

This document contains the comments the MPCA received during the second Request for Comment public comment period August 28, 2023, through October 30, 2023, for amendments being considered to rules governing Water Quality Standards – Use Classification 1, Revisor ID # R-4727.

37887 Minnesota Pollution Control Agency Request for Comments on Use Class 1 Rule

Closed Oct 30, 2023 · Discussion · 4 Participants · 1 Topics · 4 Answers · 0 Replies · 0 Votes

4

PARTICIPANTS

1

TOPICS

4

ANSWERS

0

REPLIES

0

VOTES

SUMMARY OF TOPICS

SUBMIT A COMMENT

 4 Answers · 0 Replies


Important: All comments will be made available to the public. Please only submit information that you wish to make available publicly. The Office of Administrative Hearings does not edit or delete submissions that include personal information. We reserve the right to remove any comments we deem offensive, intimidating, belligerent, harassing, or bullying, or that contain any other inappropriate or aggressive behavior without prior notification.

Alexander Bogdan · Citizen · (Postal Code: unknown) · Oct 12, 2023 10:31 am

 0 Votes

Comments from Health Risk Assessment at MDH in support of MPCA's proposed WQS are attached.

Cooper Silburn · Citizen · (Postal Code: unknown) · Oct 30, 2023 12:17 pm

 0 Votes

Please find attached MESERB's comments on MPCA's request for comments on possible amendments to rules governing water quality standards – Use Classification 1.

Eric Lindberg · Citizen · (Postal Code: unknown) · Oct 30, 2023 4:07 pm

 0 Votes

Please find the attached comments submitted on behalf of Minnesota Center for Environmental Advocacy and CURE.

Fredric Andes · Citizen · (Postal Code: unknown) · Oct 30, 2023 4:30 pm

 0 Votes

I am submitting comments for the PFAS Regulatory Coalition. Thank you.

Protecting, Maintaining and Improving the Health of All Minnesotans

October 11, 2023

James R. Mortenson
Administrative Law Judge
Office of Administrative Hearings
PO Box 64620
St. Paul, MN 55164-0620

Dear Judge Mortenson,

The Minnesota Department of Health (MDH) is writing in strong support of the Minnesota Pollution Control Agency's (MPCA) proposed amendments (OAH Docket No. 5-9003-37887) to establish Class 1 Water Quality Standards (WQS) for six per- and polyfluoroalkyl substances (PFAS):

1. Perfluorooctanoic acid (PFOA);
2. Perfluorooctane sulfonic acid (PFOS);
3. Perfluorononanoic acid (PFNA);
4. Hexafluoropropylene oxide dimer acid (HFPO-DA, commonly known as GenX chemicals);
5. Perfluorohexane sulfonic acid (PFHxS); and
6. Perfluorobutane sulfonic acid (PFBS).

For decades, MDH and MPCA have partnered in responding to PFAS contamination across Minnesota. During this time, MDH and MPCA have had to develop tools and techniques to account for the unique challenges of PFAS. Tools such as WQS have been critical to ensure that risk assessment, risk management, and remediation decisions are made with the best available science.

Class 1 WQS are applied to waters protected for domestic consumption. The proposed WQS will help MDH and MPCA to achieve their linked missions: to protect, maintain, and improve the

health of all Minnesotans, and to ensure that every Minnesotan has healthy air, sustainable lands, clean water, and a better climate.

Sincerely,

A handwritten signature in black ink that reads "Kristine Klos". The signature is written in a cursive, flowing style.

Kristine Klos, PhD

Supervisor, Health Risk Assessment

Environmental Health

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**MESERB**Minnesota Environmental Science
and Economic Review Board

Using science and economics to improve environmental regulations

October 30, 2023

VIA ONLINE

Honorable James R. Mortenson
Administrative Law Judge
Office of Administrative Hearings
PO Box 64620
St. Paul, MN 55164-0620

Re: MESERB's comments on MPCA's second RFC for Water Quality Standards: Use Class 1

Dear Judge Mortenson,

As a representative of the Minnesota Environmental Science and Economic Review Board (MESERB), I am writing to provide comments on the Minnesota Pollution Control Agency's ("MPCA") second Request for Comments for Water Quality Standards: Use Class 1. MESERB is a municipal joint powers organization comprised of 60 publicly owned wastewater treatment plants ("POTWs") in Greater Minnesota. MESERB is a leader in working with the MPCA to identify and minimize sources of per- and poly-fluoroalkyl substances ("PFAS") to POTWs. Our goal in this rulemaking is to ensure the development and implementation of PFAS standards that protect human health without placing undue burdens on public utilities and the communities that the regulations are designed to protect.

MESERB supports MPCA's effort to develop Class 1 water quality standards for PFAS to protect drinking water sources. Developing these standards will establish important thresholds for the protection of drinking water sources. However, the fact remains that POTWS are not sources of PFAS and there are no presently available technological and economically feasible options to treat PFAS at POTWs.¹ As a result, this rulemaking must support the critical efforts already underway to identify, minimize, and eliminate the sources of PFAS to POTWS and the environment.

As MPCA develops class 1 standards for PFAS, MPCA must use the best available science, create a PFAS-specific Technical Support Document, and execute a comprehensive peer review process that is inclusive of public input, as stipulated under Minn. Stat. § 115.035.

It is our understanding that MPCA is also considering whether to apply future class 1 PFAS WQS to class 1 surface waters exclusively or to also apply the standards to surface waters that affect ground water. MESERB supports the goal of the effort to apply the class 1 PFAS WQS to surface

¹ *Evaluation of Current Alternatives and Estimated Cost Curves for PFAS Removal and Destruction from Municipal Wastewater, Biosolids, Landfill Leachate, and Compost Contact Water*, Prepared by: Barr Engineering Co., Hazen and Sawyer for MPCA, May 2023 <https://www.pca.state.mn.us/news-and-stories/groundbreaking-study-shows-unaffordable-costs-of-pfas-cleanup-from-wastewater>

waters that impact groundwater; however, such efforts must be conscientiously targeted to protecting those ground water resources that are presently or could reasonably be used for drinking water in the future. As such, if MPCA chooses to apply the class 1 PFAS WQS to surface waters that could potentially impact the quality of underlying groundwater, the criteria for such designations should be robust and consistent and MESERB prefers option 2 (over option 1) as outlined in section 2.c (p.5) of the Potential changes to Minn. R. chs. 7052 and 7053 Rule Concepts/Narrative document from the initial request for comment on this issue.²

Furthermore, the MPCA should contemplate broadening the scope of the rulemaking process to develop interim state pretreatment standards or other control rules or regulations. If such included and adopted, these additions could provide additional authority to minimize and eliminate the upstream sources of PFAS to POTWs, while simultaneously providing POTWs needed liability protections under the Minnesota Environmental Response and Liability Act (MERLA). See e.g., Minn. Stat. § 115B.05, subd. 8 (2), (4), and (5). By doing so, the MPCA can create a framework that safeguards public health and provides practical solutions and support to POTWs grappling with the complexities of PFAS management and mitigation in their respective communities.

Thank you for considering these comments on the MPCA's proposal to include PFAS in the Use Class 1 rulemaking. If you have any questions, please reach out to me, at jgad@mankato.gov.

Sincerely,

MINNESOTA ENVIRONMENTAL SCIENCE AND ECONOMIC REVIEW BOARD



Joshua Gad
MESERB President
WRRF Superintendent, City of Mankato
jgad@mankato.gov

cc: Katrina Kessler, Commissioner, MPCA
Nicole Blasing, Municipal Division Director, MPCA
Suzanne Baumann, Municipal Wastewater Manager, MPCA
Daniel Marx, Senior Attorney, Flaherty & Hood, P.A.

