maintain, and make available a list of acceptable alternatives for industries to consider or provide similar resources from other agencies as it relates to the requirement in s. NR 106.99(3a) and (3c) of the proposed rule.

Response: The department appreciates the recommendation and will consider collection of this information in a location and format that is accessible to WPDES permitted facilities.

Comment: The Milwaukee Metropolitan Sewerage District noted that the department needs to recognize minimization work will vary from location to location, depending upon location circumstances. When developing guidance for these programs or implementing compliance schedules in permits, the department must avoid uniform schedules and prescriptive approaches.

Response: The department appreciates the comment and, as with all pollutant minimization plans, the department makes every effort to work closely with the permittee when making these types of permit decisions.

Comment: Wisconsin's Green Fire had the following comments related to the PFAS minimization plan under proposed s. NR 106.985 (2):

- S. NR 106.985(2)(a) does not limit the amount of time the permittee has to submit an initial PFAS minimization plan. We suggest no longer than six months.
- S. NR 106.985(2)(a) does not limit the amount of time the department has to approve, conditionally approve, or reject the plan. We suggest no longer than six months.
- S. NR 106.985(2)(c) the department unnecessarily limits the time it may require the permittee to submit a revised and updated PFAS minimization plan, presumably for being ineffective, to no sooner than 60 months. The department should be able to require a revised plan sooner in the process, if appropriate.
- S. NR 106.985(2)(c) allows the permittee to carry over implementation of the PFAS minimization plan into a third permit term with either no schedule limitations or up to another 84 months compliance schedule when PFAS minimization plan needs to be revised and updated. This appears to create an unnecessary incentive to permittees to submit and implement inadequate progress reports. This option should be eliminated.

Response: The rule language was revised to address these comments and to provide clarity. See revisions made to s. NR 106.985(2)(a)-(d) of the proposed rule for changes made. The department has a vested interest in approving PFAS minimization plans and incorporating them into permits as quickly as possible.

EPA Comment: EPA Region 5 Permits Section commented that the department proposes 24 months of sampling for municipal and industrial permittees during the initial permit reissued after the effective date of the PFAS rules. During the subsequent permit reissuance process, it is EPA's understanding that the department will complete a "reasonable potential analysis." If the data for a facility indicates reasonable potential, the department will require a pollutant minimization plan to identify and reduce PFAS in the effluent, but would delay any potential inclusion of WQBELs until a subsequent (i.e., third or later) permit. Where reasonable potential is determined, 40 C.F.R. § 122.44(d)(1)(i) requires the permitting authority to establish WQBELs; the department's draft rules appear to be inconsistent with this federal rule.

Response: Changes were made in response to the comment. The intent of the rule, as reflected in a note in the rule and in the Economic Impact Analysis, is that the reasonable potential analysis will be conducted after the sampling collection period is completed and during the initial permit term, not after the initial permit term has ended. See the note that follows s. NR 106.985(1), Wis. Adm. Code, which states that this is the department's intent. In response to this comment, the department has added clarifying language to the

text of the rule that states at the close of the sampling period, if PFOA or PFOS concentrations show reasonable potential to cause or contribute to an exceedance of the criteria, the department will modify or revoke and reissue the permit to include a compliance schedule that includes PFOA and PFOS Minimization Plan requirements and ends with a water quality-based effluent limitation (WQBEL) becoming effective. This will also provide a public comment period on the reasonable potential determination via the permit modification or revocation and reissuance.

EPA Comment: EPA Region 5 Permits Section commented that the draft rule does not provide that a PMP will be incorporated directly or by reference as conditions in a permit. A document that exists outside a permit, even one that is approved by the permit-issuing agency, may not be enforceable for the purpose of the Clean Water Act. To the extent a PMP contains best management practices under 40 C.F.R. § 122.44(k) or elements of a POTW pretreatment program under 40 C.F.R. § 122.42 or 40 C.F.R. part 403, those practices and elements need to be incorporated into a permit, and the act of incorporation needs to be subject to public participation under 40 C.F.R. part 124 and available for EPA review under 40 C.F.R. § 123.44.

Response: Changes were made in response to the comment. The proposed rule language was updated to include language regarding a permit modification (or revocation and reissuance) process with a public notice and comment period to incorporate a PFOS and PFOA minimization plan into the permit and compliance schedule into the permit in cases where the department determines that a permittee's discharge has reasonable potential to cause or contribute to an exceedance to the PFOS or PFOA water quality standards. It should be noted that the standard was relocated to s. NR 102.04(8), Wis. Adm. Code, in response to a comment from the Legislative Council Rules Clearinghouse.

Determination of Need and Reasonable Potential Analysis

Comment: The Wisconsin Paper Council believes the thresholds for requiring a PFAS minimization plan are unreasonably conservative, and the methods contained in s. NR 106.98(4)(a) and (b) should be eliminated from the rule. Instead, a PFAS minimization plan should be required if the P₉₉ of at least eleven daily discharge concentrations of PFOS or PFOA are greater than the applicable water quality standard contained in the rule.

Response: Section NR 106.98(4)(a), Wis. Adm. Code, states that the need for a PMP should be determined by comparing the 30-day P₉₉ to the criteria when eleven sample results are available. If less than eleven sample results are available, a P₉₉ cannot be calculated, and the average discharge concentration is compared to one fifth of the criteria in accordance with s. NR 106.98(4)(b), Wis. Adm. Code. The determination of need procedure using a P₉₉ under s. NR 106.98(4)(a), Wis. Adm. Code, is preferred to par. (b), and thus the data generation requirements under s. NR 106.98(2), Wis. Adm. Code, are intended to facilitate collection of at least 11 sample results before the determination of need for a PMP. Nevertheless, both of the procedures in sub. (4)(a) and (b) are consistent with other reasonable potential procedures for toxic substances in ch.

NR 106, Wis. Adm. Code. No changes were made to the proposed rule based on the comment.

