



June 13, 2021

**Re: Comments on Amendments to chapter NR 140 to set numerical standards to minimize the concentration of polluting substances in groundwater; DG-15-19**

Clean Wisconsin is a non-profit environmental advocacy organization working on clean water, clean air, and clean energy issues. We were founded over fifty years ago and have over 20,000 members and supporters around the state. We employ scientists, policy experts, and attorneys to protect and improve Wisconsin's air and water resources.

We appreciate the opportunity to comment on the draft economic impact analysis for the Cycle 10 groundwater standards rulemaking. Below we provide some information regarding the economic benefits of implementing these groundwater standards that we did not see in the draft EIA.

1. Economic analyses from other states with numerical PFAS standards indicate a net benefit.

Both New Hampshire and Michigan conducted economic analyses for proposed PFAS water quality standards. While lacking the information to quantify the benefit of avoided health costs associated with reducing exposure to PFAS from drinking water, both states concluded that there are significant benefits to be gained. The following are some illustrative quotations from New Hampshire and Michigan:

- “NHDES currently has no quantified benefit, although there is likely significant benefit to reducing exposure to these compounds through drinking water given the findings of the few previous direct exposure studies and the emerging findings from current epidemiological studies.”<sup>1</sup>
- “Qualitatively, given the potential for direct health care treatment costs, associated losses of economic production and income of those impacted, and associated impacts to families and caregivers, limiting exposure to PFOA, PFOS, PFNA, and PFHxS at unsafe levels may result in numerous and significant avoided costs”<sup>2</sup>
- “NHDES, based on the most recent studies, is confident that there is a clear and significant benefit to reducing exposure to these compounds through drinking water while additional studies will help to more accurately quantify the specific health care

---

<sup>1</sup> New Hampshire Dept of Environmental Services. 2019a. Summary Report on the New Hampshire Dept of Env Services Development of Maximum Contaminant Levels and Ambient Groundwater Qual. Stds for Perfluorooctanesulfonic Acid (PFOS), Perfluorooctanoic Acid (PFOA), Perfluorooxonanoic Acid (PFNA), and PFHxS. January 4, 2019. R-WD-19-01.

<sup>2</sup> New Hampshire Dept of Environmental Services. 2019a.

costs avoided from the known, and to be discovered, specific health impacts caused by these compounds.”<sup>3</sup>

- “There is likely a significant benefit to the reduction in exposure to PFAS chemicals given recent findings of health effects.”<sup>4</sup>
- “In a general, qualitative measure, given the potential for direct health care treatment costs, loss of income, and associated indirect costs, limiting exposure to the seven PFAS chemicals for which these rules establish MCLs will likely result in significant avoided costs.”<sup>5</sup>

In Vermont the Agency of Natural Resources is not required to conduct cost-benefit analyses when promulgating drinking water standards. However, the Agency stated that “the benefits that stem from preventing exposure to harmful PFAS—as well as other unregulated contaminants that are removed in the process—in drinking water would far outweigh the costs associated with compliance.”<sup>6</sup>

Because groundwater is the source of drinking water for approximately two-thirds of Wisconsin residents, these qualitative statements from other states regarding the economic benefit of reducing drinking water PFAS exposure are relevant to this Economic Impact Analysis.

## 2. Diseases linked to PFAS have a large economic cost in US

Recognizing that due to the lack of information about prevalence, locations, exposure and quantitative effects of PFAS, Washington state’s PFAS chemical action plan cannot currently calculate specific costs attributable to PFAS.<sup>7</sup> However, it does provide a sense of the magnitude of costs associated with diseases PFAS exposure contributes to including:

- Thyroid disease treatment in females over 18 in the US: \$4.3 billion per year.
- Kidney cancer care medical expenditures in the US: \$4.7 billion per year, along with \$3.4 billion in lost productivity.
- Testicular cancer care medical expenditures in the US: \$22 million per year, along with \$500 million in lost productivity.
- High cholesterol: millions of US adults take cholesterol-lowering medications costing \$36 to over \$600 per month
  - High cholesterol increases risk of heart disease and stroke which impose medical and lost productivity costs \$200-\$316 billion per year in the US.
- Asthma: medical costs around \$50 billion per year in the US.

---

<sup>3</sup> New Hampshire Dept of Environmental Services. 2019b. Summary of Comments on Initial proposals with NHDES Responses *and* Update on Cost and Benefit Consideration. June 28, 2019.

<sup>4</sup> Michigan Office of Administrative Hearings and Rules. 2020. Regulatory Impact Statement and Cost-Benefit Analysis. For rule set # 2019-35 EG titled “Supplying Water to the Public”

<sup>5</sup> Michigan Office of Administrative Hearings and Rules. 2020.

<sup>6</sup> Vermont Agency of Natural Resources, 2021: Notice of Decision Not To Adopt A Maximum Contaminant Level Regulating PFAS as a Class in Public Drinking Water Systems. 74 pp.

<sup>7</sup> Washington State Department of Ecology. 2021. Per- and Polyfluoroalkyl substances draft chemical action plan. Publication 20-04-035, Revised May 2021.

These high-level, population-wide costs underscore how even if PFAS from drinking water are contributing to only a small fraction of the cases, there is still a significant economic benefit to avoiding that exposure.

The massive settlements resolving lawsuits against contributors of PFAS in recent years provide another indication of the costs associated with PFAS contamination. With many cases still pending, there have been settlements in the high nine figures, reflecting the tremendous costs associated with PFAS contamination.<sup>8</sup> Large producers of PFAS recently struck a cost-sharing agreement to address up to \$4 billion in legacy PFAS pollution costs.<sup>9</sup> Future costs on this magnitude or greater can be mitigated with implementation of protective standards now.

### 3. PFAS contamination affects home values

The benefits listed in the draft EIA should include protection of home values for homeowners. A report prepared for the State of Minnesota in their legal action against 3M analyzed the impact of PFAS contamination in the east metro area of the Twin Cities.<sup>10</sup> Using a hedonic analysis of home sale prices in Oakdale and other affected communities compared to surrounding unaffected areas of the East Metro area, the report found that home values are reduced by 7.3% in Oakdale and 4.4% in other affected areas due to PFAS contamination.

### 4. PFAS groundwater contamination can affect agricultural product quality

The benefits listed in the draft EIA should include protection of agricultural product quality. Contaminated groundwater used for livestock feed or irrigation water can result in PFAS ending up in agricultural products and entering the food chain. There are examples of PFAS contamination of milk in dairy herds due to contaminated groundwater, resulting in significant economic harm for the farms.<sup>11</sup> Due to examples like this, The Maine PFAS taskforce concludes that “potential impact to farms can be severe.”<sup>12</sup>

Similarly, industrial PFAS groundwater contamination made its way into the food chain via contaminated water used for irrigation. Food such as eggs and fish were found to be

---

<sup>8</sup> State of Minnesota, Minnesota 3M PFC Settlement. <https://3msettlement.state.mn.us/>. Arathy S. Nair. 2017. DuPont settles lawsuits over leak of chemical used to make Teflon. *Reuters*. <https://www.reuters.com/article/us-dupont-lawsuit-west-virginia/dupont-settles-lawsuits-over-leak-of-chemical-used-to-make-teflon-idUSKBN15S18U>.