² MPCA Amendments to Water Quality Rules for Class 1 waters (domestic consumption) Minn. R. chs. 7050 and 7060 Potential changes to Minn. R. chs. 7052 and 7053 Rule Concepts/Narrative at 5, MPCA, December 2021 [Standards for sources of drinking water | Minnesota Pollution Control Agency \(state.mn.us\)](#)



October 30, 2023
Commissioner Katrina Kessler
Minnesota Pollution Control Agency
c/o Office of Administrative Hearings
600 North Robert Street
P.O. Box 64620
St. Paul, MN, 55164

VIA OAH E-PORTAL

RE: *Minnesota Pollution Control Agency (MPCA), Environmental Analysis and Outcomes Division REQUEST FOR COMMENTS on Amendments being Considered to Rules Governing Water Quality Standards--Use Classification 1, Minnesota Rules chapters 7050, 7052, 7053, and 7060,*

Revisor's ID Number R-04727

OAH Docket No. 5-9003-37887

Dear Commissioner Kessler,

Minnesota Center for Environmental Advocacy ("MCEA")¹ and CURE² appreciate the opportunity to provide comment on the Minnesota Pollution Control Agency's ("MPCA") Request for Comment on Amendments being Considered to Rules Governing Water Quality Standards--Use Classification 1.³ MCEA and CURE strongly support and advocate for stringent Water Quality Standards ("WQS") for per- and polyfluoroalkyl ("PFAS") substances to address the ongoing crisis Minnesota faces to adequately respond to these contaminants.⁴

¹ MCEA is a Minnesota non-profit organization whose mission is to use the law, science, and research to preserve and protect Minnesota's natural resources, its wildlife, and the health of its people. For over forty years, MCEA has worked with citizens and government decision-makers to protect and improve the quality of Minnesota's environment.

² CURE is a rural non-profit that protects and restores resilient communities and landscapes by harnessing the power of people who care about them. We believe that robust human communities can only be sustained by healthy ecosystems, and robust natural environments can only be regained through vigorous stewardship.

³ 48 SR 240.

⁴ These comments are also endorsed by Clean Water Action, Environmental Working Group, Institute for Agriculture & Trade Policy, Roots Return Heritage Farm, LLC, Minnesota Well Owners Organization, Sierra Club North Star Chapter, and WaterLegacy who are concerned about the harm PFAS contamination presents to the environment and public health.

The purpose of this comment is primarily to respond to MPCA's third topic for consideration:

The cumulative effect of the rule amendments with other federal and state regulations as related to the specific purpose of the rule (Minnesota Statutes, section 14.131(8)). Cumulative effect means the incremental impacts that result from the proposed rule in addition to other rules, regardless of what state or federal agency has adopted the other rules.

Any designation of WQS for PFAS will directly interact with the permitting of point sources, like Wastewater Treatment Facilities ("WWTFs"), under the National Pollutant Discharge Elimination System ("NPDES") and State Disposal System ("SDS") program. At the federal level, the U.S. Environmental Protection Agency ("EPA") has issued proposed Maximum Contaminant Levels ("MCLs") and a Hazard Index ("HI") for the six PFAS substances identified by MPCA in this second request for comments.⁵ MPCA must consider how its PFAS WQS can best be crafted to meet these federal limits. Minnesota's WQS must be stringent enough to be effective in regulating point source discharges so that when the MCLs become effective, the costs of compliance are borne by responsible dischargers, not downstream water utilities.

PFAS WQS will also affect and be affected by Minnesota's current Sewage Sludge Management rules (the "Biosolids rules").⁶ Specifically, how WQS affect permitting under the NPDES/SDS ("SDS"),⁷ and what contaminants are included as "pollutants" under the rules.⁸ Any issuance of PFAS WQS will need to consider the Biosolids rules as biosolids are a pathway for groundwater contamination and are directly referenced in the NPDES/SDS program.

MCEA and CURE strongly urge MPCA to take the following steps in its upcoming rulemaking. First, MCEA and CURE request MPCA issue numeric WQS for Class 1 waters for these six PFAS substances at or below EPA's proposed MCLs. The commenters also request MPCA explicitly add PFAS as a pollutant under the Biosolids rules. Finally, MCEA and CURE request MPCA expand its PFAS monitoring and data collection efforts to address PFAS in biosolids, in effluent from WWTFs, and through its ambient groundwater monitoring program.

⁵ PFAS National Primary Drinking Water Regulation Rulemaking, 88 Fed. Reg. 60, 18638 (Mar. 29, 2023) (to be codified at 40 C.F.R. pts. 141, 142) [hereinafter EPA proposed PFAS rulemaking].

⁶ Minn. R. chapter 7041.

⁷ Minn. R. 7041.0600.

⁸ Minn. R. 7041.1100.

MCEA and CURE also offer additional comments on MPCA's first topic for consideration, how to administer these new WQS but keep costs for permittees relatively low, and additional legal duties MPCA should consider and implement in fashioning a system for setting and updating protective PFAS limits.

I. PFAS are a danger to human health

PFAS exposure has been linked to an array of serious health effects on human populations. EPA has concluded that PFOS and PFOA are "likely carcinogenic."⁹ Studies have shown PFAS exposure is associated with: reduced immune function; thyroid disease; liver disease; lipid and insulin dysregulation; high cholesterol; kidney disease; buildup of uric acid leading to renal disease; reproductive dysfunction such as reduced fertility, menstrual disruption, and pregnancy induced hypertension and preeclampsia; low birth weight and developmental interruptions; and many various cancers.¹⁰

Scientific studies from experts around the world have identified the various adverse health outcomes that result from even minimal PFAS exposure. One such expert, Dr. Alan Ducatman, has contributed his voice and expertise on the adverse health outcomes associated with PFAS exposure to support MPCA issuing stringent WQS.¹¹ Dr. Ducatman has extensively researched and published peer reviewed articles on PFAS toxicity and its effects on public health. He notes not only the cancer rates associated with PFAS exposure, but that drinking water is "a reliable source of exposure and internal PFAS contamination, which puts entire populations at risk."¹² Reducing or eliminating PFAS in drinking water, especially those substances with the most scientific data linking them to negative health outcomes, such as the six MPCA has identified, is vital to protecting Minnesotans. MPCA's issuance of stringent PFAS WQS for Class 1 waters is a necessary tool to eliminate exposure rates through drinking water.

⁹ EPA proposed PFAS rulemaking, *supra* note 5.

¹⁰ Suzanne E. Fenton et al., *Per- and Polyfluoroalkyl Substance Toxicity and Human Health Review: Current State of Knowledge and Strategies for Informing Future Research*, 40 ENV'T TOXICOLOGY & CHEMISTRY 606-630 (2021).

¹¹ Attachment 1, Letter of Support from Dr. Alan Ducatman to Katrina Kessler, MPCA Commissioner (Oct. 11, 2023).

¹² *Id.*

II. WQS are critical to reducing PFAS concentrations in drinking water

PFAS are known to be ubiquitous throughout our environment.¹³ The substances are found in the bloodstreams of almost all humans on earth.¹⁴ We know that humans are commonly exposed to PFAS through contaminated drinking water.¹⁵ A recent study released by the U.S. Geological Survey, found that PFAS were present in at least 45% of drinking water systems within the U.S.¹⁶ Of the drinking water systems sampled, the most frequently found PFAS substances included PFBS, PFHxS, and PFOA.¹⁷ In all samples, PFOS and PFOA concentrations exceeded EPA interim health advisory limits.¹⁸ These substances are the same contaminants MPCA proposes to include in its WQS for Class 1 drinking water usage. By setting stringent numerical standards, Minnesota can continue to address and eliminate the pathways PFAS enter our state's waters.

PFAS exposure presents serious adverse health effects to Minnesotans and damages the environment. Scientific studies, agency data collection, and first-hand accounts have documented the severity and extent of the problem all. As evidence of this harm has grown, so has agency response, legislative initiative, and litigation efforts to begin the cleanup, testing, monitoring, and cessation of discharging these substances entering into our water systems. MPCA's issuance of WQS for these substances provides a critical link in this process. In issuing this request for comment, MPCA has signaled its awareness that drinking water is a critical pathway where exposure can and must be reduced.

¹³ Feng Xiao et al., *Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoate (PFOA) in Soils and Groundwater of a U.S. Metropolitan Area: Migration and Implications for Human Exposure*, 72 WATER RSCH. 64-74 (2015).

¹⁴ Ryan C. Lewis, Lauren E. Johns & John D. Meeker, *Serum Biomarkers of Exposure to Perfluoroalkyl Substances in Relation to Serum Testosterone and Measures of Thyroid Function Among Adults and Adolescents from NHANES 2011-2012*, 12 INT'L J. ENV'T RSCH. PUB. HEALTH 6098-6114 (2015), <https://doi.org/10.3390/ijerph120606098>.

