

PFAS and Public Health

Clean Wisconsin

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PFAS Surface Water Standard

- *Public Health Benefits:* significant benefit from reduced PFAS discharge into waterways. Reducing health impacts from contact with or ingestion of surface waters of the state and from ingestion of fish taken from surface waters of the state.
- Currently, DNR can address PFAS discharges in WPDES permits on a case-by-case basis (NR 106). Clean Wisconsin supports the proposed rule as it would set a uniform standard, specific procedures, and set PFAS limitations.
- The precautionary principle is followed in drinking water regulation to limit harm. Limiting harm to best protect public health should be the priority.

Public Health Impacts

- PFAS pose the greatest risk to developing fetuses and infants.
- Lower infant birth weight.
- Interferes with hormones.
- Decreases women's fertility.
- Increased risk of serious conditions like high blood pressure or pre-eclampsia in pregnant women.
- Metabolic disease incl. increased cholesterol.
- Interferes with immune systems and vaccine response.
- Increases likelihood of kidney or testicular cancer.

Per- and Polyfluoroalkyl Substances (PFAS) HEALTH EFFECTS

Michigan PFAS Sites Being Investigated as of October 29, 2018
Michigan Department of Environmental Quality (MDEQ)

Pregnant women, unborn fetus, and infants are most susceptible to adverse health effects once exposed to PFAS.
Perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS), two common forms of long-chain PFAS, have been associated with the following:

- Low Birth Weight
- Delayed Puberty
- Preterm Birth
- Attention deficit/hyperactivity disorder (ADHD)
- Pregnancy-Induced hypertension/Pre-eclampsia
- Immune Response Suppression

Health effects that have been associated with exposure to PFAS in non-pregnant adults include:

- Difficulty becoming pregnant
- Chronic kidney disease
- Cardiovascular disease
- Altered liver function
- Osteoarthritis

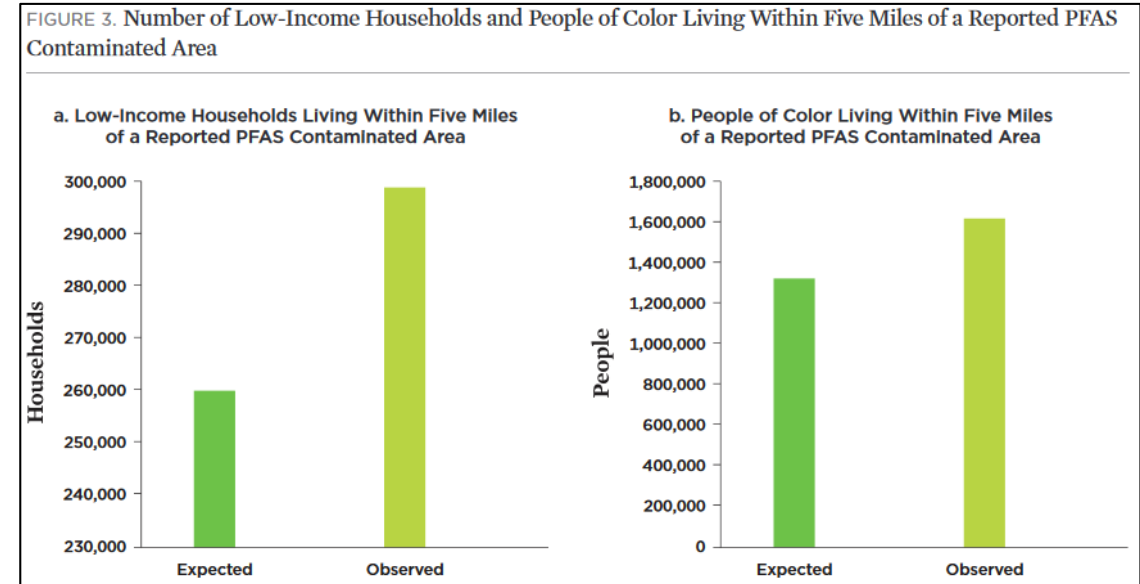
CANCER

- PFOA has been classified by the US EPA as "possibly carcinogenic to humans" [US EPA 2017]
- PFOA may cause prostate, testicular, bladder, liver, and/or kidney cancer [ATSDR 2018]

M LIFESTAGE ENVIRONMENTAL EXPOSURES AND DISEASE CENTER
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Environmental Justice

- Low income and/or BIPOC communities are more likely to live closer to industrial contamination sites.
 - Such sites are likely sources of PFAS contamination.
- EXAMPLE: The Union of Concerned Scientists published a report that looked at minority and low-income populations around 73 non-military PFAS contamination sites.
 - In Michigan, 48% more minorities and 49% more low income people lived within 5 miles of the state's 23 PFAS contamination sites than would be expected if the sites and populations were randomly distributed.