<sup>9</sup> DuPont. 2021. DuPont, Corteva, and Chemours announce resolution of legacy PFAS claims. <https://www.dupont.com/news/dupont-corteva-chemours-announce-resolution-legacy-pfas-claims.html>.

<sup>10</sup> Sunding DL. 2017. Damage to Minnesota’s Natural Resources Resulting from 3M’s Disposal of PFASs in Washington County, MN. Prepared for the State of Minnesota in the matter of the State of Minnesota v. 3M Company. September 22, 2017.

<sup>11</sup> Laca, Anna-Lisa. 2019. Air Force Pollution forces New Mexico dairy to euthanize 4,000 cows. *Wisconsin State Farmer*. [www.wisfarmer.com/story/news/2019/02/19/air-force-pollution-has-poisoned-everything-dairy-farm/2920729002/](http://www.wisfarmer.com/story/news/2019/02/19/air-force-pollution-has-poisoned-everything-dairy-farm/2920729002/); Maine PFAS Task Force. 2020. Managing PFAS in Maine. Final report from the Maine PFAS Task Force. January 2020.

<sup>12</sup> Maine PFAS Task Force. 2020.

contaminated with PFAS, prompting authorities to establish agricultural and food product standards.<sup>13</sup>

5. PFAS contamination disproportionately affects disadvantaged communities

The Union of Concerned Scientists published a report<sup>14</sup> finding that non-military PFAS contamination sites are more likely to be found closer to minority and low-income populations. For example, around the 23 sites examined in Michigan, 48% more minorities and 49% more low-income people lived within 5 miles of the PFAS contamination site than would be expected if the sites and populations were randomly distributed. Although these data were not from Wisconsin, this potential disproportionate economic impact on those worst positioned to afford to deal with the contamination should be noted.

6. Pesticide contamination could affect pollinators and other non-target organisms.

The list of benefits should include protection of Wisconsin's pollinators and the benefits they provide. Wisconsin's Department of Agriculture, Trade and Consumer Protection has expressed concern that groundwater contaminated with neonicotinoids that is used for irrigation could adversely pollinators and other non-target insects.<sup>15</sup>

Pollinators provide a well-known economic benefit, particularly to the agricultural sector. A recent study estimates that the economic value of insect pollination is over \$30 billion per year in the United States.<sup>16</sup>

Respectfully submitted this 13th day of June 2021.

/s/ Paul Mathewson

Paul Mathewson  
Staff Scientist  
Clean Wisconsin

---

<sup>13</sup> Goldenman, Gretta, et al. 2019. The cost of inaction: A socioeconomic analysis of environmental and health impacts linked to exposure to PFAS. Nordic Council of Ministers.

<sup>14</sup> Desikan, Anita, Jacob Carter, Shea Kinser, and Gretchen Goldman. 2019. *Abandoned Science, Broken Promises: How the Trump Administration's Neglect of Science Is Leaving Marginalized Communities Further Behind*. Cambridge, MA: Union of Concerned Scientists. <https://www.ucsusa.org/resources/abandoned-science-broken-promises>

<sup>15</sup> Wisconsin Department of Agriculture, Trade and Consumer Protection. 2019. Neonicotinoid pesticides in Wisconsin Groundwater and Surface Water. ARM Pub. 315

<sup>16</sup> Jordan et al. 2021. Economic dependence and vulnerability of United States agricultural sector on insect-mediated pollination service. *Environmental Science & Technology* 55:2243-2253.



**Leather-Rich INC.**

1250 Corporate Center Drive  
P.O. Box 23  
Oconomowoc, WI 53066-0023  
Phone 262-569-3100  
FAX 262-569-3119  
Toll Free 800-236-6996

Email: [info@leatherrich.com](mailto:info@leatherrich.com)  
[www.leather-rich.com](http://www.leather-rich.com)

June 11, 2021

Mr. Bruce Rheineck  
Groundwater Section  
Wisconsin Department of Natural Resources  
P.O. Box 7921, Madison, WI 53707

*Via email*

Mr. Rheineck:

This letter is in response to the Economic Impact Analysis for DG-15-19, and is intended to add information to the current discussion regarding the regulation of PFAS and TCE.

Leather Rich is a small business with 20 part-time employees. Joanne Kantor and late husband, Ronald Kantor, both of whom have resided in Wisconsin for many generations, owned and operated the business in Oconomowoc for 44 years. After Ron's passing in February 2018, Joanne, an octogenarian, took steps to sell the four acre property and building of Leather Rich located at 1250 Corporate Center Drive. Daughter, Cheryl Chew, took over the day-to-day responsibilities at the business with the goal of settling Joanne's affairs.

In April, 2018, the property was found to have levels of TCE above PAL standards, but still relatively low when compared to other open remediation cases. Notice was given to DNR. Proactively, LRI took steps to have substantial investigation of the property including participation in the VPLE program. DNR told LRI to test for PFAS test in the groundwater, which then revealed a number of 160 ppt at one of the wells in January 2020. LRI does not manufacture anything with PFAS/PFOS. However, by virtue of being a cleaner, there could be PFAS/PFOS in the items that we receive from customers to clean. LRI is also located in an industrial area and surrounded by other businesses that may also have PFAS. Because LRI cannot prove it is not responsible for these chemicals (because it is impossible to prove a negative), DNR is holding LRI responsible for investigating and potentially remediating them, including insisting that we investigate the impact on private wells nearly a half mile away.

For three years, the demands of DNR to investigate have continued to grow. LRI was informed that there are no standards in place for PFAS regulation, but DNR refused to allow LRI to remediate the TCE until we fully investigate the PFAS. Eventually, we felt there was no way to move forward except to begin litigation due to DNR's overreach.

The ongoing investigation and litigation has cost Leather Rich over \$275,000. There is no insurance and no government subsidy in place for these costs. As small business owners, our sole purpose to work is to pay for the exorbitant environmental bills. There is zero profit. The remediation of the TCE will be additional hundreds of thousands of dollars. To date, LRI has not been allowed permits by DNR to restore the property thus there can be no real estate transaction.

*For The Professional Cleaning of Your Leathers, Suedes And Furs*



The economic impact on our small business to remediate TCE and then remediate PFAS/PFOS will be more than the worth of the property and building. We have been told that it is three times as expensive to remediate PFAS/PFOS than TCE. Keeping things simplistic, the TCE will cost over \$550,000 to investigate and remediate. The PFAS estimate is \$1,500,000 to investigate and remediate. The total spent on environmental remediation (excluding the costs related to litigation) may be \$2 million or more. The LRI property is worth \$1.8 million.

From Joanne and my perspective, the goal of DNR is to eradicate small businesses and all other business forced by DNR to perform PFAS/PFOS testing. The proposed regulations on lowering the TCE standards and putting in place stringent PFAS/PFOS regulations will adversely affect Wisconsin's economy. Indeed, there will be numerous WI businesses closing and business owners will opt to relocate their business in another state. This will impact small businesses who cannot absorb the additional costs, at a disproportionate rate.