¹⁵ Feng Xiao et al., *Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoate (PFOA) in Soils and Groundwater of a U.S. Metropolitan Area: Migration and Implications for Human Exposure*, 72 WATER RSCH. 64-74 (2015).

¹⁶ *Tap Water Study Detects PFAS 'Forever Chemicals' Across the U.S.*, U.S. GEOLOGICAL SURV. (July 5, 2023), <https://www.usgs.gov/news/national-news-release/tap-water-study-detects-pfas-forever-chemicals-across-us#:~:text=At%20least%2045%25%20of%20the,by%20the%20U.S.%20Geological%20Survey>.

¹⁷ *Id.*

¹⁸ *Id.*

A. Minnesota's agencies have recognized the threat of PFAS

Minnesota's agencies have acknowledged the crisis that these substances present. In 2021, MPCA issued its "PFAS Blueprint," which provided a roadmap for how MPCA and other state agencies would coordinate their response to the PFAS problem.¹⁹ In the PFAS Blueprint, MPCA identified the need to limit PFAS exposure through drinking water, food consumption, and waste and waste byproducts. MPCA's PFAS Blueprint called out the various harms linked to PFAS through these consumption pathways, and indicated the need for increased testing, monitoring, and research to reduce harm and exposure pathways. To achieve these data collection goals and to fill in gaps of how PFAS travels through our environment, the report recommended MPCA work with the Minnesota Department of Health ("MDH") to reduce PFAS exposure and contamination.

MDH has taken some of the swiftest actions among state agencies in its response to PFAS contamination in drinking water. In 2002, MDH established its first Health Based Values ("HBVs")²⁰ for two types of PFAS—PFOS and PFOA.²¹ The HBVs provide guidance to drinking water providers on the levels of PFAS that should not be exceeded in order to protect human health. Based on the scientific data available at the time, MDH determined that drinking water should not contain more than 1,000 parts-per-trillion ("ppt") of PFOS and 7,000 ppt of PFOA. As more data accumulated and testing technologies advanced, MDH continued to reevaluate and update its regulations. In response, MDH included regulatory levels for additional PFAS, such as PFHxS and PFBS. Five years later, in 2007, MDH again released updated HBVs for PFOS and PFOA. This time, MDH drastically reduced contaminant limits to 300 ppt for both substances. These standards remained in place until 2017, when MDH again reduced concentration limits to 27 ppt for PFOS and 35 ppt for PFOA. A year later, MDH further dropped the limits for PFOS down to 15 ppt. In a matter of less than two decades, MDH instituted a 99% decrease from the first HBV. In fact, a now-retired senior researcher at MDH charged with developing the agency's guidance values stated that in his career he had never seen

¹⁹ MINN. POLLUTION CONTROL AGENCY, MINNESOTA'S PFAS BLUEPRINT (2021), <https://www.pca.state.mn.us/sites/default/files/p-gen1-22.pdf>.

²⁰ Health Based Values are "the concentration of a chemical (or a mixture of chemicals) that is likely to pose little or no risk to human health. *Health-Based Values and Risk Assessment Advice for Water*, MINN. DEP'T OF HEALTH, <https://www.health.state.mn.us/communities/environment/risk/guidance/hbvraawater.html> (last visited Oct. 23, 2023).

²¹ *Toxicological Summary for Perflouroctane Sulfonate*, MINN. DEP'T OF HEALTH (Aug. 2020), <https://www.health.state.mn.us/communities/environment/risk/docs/guidance/gw/pfos.pdf>; *Toxicological Summary for Perfluorooctanoate*, MINN. DEP'T OF HEALTH (Mar. 2022), <https://www.health.state.mn.us/communities/environment/risk/docs/guidance/gw/pfoa2022.pdf>.

such repeated and significant changes to toxicity levels for contaminants in drinking water. These drastic actions in response to increased scientific studies and research show not only the pervasiveness of PFAS in our environment, but also agency initiative in taking the actions needed to address this crisis.

While MDH's swift science-based system for establishing limits is a good example for other agencies, it is now MPCA's duty to set enforceable WQS for all waters of the state. MPCA must not only follow the best science, but it also must establish a testing and permitting regime that achieves the standards without any lingering impairment. These pollutants are far too harmful and long-lived to allow for them to be untracked or discharged in amounts that are harmful to human health and the environment.

B. The Minnesota legislature has recognized PFAS as harmful

The 2023 legislative session culminated in historic action to address PFAS within Minnesota. Colloquially known as Amara's Law, the Minnesota Legislature passed a ban on the non-essential use of intentionally added PFAS into consumer goods.²² This was a critical first step in turning off the proverbial tap to prevent further intrusion of PFAS substances into our environment. The cessation of PFAS in many products means that less of the substances will flow into WWTFs from our homes, landfills, and stormwater drains. The resulting effect will reduce the infiltration of PFAS that ultimately enters our water systems.

The scope of Amara's Law, along with Minnesota being one of the first states to enact such a non-essential use ban, is evidence of our lawmakers' serious concern for PFAS within our environment. As part of this historical legislative session, MPCA is also required to enact WQS for these six PFAS compounds.²³ Stringent WQS are the next crucial step in preventing the recycling of PFAS through our water systems and into our drinking water. Because of this, MPCA will also need to consider how to meet these WQS when there are non-regulated sources of PFAS entering our drinking water systems. In order to set effective PFAS WQS, MPCA needs to systematically monitor known PFAS pathways to drinking water sources to identify where remediation work needs to be focused. MPCA, as part of its monitoring efforts, should additionally include ambient groundwater data. The collection, as well as the public release of ambient groundwater data for PFAS, is key to both agency and public understanding in mitigating exposure risks.

²² Minnesota Session Law - 2023, Chapter 60, H.F. No. 2310, Article 3, Section 21.

²³ Minnesota Session Law - 2023, Chapter 60, H.F. No. 2310, Article 3, Section 33.

III. Federal Regulations: WWTF and EPA's MCLs

In March of 2023, EPA published proposed rulemaking to begin addressing PFAS in drinking water through MCLs and a Hazard Index ("HI").²⁴ The EPA identified six substances where the science indicated a need for regulation under the National Primary Drinking Water Regulations. These six PFAS are the same substances that MPCA intends to regulate in its request for comment on WQS. EPA proposed to set federal MCLs at 4 parts per trillion ("ppt") for both PFOA and PFOS. EPA additionally set a HI to not exceed an aggregate of 1, with individual limits for PFNA at 10 ppt, PFHsX at 9 ppt, PFBS at 2,000 ppt, and GenX at 10 ppt.

As part of its directive under the Safe Drinking Water Act, EPA was first required to identify MCL Goals ("MCLGs") for these six substances before issuing proposed MCLs. MCLGs are to "be set at the level at which no known or anticipated adverse effects on the health of persons occur and which allows an adequate margin of safety."²⁵ After reviewing the scientific evidence, EPA found that there was no level at which the exposure to PFOA or PFOS was safe and set the MCLGs for these two substances at zero.²⁶ Once MCLGs were identified, EPA was then required to set MCLs as technologically and feasibly close to MCLGs as possible. MPCA should take seriously the direness of EPA's finding that no levels of PFOA or PFOS are safe for humans.

EPA's issuance of these MCLGs, MCLs, and HI can serve as an effective standard for MPCA to use in setting WQS for these substances. Knowing an approximation of what forthcoming federal PFAS regulations will be, MPCA can set its own WQS at or below those limits to reduce cost and compliance by WWTFs. Doing so will assist WWTFs and taxpayers in the financial burden of PFAS treatments and further reduce the cyclical pattern of PFAS flowing through Minnesota's water systems.

A. Stringent WQS will reduce the cost of complying with federal MCLs

By setting PFAS WQS at or below the levels identified by EPA, MPCA can begin to dampen the costs of removing PFAS from Class 1 waters. Shortly after EPA issued its proposed MCL rulemaking, MPCA released a report illuminating the projected cost to WWTFs to treat PFAS in drinking water.²⁷ MPCA expressed concern that WWTFs would not be able to afford the technological upgrades needed to fully remove PFAS, stating

²⁴ EPA proposed PFAS rulemaking, *supra* note 5.

²⁵ 42 U.S.C. § 300g-1(b)(4)(A).

²⁶ EPA proposed PFAS rulemaking, *supra* note 5.