Comment: The Municipal Environmental Group (MEG) and NEW Water noted that the proposed rules do not define the applicability of data for determining reasonable potential. MEG would appreciate clarification from the department as to how data will be determined to be “representative” and what data will be included in the reasonable potential calculation.

Response: Monitoring data may be considered unrepresentative and thus excluded from the reasonable potential calculation in a variety of situations which are not feasible to characterize completely in the rule. Decisions about the representativeness of effluent data are made by department staff on a case-by-case basis using professional judgment and take into consideration all available information about the conditions in which the monitoring data was collected. In general, monitoring data may be considered unrepresentative when abnormal levels of the pollutant can be attributed to a condition or event which is not expected to reoccur. Reductions in PFAS data due to successful PMP implementation may be a reason to consider previous PFAS monitoring data unrepresentative. Monitoring data may also be considered unrepresentative if issues with sample collection or laboratory QA/QC may have caused inaccurate sample results. The department uses these principles to determine when effluent data is representative for all pollutants and would apply the same principle to PFAS data. As with other pollutants, permittees are encouraged to provide department staff with any information about changes in operations or unusual events which may have caused effluent PFAS data to be unrepresentative of the discharge. No changes were made to the proposed rule based on the comment.

Comment: The Municipal Environmental Group and NEW Water request clarification from the department as to the parameters around which historic PFOS and PFOA sampling data will be used and how historic PFAS sampling will be used in the reasonable potential calculation for permittees that have implemented successful PFAS minimization plans.

Response: All available representative PFAS data will be used in the reasonable potential determination. Reductions in PFAS data due to successful PMP implementation may be reason to consider previous PFAS monitoring data unrepresentative. Decisions about representative data are made by department staff of a case-by-case basis. See previous comment response for more detail.

Comment: Madison Metropolitan Sewerage District requests clarification on the method for determining need in s. NR 106.98(4) (a). The calculation method uses daily discharge concentrations and 30-day average discharge concentrations. Municipal dischargers are required to sample monthly (or every two months). It would be helpful for the department to provide definitions of “daily sample” and “30-day average discharge concentration.”

Response: A daily discharge concentration refers to the concentration measurement for a single day. The determination of need is based on the “upper 99th percentile of the 30-day average discharge concentrations” (sometimes referred to as a 30-day P₉₉), which is

calculated based on the equation in s. NR 106.05(5)(a), Wis. Adm. Code. This same equation is used regardless of monitoring frequency. The calculated 30-day average discharge concentration itself is not directly used in the determination of need.

Comment: Wisconsin's Green Fire commented that the administrative rules should clearly state the method that the department will use to determine what PFOA value to use for dischargers upstream from public water supply waters and that the method be consistent with methods used to determine effluent limits that are protective of downstream waters.

Response: The department intends to apply the same procedures used for other pollutants in considering the protection of downstream waters with PFOA criteria. This involves a site-specific analysis that will ensure that calculated water quality based effluent limits are protective of public water supply standards under critical low flow conditions. For a discharger to a waterbody tributary to a public water supply, this analysis will use a mass balance equation, assuming a 7Q10 flow and observed background concentrations, to ensure that 95 ng/L PFOA is not exceeded outside of an allowed mixing zone within the tributary, and that 20 ng/L is not exceeded within the public water supply. Note that the drinking water criteria apply to open waters of the Great Lakes under 40 CFR 132.4(d)(3)(i). Also see definition of connecting channels in 40 CFR 132.2. The department did add a reference to the rule to s. NR 106.06(1), Wis. Adm. Code, which requires consideration of downstream impacts (see paragraph (b) of this subsection).

Comments:

- WMC, et al. believes the reasonable potential determination for PFOA should consider dilution in the receiving water and should not be directly compared to the narrative criteria. Both reasonable potential determination methods described in s. NR 106.98(4) use the narrative criteria itself rather than the limit that would apply calculated by using the procedures in ch. NR 106 and the narrative criteria. Proposed s. NR 106.98(4)(a) requires a PFAS minimization plan if the 30-day P99 “for PFOS or PFOA exceeds the narrative standard specified under s. NR 102.04(1m).” Proposed s. NR 106.98(4)(b) requires a PFAS minimization plan “for PFOS or PFOA...if the arithmetic average exceeds one-fifth of the narrative standard specified under s. NR 102.04(1m).” Both reasonable potential determination methods should be revised accordingly and the reasonable potential determination for PFOA should evaluate the potential to exceed the WQBEL, not the narrative standard itself.
- WMC, et al. believes the reasonable potential determination for PFOA in s. NR 106.985(3) should compare the permittee's effluent to the WQBEL calculated using the narrative standard.

Response: Changes made. The procedures under s. NR 106.98(4)(a), Wis. Adm. Code, were changed to require determination of the need for a PFOS and PFOA minimization plan based on comparison to the calculated PFOA limitation rather than the PFOA standard. Changes were also made to s. NR 106.98(4), Wis. Adm. Code, to refer to s. NR 106.06(1) and (4) through (11), Wis. Adm. Code, to ensure that PFOS and PFOA limit calculation procedures are consistent with the procedures used to calculate limitations for

other toxic substances. Mixing zones are still not allowed for permitted discharges of PFOS because PFOS is a bioaccumulating chemical of concern. The reference to mixing zone language was removed from the PFOS and PFOA criteria because mixing zones are implemented through the permitting program.

Comment: WMC, et al. requests changes to s. NR 106.98 to clarify how to conduct reasonable potential determinations when the representative background concentration in the receiving water exceeds the given water quality for the substances. For example, the text could mirror or reference s. NR 106.06(6), which includes procedures for making reasonable potential determinations in these circumstances. Specifically, s. NR 106.06(6)(b) which includes five conditions that must be demonstrated, including a no net addition.

Response: Changes made. The department agrees that elevated background concentrations should be considered for facilities that source effluent from surface water intakes where appropriate. Sections NR 106.98(4), 106.985(2)(d), and 106.996, Wis. Adm. Code, were revised to reference the procedures for determining reasonable potential and calculating effluent limits based on elevated background concentrations in s. NR 106.06(6), Wis. Adm. Code.