Given that PFAS/PFOS is common and that 99% of Americans have it in their bloodstream by eating or drinking cheese, beer, items with whey, or because of constant contact with waterproof clothing and several other everyday products, it is unconscionable that LRI or any other business would be subjected to DNR's massive regulatory burdens. There is significant disagreement in the scientific community regarding the actual health impact of these chemicals. Other countries, such as Germany, have a standard of 300 ppt or higher for PFAS/PFOS. Unfortunately for all of us Wisconsin business owners, due to the DNR's knee-jerk reaction of the Marinette fire-fighting foam issue, we will be coerced to the stringent standard of 2 ppt in order to be in compliance.

The economic impact to our business is a snapshot of what other businesses will experience. DNR seems to think that there is too much speculation and has estimated costs very low. LRI has current and ongoing proof to the contrary of DNR's stance that "any costs may not be significant." DNR should be required to analyze current open cases and they will see what LRI is saying is correct. If DNR is unable to calculate the cost, then the process should be stopped until real numbers are available. This information should then be used to help determine the catastrophic adverse effects on Wisconsinites brought about by DNR's proposed standards and regulations.

LRI has carried the heavy weight of this burden for over three years, and we see no end in sight regarding remediation or case closure. DNR has extorted LRI during the environmental investigation process. We expect DNR and their committees with extreme views will do the same to other businesses unless level headed people are heard and a moderate stance is pursued.

Joanne and I would be grateful for a resolution of DNR's constantly changing demands on us amidst our working long hours daily for the sole purpose of paying for the continuing environmental investigation.

Thank you for your attention to this matter.

Sincerely,



Cheryl Chew  
Leather Rich Inc.



Joanne Kantor  
Leather Rich Inc.



131 W. Wilson St., Suite 505  
Madison, Wisconsin 53703  
phone (608) 267-2380; (800) 991-5502  
fax: (608) 267-0645  
league@lwm-info.org; www.lwm-info.org

June 13, 2021

Department of Natural Resources  
Attn: Bruce Rheineck – DG/5  
101 S. Webster Street Madison, WI 53703

Via Email - [BruceD.Rheineck@wisconsin.gov](mailto:BruceD.Rheineck@wisconsin.gov) and  
[DNRAAdministrativeRulesComments@wisconsin.gov](mailto:DNRAAdministrativeRulesComments@wisconsin.gov)

Mr. Rheineck:

The League of Wisconsin Municipalities welcomes the opportunity to submit comments related to the Economic Impact Analysis (EIA) for Board Order DG-15-19, related to the proposed revision to ch. NR 140 which establishes numerical standards for several compounds including PFOA and PFOS. The League is a nonprofit and nonpartisan association of 594 cities and villages, nearly all of which operate wastewater treatment plants that would be affected by these proposed rules.

While the League supports following sound science, sampling, and monitoring to produce technologically and financially feasible regulations for PFAS compounds, we are concerned that the draft EIA has underrepresented the economic impacts that Wisconsin municipalities may be responsible for under the recommended revisions to ch. NR 140.

The League is particularly concerned that department responses will vary greatly depending on the type and age of a facility, hydrogeological conditions, how the department evaluates alternative responses that may achieve the same objectives as those proposed by DNR, how the department considers background water quality, and the type of project. In addition to wastewater facilities, biosolid land spreading and remediation and redevelopment sites will be impacted by this rule because they may be subject to ch. 292 Stats., related to remedial actions for hazardous substances.

Under ch. 292 Wis Stats, a response action is required on those sites or projects if a numeric groundwater enforcement standard is attained or exceeded, and the League believes those impacts are not specifically addressed in the EIA. These concerns are intensified by the DNR practice to issue partial closures for remediation sites meaning they may be required to take additional action related to PFAS. In addition, the department states in the EIA that facilities regulated both under chs. NR 140 and chs. NR 700-799 may be eligible to receive case closure if a party can demonstrate that natural attenuation will bring the groundwater into compliance. Can a substance that does not break down in the environment be naturally attenuated?

Finally, the League fully endorses the entirety of the comments submitted by Vanessa Wishart and Paul Kent on behalf of the Municipal Environmental Group (MEG) – Wastewater Division on June 13, 2021. We urge you to consider the recommendations submitted by MEG.

*YOUR VOICE. YOUR WISCONSIN.*

We look forward to continuing the dialogue with the department on this important issue. The League is supportive of regulating these emerging compounds in a scientifically supported and financially feasible manner.

Kind Regards,

*Toni R Herkert*

Toni Herkert, Government Affairs Director  
Wisconsin League of Municipalities





Vanessa D. Wishart  
222 West Washington Avenue, Suite 900  
P.O. Box 1784  
Madison, WI 53701-1784  
VWishart@staffordlaw.com  
608.210.6307

June 11, 2021

VIA EMAIL  
DNR140GroundwaterQualityStandards@Wisconsin.gov

Department of Natural Resources  
Groundwater Section – DG/5  
P.O. Box 7921  
Madison, WI 53707

RE: Comments of the Municipal Environmental Group – Wastewater Division  
Environmental Impact Analysis for Board Order DG-15-19

To Whom It May Concern:

We are submitting these comments on behalf of the Municipal Environmental Group–Wastewater Division (MEG Wastewater). MEG Wastewater is an organization of over 100 municipalities statewide who own and operate wastewater treatment plants. We represent facilities ranging in size from small sanitary districts to larger utilities. MEG appreciates the opportunity to comment on the Economic Impact Analysis (“EIA”) for Board Order DG-15-19, proposed rules relating to amendments to Chapter NR 140 setting numerical standards for compounds including PFOS and PFOA.

While MEG supports the regulation of PFAS compounds based on due deliberation and credible science, we are concerned that the EIA as drafted fails to account for potentially significant costs on MEG members and other municipal entities.

The proposed rule establishes an enforcement standard (“ES”) of 20 ppt for PFOS and PFOA combined and a preventative action limit (“PAL”) of 2 ppt. These are restrictive standards—the PAL is essentially the detection level—and are likely to have widespread economic impacts. The EIA, however, states that the impact of the proposed groundwater standards, is “Moderate cost: \$175,000 to less than \$5 million per year.” MEG believes that this cost estimate greatly underestimates the likely costs associated with the proposed groundwater standards.

The Department states that economic impacts are likely to be moderated by the fact that “there will be few cases where the proposed standards will be exceeded where existing standards are not already being exceeded.” However, MEG anticipates that there could be many impacts of this rule beyond existing contaminated sites. Potential impacts include projects that require pit trench dewatering and land application of biosolids. In most cases, these projects would not be associated with sites where existing standards are already being exceeded and remediated. Further, even for existing contamination sites,

0611211406

Madison Office

222 West Washington Avenue 608.256.0226  
P.O. Box 1784 888.655.4752  
Madison, Wisconsin Fax 608.259.2600  
53701-1784 www.staffordlaw.com

Milwaukee Office

1200 North Mayfair Road 414.982.2850  
Suite 430 888.655.4752  
Milwaukee, Wisconsin Fax 414.982.2889  
53226-3282 www.staffordlaw.com

June 11, 2021

Page 2

the costs associated with the establishment of PFAS criteria could be significant due to the extremely limited options for disposal of PFAS compounds.

