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November 27, 2019

Christopher Frederickson
Mayor
City of Rhinelander
135 S. Stevens Street
Rhinelander, WI 54501

Subject: PFAS drinking water and surface water testing results for the City of Rhinelander

Dear Mayor Frederickson,

At your request, I am providing this summary of information on health risks of per- and polyfluoroalkyl substances (PFAS) relating to recent drinking water and surface water testing results for the City of Rhinelander.

Drinking Water Exposure

Studies among people suggest that high levels of PFAS can increase in cholesterol, reduce immune response, and change thyroid hormone levels. In June 2019, the Department of Health Services (DHS) recommended a groundwater standard of 20 ng/L for perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS). Studies in research animals have shown that PFOA and PFOS can cause developmental effects in babies. As such, the recommended groundwater standard was established at a level to protect women who are or who may become pregnant, breastfeeding mothers, and infants who are bottle-feeding.

Scientists continue to learn about the health effects of other PFAS. DHS is currently working on developing groundwater standard recommendations for up to 20 other PFAS compounds. In instances when we do not have a Wisconsin-specific health-based value for a chemical, we may use values from other states or federal agencies to evaluate the potential for health risks.

Drinking water samples were collected from the Municipal Well 8 on October 2, 2019 and analyzed for PFAS (Appendix). Among the PFAS detected, perfluorohexanesulfonic acid (PFHxS) was found at a level higher than most of the health-based values established in other states (Table 1). Therefore, DHS supports the city's decision on shutting down the well to protect public health from PFHxS exposure until this issue can be further resolved. Additionally, DHS recommends continued monitoring when PFAS are detected in water even if levels of PFOA and PFOS are below the recommended groundwater standards of 20 ppt to adequately ensure protection of public health.

Table 1. Current Guidance for PFHxS in other States

State	Value Type	PFHxS Level (ppt)
CT	Health Advisory	70*
MA	Screening Level	70*
MN	Health Advisory	47
VT	Standard	20*
NH	Standard	18
TX	Standard	93

*Combined with PFOA, PFOS, PFHpA, and PFNA

Surface Water Exposure

Water quality standards are established for surface water to protect public health. These standards protect from long-term exposure to chemicals after ingesting water during recreation (swimming and wading) and eating fish caught from the waterbody. Currently, Wisconsin does not have surface water standards for PFAS. Michigan has a surface water standard of 12 ppt for PFOS and 12,000 ppt for PFOA for waterbodies that are not used as a drinking water source.

Surface water samples were collected from the Wisconsin River below the Hat Rapids Dam and analyzed for PFAS on June 27, 2019 as part of the Department of Natural Resources' (DNR's) monitoring study. The level of PFOS and PFOA were 3.1 ppt and 23 ppt, respectively. Both PFOS and PFOA levels found in the Rhinelander area were lower than the Michigan surface water standards.

During recreational activities in lakes, rivers, and creeks, people can be exposed to PFAS by swallowing and touching the water and by eating the fish caught from the waterbody. Accidentally swallowing (ingestion) water while swimming or wading is unlikely to cause someone to become sick. Touching (dermal contact) is a minor source of PFAS exposure from surface water and should not lead to health effects. Available information suggests that PFAS do not easily enter through the skin, although the extent to which they do cross the skin depends on the individual PFAS characteristics. This means that people are not likely to absorb PFAS through the skin while swimming or playing in the water.

Eating fish containing elevated levels of PFAS is a potential human health concern. DNR collected fish samples from the Wisconsin River below Rhinelander this past summer and we are waiting for results from the lab. As such, we cannot say if PFAS are present in fish in this area at levels of concern at this time. Current fish consumption advisories are in place to protect from mercury and other contaminants. People should continue to follow these advisories as we learn more. Once these fish testing results are available, DHS will work with DNR to evaluate whether an advisory is needed.

These following actions should be taken by people and pets to avoid accidental exposure to PFAS:

- Avoid drinking or swallowing water.
- Wash after wading or playing in the water.

Appendix. Drinking water test results for Well 8

PFAS Analyte	Results (ppt)		Change ^b (Latest - Round 1)
	Round 1 (05/30/2019) ^c	Latest (10/02/2019)	
perfluorobutanesulfonic acid (PFBS)	ND	[9.5]	9.5
perfluorohexanoic acid (PFHxA)	[2.08] ^a	12.3	10.22
perfluoroheptanoic acid (PFHpA)	ND	4.87	2.83
perfluorohexanesulfonic acid (PFHxS)	[7.25]	90.1	82.85
perfluorooctanoic acid (PFOA)	[1.72]	[4.86]	3.14
perfluorononanoic acid (PFNA)	ND	ND	
perfluorooctanesulfonic acid (PFOS)	ND	[7.46]	7.46
perfluorodecanoic acid (PFDA)	ND	ND	
perfluoroundecanoic acid (PFUnA)	ND	ND	
perfluorododecanoic acid (PFDoA)	ND	ND	
perfluorotridecanoic acid (PFTrDA)	ND	ND	
perfluorotetradecanoic acid (PFTA)	ND	ND	

a. "[] Values" are between limit of detection (LOD) and limit of quantitation (LOQ), region of less certain quantitation.

b. "Change" is difference between sample rounds, negative represents decrease and positive represents increase.

c. Sample collection date.

- Rinse pets off thoroughly after contact with water.

I hope this information provides you with a better understanding of the PFAS situation in the City of Rhinelander area. DHS will continue to work closely with the Oneida County Health Department and the DNR to respond to this situation and assist with the community's needs.

Please feel free to contact us with any further questions.

Sincerely,



Clara Jeong, PhD

Toxicologist

Division of Public Health

Cc:

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