²⁷ MINN. POLLUTION CONTROL AGENCY, EVALUATION OF CURRENT ALTERNATIVES AND ESTIMATED COST CURVES FOR PFAS REMOVAL AND DESTRUCTION FROM MUNICIPAL WASTEWATER, BIOSOLIDS, LANDFILL LEACHATE, AND COMPOST CONTACT WATER (Barr Engineering Co. & Hazen and Sawyer 2023).

that it could cost WWTFs and the state \$14 to \$28 billion over the next 20 years.²⁸ The report highlighted that smaller WWTFs may end up expending six times more than their larger counterparts to address PFAS. Part of the problem identified was leachates from nonpoint sources entering water streams and bringing along PFAS laden water. One of the solutions suggested that “[t]argeting PFAS in wastewater streams [] would be a significant step toward protecting these resources.”²⁹

MDH has already identified areas in Minnesota where PFAS levels in drinking water currently exceed EPA’s proposed MCLs and HI. These include the cities of Alexandria, Cloquet, Cottage Grove, Hastings, Lake Elmo, Pease, Saint Paul Park, Sauk Rapids, Stillwater, Swanville, Waite Park, and Woodbury.³⁰ The concern here is that the WWTFs that serve these areas will have an even harder time at meeting the finalized MCLs. MPCA can help reduce the costs to WWTFs serving these areas. Strict WQS for PFAS will slow the reintroduction of these substances into the water systems, so that WWTFs downstream are not continuously in violation of MCLs due to the actions of those upstream. As time elapses, WQS will reduce the concentrations of PFAS in our surface and groundwater. In conjunction, MCLs and the HI will begin to reduce the levels found in WWTF effluent. This is critical, because without stringent WQS, PFAS are simply being recycled in our environment, with WWTFs, and ultimately Minnesotans, left to pick up the tab.

B. MPCA has a duty to the public to reduce compliance cost through stringent PFAS WQS

Part of the PFAS solution is holding polluters accountable. We are already seeing lawsuits across the nation seeking compensation from polluters for PFAS released into water systems. In fact, WWTFs have recently turned to litigation in an effort to recoup the costs of receiving PFAS laden water. Just this year, WWTFs across the nation settled a lawsuit against 3M for \$10.3 billion, to be used to offset the treatment costs from decades

²⁸ *Groundbreaking Study Shows Unaffordable Costs of PFAS Cleanup from Wastewater*, MINN. POLLUTION CONTROL AGENCY, <https://www.pca.state.mn.us/news-and-stories/groundbreaking-study-shows-unaffordable-costs-of-pfas-cleanup-from-wastewater> (June 6, 2023).

²⁹ *Id.*

³⁰ Deena Winter, *12 Minnesota Exceed EPA’s Proposed Limits for Forever Chemicals in Drinking Water*, MINN. REFORMER (Aug. 22, 2023), <https://minnesotareformer.com/2023/08/22/12-minnesota-cities-exceed-epas-proposed-limits-for-forever-chemicals-in-drinking-water/>.

of PFAS polluted water.³¹ Positioning WWTFs to rely on litigation so that they may be in compliance with federal MCLs is a regulatory failure. MPCA is well positioned to be an ally in reducing these costs and can do so with its regulatory power.

Even before MPCA issues WQS for PFAS, the agency can leverage its NPDES/SDS authority to ensure that testing, monitoring, and pretreatment occurs for those industrial users who send their water to WWTFs. In December of 2022, EPA released a Memorandum of Guidance to States as part of its own PFAS Strategic Roadmap.³² The guidance memo stressed the need for states to begin to use their authority under the NPDES/SDS permitting process to help WWTFs reduce PFAS in water systems. EPA provided a whole host of actions that can be taken, including testing, monitoring, and pretreatment programs that states should utilize “to the fullest extent available under state and local law.”³³

EPA recommends that specific terms be included in NPDES/SDS permits to address PFAS in water systems. These include pretreatment provisions when issuing a permit or by modifying an existing permit;³⁴ quarterly requirements to monitor effluent and waste water for PFAS discharges; Best Management Practices MPCA can write into its NPDES/SDS permits for industrial users to decrease PFAS discharges; requiring WWTFs to take an inventory of all industrial users from which they receive PFAS influent; and ensuring that all PFAS monitoring data be reported on Discharge Monitoring Reports.³⁵ The guidance memo also recognizes the importance of biosolids in PFAS reduction. EPA advocates that states work with WWTFs to begin reduction of PFAS in biosolids through the use of NPDES/SDS permits by including testing, monitoring, and pretreatment programs.

By acting in accordance with EPA guidance, MPCA can strengthen NPDES/SDS permit terms to get ahead of the PFAS remediation efforts. MPCA can give WWTFs additional regulatory tools for accountability through instigating pretreatment requirements, requiring testing and monitoring programs, and updating its Biosolids

³¹ Clark Mindock, *3M's \$10.3 Billion PFAS Settlement Gets Preliminary Approval*, REUTERS (Aug. 20, 2023), [https://www.reuters.com/legal/government/us-states-withdraw-objections-3ms-103-billion-pfas-settlement-2023-08-29/#:~:text=Aug%2029%20\(Reuters\)%20%2D%203M,their%20objections%20to%20the%20deal](https://www.reuters.com/legal/government/us-states-withdraw-objections-3ms-103-billion-pfas-settlement-2023-08-29/#:~:text=Aug%2029%20(Reuters)%20%2D%203M,their%20objections%20to%20the%20deal).

³² U.S. ENV'T PROT. AGENCY, MEMORANDUM OF GUIDANCE ADDRESSING PFAS DISCHARGES IN NPDES PERMITS AND THROUGH THE PRETREATMENT PROGRAM AND MONITORING PROGRAMS (2022), https://www.epa.gov/system/files/documents/2022-12/NPDES_PFAState%20Memo_December_2022.pdf.

³³ *Id.*

³⁴ MPCA maintains the authority to do so under 40 C.F.R. § 122.62.

³⁵ See 40 CFR 122.41(l)(4)(i).

rules. These tools, along with stringent PFAS WQS are available to MPCA to begin to address the cycle of PFAS recirculating through our Class 1 waters.

IV. State Rules: Biosolids

Minnesota, like all states except Maine, currently allows for biosolids, or sewage sludge, to be land applied. Biosolids are a byproduct of the wastewater treatment process. Although historically applied throughout Minnesota, we are starting to understand the implications of this practice and its effect on groundwater. MPCA's Biosolids rules are found in Chapter 7041 of the regulations and control how biosolids from WWTF are regulated for land application. Two of these sections will impact any rulemaking MPCA completes on PFAS WQS, Minn. R. 7041.0600, and Minn. R. 7041.1100. These regulations pertain to what terms are in place for biosolids included in NPDES/SDS permits, and what contaminants are considered a "pollutant" under Minnesota's Biosolids rules. As MPCA develops WQS for PFAS, the agency will need to address how land applied biosolids will impact the ability to meet these WQS.

The Minnesota Supreme Court recently reiterated the importance of protecting groundwater from pollution under Minnesota's groundwater rules. The court stressed that under the rules, groundwater must be protected from the addition of new pollution and requires the abatement of existing pollution – stating that in short, Minn. R. 7060.0600 subp. 2 disallows pollution to "be discharged to the unsaturated zone in a way that may result in pollution to the underground waters."³⁶ The court said that in addition to the subpart 2 prohibition on pollution entering groundwater through the unsaturated zone, subpart 3 of the rule works to "require[] control measures *before* any waste is discharged to or deposited in the saturated zone or the unsaturated zone."³⁷ This court decision is important to the PFAS discussion, because we know that PFAS can enter groundwater through biosolids land application, thereby causing additional pollution. This is especially true for long term land application, and for PFOA and PFOS. Addressing Minnesota's Biosolids rules are a necessary control measure that can be implemented before further groundwater pollution results from leaching and surface runoff.

A. Once WQS are in place, they will set the limit for PFAS in Class 1 waters

MPCA has identified that WQS should be employed for Class 1 usage, which applies to surface and groundwater systems intended for drinking water.³⁸ Under the

³⁶ *In the Matter of the Denial of Contested Case Hearing Requests and Issuance of National Pollutant Discharge Elimination System / State Disposal System Permit No. MN0071013 for the Proposed NorthMet Project St. Louis County Hoyt Lakes and Babbitt Minnesota*, 993 N.W.2d 627, 663 (Minn. 2023).