MEG therefore anticipates that there may be a significant economic impact due to required remediation for PFAS contamination, both for new projects or sites and those sites that already require remediation due to the exceedance of another NR 140 standard. The EIA should be revised to reflect the full potential economic impact of the proposed groundwater standards.

Thank you for consideration of these comments. MEG greatly appreciates the opportunity to participate in this process and welcomes further communication with the Department.

Sincerely,

STAFFORD ROSENBAUM LLP

A handwritten signature in black ink, appearing to read "Vanessa D. Wishart".

Vanessa D. Wishart

Paul G. Kent

VDW:mai

## Madison Metropolitan Sewerage District



1610 Moorland Road • Madison, WI 53713-3398 • P: (608) 222-1201 • F: (608) 222-2703

June 11, 2021

Bruce Rheineck  
Groundwater Section DG/5  
Department of Natural Resources  
P.O. Box 7921  
101 S. Webster Street  
Madison, WI 53707-7921

Re: Comments on the economic impact of proposed rule DG-15-19

Thank you for the opportunity to comment on the economic impact of proposed rule DG-15-19 related to the setting of numerical standards to minimize the concentration of pollution in groundwater.

We are encouraged that the Department is undertaking the rulemaking process, as consistent rules and regulations provide the District a clearly defined goal to attain. It also creates an even playing field for all utilities and sets clear targets that the District can use when looking toward reduction of these compounds within our own operations and the operations of our permitted industrial and commercial customers.

As part of the rule-making process, the District asks that the Department holistically consider potentially affected parties and the economic impacts these parties can anticipate; this is especially true for WPDES permittees, such as the District, that have biosolids land application programs, industrial pretreatment programs and that do major construction projects.

With new groundwater enforcement standards in place for PFOS and PFOA combined at 20 ng/l and the preventive action limit (PAL) even lower at 2 ng/l, this will undoubtedly have an economic impact on wastewater utilities that beneficially reuse biosolids. For example, if a private rural well or a monitoring well in any proximity to a land application site provides a test result above the standards presented in the rule, there is the potential for the Department to act to limit any additional impacts to groundwater. Although the fate and transport of PFAS compounds from land application of biosolids to groundwater wells is still emerging, there is a significant concern that setting the PAL at 2 ng/l – essentially the detection level – will effectively require a more conservative approach to land application that could manifest itself in the form of significant costs for additional treatment and disposal of biosolids.

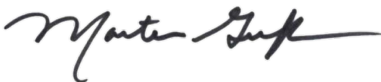
A [recent report put out by NACWA, WEF and NEBRA](#) assesses the cost of alternative biosolids management and disposal to address PFAS contamination. This report indicates that, on average, biosolids management costs increased 37% in response to PFAS concerns. The District generates approximately 7,500 tons of biosolids per year and the land application program costs approximately \$2 million per year to operate (data taken from p. 20 of [2019 District annual report](#)). Increasing our land application costs by 37% would result in a biosolids management program cost of an additional \$1 million, increasing annual costs to almost \$3 million for one utility. These are conservative costs. A preliminary analysis by District staff pertaining to biosolids disposal options in lieu of a land application option has landfilling costs at between \$2 million and \$4 million annually, depending on the distance to transport to the landfill and the landfill cost per ton. Incineration isn't any cheaper. To incinerate, the costs start at \$4 million annually and increase from there depending on incineration costs per ton and the distance to transport the material. These are costs that will necessitate raising rates for the customers we serve, and we feel that these costs should be accounted for in the economic impact analysis.

Additionally, with the proposed groundwater standards there is now a threshold for what levels of PFOA and PFOS are acceptable in groundwater. This threshold for treatment will have significant costs for our Industrial Pretreatment program customers and costs for the District in administering the program. As part of our pretreatment program, the District accepts contaminated groundwater from construction sites that cannot be discharged directly to surface waters. Creating a new standard for PFOA and PFOS will require the District to require additional analytical information and review each discharge request, increasing costs for the requestor and the District. If it appears that the groundwater standards are not being met, the District will be in a situation to potentially require pretreatment from customers before accepting the material, resulting in significant costs to those customers and small businesses.

Coupled with this is the District's own construction activities related to conveying wastewater in an efficient manner and many District projects require dewatering (sometimes known as pit-trench dewatering). With the proposed rule establishing a new PFOA and PFOS threshold for treatment, District construction projects that require dewatering will now also be required to treat groundwater before discharge. Dewatering volumes on construction projects vary, but on average, a District project could discharge around 0.25 MGD over the course of the project (from personal communication with a District project engineer). Depending on the treatment technology chosen (Granular Activated Carbon or Ion Exchange), costs to put in an on-site treatment of groundwater as part of dewatering could be upward of an additional \$500,000 per project (data taken from [EPA presentation "PFAS Treatment in Drinking Water and Wastewater State of the Science"](#)). With multiple projects in a year, that cost increases exponentially per year into the millions of dollars. These are costs that will necessitate raising rates for the customers we serve, and we feel that these costs should be accounted for in the economic impact analysis so the rule can fully account for the economic impacts of meeting the proposed PFOA and PFOS enforcement standard and PAL.

Please feel free to contact me at [marting@madsewer.org](mailto:marting@madsewer.org) or 608-222-1201 if you would like any more information or to discuss this any further.

Regards,



Martin Griffin  
District Director of Ecosystem Services



**TO:** Bruce Rheineck  
Wisconsin Department of Natural Resources

**VIA:** [DNR140GroundwaterQualityStandards@Wisconsin.gov](mailto:DNR140GroundwaterQualityStandards@Wisconsin.gov)

**FROM:** Jason Culotta  
President  
Midwest Food Products Association

**DATE:** June 4, 2021

**RE:** Comments on Draft Economic Impact Analysis concerning proposed revisions to Chp. NR 140, Wis. Admin. Code; Board Order DG-15-19

The Midwest Food Products Association (MWFPA) appreciates the opportunity to offer comments on the Department's DRAFT Economic Impact Analysis (EIA) issued in relation to the "Cycle 10" proposed revisions to Chapter NR 140, Wis. Admin. Code, designated by the Department as draft rule DG-15-19 (Draft Rule).

MWFPA is the trade association representing food processors and their allied industries throughout Illinois, Minnesota, and Wisconsin. Wisconsin is among the leading states for vegetable growing and processing, ranking second in the nation in vegetable production behind California. Many MWFPA members would be directly and adversely affected by the proposed rule changes and thus are interested in a thorough and accurate EIA.

The Department's draft EIA fails to contain the minimum amount of information required by § 227.137(3), Wis. Stats. Indeed, the Department wholly "punted" in its draft EIA indicating in multiple places that it intends to "reassess the preliminary cost estimate based on comments received during the comment period" (*See, e.g.*, EIA @ pg. 4). Shockingly, the Department concludes that a rulemaking which would develop and lower groundwater standards that will have economy-wide impacts in Wisconsin will carry only "moderate costs", less than \$5 million each year.

This conclusion is unsupported when the Department itself indicates it has made no reasonable effort to truly estimate the complete economic impact of this rule. Additionally, the Department provides no support for its supposition that there will only be "few cases" where proposed standards are exceeded where existing standards are not already exceeded.