EPA Comment: EPA Region 5 Permits Section commented that the department's draft rules suggest that 12 data points are the minimum required to characterize effluent and perform a reasonable potential analysis (proposed rule NR 106.98(4)). Note that under 40 C.F.R. § 122.44(d)(1)(ii), permitting authorities shall use procedures which account for effluent variability when conducting reasonable potential analyses, an exercise which can be done with data sets smaller than 12. In fact, EPA's *Technical Support Document for Water Quality-based Toxics Control* (1991) includes methods that can be used with as few as one data point. The department should complete reasonable potential analyses when data sets are smaller than 12.

Response: No changes made in response to this comment. The department agrees that reasonable potential determinations can be made with less than 12 samples, and the proposed rule as written does provide the department flexibility to evaluate reasonable potential prior to 24 months of data collection and with less than 12 data points (see proposed s. NR 106.98(4), Wis. Adm. Code). However, based on the department's experience, sampling conducted during the permit term and for a duration of 12 to 24 consecutive months provides representative data that results in a robust statistical dataset and that captures effluent variability that may occur over time, including between seasons. Due to the significant implications of reasonable potential determinations for PFOA and PFOS, the department maintains that considering potential effluent variability through the proposed sampling framework is important.

EPA Comment: EPA Region 5 Permits Section commented that proposed rule s. NR 106.985(2)(d) states that water quality-based limits will be established as average monthly limits. 40 C.F.R. § 122.45(d) requires POTW limits for continuous discharges to be established as average weekly limits as well, and for non-POTWs as daily maximum limits. Therefore, the proposed rule 106.985(2)(d) is inconsistent with 40 C.F.R. §122.45(d).

Response: In response to this comment, the department updated the proposed s. NR 106.985(2)(d), Wis. Adm. Code, to instead require expression of limits as monthly average values and as any additional expressed averaging frequencies required by s. NR 106.07, Wis. Adm. Code, which parallels 40 CFR 122.45(d). This code does require limits to be expressed as daily maximums or weekly averages in some instances, as EPA notes. However, s. NR 106.07(10), Wis. Adm. Code, also contains a provision that allows for alternative methods of limit expression where it is impracticable to express a limit also as a daily maximum or weekly average.

The narrative standards for PFOS and PFOA are written as a monthly average, and thus a monthly average limit may be sufficient to ensure water quality standards are met in at least some cases. However, this determination will be made in accordance with s. NR 106.07(10), Wis. Adm. Code, on a case-by-case basis or through a policy decision (i.e. guidance or other) that is reviewed by EPA as appropriate.

PFOA and Mixing Zones

Comments:

- Wisconsin Paper Council commented that proposed s. NR 102.04.04(1m) specifies that practices relating to industrial and other activities shall be controlled so that surface waters, including the “mixing zone,” meet the criteria referenced above at all times and under all water level and flow conditions. PFOA is not a bioaccumulative chemical of concern and should not be subject to the mixing zone ban.
- The PFAS Regulatory Council does not believe that a ban on mixing zones for PFOA is appropriate and believes that the proposed rule’s ban on mixing zones is inconsistent with Great Lakes policy and recommends that the department modify the proposed rule to remove the mixing zone ban.
- WMC, et al. submitted comments regarding the inclusion of PFOA in the “mixing zone,” because PFOA is not a bioaccumulative chemical of concern, the narrative criterion should apply at the edge of the mixing zone and reasonable potential determinations should consider dilution in the receiving water. The Coalition requests revisions to all sections of the code that reference the determination of need for PFOA to allow for mixing zones and the reasonable potential determination for PFOA evaluate the potential to exceed the WQBEL, not the narrative standard itself.

Response: Changes made. The procedures under s. NR 106.98(4)(a), Wis. Adm. Code, were changed to require determination of the need for a PFOS and PFOA minimization plan based on comparison to the calculated PFOA limitation considering available dilution rather than the PFOA standard. Changes were also made to s. NR 106.98(4), Wis. Adm. Code, to refer to s. NR 106.06(1) and (4) through (11), Wis. Adm. Code, to ensure that PFOS and PFOA limit calculation procedures are consistent with the procedures used to calculate limitations for other toxic substances. The department also

revised the narrative criteria for PFOA in response to this comment by removing language stating that the criteria applied in mixing zones.

Reference to sludge and biosolids

Comment: The Municipal Environmental Group, League of Wisconsin Municipalities, and NEW Water noted that the proposed rule package establishes narrative criteria for surface waters and is not the appropriate mechanism for regulating sludge or biosolids and requests that references to sludge and biosolids be removed from this rule language.

Response: No changes were made to the proposed rule based on the comment. Note, the proposed rule does not provide limitations for sludge or biosolids. The PFAS minimization plan is most useful when concentrations in all aspects of the treatment process have been measured. Research has shown that the longer chain PFAS compounds such as PFOS and PFOA accumulate to greater extents in the sludge. Understanding how PFOA and PFOS partition between solids and effluent at a specific treatment plant and the factors that influence this partitioning may be a means of controlling effluent concentrations of PFOA and PFOS.

Pretreatment and Waste Acceptance

Comment: The Municipal Environmental Group requests clarification on the landfill leachate as a known waste source of PFAS. Will all such sources need to pretreat to the applicable thresholds before a municipal plant would be allowed to accept such waste? That is not the current practice with other contaminants, provided that the treatment plant can stay within its permit limits and imposing that requirement here could result in substantial costs and practical issues.

Response: Decisions on landfill leachate disposal will be site-specific and is dependent on whether the landfill is the primary or sole reason that a facility has reasonable potential to exceed the proposed standards. Even though landfill leachate is an obvious source of PFOA/PFOS to POTWs, the *“Michigan Waste & Recycling Association Statewide Study on Landfill Leachate PFOA and PFOS Impact on Water Resource Recovery Facility Influent”* shows that, generally speaking, leachate is a relatively small contribution on a mass-basis to the POTW’s treatment plant. The department encourages POTWs to identify all other sources of PFOA/PFOS to the sanitary sewerage system prior to focusing on landfill leachate sources. The department does not anticipate any landfills will be required to install pretreatment as a consequence of this proposed rule if facilities investigate all other sources.