³⁷ *NPDES/SDS Permit No. MN0071013*, 993 N.W.2d at 665 (emphasis in original).

³⁸ Minn. Stat. §§ 115.03, 115.44; Minn. R. 7050.0221.

Clean Water Act (“CWA”), if the concentration of PFAS in the water exceeds the WQS, then there can be no new point source discharges into that water absent an exception specified in a NPDES permit.³⁹ In order to meet PFAS WQS, MPCA will need to be cognizant of the pathways through which PFAS are entering both surface and groundwater, both as point sources and nonpoint sources. One of the non-regulated ways in which PFAS currently enters Class 1 designated waters, is through the land application of biosolids.

Under section 303(d) of the CWA, MPCA will be required to identify which water bodies will be unable to meet the WQS for PFAS, once dischargers have employed technology-based standards.⁴⁰ This will then require MPCA to identify these segments as impaired and begin the process of issuing and ranking Total Maximum Daily Loads (“TMDLs”) for the pollutants in the impaired segments.⁴¹ TMDLs are defined as “the sum of the individual [waste load allocations] for point sources and [load allocations] for nonpoint sources and natural background.”⁴² Because there are many nonpoint sources through which PFAS are released into Class 1 waters, the land application of biosolids included, NPDES/SDS permits will in turn be affected. MPCA will need to address this by incorporating waste load allocations into each NPDES permit through numerical pollution discharge limitations, or water quality-based effluent limitations (“WQBELS”).⁴³ One effective way for MPCA to get ahead of this is to begin the process of testing, monitoring, and regulating PFAS through its Biosolids rules.

B. The land application of biosolids are a nonpoint source of pollution for PFAS entering our groundwater and surface waters

Minnesota has regulations in place for biosolids, but none that contain enforceable PFAS standards. This is concerning, and must be rectified, as studies show that PFAS can leach from the surface level into the vadose zone⁴⁴ and into groundwater.⁴⁵ It has long

³⁹ 40 C.F.R. § 122.44.

⁴⁰ 33 U.S.C. § 1313(d).

⁴¹ 33 U.S.C. § 1313(d); 40 C.F.R. §§ 130.7, 130.10.

⁴² 40 C.F.R. § 130.2(i).

⁴³ 40 C.F.R. § 122.44.

⁴⁴ The vadose zone refers to the unsaturated zone of the earth that extends from right below the soil surface, down to the groundwater table. See P.A. HOLDEN & N. FIERER, *ENCYCLOPEDIA OF SOILS IN THE ENVIRONMENT* 216 (U.C. SANTA BARBARA 2005), <https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/vadose-zone>.

⁴⁵ Feng Xiao et al., *Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoate (PFOA) in Soils and Groundwater of a U.S. Metropolitan Area: Migration and Implications for Human Exposure*, 72 *WATER RSCH.* 64-74 (2015); Gwynn R. Johnson, *PFAS in Soil and Groundwater Following Historical Land Application of Biosolids*, 211 *WATER RSCH.* 118035 (2022).

been suspected that given the prevalence of PFAS found in humans and consumer products, that biosolids from WWTFs, especially those facilities that receive high levels of industrial wastewater, would also contain high concentrations of PFAS. Scientific studies have confirmed this suspicion to be accurate.⁴⁶

Research has confirmed that depending on the type of soil, the geological composition of the land, and whether the PFAS substances are short or long chained, PFAS in biosolids that are land applied can migrate through the soil and into the groundwater below.⁴⁷ In a first of its kind study, researchers from Portland State University took soil core and groundwater samples from a Pacific Northwest farm that had been land applying biosolids since the 1990s.⁴⁸ Samples were tested for twelve PFAS substances to determine which substances were more prone to leaching and how extensive the leaching was. What they found confirmed what researchers around the globe had already suspected – PFAS leach from the surface, through the soil profile, and into groundwater. PFOA and PFOS were found in the highest concentrations both throughout the soil and in the groundwater below. And short-chain PFAS were more prone to leaching. This makes sense from a historical production background, as PFOA and PFOS are what is known as “legacy” compounds, meaning that they are the earliest PFAS produced and are therefore more abundant in our environment. As Minnesota’s 3M has been a historical mass producer of PFAS substances, including legacy compounds, this data is especially concerning.

The results of this study indicate that historical, long-term use of biosolids to amend soil has a positive correlation with increased levels of PFAS in the soil, creating a high potential to cause groundwater contamination below these soils. The important takeaway here is that as Minnesota continues to apply biosolids, we will continue to impact groundwater health. As more time elapses, Minnesota will see more water contamination from thousands of kinds of newer, short-chain PFAS substances that have replaced long-chain PFOS and PFOA and have had less time to build up in our environment than their legacy counterparts. Addressing Minnesota’s Biosolids rules in conjunction with issuing WQS for PFAS will help prevent future effects of these substances leaching into groundwater. In concert, MPCA must develop Minnesota-specific sampling and data to determine the severity of PFAS leaching into Class 1 waters

⁴⁶ See Jennifer A. Pozzebon & Lars Seifert, *Emerging Environmental Health Risks Associated with the Land Application of Biosolids: A Scoping Review*, 22 ENV’T HEALTH 57 (2023); see also Ian Pepper et al., *Is PFAS from Land Applied Municipal Biosolids a Significant Source of Exposure via Groundwater?*, 864 SCI. TOTAL ENV’T 161154 (2023).

⁴⁷ Jennifer A. Pozzebon & Lars Seifert, *Emerging Environmental Health Risks Associated with the Land Application of Biosolids: A Scoping Review*, 22 ENV’T HEALTH 57 (2023).

⁴⁸ Gwynn R. Johnson, *PFAS in Soil and Groundwater Following Historical Land Application of Biosolids*, 211 WATER RSCH. 118035 (2022).

from biosolids that are land applied across the state. Especially since EPA-released data demonstrates that various PFAS substances can transfer into the edible portions of plants in soil amended with biosolids.⁴⁹

C. While NPDES/SDS permits do include biosolids terms, Minn. R. 7041.1100 must identify PFAS as a “pollutant”

Minnesota regulations do not explicitly identify PFAS as a pollutant.⁵⁰ MPCA defines a “pollutant” to include any organic or inorganic substance that “after discharge and upon exposure, ingestion, inhalation, or assimilation into an organism either directly from the environment or indirectly by ingestion through the food chain, *could*, on the basis of information available to the administrator of EPA, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions including malfunction in reproduction, or physical deformations in either organisms or offspring of the organisms.”⁵¹ Given the concerns EPA identified in its proposed rulemaking for MCLs and HI for these same six PFAS substances, and the finding that PFOA and PFOS are “likely carcinogenic,”⁵² these six compounds fit squarely within MPCA’s definition of what should be included as a “pollutant” under the rule.

Additionally, Minnesota includes biosolids terms in its NPDES/SDS permits for those who intend to land apply biosolids or those who distribute biosolids for land application.⁵³ The consequence of failing to explicitly include PFAS as a pollutant under Minn. R. 7041.1100 is that, under current regulations, NPDES/SDS permits do not fully address water contamination. Until PFAS are explicitly recognized as a pollutant, NPDES/SDS permit holders will be out of sync with the proposed WQS. When permits are issued or renewed, there will be incongruencies between the terms required in WQBELs to meet TMDLs for impaired waters, and the biosolids terms that omit PFAS. Point source dischargers will effectively be contributing to the PFAS pollution that their

⁴⁹ Marc Mills, *Session 6: PFAS Treatment in Biosolids—State of the Science*, U.S. EPA OFFICE OF RESEARCH AND DEVELOPMENT (Sept. 23, 2020), https://www.epa.gov/sites/default/files/2020-10/documents/r1-pfas_webinar_day_2_session_6_mills_final.pdf.

⁵⁰ Minn. R. 7041.1100.

⁵¹ Minn. R. 7041.0100, subp. 40 (emphasis added).

⁵² In its proposed rulemaking, EPA identifies the need to regulate these six compounds in drinking water because exposure above “certain levels can result in harmful health effects. Depending on the individual PFAS, health effects can include negative impacts on fetal growth after exposure during pregnancy, on other aspects of development, reproduction, liver, thyroid, immune function, and/or the nervous system; and increased risk of cardiovascular and/or certain types of cancers, and other health impacts.” EPA proposed PFAS rulemaking, *supra* note 5.