The proposed rule would set new groundwater standards for 14 compounds and lower (make more stringent) the standard for five other compounds that have existing standards. The development of these enforceable standards will carry significant economic impact to local communities, industrial and agricultural operations.

### **PFOA & PFOS**

The inclusion of a new groundwater standard for PFOA & PFOS (collectively “PFAS”) will have far reaching economic impacts in the state. In August 2020, the Department’s Remediation and Redevelopment Bureau (R&R) sent a letter to responsible parties for more than 3,000 open sites suggesting that sampling for PFAS be included in site investigations, regardless of where the site was in the NR 700 process.

Not only will there be costs associated with additional monitoring and investigation at these sites, but as the EIA acknowledges (but without quantifying) such sampling will “require response actions to address both source control and any necessary remediation of contaminated groundwater.”

Wisconsin has a vast amount of experience of likely investigation and cleanup costs under its NR 700 voluntary party remediation program. Site investigations alone range from \$30,000-\$150,000 or more. Cleanups range from the low six figures to multi-millions. Given how ubiquitous and persistent PFAS are in the environment, it is reasonable to assume that more than half of the *existing* NR 700 sites will find levels of PFAS above the proposed enforcement standard of 20 ppt. Such detections will, as the EIA indicates, require response actions.

Despite that near certainty, the EIA makes no effort to quantify the impacts generally on the Wisconsin economy. In the very next sentence after the EIA indicates response actions are likely to be required, the EIA only estimates a cost for *testing* for PFAS, not for the response actions that will necessarily be required to comply with Wisconsin law (EIA @ pg. 1). Indeed, there are NR 700 sites that are being denied closure based on the *pending* Cycle 10 rulemaking, resulting in these parties incurring additional costs already when the rule is not even as yet finalized.

The Department is already aware of “over 50 sites” in Wisconsin where PFAS has been detected in the groundwater. Given the extremely low proposed enforcement standard of 20 ppt, wherever PFAS is detected it is likely to be over the ES. The number of sites where a response action will be required will blossom exponentially, as the experience in Minnesota and Michigan supports. The annual cost of compliance for communities, businesses and agriculture will easily exceed \$10 million annually statewide.

### **Imidacloprid**

The proposed recommendation to set an enforcement standard of 0.2 ug/L for Imidacloprid is unjustifiably below the EPA's most recent federal number and is not based on the science-based and relevant studies available. Along with the proposed preventive action limit of 0.02 ug/L, these proposed standards will significantly reduce the use of Imidacloprid. This crop treatment is used widely today in specialty crops such as snap beans, potatoes, and sweet corn.

U.S. EPA conducted an assessment of Imidacloprid in 2017 which was subject to an open public comment period. The agency's registration review is expected to be completed yet this summer. It would be more appropriate for Wisconsin's regulatory standard to be based on the more robust federal process upon its completion.

### **TCE**

Trichloroethylene (TCE) was a widely-used component of industrial solvents. There are hundreds of TCE sites in Wisconsin that have either been closed or are in the NR 700 response process. The EIA makes no attempt to quantify the impacts of reducing the groundwater enforcement standard for TCE from 5 ug/L to 0.5 ug/L (PAL proposed at 0.05 ug/L). Not only will sites be forced to undergo reinvestigation and additional remediation, but some portion of the "over 7,300 case closures" will no doubt be reopened to assess compliance with the new standard.

Responsible parties who thought their sites were long closed (and whose properties may have been bought and sold over time) will likely be quite surprised to find out the site has been reopened. Also, this change will not only affect groundwater issues, but also the vapor intrusion pathway which may have been assessed previously. Additional costs will be incurred redoing VI assessments.

In conclusion, we find the EIA wholly inadequate for its statutory purposes. We believe the Department should withdraw the EIA and rework it to meet the requirements of § 227.137, Wis. Stats.



June 11, 2021

Department of Natural Resources  
P.O. Box 7921  
101 South Webster Street  
Madison, WI 53707-7921  
[DNR140GroundwaterQualityStandards@Wisconsin.gov](mailto:DNR140GroundwaterQualityStandards@Wisconsin.gov)  
*Sent Via Email*

RE: Comments on Draft Economic Impact Analysis (EIA) for DG-15-19 (Proposed Cycle 10 Groundwater Standards)

Dear DNR Representative:

These comments are submitted on behalf of the Wisconsin Paper Council (WPC) and Wisconsin Manufacturers & Commerce (WMC).

WPC is the premier trade association that advocates for the papermaking industry before regulatory bodies, and state and federal legislatures to achieve positive policy outcomes. WPC also works to educate the public about the social, environmental, and economic importance of paper, pulp, and forestry production in Wisconsin and throughout the Midwest.

The pulp and paper sector employs over 30,000 people in Wisconsin and has an annual payroll of \$2.5 billion. Wisconsin is the number one paper-producing state in the United States, with the output of paper manufactured products estimated to be over \$18 billion. Our members are dedicated to maintaining clean water in Wisconsin.

WMC is the state's largest general business trade association, representing roughly 3,800 members businesses of all sizes and throughout all regions of the state. WMC members do business in all sectors of the economy, including manufacturing, retail, financial services, healthcare, agriculture, and energy. Since its founding in 1911, WMC has advocated for policies that make Wisconsin the most competitive state in the nation to do business.

WPC and WMC appreciate the opportunity to comment on DNR's draft EIA. Our general and specific comments are set forth below.

## I. Lack of Information in Draft EIA

Wis. Stat. § 227.137 sets forth requirements of economic impact analyses (EIA) of proposed rules. This section mandates in part that an EIA “of a proposed rule shall contain information on the economic effect of the proposed rule on specific businesses, business sectors, public utility ratepayers, local governmental units, and the state’s economy as a whole.” This draft EIA, however, provides almost no information regarding economic impacts.

More specifically, the Wisconsin Department of Natural Resources (DNR) estimates that the cost of implementation to be \$175,000 to \$5 million per year. DNR notes that the “quantifiable and defensible” cost is approximately \$175,000, which is mainly for testing for PFAS. Presumably, this amount is largely reflective of the \$173,250 DNR identifies as the estimated cost to collect one round of PFAS groundwater sampling at 334 permitted waste land application sites.

DNR largely punts on all other costs associated with these proposed groundwater standards, indicating that costs are “site specific and highly variable.” DNR also notes that “site-specific information needed to make reasonable estimates is unknown at this time.” Thus, there is virtually no cost information in the proposed EIA on which to comment.

DNR has a fair amount of experience with PFAS at this point and should be able to provide more information. The draft EIA contains a page and a half of administrative code chapters that use the NR 140 groundwater standards to implement regulatory requirements. This list includes the NR 700 rule series, which governs investigations and remediation of contaminated sites in Wisconsin. Groundwater standards are a frequent driver in environmental investigations and cleanups, and these standards will have a significant impact on associated costs. Please note that **Appendix A (NR 700 Process and Associated Costs)** outlines the various steps associated with an NR 700 compliant investigation and remediation, and contains estimates of costs associated with the various requirements.