Comment: Madison Metropolitan Sewerage District noted that the rule is unclear as to whether a utility would be able to accept waste containing PFAS over the narrative threshold and remain in compliance with the rule and any applicable pollutant minimization programs. WPDES permit holders with waste acceptance programs could benefit from guidance from the department

around waste acceptance thresholds and how that relates to meeting the narrative standard through pollution prevention BMPs. More specifically, is the narrative standard meant to be the bar at which a utility will require sampling mitigation measures from customers before accepting the material or not accepting the material at all?

Response: The proposed rules do not specifically prohibit facilities from accepting waste containing PFAS concentrations over the criteria. The rules require that permittees meet their calculated water quality based effluent limitation and take actions necessary to do so through implementation of their PMP. The rule does not directly set pretreatment limits for entities discharging to a publicly owned treatment works, although POTWs may calculate and enforce local limits based on calculated maximum allowable headworks loadings, which are derived using final effluent limits.

Comment: Sierra Club commented that Wisconsin should require pretreatment of PFAS-contaminated effluent instead of just process changes that address only PFOS instead of all PFAS chemicals.

Response: This water quality standards development effort is focused on PFOA and PFOS, so PMPs will focus on these two compounds and their precursors rather than other PFAS.

Regulation related to pit trench dewatering and construction

Comment: The Municipal Environmental Group, League of Wisconsin Municipalities, and NEW Water noted that it is still unclear how the proposed narrative standards and thresholds would apply to construction projects that involve pit trench dewatering and would appreciate clarification from the department on these types of activities. For instance, when will it be necessary to test for PFAS? If testing occurs and the water is under the applicable thresholds, could it be discharged to storm sewer and/or surface waters? Generally, municipal wastewater treatment plants accept contaminated groundwater from construction sites, and municipalities often undertake construction activities that require pit trench dewatering. If the water is over the applicable thresholds, would municipal treatment plants be allowed to accept it, or knowing that it contains PFAS over a threshold, would a PMP have to require treatment before discharge to a sanitary sewer?

Response: The current policy on PFOA/PFOS treatment for pit trench and other dewatering activities is that PFAS screening is required for all dewatering activities occurring near a known-contaminated site. Under the status quo, if those values are higher than 20 ppt combined PFOA+PFOS, then treatment is required prior to discharging that effluent to waters of the state. If those values are lower than 20 ppt combined PFOA+PFOS, then treatment prior to discharge is not required by the department. Under the proposed rule, the policy is not expected to change, except that the screening values would be set equal to the proposed criteria (8 ppt PFOS and 20/95 ppt PFOA). This is of course only applicable to direct discharges to surface waters of the state. If an entity intends to discharge contaminated groundwater to a POTW which

implements a PMP required by the WPDES permit, then the department leaves that decision-making up to the POTW based on site-specific factors such as: other sources of PFOA/PFOS, available dilution, and current effluent concentrations. See the response to the comment two entries above for more detail on acceptance of discharges of PFAS-impacted water to sanitary sewers.

Known waste sources of PFAS such as landfill leachate

Comments:

- The Municipal Environmental Group, League of Wisconsin Municipalities, and NEW Water request clarification on the landfill leachate as a known waste source of PFAS. Will all such sources need to pretreat to the applicable thresholds before a municipal plant would be allowed to accept such waste? That is not the current practice with other contaminants, provided that the treatment plant can stay within its permit limits and imposing that requirement here could result in substantial costs and practical issues.
- Waste Management, Inc. requests that the rule clarify that a POTW's minimization plan is not required to reduce/eliminate acceptance of landfill leachate if effluent criteria can be met through other means. Restricting POTW leachate acceptance would entail significant costs and consequences that aren't associated with other industries reliant on POTW access.

Response: Decisions on landfill leachate disposal will be site-specific and dependent on whether the landfill is the sole or primary reason a facility has reasonable potential to exceed the proposed standards. For example, based on effluent sampling conducted at NEW Water in Green Bay, the department does not anticipate that the permittee will have reasonable potential to exceed the proposed criteria. Because of this, the WPDES permit would not require that NEW Water perform source investigation. Even though landfill leachate is an obvious source of PFOA/PFOS to POTWs, the *“Michigan Waste & Recycling Association Statewide Study on Landfill Leachate PFOA and PFOS Impact on Water Resource Recovery Facility Influent”* shows that, generally speaking, leachate is a relatively small contribution on a mass-basis to the POTW's treatment plant. The department encourages POTWs to identify all other sources of PFOA/PFOS to the sanitary sewerage system prior to focusing on landfill leachate sources.

Reference to Michigan's guidance

Comment: The League of Wisconsin Municipalities requests the note referencing Michigan's guidance be deleted or clarified to state that permittees may refer to the most up to date, generally accepted sampling protocols.

Response: A “Note” is non-binding and the department chose to include the reference to the guidance as a frame of reference and a helpful tool that permittees may use.

Analytical Methods

Comment: Wisconsin's Green Fire, the Wisconsin Paper Council, the PFAS Regulatory Coalition, WMC, et al., and the 3M Company expressed concern that the proposed changes to ch. NR 219 implied that the department was recommending or mandating adoption of EPA's Draft Method 1633, which is still undergoing multi-lab validation.

Response: The department has clarified in the rule language that it is only recommending use of final approved EPA methods.

Comments Received on Economic Impact Analysis (EIA) During Public Comment Period

EIA should include costs related to pit trench dewatering and construction

Comments:

- WMC, et al. submitted comments which expressed concern that businesses engaging in construction projects will face substantial treatment costs related to dewatering if there are legacy sources of PFOA and/or PFOS on site. Furthermore, the department ignores s. 227.10, Wis. Stats., which requires that the department promulgate as a rule their interpretation of a statute. The compliance costs for the 3 projects/year that are expected to dewater due to PFOA/PFOS contamination should be included in the total costs. They go on to state that the final EIA should also include compliance costs associated with the Tyco One Stanton Street facility and the Marinette Wastewater Utility.