⁵³ Minn. R. 7041.0600, 7041.0700.

permits are attempting to reduce. This problem is even more salient for WWTFs, who will be left with the ramifications of both treating PFAS laden influent and ensuring that effluent meets federal standards.

As MPCA begins considering WQS for PFAS, the agency will also need to evaluate how these limits affect current and future NPDES/SDS permit holders. MPCA will need to include terms that monitor for these substances and require regular testing to ensure discharges from these point sources are not exacerbating PFAS concentrations in Class 1 waters.⁵⁴ For MPCA to ensure compliance with its own WQS, the agency must also begin to address how PFAS flows through and is discharged from both point sources and nonpoint sources.

Minnesota's regulations allow for biosolids to be prepared in other states and then applied to Minnesota lands.⁵⁵ Many other states have not yet begun to address PFAS with the critical eye that Minnesota has, so this provides additional opportunities for continued PFAS contamination of our lands and water systems. By labeling these six compounds as a "pollutant," MPCA has the opportunity to tackle yet another front of PFAS intrusion and limit the concentrations in biosolids shipped into the state as well as those produced in-state. Just as we have ceased importing consumer products with intentionally added PFAS under Amara's Law, we should stop importing biosolids with PFAS from other states. Doing so will close an additional PFAS pathway here in Minnesota, reducing the adverse effects on the environment and the health of residents.

V. MPCA should require a Total Organic Fluorine testing regime to better identify waters that may be impaired before testing for specific PFAS

MPCA must determine if the costs of compliance will exceed \$25,000 for a city or business and will undoubtedly be hearing from regulated industries regarding the cost of testing for these chemicals. By adopting rigorous and across-the-board requirements for Total Organic Fluorine ("TOF") testing, MPCA could better understand the extent of water pollution, while potentially lowering the costs of compliance for most permittees.

TOF testing allows for a single test to screen for the presence of any PFAS, as all PFAS contain organic fluorine. By requiring all permittees to engage in regular TOF tests of their discharge, and for a systematic testing of Minnesota waters using TOF testing, MPCA could get a full view of PFAS presence across the state and all regulated industries. After a TOF result demonstrates the presence of organic fluorine, MPCA could then mandate the more specific tests required for the listed PFAS at issue in this rulemaking. If the TOF test showed no organic fluorine, then the additional testing for specific PFAS

⁵⁴ For example, TMDLs incorporated into effluent and technological based limits. *See* 40 C.F.R. § 122.44(d)(1)(vii)(B).

⁵⁵ Minn. R. 7041.0600, subp. 1(B).

may be unnecessary—but continued regular testing for TOF would of course still be called for. Overall, by collecting the larger data set of impacted waters that have high TOF readings, MPCA will have more and better data about PFAS contamination than it could ever have by simply requiring testing for six of these chemicals out of the thousands that are known to exist.⁵⁶ Without this comprehensive testing for all PFAS presence throughout the state, MPCA will never be able to catch up to the real damage wrought by many decades of uncontrolled release of these dangerous chemicals.

While numerous labs may be able to provide TOF testing, it is apparent that at least one leading company, Eurofins, has the capacity to provide this service and that its testing methods are complementary to EPA testing methods that MPCA is presumably already considering following.⁵⁷ By reaching out to similarly situated labs now, MPCA could inform its process and maximize the data produced at the lowest cost by requiring TOF testing as a gatekeeping measure along with more specific EPA testing methods for specific PFAS.

VI. MPCA is required by the Minnesota Environmental Policy Act to continuously update these standards as the science develops, and should establish an expert panel for that purpose

The Minnesota Environmental Policy Act (“MEPA”) requires MPCA to consult with outside experts, other than the regulated community, to set the best standards possible with current science.⁵⁸ Because MEPA requires this, MPCA must establish an unbiased non-permittee advisory council to review and tighten these WQS for the PFAS that the agency has identified for regulation.⁵⁹ Moreover this advisory council must also

⁵⁶ EPA’s, now retired, list of PFAS chemicals included 12,034 known PFAS at the time it was retired. See *PFAS Master List of PFAS Substances (RETIRED)*, U.S. ENV’T PROT. AGENCY, <https://comptox.epa.gov/dashboard/chemical-lists/pfasmaster> (last visited Oct. 26, 2023).

⁵⁷ For more information on Eurofins services in this regard see *PFAS Testing (Per- and Polyfluoroalkyl Substances)*, EUROFIN, <https://sustainabilityservices.eurofins.com/services/pfas-testing-per-and-polyfluoroalkyl-substances/> (last visited Oct. 26, 2023); For information on how its testing method can be used in conjunction with EPA methods see EUROFIN, *TOTAL ORGANOFLOURINE ANALYSIS & PFAS INVESTIGATIONS* (2018), <https://cdnmedia.eurofins.com/apac/media/601777/environote-1080-tof.pdf>. Neither MCEA nor CURE has any relationship to Eurofins and it is also entirely possible that other businesses could provide similar services to those described here.

⁵⁸ These requirements are comprehensive and can be found throughout Minn. Stat. § 116D.03, subd. 2.

⁵⁹ For more on the duty to establish an advisory council see Minn. Stat. § 116D.03, subd. 2(2).

be tasked with adding new PFAS to MPCA's list for regulation as the information on these chemicals develops. The history of Minnesota's continually tightened standards for PFAS demonstrates that any PFAS that is studied has been shown to have significant harms to the environment and public health. This will continue apace as researchers continue to dig into new harmful chemicals in this class. As the data develops, this advisory council could also relay to MPCA the best and most cost-effective ways to regulate PFAS chemicals as a class—perhaps adopting additional WQS based on TOF standards and negating the necessity for many expensive and difficult tests for individual PFAS chemicals.

The evolving nature of the PFAS threat, as well as the state's history of being a leader in assessing and addressing the harms of these chemicals makes it a natural fit for MPCA to follow its duties under MEPA and establish a body that can continuously update the agency on the science and how to best think about these forever chemicals. These experts should include academics, testing labs, and impacted communities. The council should not include members of the regulated community or chemical industry as they have already received plenty of deference and regard from regulators, leading to the current public health crisis that PFAS are known to be causing right now.

VII. Conclusion

MPCA has a duty under the law and to the public, to ensure that continued PFAS pollution to groundwater is abated. By enacting strict PFAS WQS and beginning the process of testing and monitoring for PFAS in ambient groundwater and biosolids used for land application, MPCA can ensure that its duty is met. But one cannot happen without the other. The process of addressing PFAS in biosolids is a vital link to ensuring that WQS can be met, and in turn that the federal MCLs and HI will be met. Continued testing of biosolids and soils will help state agencies and the public to better understand this potential exposure pathway that is implicated in the development of Class 1 WQS for PFAS.

MCEA and CURE appreciate the opportunity to contribute to the dialogue of including PFAS within Minnesota's WQS. The PFAS crisis in our drinking water is one that will take many actors and many legal mechanisms to address. We thank MPCA for beginning to tackle one of the parts of the puzzle by enacting stringent WQS for these six substances. Setting these WQS at or below EPA's federal limits serves to ensure that communities can begin to see a reduction in exposure rates and WWTFs are not bearing the bulk of treatment costs. We already know that drinking water is a primary path of PFAS exposure to humans, and the enactment of strict WQS will help. As MPCA has recognized with its request for comment, groundwater and surface waters designated as Class 1 usage for drinking water are an important part of addressing the PFAS problem

here in Minnesota. The public should not be left to pick up the tab of polluters doing business, either financially or, worse yet, physically.

Sincerely,

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Katrina Kessler
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Dear Commissioner Kessler

This letter follows up on and updates previous support (letter of Dec 3, 2020) for Minnesota's leadership role in providing safe water to citizens who are affected by per- and polyfluoroalkyl substance ("PFAS") contamination. Minnesota should set standards that meet hazard ratios as low as practicable.