DNR has instructed those identified as responsible parties to investigate for PFAS. Moreover, the EIA notes that DNR is aware of evidence of over 50 sites at which PFAS has been found in groundwater. As of this writing, DNR’s Bureau of Remediation and Redevelopment Tracking System (BRRTS) indicates there are 61 active sites with PFAS contamination. Given this, it is hard to understand why the Department was unable to contact a sample-size of active sites to help aggregate data for this EIA.

In addition, at a high profile PFAS site in the Marinette and Peshtigo area, DNR recently approved a groundwater extraction treatment system designed to reduce, but not eliminate, PFAS over a 30-year period. Furthermore, DNR has done an analysis of treatment systems for removing PFAS as part of its development of a PFAS firefighting foam rule. In its Technical Support Document for the rule, DNR references the technology used at four sites with groundwater contamination, in addition to other sites.

At each of these sites, there was pretreatment filtration, followed by application granular activated carbon (GAC) technology.

Furthermore, our organizations are aware that the Wisconsin DNR has requested and received Wisconsin-based PFAS treatment cost data for the purposes of preparing an EIA. It is thus unclear, and again contrary to the directive of s. 227.137, that the Department failed to provide a more detailed cost estimate.

Yet, DNR's only defensible cost estimate identified in the EIA relates to one round of sampling at land disposal sites. Furthermore, DNR acknowledges that it has no basis for the estimated high-end cost of this rule proposal of \$5 million per year. This is particularly of concern given the large focus on the new groundwater standards for perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS), which has a combined enforcement standard (ES) of 20 parts per trillion (ppt), and a preventative action limit (PAL) of 2 ppt. It is also worth noting that Wis. Stat. § 227.137 does not provide an exemption from the EIA requirement for costs that are "site-specific and highly variable."

Also note that DNR's estimate is inconsistent with Wis. Stat. §227.137(3)(b)(1), the statutory provision set forth in the EIA as the basis for providing this estimate. That provision requires implementation and compliance costs be "expressed as a single dollar figure." Providing a range, let alone a range with no justification, does not comply with this requirement. Moreover, if the cost of the rule is at the top end of DNR's estimated range, DNR is required to obtain legislative approval before moving forward with this rule, while if the cost was at the lower end of the range, it would not. Thus, the cost range also fails to meet the statutory mandate for DNR to determine "whether \$10,000,000 or more in implementation and compliance costs are reasonably expected to be incurred" over a two-year period [Wis. Stat. § 227.137(3)(b)2].

## **II. Costs Associated with Current Implementation of PFOA & PFOS Requirements**

DNR also asserts that it has the authority to develop site-specific groundwater standards in the absence of a rule establishing groundwater enforcement standards. Furthermore, DNR has required entities it has identified as responsible parties to take certain actions regarding PFAS, such as sampling to determine whether a site has PFAS contamination. The issue of whether DNR has such authority is currently subject to litigation.

Regardless of DNR's current practice, all costs associated with PFOA and PFOS requirements related to groundwater must be incorporated into the EIA. In other words, DNR cannot avoid identifying costs in the EIA by claiming there are no costs associated with the PFOS and PFOA proposed groundwater standards because it is currently requiring certain actions pertaining to PFOA and PFOS. For example, insofar as DNR is requiring investigations of contaminated sites for PFOS and PFOA in the absence of promulgated groundwater standards, the costs associated with those investigations



must be included in the EIA. Doing otherwise would circumvent the EIA requirements for these substances, as well as for any other hazardous substances for which DNR has implemented regulatory requirements prior to promulgation of a groundwater standard.

In addition, our organizations are aware of several active examples of substantial costs incurred in relation to PFOA and PFOS remediation. This includes businesses that have spent approximately \$775,000 - \$1,200,000 per year *per business*. Given DNR involvement, the agency should at least be indirectly aware of some of these substantial costs imposed on the regulated community. Unfortunately, these costs are not reflected in the draft EIA.

Finally, Leather-Rich, a specialty dry cleaner located in Oconomowoc, expects to spend more than \$1.5 million to investigate and remediate PFAS. In addition, investigation and remediation of TCE is expected to cost more than \$550,000. These costs exceed the estimated value of the property at \$1.8 million, and the owners are currently unable to sell the business due to the ongoing DNR investigation.

### **III. Costs Associated with Proposed NEW PFOS and PFOA Groundwater Standards**

PFOS and PFOA are two PFAS that have been most extensively studied. Neither PFOS nor PFOA are currently manufactured in the United States and have not been manufactured in the United States for years. Thus, contamination associated with these substances are a result of historic use.

As mentioned above, DNR has proposed a combined ES of 20 ppt, and a PAL of 2 ppt. To put this in context, one ppt is the equivalent of one second in about 32,000 years, or about one ounce in 7.5 billion gallons of water.

It is difficult to estimate the number of sites that may require remediation, but given the extremely stringent nature of the proposed standard, we estimate that there may be as many as 100 sites with PFOA/PFOS levels exceeding the proposed groundwater standard of 20 ppt and another 100 exceeding the PAL of 2 ppt. As there is no evidence to indicate the possibility of bioremediation of these substances, natural attenuation is not a viable approach to remediation. Further, WMC and WPC are not aware of commercially available approaches to remediating PFOA/PFOS contamination in the ground (*in situ*). Consequently, groundwater would need to be pumped to the surface for treatment (*i.e.*, pump and treat).

Based on data collected by the Madison Water Utility, a system for treating PFOA/PFOS groundwater contamination will range from \$670,000 to \$812,000 to install and from \$136,000 to \$733,000 annually to operate.<sup>1</sup> Extrapolating to the estimate of 100 sites state-wide produces a total capital cost associated with compliance with the

---

<sup>1</sup> [https://www.cityofmadison.com/water/documents/2021\\_Well\\_15\\_Feasibility\\_Study\\_PFAS\\_Removal\\_Report\\_Final.pdf](https://www.cityofmadison.com/water/documents/2021_Well_15_Feasibility_Study_PFAS_Removal_Report_Final.pdf)

groundwater standard for PFOA/PFOS of between \$67 and \$81 million, with annual operating costs of \$13.6 to \$73 million.

Assuming that DNR requires monitoring only at the 100 sites we estimate will exceed the proposed PAL of 2 ppt but not the standard of 20 ppt, total annual costs would range from \$51,000 to \$200,000.<sup>2</sup> As noted above, a requirement for remediation at any of these sites would significantly increase the cost.

#### **IV. Costs Associated with Proposed Revision to trichloroethylene (TCE) Groundwater Standard**

TCE is a chemical that has been used for a variety of purposes, including as a degreasing solvent for metal equipment. DNR is proposing to reduce the existing ES and PAL for TCE by an order of magnitude. The ES is being reduced from 5 to 0.5 micrograms per liter, and the PAL is being reduced from 0.5 to 0.05 micrograms per liter. DNR estimates that TCE is present at about 1000 closed remediation sites and 750 current sites. Although the levels of TCE at these sites are unknown, a very conservative estimate might suggest that 10 to 20 percent will exceed the proposed groundwater standard of 0.5 ppm – totaling 100 to 200 of the closed sites and 75 to 150 of the current sites.