Response: These costs are not included in the EIA because they are already being incurred based on implementation of the existing narrative toxic standard, other programs or other statutory requirements. EIAs must include costs incurred that are based on the proposed rule, but not costs of any existing rules or statutes. The department's current interpretation of the already-promulgated narrative standard in s. NR 102.04(1)(d), Wis. Adm. Code, is implemented on a case-by-case basis in accordance with the authority in s. 227.10, Wis. Stats. In addition, costs associated with Tyco are required under other existing PFAS Foam statutory requirements (s. 299.48, Wis. Stats., and emergency rule EmR2045) and the remediation program. In accordance with s. 227.137, Wis. Stats., these costs are not reasonably expected to be incurred as a consequence of this proposed rule. Because the costs in the Marinette area are incurred as a consequence of the department's Remediation and Redevelopment program's actions and other requirements, they are independent of this proposed rule and should be excluded from the final EIA.

- The League of Wisconsin Municipalities requested clarification on how the pit trench dewatering activities were factored into the EIA.

Response: The department did consider pit trench dewatering treatment costs in the final EIA (see s. 1.4 and 4 of EIA Attachment B), and it was determined that there was an expected cost savings from promulgation of this rule to affected entities which dewater. The reason for this is because, under the status quo, more entities have been required to install treatment for dewatering discharges to surface waters based on implementation of the existing narrative toxic standard than anticipated under the proposed rule.

EIA should include additional costs associated with source investigation

Comments:

- Waste Management, Inc. submitted comments regarding hauling costs associated with landfills. Specifically, they state that all closed landfills that currently discharge to a POTW may be affected, landfills which currently discharge to sanitary sewer may lose their investment in that infrastructure, and that the current available fleet of tanker trucks and drivers would be inadequate to meet the increased demand for leachate transport as a consequence of this proposed rule.

Response: First, the department assumed that landfills would be affected at similar rates as POTWs, since affected POTWs would turn to their industrial sources, such as landfills, and potentially require reductions in PFAS discharges. However, the commenter assumes that *all* landfills which discharge to an affected POTW would need to haul their leachate elsewhere. This assumption overestimates costs as the department anticipates that the only landfills which realistically will need to transport leachate will be those discharging to a POTW that cannot meet limits by addressing sources of PFAS that can be managed in a more cost-effective manner. Moreover, some POTWs that accept landfill leachate will still discharge at levels below the calculated PFOS or PFOA limits due to dilution in the effluent (and due to allowable PFOA mixing zones in the receiving water) leachate. Finally, because closed landfills both tend to generate less leachate and are less controllable as sources, the department expects that other pretreatment industries would instead be targeted for source reduction measures to achieve the proposed thresholds rather than refusing to accept leachate.

Costs of fleet management, including wages for drivers, are included in the cost/mile for hauling leachate. Loss of investment in existing sanitary sewer discharge infrastructure is not considered a cost under the framework of this EIA, since those costs have already been incurred independently of this rule. This EIA considers any new costs imposed as a result of the rule.

- Wisconsin Paper Council submitted several comments expressing concern that costs are not adequately addressed in the current version of the EIA. First, they claim that the economic impact of limiting paper recycling is significant, and that the ubiquity of PFOS/PFOA results in identification of those particular waste streams as very difficult. Furthermore, ceasing recycling of wastepaper would result in lower cost effectiveness for use of 100% recycled wastepaper, leading to increased consumption of virgin pulp. WMC, et al. states that this proposed rule should ensure that the reuse of recyclable materials is not negatively impacted.

They also state that sampling costs exceed the department's estimated costs, reaching \$4,850/sample.

Response: The department made several conservative assumptions throughout the EIA in order to supplement costs that were unable to be assessed. For example, because the department was not provided with facility-specific costs pertaining to disposal of recyclable materials, labor was identified as the basis for all activities taken by a facility to reduce PFOA/PFOS concentrations in the effluent. This time devoted to PMP implementation was estimated to be 30%, even though for most facilities the department anticipates designated staff will spend less than that devoted to PMP activities over the course of 7 years. It is important to note, that although the department believes that industries will be able to comply through source reduction actions, if industries are unable to comply due to the nature of their industry (recycling paper) and treatment is cost prohibitive, facilities may apply for an economic variance. The submitted sampling costs exceed the department's estimates because the department's costs are based on how facilities currently perform sample collection by utilizing existing staff and resources instead of hiring a consultant for those purposes.

- WMC, et. al. submitted comments expressing doubt that the costs of the rule will be just under the \$10,000,000 maximum 2-year compliance cost which would require the department cease work on this rule and believe the EIA underrepresents actual PMP costs to affected businesses. This comment notes the groups' previously calculated maximum 2-year compliance cost of \$57 million. Additionally, the comment notes that 11 Wisconsin facilities already exceed 20ppt PFOA, compared to no facilities in Michigan which were over their PFOA standard of 420ppt; they urge the department to update the EIA to address increased costs when compared to Michigan. The comment goes on to object to the calculated average PMP development and implementation cost of \$13,728/facility, stating that investigative sampling was not included. Furthermore, the comment expresses concern that replacement product costs were not estimated as part of the EIA, citing Wisconsin Paper Council's concerns about wastepaper recycling costs.