I am Alan Ducatman, MD, MS, a clinician researcher/educator, retired as professor emeritus at West Virginia University School of Public Health, and active consultant to industry, labor, government, and communities. My background is that I am a Mayo Clinic-trained, board-certified internist and board-certified occupational physician. I practiced for a year in the Twin Cities area before my wife and I moved on to our military obligations and then our academic careers. My research focuses on environmental disease and disease prevention, including health outcomes of exposure to PFAS. I have published more than 40 peer reviewed publications that advance either population or toxicology and physiology aspects of PFAS research. I am frequently asked to provide lectures to fellow clinicians and our professional societies, government entities, or water utility groups that review PFAS science, including routes of exposure and health effects. In drafting this letter, I reviewed the substantial literature relating to PFAS contamination and health outcomes. There are many more than a thousand such references, and this letter will cite some of the compelling summary data concerning the need to protect drinking water supplies from PFAS.

I am sure that my Minnesota colleagues are aware that PFAS are biologically active and have negative impacts on biomarkers of health and related diagnosable conditions at alarmingly low doses, with substantial evidence of adverse health outcomes for both PFOA and PFOS. It is useful to note that some of the human outcomes such as disruption of lipid metabolism have dose-response that is "asymptotic" (or log linear or attenuating),¹ such that the undesirable outcomes become visible with any increases above the lowest measured exposures in sufficiently large populations. Therefore, exposure populations will reasonably want the lowest achievable undesirable exposure, into the foreseeable future.

Examples of the activity at low dose and the asymptotic (or log linear or attenuating) PFAS dose response were initially reported for lipids in adults and in children in the massive C8 Health Project,² which studied Mid-Ohio Valley communities that have been potentially affected by PFAS releases since the 1950s. This study revealed very similar results for young adults to the equally massive Veneto, Italy population, which looked at PFAS contamination of drinking water affecting over 120,000 citizens. (The general case of association to adverse lipid outcomes is seen in at least 25 different populations in

multiple studies per population internationally, involving both cross-sectional and longitudinal data. The C8 and Veneto population data are emphasized because their datasets are large enough to illustrate the dose response in tables, and the C8 studies from Steenland et al and Frisbee et al studies also feature helpful figural depictions of the dose response).^{3,4} It should be noted that the effects are found repeatedly in children and adolescents.⁴⁻⁸ (They are not artifacts of medications). And they are found in longitudinal as well as cross-sectional studies in children and adults.⁸⁻¹⁰

Beyond the lipid data, similar health outcomes and dose response are reliably reported for other PFAS exposure and biomarkers of liver function such as alanine amino transferase (ALT) in meta-analysis studies,¹¹ and this same association is seen across species in experimental studies.¹¹ Uric acid metabolism is mostly controlled by the liver and there are similar findings for meta-analysis of PFAS levels and uric acid.¹² Recently (and unsurprisingly) both imaging and histologic evidence has begun to emerge that corroborates the adverse steatosis impact of PFAS exposure upon the liver, in adults¹³ and in children.^{14,15} The triad of consistently adverse associations of PFAS exposure to lipids, liver function, and uric acid in humans suggests that the mechanism of liver damage is or resembles nonalcoholic fatty liver disease (NAFLD). The recent emergence of imaging and biopsy evidence in humans supports this mechanism. And the detection of steatosis across numerous exposed animal species strongly supports this mode of operational damage following PFAS exposure.^{1,16,17}

Cancer outcomes are worth mentioning because of their societal importance and obvious concern in populations affected by exposure. For example, a recent case national Cancer Institute control study nested in a longitudinal 8-yr study design was recently added to the list of studies linking kidney cancer to PFAS exposure.¹⁸ This longitudinal work builds on previous cross-sectional studies, and shows a greater association of PFOA to kidney cancer second study in the multiethnic cohort found similar outcomes for white participants with early PFOA blood draws (the serum PFAS were higher in early draws) and with PFNA exposure.¹⁹ The concern with PFAS causing testicular cancer was heightened based on the findings of the C8 Health Project.²⁰ Like kidney cancer, testicular cancer is one of the six “linked conditions” of the Science Panel. More recently, the US Department of Defense Serum Repository was used for a case-control study and indicated that PFOS is also implicated in the cause of testicular cancer (in a population whose dominant exposure was to PFOS).²¹

These are far from the only health risks reliably attributed to and worsened by PFAS exposure, they are a representative presentation of the extensive problem facing our society. And, when water is contaminated, we know that is a reliable source of exposure and internal PFAS contamination, which puts entire populations at risk.^{2,22,23} Some of these PFAS are not yet the common subject of reliable testing,²⁴ a significant challenge to the task of protecting the public from contaminated water. Therefore, I hope this letter will be received in the intended spirit of support for Minnesota efforts to create the lowest practicable drinking water standards.

Sincerely,



Alan Ducatman, MD, MS

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October 30, 2023

via electronic submission

Office of Administrative Hearings Rulemaking eComments webpage

<https://minnesotaoah.granicusideas.com>

Re: Comments of The PFAS Regulatory Coalition on the Minnesota Pollution Control Agency's Water Quality Standards Rulemaking Revisor's ID Number R-04727

To Whom It May Concern:

The PFAS Regulatory Coalition (the "Coalition") appreciates the opportunity to file the following comments regarding the Minnesota Pollution Control Agency's ("MPCA") Water Quality Standards Rulemaking. MPCA is requesting comments on proposed amendments to *Minnesota Rules*, chapter 7050 (Waters of the State), chapter 7052 (Lake Superior Basin Water Standards), chapter 7053 (State Waters Discharge Restrictions), and chapter 7060 (Underground Waters) ("Potential New Rules" or "Rules"). MPCA is accepting comments on the Rulemaking until 4:30 p.m. on Monday, October 30, 2023.

I. The Coalition's Interest

The Coalition is a group of industrial companies, municipal entities, agricultural parties, aviation representatives, utilities, and trade associations, each of which has facilities or members that are directly affected by the development of policies and regulations related to per- and poly-fluoroalkyl substances ("PFAS"). Coalition membership includes entities in the automobile, airport, coke and coal chemicals, electric utilities, iron and steel, municipal, paper, petroleum, and other sectors. The Coalition's comments in this instance are related in particular to the section of the Potential New Rules related to adding new Class 1 water quality standards ("WQS") for emerging pollutants of concern, including certain PFAS compounds.

None of the Coalition members manufacture PFAS compounds. Coalition members, for purposes of these comments, include: Airports Council International – North America; American Coke and Coal Chemicals Institute; American Forest and Paper Association; American Fuel and Petrochemical Manufacturers; American Iron and Steel Institute; American Petroleum Institute; Barr Engineering; Brown & Caldwell; City of Pueblo, CO; Gary Sanitary District (IN); HDR; Illinois Association of Wastewater

Agencies; National Oilseed Processors Association; Portland Cement Association; Trihydro; and Western States Petroleum Association. PFAS Regulatory Coalition member entities or their members own and operate facilities located in Minnesota. Because the Potential New Rules, if finalized by MPCA, would impose potentially enormous costs and liabilities on Coalition members, the Coalition and its members have a direct interest in the Potential New Rules. Further, because this proposed action poses important and complex issues concerning regulation of PFAS, and could serve as a precedent in PFAS regulation beyond Minnesota, all Coalition members have an interest in the Potential New Rules. Beyond the issues raised in these comments, individual members of the Coalition may have other concerns with various aspects of the Potential New Rules and may file additional comments separately.

II. Coalition Analysis and Recommendations

This Rulemaking was mandated by Minnesota Session Law – 2023, Chapter 60, article 3, section 33 (H.F. No. 2310) which requires that the commissioner adopt WQS for the following PFAS compounds by July 1, 2026:

1. Perfluorooctanoic acid (“PFOA”);
2. Perfluorooctane sulfonic acid (“PFOS”);
3. Perfluorononanoic acid (“PFNA”);
4. Hexafluoropropylene oxide dimer acid (“GenX”);
5. Perfluorohexane sulfonic acid (“PFHxS”); and
6. Perfluorobutane sulfonic acid (“PFBS”).

As an initial matter, the Coalition believes that MPCA should not proceed with these Proposed New Rules at this time. Minnesota's WQS rules apply to all waters of the state, including surface and groundwater. This action poses widespread, important, and complex precedential issues that need to be carefully considered. The Coalition supports responsible, science-based, effective measures to address risks posed by PFAS. How PFAS acts in the environment, as well as the nature and extent of any associated ecological or human health risks, are complex issues that are not yet settled as a scientific matter. Addressing PFAS compounds is an ever-evolving concern for the regulated community, including Coalition members. The Coalition therefore urges MPCA to postpone adding WQS for PFAS.