Environmental Justice

- Low-income and/or BIPOC communities are more likely to live near a PFAS contamination site.
- Some underserved populations are heavily dependent on sustenance fishing, and PFAS bioaccumulates in wild fish.
 - Fish in contaminated areas will have even higher levels of PFAS than fish in other areas.
- Interactive effects of PFAS exposure with other environmental contaminants (e.g., lead) magnify the impacts of either exposure independently.

Public Health Costs of PFAS Contamination

- For European Economic Area countries, an analysis estimates the annual health impact-related costs from PFAS exposure of 52-84 billion Euros (approx. \$62-100 billion USD). (Nordic Council of Ministers)
 - The analysis looks at a variety of health endpoints including kidney cancer, low birthweight, increased infection, hypertension, and increased all-cause mortality.
- The total cost of PFOA-attributable low birthweight births in the United States from 2003-2014 was \$13.7 billion. (International Journal of Hygiene and Environmental Health)
 - These costs included the direct hospital costs at the time of birth as well as lost economic productivity due to low birthweight births being associated with a variety of longer-term outcomes including lower lifetime earning potential.



Public Health Costs

- There is likely a significant benefit to the reduction in exposure to PFAS chemicals given known health effects.
- NH and MI provided qualitative statements about the public health benefits and avoided costs of addressing PFAS in drinking water relating to enacting specific MCLs:
 - Given the potential for direct health care treatment costs, loss of income, and associated indirect costs, limiting exposure to the PFAS chemicals for which these rules establish MCLs will likely result in significant avoided costs.
 - Indirect costs such as reduced quality of life for both the sick individual and their family caregivers are often ignored or underestimated.

Home Valuation Costs

A report for the State of Minnesota in the legal action against 3M analyzed the impact of PFAS contamination in the east metro area of Minneapolis-St. Paul, MN.



- The report found that home values are reduced by 7.3% in Oakdale and reduced by 4.4% in other affected areas due to PFAS contamination.
 - EXAMPLE: the average house in Oakdale sold for \$17,000 lower than expected (expected: \$239,000). The average house other affected areas sold for \$14,000 less than expected (expected: \$320,000).
- Calculating cumulative past (dating back to 1971), present, and future (out to 2050) lost home value in the affected communities, the report found \$1.5 billion in total lost home value damages due to 3M's PFAS contamination in the East Metro area.



Recreational Fishing Costs

- PFAS is known to accumulate in fish tissue, leading to some PFAS-related fish consumption advisories already in Wisconsin.
- A report of recreational fishing in the Twin Cities' east metro area found a 3-6% decline in visits to parks following the introduction of a PFOS advisory in an associated lake or river reach.
- Based on a willingness to pay study, they found that anglers would be willing to pay an average of \$18 per trip to travel farther to fish to avoid a PFOS fish consumption advisory.
 - The annual impact was calculated to be \$3.87 million in damages to the recreational anglers in the East Metro Area.
- EXAMPLE: Wisconsin receives \$2.3 billion annually from fishing related economic activity. Hunters and anglers spend \$4 billion in Wisconsin, support 56,000 jobs and generate \$375 million in local and state revenue.

Potential Dairy Industry Costs

- There is the potential for impacts to the dairy industry. PFAS can contaminate dairy products if the farm's water, feed, or soils are contaminated.
- Farms may be contaminated by PFAS from nearby military bases using aqueous film-forming foam (AFFF), fields being spread with contaminated sludge, and discharge from nearby industrial sources. All three potential pathways exist in Wisconsin.
- Given the importance of the dairy industry to Wisconsin, and the presence of known PFAS contamination pathways, this potential cost could be considered.



NM Case Study:

- PFAS contamination of groundwater near Cannon Air Force Base where AFFF was used affected the Highland Dairy, a 4,000 head farm that supported more than 40 employees.
- Due to the contamination, the dairy's permit to produce milk as suspended by the New Mexico Department of Agriculture, resulting in the farm dumping 15,000 gallons a day and laying off most employees.
- Without the revenue from milk sales to pay for feed, and unable to sell the cows, the farm is facing reality of needing to euthanize the herd.

Summary

- Cleaning up PFAS contamination in a way scientists recommend to protect public health should be the priority when addressing PFAS in surface waters.
- There is a clear and significant benefit to reducing exposure from PFAS that can come from a statewide surface water standard.
- There is a significant benefit to the reduction in exposure to PFAS chemicals given health effects.
- Indirect and direct harms from PFAS pollution need to be taken into consideration:
 - impact of environmental contamination (soil and water),
 - impacts to public health and associated costs,
 - impact to home values,
 - recreational fishing costs,
 - potential impact to the dairy industry.
- Clean Wisconsin supports science-based PFAS standards that most importantly protect public health.

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