Response: The department intentionally framed the proposed surface water quality rule to maximize flexibility in complying with it and minimize compliance costs to permittees, while also protecting public health. For example, the department considered the potential cost of compliance with a possible PFOS criterion that, if calculated using ch. NR 105, Wis. Adm. Code, procedures, would have been at the background levels seen in DNR sampling of ambient water. The department identified an alternative method that it used to calculate PFOS criteria that is still protective of public health and scientifically defensible, but which is estimated to have a lower economic impact. This, along with offering permittees 7 years to comply with the proposed rule, naturally resulted in lowered costs to the regulated community. The source reduction approach also has a better result in the end in that it avoids expensive treatment installation that generates contaminated filters which would need to be disposed. For any facility that is expected to install treatment, the department relied upon cost breakdowns and typical flows from real projects in Wisconsin. The costs associated with treatment installation may vary based on factors such as flow rate and carbon usage. The department's costs are based on

solicitation of industry consultants regarding treatment installation costs and the expected flow rates and carbon usage from affected industries. If WMC, et. al. is aware of a project that exceeded the forecasted cost per project, the department believes this project is not representative of flow rates for treatment systems which are expected to be installed because of this rule. The EIA was written based upon data reflective of typical projects that are most likely to occur.

The final calculated cost of PMP development and implementation is meant as an average across all facilities. Some facilities may incur costs that are higher than the figure calculated by the department, and most facilities are expected to be lower, given that most facilities which were sampled were just above the proposed criteria and source reduction efforts are expected to reduce PFOA/PFOS levels to below the proposed criteria. For product replacement costs, the department did not receive specific product cost estimates from affected businesses, so the labor involved in developing and implementing a PMP is deemed appropriate in conjunction with other conservative assumptions made throughout the EIA in assessing compliance costs. Without specific information from industries, it is possible that product at some sites could even result in net savings over the long run, especially when compared to remediation costs in the long term.

Additionally, the department did factor increased investigative sampling costs into the final EIA costs; these additional PMP costs can be found under the "Sampling" section of EIA Attachment B. As stated previously, when comparing the costs incurred in Michigan, it must be recognized that the department is allowing 7 years of source reduction activities compared to just a few months in Michigan. Michigan's approach resulted in several industries installing pretreatment immediately, whereas Wisconsin's approach is designed to minimize the number of facilities which ultimately need treatment. PFOS is generally the cost driver in this EIA just as with Michigan, and identification of those specific affected industrial categories based on Michigan's efforts is appropriate in this case as the Wisconsin effluent data showed that, of the facilities which were shown to be discharging above 20 ppt PFOA, only three would potentially need to implement PMPs solely due to PFOA because most facilities discharge to non-public water supplies. Also, the department revised the rule to allow mixing zones for PFOA so the number affected by the 20 ppt PFOA may be lower than three.

EIA should include costs associated with treatment if it is ultimately required

Comment: WMC, et al. submitted comments which assumes that 70% of affected businesses would need to install granular activated carbon treatment, for a total annual cost of approximately \$27.9 million (using the department's own estimated treatment costs). This percentage was derived from the percentage of pretreatment industries which needed to install treatment in Michigan.

Response: The department estimates that significantly less than 70% of small businesses will need to install treatment as a consequence of this proposed rule. As stated previously,

direct comparison of costs with Michigan is inappropriate, as the department is allowing 7 years of source reduction activities compared to just a few months in Michigan. Michigan's approach resulted in several industries installing pretreatment immediately, whereas Wisconsin's approach is designed to minimize the number of facilities which ultimately may need treatment by allowing time for source reduction.

Outside the scope of this rule

Comment: Four members of the public expressed support for the development of groundwater and/or drinking water standards.

Response: While the department appreciates support for these related rulemaking efforts, such comments are outside the scope of this rule. They have been forwarded to the appropriate staff for review.

Comments: River Alliance of Wisconsin stated that the proposed PFAS rule reveals weaknesses in our system of regulating toxics. They stated that there should be a way to prevent "forever chemicals" from getting into the environment by screening chemicals before allowing their use, and that our current approach doesn't take into account interaction; need to determine whether there is increased danger when exposed to multiple substances. They further expressed the opinion that it is not appropriate to only measure economic impacts of compliance and not economic benefits of reducing pollution and protecting public health.

Response: Comment noted. The EIA does include a discussion of costs incurred and benefits lost if PFOA and PFOS regulations are not implemented.

Comments: Two members of the public encouraged product substitution that meets the needs of manufacturing and firefighting. They further noted a need to test private wells within a 2-mile radius of landfills, known industrial point source pollution and landspreading of biosolids.

Response: These recommended actions are outside the scope of this rule. They have been forwarded to the appropriate staff for review.

Economic Impact Analysis (EIA) Public Comment Period: Summary and Responses

(Comments received during EIA comment period: Jul. 19 – Aug. 18, 2021)

EIA should include costs related to pit trench dewatering and construction

Comments:

- The Municipal Environmental Group – Wastewater Division and League of Wisconsin Municipalities both expressed that it's unclear how standards will apply to construction

projects that involve pit trench dewatering. Indicating that these costs should be clarified and incorporated into EIA. They indicated that POTWs that accept contaminated groundwater from construction sites will likely face increased costs for reviewing analytical info associated with discharge requests, increased costs to provide analytical info, and potentially retreat wastewater to meet thresholds. Also, POTWs that undertake their own construction activities which may require groundwater treatment before discharging to surface waters could incur significant costs.

- Madison Metropolitan Sewerage District (MMSD) indicated that they have their own construction activities, and if dewatering is required, treatment of groundwater may be required before discharging to surface water. They expressed that on average, MMSD could discharge 0.25 MGD per project and costs for groundwater treatment could be ~\$500,000 per project. If multiple projects per year, MMSD may incur costs of millions of dollars per year which would necessitate increased rates for customers.
- Wisconsin Manufacturers & Commerce and Midwest Food Processors Association expressed concern that exclusion of compliance costs associated with dewatering projects is unlawful, and requiring dewatering operations to be in compliance with a previous threshold without a promulgated rule is unlawful, and that costs associated with dewatering costs must be analyzed and included in the EIA. They also submitted an estimate of a dewatering treatment project which exceeded \$800,000/year.