DNR may allow for natural attenuation of TCE contamination at some sites, rather than requiring treatment to reduce the amount of TCE. While DNR may take that approach at many of the 175 to 350 sites estimated to exceed the proposed standard, it is likely that they will require groundwater treatment at some of the sites – depending on the TCE levels present and the proximity of the site to residences, groundwater wells, or surface water. Assuming this would apply to 10 to 20 percent of the sites, 20 to 70 sites would need to be reopened or to have their treatment plans revised to achieve additional cleanup of TCE levels. Remediation of TCE can be accomplished in situ, but pump and treat systems may be necessary in some cases. Installation costs can vary from \$100,000 to \$250,000 or more, depending on the approach taken. Based on the assumption of 20 to 70 sites requiring treatment, the total capital cost would range from \$2 to \$17.5 million with annual operating costs ranging as high as \$2 million.

For the remaining sites for which DNR determines that natural attenuation is appropriate, regular monitoring of TCE levels will be required. These costs may total as much as \$2.5 million annually.

Alternatively, at the high end, it is possible that *all* of the approximately 1000 closed TCE remediation sites will require treatment. TCE is difficult to detect below 0.5 ppm, which certainly could impact remediation efforts. A conservative estimate would be

---

<sup>2</sup> Based on DNR's estimate of \$173,000 for 334 sites (\$500 per site) for one round for sampling and the collection of 2 to 4 samples during the year.

\$50,000 per site for remediation efforts. If we applied this figure to *all* closed and open TCE sites, the estimated compliance cost of this proposed standard is \$87.5 million.

**V. Costs Associated with Proposed Revision to 1,4-Dioxane Groundwater Standard**

1,4-Dioxane was used as an additive in formulations of 1,1,1-trichloroethane (TCA) which replaced TCE as a degreasing solvent at many of the manufacturing sites in the state. It is likely, therefore, that many of the sites where TCE has been identified also have levels of 1,4-dioxane. DNR is proposing to significantly reduce the existing ES and PAL for the substance. The ES is being reduced from 3.0 to 0.35 micrograms per liter, and the PAL is being reduced from 0.3 to 0.035 micrograms per liter.

1,4-Dioxane is not tracked in BRRTs, and our organizations were not able to find information on the number of ground water sites that may have 1,4-Dioxane contamination. Therefore, we have not attempted to estimate the number for purposes of developing an estimate of the costs associated with complying with the proposed standard. Like PFOA and PFOS, however, natural attenuation is not a viable approach for reducing levels of 1,4-dioxane, as the evidence for bioremediation of the substance is limited. In addition, typical carbon adsorption systems do not remove 1,4-dioxane. Thus, advanced oxidation systems would be required at sites where the proposed standard is exceeded. These systems are more expensive to install and operate such that a system installed to remove 1,4-dioxane likely will exceed \$1 million. Even for existing remediation sites using carbon adsorption, the addition of an advanced oxidation system will significantly increase the cost.

**VI. Summary of Costs and Conclusion**

The following table outlines many (but not all) of the aforementioned costs:

*Table 1*

	<b>PFOA/PFOS</b>	<b>TCE (Low)</b>	<b>TCE (High)</b>	<b>1,4-Dioxane</b>
<b>One-Time Cost</b>	\$67 M - \$81 M	\$2 M - \$17.5 M	\$87.5 M	<i>Unknown</i>
<b>Annual Operating Cost</b>	\$13.6 M - \$73 M	<\$4.5 M	<i>Unknown</i>	<i>Unknown</i>

To clarify, these are conservative figures, particularly in reference to PFOA/PFOS.

In summary, even if we accepted the conservative compliance costs cited in *Table 1*, assume the implementation of the new 1,4-Dioxane standard will lead to no additional costs, and ignore the other cited costs not included in Table 1, the overall compliance cost estimate is still substantially higher than the range of \$175,000 – \$5 million/year provided by the DNR.

To address our aforementioned concerns, WPC and WMC request the following changes to the draft EIA:

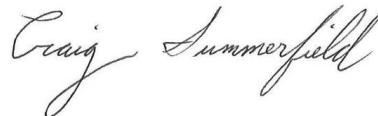
1. Incorporate PFOA/PFOS remediation costs into the EIA, regardless of whether the DNR has already required the remediation.
2. Update the estimate to better reflect actual compliance costs associated with implementing the PFOA/PFOS and TCE standards.
3. Provide an estimate of costs associated with implementing the 1,4-Dioxane standard.
4. Revise the provided range to a single dollar figure, as required by s. 227.137(3)(b)(1).

Thank you for consideration of these comments, and please contact us if you have any questions.

Sincerely,

*/s/ Scott Suder*

Scott Suder  
President  
Wisconsin Paper Council



Craig Summerfield  
Director of Environmental & Energy Policy  
Wisconsin Manufacturers & Commerce

*Enclosure: Appendix A NR 700 Process*

# WISCONSIN SOLID WASTE PFAS COALITION

June 11, 2021

Re: Comments regarding an economic impact analysis for amendments to chapter NR 140 to set numerical standards to minimize the concentration of polluting substances in groundwater; DG-15-19

To the Wisconsin Department of Natural Resources:

On behalf of the Associated Recyclers of Wisconsin (AROW), the Wisconsin Badger Chapter of the Solid Waste Association of North America (SWANA), and the Wisconsin Counties Solid Waste Management Association (WCSWMA), the Wisconsin Solid Waste PFAS Coalition is providing comment on DG-15-19: Amendments to chapter NR 140 to set numerical standards to minimize the concentration of polluting substances in groundwater.

## Introduction

The standards proposed in DG-15-19 for perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) are at particularly low levels and could result in significant economic impacts to the solid waste industry. In the case of our municipally owned sites, this cost will ultimately be paid by our communities and the taxpayers of Wisconsin. We estimated costs to understand the approximate scale of economic impact for initial sampling for PFAS at a subset of state landfills, and for remedial site investigation and treatment at a hypothetical landfill where PFAS concentrations exceed proposed groundwater standards.

It is important to note that although solid waste facilities are recipients of PFAS contaminated waste such as food packaging, containers, and household cookware, they are **not** producers of PFAS. PFAS are released from decomposing municipal solid waste over time and have the potential to leave landfills in the form of leachate, or the liquid that is collected at the bottom of a landfill. Ultimately, the responsibility of leachate treatment and groundwater monitoring falls on the solid waste facility.

## Sampling Costs for Initial Investigation

There are over 400 landfills (active and closed) in the state of Wisconsin that are required to monitor groundwater quality on a regular schedule. Establishing numerical standards for PFAS concentrations may result in the requirement that solid waste facilities also sample groundwater wells for PFAS.

To understand the cost implications of this additional monitoring requirement, we performed a back-of-the-envelope calculation assuming the following inputs:

- \$375: Average costs for sampling for PFAS as cited in the FE&EIA. However, this number may be low; a recent quote requested from a



[recyclemorewisconsin.org](http://recyclemorewisconsin.org)



[swana-wi.org](http://swana-wi.org)



[wcswma.org/](http://wcswma.org/)

## About us

The Wisconsin Solid Waste PFAS Coalition was formed in 2019 to educate and inform our industry members, lawmakers, and the public about the relationship between PFAS and our waste.