Insufficient information exists as to testing methods, procedures and protocols; costs; supporting data; and regulatory standards, to include WQS for PFAS at this time. Even if there were agreed-upon test methods and best practices for procedures and protocols (which there are not) and some understanding of the costs associated with WQS for PFAS (which there is not), it is not clear what standards would be used to assess sampling results, or what data would be used to develop those standards.

Therefore, the Coalition recommends that MPCA defer adding WQS for PFAS entirely until sufficient information exists to further manage these emerging issues with clarity and scientific support. The Coalition provides the following additional comments:

A. Critical information does not yet exist on background water quality or with regard to best practices for testing methods, procedures, or protocols.

There are multiple concerns regarding background water quality, testing methods, and testing procedures as to PFAS, and there is simply not enough information to allow for PFAS WQS. With regard to background water quality, the National Atmospheric Deposition Program (“NADP”) is now conducting studies related to PFAS dispersal and atmospheric processing. This work has demonstrated that PFAS can be found in “remote...aquatic environments” far from any known sources.¹ Therefore, before PFAS WQS are set, there must be an understanding of how monitoring and reporting requirements would reflect that background sampling as a crucial component of monitoring plans. Furthermore, MPCA should address how such sampling and reporting would incorporate consideration of background PFAS levels that are beyond the ability of any one facility to control. Also, of course, it will be critical to gather sufficient data to determine the background PFAS levels in the state’s waterbodies.

The Coalition stresses that prior to adding WQS for PFAS, clarity and consistency regarding sampling and analytical methods are absolutely critical to successful implementation of PFAS WQS. Measurement methods are unavailable to measure many of the individual compounds making up the collective group of PFAS compounds. Even for those PFAS that can be reliably measured to a certain level, the methods may not be capable of achieving detection or quantification limits below the WQS levels. In addition, there is significant variability among analytical methods and laboratory use of those methods. Also, new methods are currently under development, and the utility of some analytical methods is still evolving and rapidly developing. Therefore, the Coalition recommends that if MPCA moves forward with adding WQS for certain PFAS compounds, MPCA should provide sufficient flexibility to allow facilities to utilize the evolving best practices for analytical methods.

B. MPCA should provide clarity on the basis for the numeric standards it intends to set and take into consideration costs associated with those standards.

MPCA notes that WQS include numeric standards that identify specific levels of a substance that will protect beneficial uses of the state’s waters and may also include a narrative description of the conditions necessary to protect water quality for a beneficial

¹ See “PFAS concentrations and deposition in precipitation: An intensive 5-month study at NADP-NTN across Wisconsin,” Martin Shafer, Mark Olson, David Pfothenhauer, Emily Sellers, and Katie Praidel, *Atmospheric Environment*, Vol 291, 15 December 2022, *available at*: <https://www.sciencedirect.com/science/article/abs/pii/S1352231022004332> (last accessed October 18, 2023).

use. Beyond this statement, MPCA has not explained what kind of standards will be set for these specific PFAS compounds. Options include aquatic life standards; human health/fish protection-based standards; and drinking water use-based standards. Each of these requires very different data and methodologies. To date, EPA has only published draft aquatic life criteria.

As MPCA considers development of WQS, it is critical that the agency utilize the best available science. There are currently data gaps in understanding of PFAS toxicity, exposures, and environmental fate, and MPCA should consider supporting additional science to address these gaps before it develops WQS. To date, PFAS regulatory approaches have differed widely from state to state, resulting in variations of more than five orders of magnitude for in the levels set for some substances.² Ensuring quality data are used in setting WQS will be important to ensure that measures taken to address risk are both necessary and appropriate. Recent studies on PFOS toxicity to zebrafish have shown that robust studies that show clear dose-response can reduce uncertainty in criteria development.³

Importantly, as MPCA states, numeric and narrative WQS are used to determine the need for effluent limits in National Pollutant Discharge Elimination System/State Disposal System permits. However, MPCA has not taken into account the operational and practical impacts of PFAS WQS. The Potential New Rules will trigger complicated source identification investigations for dischargers who are not generators of PFAS and do not utilize PFAS in their processes. These facilities include passive recipients of PFAS materials from their users such as wastewater treatment facilities (“POTWs”) but also facilities without any history of PFAS use or the potential for pass-through since, as noted above, PFAS is detected in low levels at locations without any history of PFAS use. This is particularly problematic given that the WQS will include groundwater.

According to EPA, there are currently three known treatment processes effective for removing PFAS from contaminated water: granular activated carbon (“GAC”), ion exchange resins, and high-pressure membrane systems/reverse osmosis (“RO”). The American Water Works Association estimates that the national cost for water systems to

² Ruffle B, Archer C, Vosnakis K, Butler JD, Davis CW, Goldsworthy B, Parkman, R and Key TA. 2023. US and international per- and polyfluoroalkyl substances surface water quality criteria: A review of the status, challenges, and implications for use in chemical management and risk assessment. *Integ Environ Assess Manag* 2023:1–23. DOI: 10.1002/ieam.4776

³ See “[Establishing Chronic Toxicity Effect Levels for Zebrafish \(Danio rerio\) Exposed to Perfluorooctane Sulfonate \(PFOS\)](https://doi.org/10.1002/etc.5768)”- Pandelides - *Environmental Toxicology and Chemistry* - Wiley Online Library, Zacharias Pandelides, Jennifer Arblaster, Jason Conder, October 18, 2023, available at: <https://doi.org/10.1002/etc.5768>

install treatment to remove PFOA and PFOS exceeds \$3.8 billion annually.^{4,5} This estimate does not take into account the carbon footprint impacts of acquiring plants and equipment to install and/or run these energy-intensive control technologies, or the costs associated with treating/disposing of the PFAS found in the spent GAC and spent resin. At this time there are no known fully destructive treatments for RO concentrate streams.

The Potential New Rules have the potential to impose significant obligations on parties that had no control over the inputs of PFOA/PFOS into their operations. Municipal POTWs, regional and municipal landfills, and commercial airports represent good examples of this problem. In making a decision on the Potential New Rules, MPCA needs to carefully consider the potential cost implications.

C. Rules should be delayed until there is more certainty.

PFAS compounds are ubiquitous. As MPCA notes, the Potential New Rules are likely to impact municipal water suppliers/utilities and municipal and industrial dischargers to surface water. Many of these entities are not generators of PFAS. Nor do they utilize PFAS in their processes. They are passive recipients of PFAS, who have had no involvement with PFAS other than that those substances may pass through or under their facilities. Further, landowners in Minnesota (and elsewhere) have used properly permitted municipal treatment plant biosolids to enhance reclamation and revegetation efforts, in compliance with established regulatory requirements, but may now find themselves faced with potential liability due to the presence of PFAS in those biosolids.

Assessment and management of PFAS is an ongoing, costly challenge for many entities, including Coalition members. The potential costs associated with PFAS WQS may be very significant and would very likely need to be ultimately borne by ratepayers for certain entities. Until there is more certainty in the best practices for addressing PFAS in surface and groundwater, as well as more information on the background PFAS levels in the state's waterbodies, MPCA should refrain from developing PFAS WQS.

III. Conclusion

The Coalition appreciates the opportunity to submit these comments concerning PFAS WQS. We appreciate MPCA's efforts to gather additional information and input on

⁴ See "WITAF 56 Technical Memorandum, PFAS National Cost Model Report," Black & Veatch, March 7, 2023, available at: <https://www.awwa.org/Portals/0/AWWA/Government/2023030756BVFfinalTechnicalMemoradum.pdf?ver=2023-03-14-102450-257> (last accessed October 18, 2023).

⁵ EPA believes these treatment options are effective for the other PFAS compounds listed in the Potential New Rules. <https://tdb.epa.gov/tdb/contaminant?id=11020> (last accessed October 18, 2023).

Comments on MPCA Water Quality Standards Rulemaking

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the Potential New Rules and look forward to working with MPCA in its efforts to address PFAS contamination. Please feel free to call or e-mail if you have any questions, or if you would like any additional information concerning the issues raised in these comments.

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