Response: The department's current implementation of the existing narrative toxic standard in s. NR 102.04(1)(d), Wis. Adm. Code, which is a condition of the dewatering general permit has been applied on a case-by-case basis to discharges that are known to contain high levels of PFAS (e.g. ground water pumped from PFAS contaminated areas in the state), and is based on the authority in s. 283.31(3)(d), Wis. Stats. The department cannot grant coverage under the dewatering general permit (which includes the existing narrative toxic standard) if it is clear that the discharge contains levels of PFAS that are of public health significance and detrimental to public health. The costs associated with treatment installation may vary based on factors such as flow rate and carbon usage. The department's costs are based on solicitation of industry consultants regarding treatment installation costs and the expected flow rates and carbon usage from affected industries. The department has considered treatment costs associated with pit trench and construction dewatering activities as part of this Economic Impact Analysis (see p. 10-11 and p. 18 of Attachment B of Economic Impact Analysis) using data from real projects in Wisconsin over the last few years. Based on the department's review of costs associated with the current interpretation and implementation of the narrative standard in s. NR 102.04(1)(d), Wis. Adm. Code, construction dewatering treatment and analytical costs incurred as a result of this rule are expected to be lower than the costs incurred under the status quo without rule implementation.

EIA should include additional costs associated with source investigation

Comments:

- GZA GeoEnvironmental, Inc. (GZA) submitted the following clarifying questions pertaining to the EIA: Does the cost of \$425 per sample include the cost of labor to collect the sample or does it just represent laboratory analysis? Does the PMP cost of \$6000 per facility include the median or average cost of labor hours? Do dischargers write their own PMP, provided they include all of the requirements?

Response: The original cost of \$425 per sample reflected only the actual sampling cost from the lab, does not include labor costs for sample collection. The original PMP cost of \$6,000 was not inclusive of labor hours, rather it was based on the median of reported costs from permittees for mercury PMP development and implementation. The department anticipates that permittees would be responsible for drafting their own PMPs, specific to their facility. In response to these and other comments, the EIA was updated to have the basis for PMP costs be the cost of labor hours, which are inclusive of labor associated with sample collection. It's also worth noting that permittees are already required to collect samples to test for a variety of pollutants, so the inclusion of additional sample collection labor costs is conservative in this context. Additionally, the cost per sample was increased to \$500/sample, the highest cost associated with any lab that was reporting PFAS sampling cost data to the department. Also, sampling blanks (\$275/blank) and shipping costs (\$75/sample) were included as well.

- Madison Metropolitan Sewerage District (MMSD) expressed concern that the department has underrepresented the financial impacts associated with this rulemaking effort. They identified specific areas where costs could exceed the department estimates, such as PMP development and implementation, increased sampling costs with source identification, and significant costs to industrial users to install treatment and for MMSD to review information to determine treatment necessity. Last, they indicated that MMSD occasionally accepts waste from other POTWs if they experience challenges or operational difficulties, and the proposed thresholds may impact MMSD's ability to accept waste which may result in higher disposal costs for POTWs through other outlets.

Response: Based on data obtained by the department in sampling MMSD's effluent, the department excluded MMSD in the lists of facilities as likely incurring PMP development and implementation costs, along with sampling costs outside of the first 24 months to determine reasonable potential. If MMSD has effluent data showing that they would have reasonable potential to exceed the proposed narrative standard, then the department requests that information and subsequently would reconsider the exclusion of MMSD in this portion of the EIA. However, the department did update the EIA in response to this and other comments to include a more robust estimate of PMP development and implementation costs (based on labor hours), which factors in higher sampling costs during the first couple of years of PMP implementation due to source identification. With regard to impacts to industrial users, the department conducted a thorough analysis of all industries throughout the state which discharge to a POTW that could contain PFOA and

PFOS in the discharge. Additionally, most industrial users are not expected to be significant sources of PFOA or PFOS.

- Municipal Environmental Group – Wastewater Division submitted comments questioning the estimate of PMP costs of \$6000/year, stating that significantly higher costs are anticipated for initial implementation of a PMP due to extensive source identification. They also indicate that the justification for mercury as a surrogate in assessing reasonable potential calculations is unclear.

Response: In response to the comment regarding the under-estimation of PMP development and implementation, the department has updated the EIA to base the PMP costs on actual expected labor hours devoted to PFAS investigation. Additionally, since the department agrees that source investigation sampling efforts would be higher during initial implementation of the PMP, the PMP costs were updated to account for this. Mercury was used as a surrogate in estimating P99s based on a single PFAS sample because the department only had one sampling result for each of the facilities which were sampled, whereas the department has a robust data set for mercury in particular. This allowed the department to be conservative in assessing reasonable potential for facilities with only one data point. Mercury reductions as a result of PMP implementation were used as a tool of estimating expected reductions achievable through PFOA and PFOS minimization plans as well. This is because mercury and PFAS share many similarities in that each is regulated at the parts-per-trillion (ppt) level, each are present at ambient levels in the lower parts-per-trillion range, and elevated levels of each are most commonly the result of an industrial source.

- The National Council for Air and Stream Improvement (NCASI) and the Wisconsin Paper Council submitted comments expressing concern that financial costs pertaining to source identification were underestimated. Specifically, that it may be necessary to test a large number of raw materials (surface/groundwater sources, incoming fiber supplies, process chemicals), repeated testing of incoming raw materials is likely due to variable PFAS concentrations, existing analytical methods are designed for relatively clean waters. Methods under development for wastewaters and certain solids will likely be challenged by certain raw materials used in the pulp/paper industry, and that time and material costs associated with sampling for PFAS are not accounted for. Additionally, they indicated that the cost to retain a consultant is greater than \$6000/year. Last, the usage of mercury to estimate source reduction success discounts the fact that there are several known and controllable sources of mercury. Because PFOS and PFOA have not been used or manufactured in the U.S. for many years, it may be more of a challenge to identify controllable sources of these compounds.

Response: The department recognizes that source reduction activities may be site-specific, and agrees that PMP implementation for mercury, while expected to be similar in many ways to PFAS, may not be an exact surrogate for PMP implementation for PFOA and PFOS. Therefore, in response to this and other comments submitted to the department, the EIA was updated to account for this inherent issue with PFAS source identification. Instead of solely basing the PMP costs on mercury PMP development, the department based it on time devoted to source reduction efforts, even updating sampling

costs to account for the increased sampling during the first couple of years of PMP implementation. In consultation with labs that regularly sample non-potable wastewater media, the cost per sample was also updated, along with the addition of shipping costs and sampling blanks.