The solid waste industry supports regulating these chemicals and has always held protection of human health and the environment as a core value; however, the health risks of PFAS need to be fully evaluated and weighed against other environmental pollutants before stringent standards are implemented.

## Contact us

Meleesa Johnson, AROW President  
715.573.3165  
[Meleesa.Johnson@co.marathon.wi.us](mailto:Meleesa.Johnson@co.marathon.wi.us)

John Welch, SWANA President  
608.516.4154  
[Welch@countyofdane.com](mailto:Welch@countyofdane.com)

Gerry Neuser, WCSWMA President  
920.683.4307  
[GerryNeuser@co.manitowoc.wi.us](mailto:GerryNeuser@co.manitowoc.wi.us)

Roxanne Wienkes, Coalition  
Coordinator  
608.509.6681  
[Wienkes.Roxanne@countyofdane.com](mailto:Wienkes.Roxanne@countyofdane.com)



certified lab to measure 33 PFAS compounds per the Wisconsin guidance method was \$450 per sample.

- 15 to 30 groundwater monitoring wells: average number of wells at a landfill, though some sites have more and others fewer. We assume 50% of the wells would be sampled at each site in an initial sampling effort.
- \$2,000 and \$10,000: Cost for sample coordination, field mobilization, sample collection, and data analysis for a single sampling event.
- A field blank with every sample: due to the high likelihood for cross contamination from sampling equipment, PFAS sampling guidance recommends collection of quality control samples to ensure validity of results.

Using these assumptions, a conservative estimate of the cost for an individual landfill site to sample for PFAS during an initial event is between \$7,600 and \$21,000. Should the scale of the initial sampling investigation be similar to that performed in Minnesota (where PFAS sampling was required at approximately 100 landfill sites according to the FE&EIA), costs in Wisconsin are estimated between \$760,000 and \$2.1 million (sampling at 100 of 400 existing sites).

According to the FE&EIA, approximately 60% of the landfill sites in Minnesota exceeded the regulatory guidance for PFAS. Considering the pervasive and ubiquitous nature of PFAS, this is not surprising. If the State of Wisconsin sets enforcement standards and preventative action limits at levels so close to what we observe as background concentrations, we can only expect to see similar if not higher rates of exceedances, which would result in additional ongoing monitoring and remedial site investigations. Should a significant portion of the sampled wells require additional PFAS monitoring (i.e. 60% of the 100 landfills initially tested), ongoing sampling costs by our estimate quickly balloon to over \$1 million annually.

### **Estimated Costs if PFAS are detected at a Landfill**

The purpose of the following section is to further evaluate costs that one municipal landfill might incur should PFAS exceed proposed groundwater standards. Typical additional work at a site where PFAS are detected in groundwater would encompass two phases: first, a remedial site investigation, and second, remedial action.

#### *Remedial Site Investigation*

Costs associated with more substantial remedial site investigation at an individual site will vary but could exceed \$1 million depending on the number and depth of wells needed for any further investigation. Table 1 presents a range of costs for a single site investigation.

Table 1: Estimated costs for a remedial site investigation based on costs observed at other Wisconsin sites (NR700 cases).

<i>Task</i>	<i>Estimated Cost</i>		
Preparation, Scoping, and Workplan	\$70,000	-	\$200,000
Well Network Installation	\$50,000	-	\$400,000
Sampling and Analysis (8 round min.)	\$80,000	-	\$175,000
Remedial Design	\$100,000	-	\$300,000
<b>Total Estimate Annual Cost</b>	<b>\$300,000</b>	<b>-</b>	<b>\$1,075,000</b>

### *Remedial Action*

At landfills where remedial action is necessary, costs will vary based on the extent of the impacts, but estimates could quickly exceed \$900,000 annually per site. Table 2 presents costs for an example groundwater PFAS sequestration for a system with capacity of 150 gallons per minute. For context, a household potable well pump has a capacity of 5-10 gallons per minute.

While the most appropriate technology for PFAS destruction is uncertain, there are technologies that can sequester (consolidate and remove) PFAS. All available technologies produce highly-concentrated, residual PFAS as a waste product. For illustrative purposes, we have chosen a media-based sequestration system with pre-treatment for solids removal.

Table 2: Example costs for a PFAS sequestration system.

<i>Task</i>	<i>Estimated Annual Cost</i>
Mobilization/Demobilization of Sequestration Equipment (tanks, media beds, pumps)	\$140,000
Rental of Sequestration Equipment	\$140,000
Consumables (flocculent, media)	\$200,000
Media Disposal (assuming hazardous designation)	\$150,000
System Operation and Discharge Treatment	\$150,000
15% Contingency Costs	\$120,000
<b>Total Estimate Annual Cost</b>	<b>\$900,000</b>

At active landfills, these remediation costs will ultimately impact landfill disposal rates and landfill users. For instance, to finance an additional \$1 million in remediation costs, a landfill that manages 250,000 tons of waste per year would need to increase disposal rates by \$4/ton. For a municipality with 50,000 residents, that could mean an additional \$27,000 in disposal costs (assuming 3 pounds of waste per person per day). Please note that this is just the cost for sequestering PFAS in groundwater and does not include the cost of sequestering PFAS in leachate.

In cases where a landfill is still under monitoring requirements but is no longer generating revenue, those costs will need to be realized by the legal authority associated with the site. In most cases, legal responsibility falls to local and county municipalities, which again will translate to increased tax burden for our communities.

None of the above information assumes that the landfill or solid waste facility released or is responsible for PFAS in groundwater. Background levels of PFAS may be present in groundwater at or above enforcement limits.

## Summary

The solid waste and recycling industry works every day to protect human health and the environment by managing materials that industries and households discard. We do so according to prescribed legal requirements and social conscientiousness based on the information available to us when materials are received. We accepted waste materials in good faith and now, based on growing expectations of regulatory standards for mitigating the harm of PFAS, face significant financial and technical hurdles.

Our investigation into the cost and complexity of advanced PFAS sequestration methods may include the following costs to the solid waste industry alone:

- initial sampling at just a subset of the state's landfills : \$ 1 million
- additional ongoing monitoring and remedial site investigations : \$1 million annually
- Estimated costs for a remedial site investigation : \$300,000 to \$1,075,000 per site
- Example operational cost of PFAS removal from groundwater : \$900,000 per site annually

Detection of elevated PFAS concentrations at just a handful of the state's hundreds of landfill sites could lead to millions of dollars in investigations and millions of dollars in annual remediation costs. These estimates indicate that addressing this problem in this way will be prohibitively expensive. It is imperative that the legislature, WDNR, local units of government, and the waste sector collaborate to ensure that solid waste facilities, and other passive receivers, not only identify PFAS sequestration options that do not place a disproportionate financial burden on any one sector, but also ban or further minimize the ongoing manufacturing of PFAS containing products to incrementally decrease future exposure and mitigation efforts.

Thank you for your consideration of the potential financial impacts of this legislation to the solid waste industry. The goal of any PFAS policy or regulation should be to determine the most effective steps needed to reduce human exposure and implement them within the broad context of protecting human health. Legislators, regulators, and drinking water agencies, wastewater, and solid waste agencies must work collaboratively to examine how to manage PFAS holistically, with science driving the decision making.