The department believes that PFOS and PFOA concentrations in effluent will be controllable through source reduction to a significant extent. Even though PFOS and PFOA have not been manufactured in the U.S. for years, reductions in effluent concentrations may be achieved by replacement or cleaning of pipes, tanks, or other equipment that contain legacy contamination, or through elimination of use of chemicals and materials that contain PFOA and PFOS precursor compounds.

- Wisconsin Manufacturers & Commerce and Midwest Food Processors Association believe that this EIA underestimates the substantial cost that the proposed surface water criteria will have on the regulated community. They state that annual costs of \$6,000 per facility does not account for differences between mercury and PFAS, that the EIA underestimates sampling costs, and it ignores impact of landfill leachate from PFOS/PFOA on water quality.

Response: In response to the comment regarding the under-estimation of PMP development and implementation, the department has updated the EIA to base the PMP costs on actual expected labor hours devoted to PFAS investigation. Additionally, since the department agrees that source investigation sampling efforts would be higher during initial implementation of the PMP, the sampling costs were updated to account for this. In response to the comment on why landfills were excluded, the department agrees that landfills will likely be financially impacted by this rule development, so costs for landfills were added to the EIA.

EIA should account for the benefits of regulations and/or the costs of inaction

Comments:

- Clean Wisconsin identified two studies that have quantified health care costs associated with PFAS exposure. One study calculated the health care burden of PFOA-related low birthweight births in the US provided an estimate of these costs which including direct hospital costs and lost economic productivity due to low birthweight being associated with a variety of longer-term adverse outcomes. A second study found annual healthcare costs associated with PFAS exposure in the EU. They also claimed that diseases linked to PFAS have a large economic cost in the U.S. Washington state's PFAS action plan included a high-level nationwide estimate of annual costs associated with diseases linked to PFAS exposure. They also indicated that fish consumption advisories negatively affect the recreational fishing industry and there will be a significant economic benefit to avoiding PFAS contamination, citing lower recreational visits to parks in the Minneapolis metropolitan area following consumption advisory issuances. Home sales may also be affected by PFAS contamination, citing a report on home values in areas in Minnesota where PFAS contamination was identified. Last, PFAS contamination may disproportionately affect disadvantaged communities. Non-military PFAS contamination sites are more likely to be found closer to

minority and low-income populations. Subsistence anglers are disproportionately non-white, and are more likely to consume contaminated fish and are significantly less likely to be aware of advisories, increasing their health risks.

- League of Women Voters of Wisconsin and League of Women Voters of La Crosse Area both expressed concern that the EIA does not include estimate of benefits of proposed rule. Identifying the following benefits: protection of public health, cost savings from not having to provide bottled water for affected communities, improved lake and stream water quality, and maintaining Wisconsin's tourism/recreation industry.
- Wisconsin Conservation Voters expressed that the department should address the economic impact of not moving forward with rule; as currently structured, EIAs do not account for cost of inaction. For example, families with PFAS-contaminated water are affected such as the Town of Peshtigo, French Island, and Town of Campbell. This forces many to install their own well water treatment systems. They also indicated that Wisconsin is already behind Minnesota and Michigan in promulgating public health-based standards for PFAS. Last, they expressed the opinion that costs associated with infrastructure to remove PFAS, costs of public-health-related consequences should take precedence over costs incurred by small handful of businesses.

Response: In response to these comments expressing an interest in the department assess the costs of not promulgating the proposed standards, EIA Attachment B was updated to include s. 10, which identifies various areas where costs may be incurred to Wisconsinites in the absence of these rulemaking efforts. A particular dollar amount was not factored into the overall maximum 2-year annual costs because the 2-year cost is required to be presented as gross costs rather than net costs, but the department agrees that benefits are an important consideration when discussing costs pertaining to these unregulated compounds.

EIA should include costs associated with treatment if it is ultimately required

Comments:

- The National Council for Air and Stream Improvement (NCASI) and the Wisconsin Paper Council expressed concern that the department did not include estimated costs for pretreatment of PFAS in the EIA, stating that it is expected that granular activated carbon (GAC) will be needed in most applications. NCASI estimated pretreatment costs for a 20MGD facility to exceed \$100 million.

Response: The department included pretreatment costs specific to the facilities that are expected to need to install treatment based on the Wisconsin-specific effluent data that was obtained. The department does not anticipate any paper/packaging manufacturers will need to install treatment as a consequence of this proposed rule. The high cost estimate provided by NCASI for treatment at a 20 MGD facility is likely due to the magnitude of flow at a facility of that size, but, as mentioned, the department believes that such facilities will not need to install treatment as a result of this rule because they

either already meet the proposed standards or are expected to be able to meet them using source reduction.

- Wisconsin Manufacturers & Commerce and Midwest Food Processors Association expressed concern that the EIA underestimated costs for industrial treatment for PFAS. This comment calculated an estimate of >\$27 million/year, noting that they believe the costs could be greater. They also referenced the fact that most PFAS reductions in Michigan occurred as a result of installing pretreatment at the industrial source.

Response: The department did not directly compare the number of facilities expected to install treatment with Michigan for two reasons. First, the department included pretreatment costs specific to the facilities that are expected to need to install treatment based on the Wisconsin-specific effluent data that was obtained. The number of facilities expected to need to install treatment was drawn directly from POTW effluent data, focusing on the universe of POTWs which are estimated to have reasonable potential to exceed the proposed criteria. The department was not provided any other Wisconsin-specific data which contradicts this estimate. Second, Michigan did not grant these pretreatment industries 84 months to implement source reduction and comply with the proposed standards, which would inherently lower the total number required to install treatment. It is unclear how the 27 million a year was derived – no supporting information was provided.