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Sent: 5/28/2019 12:57 PM

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Subject: Madison Well #15 PFOA + PFOS + PFHxS + PFHpA + PFNA Total exceeds VT state drinking water standard

Hello MWU Board members:

Thank you for your continued sponsorship of testing and other efforts that bear on the complex issue of PFAS pollution.

In an attachment to today's agenda, [2019.05.24 WUB Update.pdf](#), the (self-contradictory?) statement about standards perhaps may mislead some persons: "*There are no federal or state drinking water standards for any of the several thousand potential PFAS chemicals; EPA established a health advisory level of 70 parts per trillion for the combined concentration of PFOA & PFOS – two of the more widely used PFAS. Some have suggested this level is not sufficiently protective of human health especially for sensitive populations including fetuses and breast-fed infants. Meanwhile, some states have established lower limits for PFAS in drinking water and/or groundwater, or set standards for PFAS beyond PFOA & PFOS.*"

Here's a well-vetted, evidence-based, state-level example of just such a lower limit: "*Vermont's health advisory level for the sum of five PFAS should not exceed **20 ppt (parts per trillion)** in drinking water. The five PFAS chemicals are: PFOA, PFOS, PFHxS (perfluorohexane sulfonic acid), PFHpA (perfluoroheptanoic acid), PFNA (perfluorononanoic acid). If your water has been tested and the total sum of the five PFAS is more than 20 ppt, we recommend not using your water for drinking, food preparation, cooking, brushing teeth, preparing baby formula, or any other manner of ingestion. Use bottled water instead or water from a known safe source. Do not use water containing the five PFAS over 20 ppt to water your garden. The PFAS could be taken up by the vegetables.*" [<https://anr.vermont.gov/node/1223>]

From what I can gather, FEB-APR testing of Well 15 revealed a 32-34 PPT Total for these same five PFAS, i.e., well above VT's 20 PPT health advisory level. Perhaps MWU should be taking steps– now, and in advance of returning Well 15 to service– toward protecting "sensitive populations including fetuses and breast-fed infants" at minimum? Should testing of Well 15 drinking/gardening be expanded to drinking/cooking water being used at public housing, school, park, and community center bubbler, faucethead, and garden hose outlets?

Regards,
Jon

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Midwest Environmental Justice Organization comments on “PFAS summary & Update” presented at Water Utility Board meeting, May 28, 2019

Original summary comments in black; **MEJO comments in red.**

PFAS [Per and polyfluoroalkyl substances] Summary & Update

May 24, 2019

Background: PFAS are a group of man-made chemicals designed to repel water, oil, and grease. They are present in many consumer products including waterproof clothing; stain-resistant fabrics, carpets, and furniture; paper and food packaging; non-stick cookware; and firefighting foams. PFAS are often described as persistent organic pollutants or “forever chemicals” since they do not readily break down once released to the environment. They are very mobile in water and bioaccumulate in animal tissue. Some studies have associated high-level PFAS exposures with reduced fertility, developmental delays in infants and children, interference with natural hormones, increased cholesterol levels, reduced immune response, and increases in some types of cancer. Many PFAS have not been studied for their impact on human health. **Incomplete information is available for decision-making on this rapidly developing issue.**

Uncertainty and “incomplete information” should not be used as excuses not to act to protect the most vulnerable people in our community. If we wait till people are already ill till we act, it is too late.

Highlighting uncertainties and unknowns is a classic toxic chemical industry PR strategy to downplay risks and stop and/or delay regulations and actions addressing toxic chemicals. Hopefully the City of Madison won't follow their lead.

PFAS focus areas: Drinking Water, Fire Training Areas, Truax Contamination, & Starkweather Creek

A. Drinking Water – monitoring is on-going; PFOA & PFOS groundwater standards are imminent

☐ In 2017, low-level PFAS contamination was first discovered in two Madison wells.

☐ To date, 19 of 23 Madison wells have been screened for 24-30 PFAS chemicals at low single-digit part per trillion detection levels; the remaining four wells will be tested later this summer.

☐ Ten wells have shown the presence of at least one PFAS chemical; when present, a mixture of six to ten PFAS chemicals are often found.

☐ The highest combined PFOA + PFOS concentration at any Madison well is 12 parts per trillion (ppt) at Well 15; the other wells range from non-detect to about 5 ppt.

☐ The highest total PFAS concentrations are found at Well 15 (56 ppt) and Well 9 (52 ppt); most other wells with detections test in the single-digit ppt range with Well 6 (13 ppt) and Well 14 (18 ppt) being a little higher.

Five compounds at Well 15 (PFOA, PFOS, PFHxS, PFHpA, PFNA) found at a total of 34 ppt exceed Vermont's standard of 20 ppt for these five compounds. While the Water Utility Technical Advisory Committee members have discounted Vermont's standard as ill-informed, Vermont toxicologists used the same formula EPA used in developing this standard---with only one key difference. They used a water ingestion rate for bottle-fed infants, in order to protect this vulnerable group.

☐ **There are no federal or state drinking water standards for any of the several thousand potential PFAS chemicals;** EPA established a health advisory level of 70 parts per trillion for the combined concentration of PFOA & PFOS – two of the more widely used PFAS. Some have suggested this level is not sufficiently protective

of human health especially for sensitive populations including fetuses and breast-fed infants. **Meanwhile, some states have established lower limits for PFAS in drinking water and/or groundwater, or set standards for PFAS beyond PFOA & PFOS.**

The first sentence in this paragraph seems to contradict the last sentence.

Well 15 was converted to a seasonal well in March and has not operated since. After the Wisconsin Dept of Health Services recommends a groundwater standard for PFOA + PFOS, which is expected mid-year 2019, water utility staff will assess whether to return Well 15 to service for the high-demand summer months (June to September).

People drinking from Well 15 should be actively engaged in decisions about whether or not to return the well to service and if it is turned on, whether the water should be treated/filtered, etc.

Before this decision is made, people in the Well 15 service area should receive complete information about types/levels of PFAS found in this well (and open, easy access to full lab reports if they want them) so that they can make informed decisions about whether or not they want to drink this water, filter it, serve it to their children, etc. If they don't know what detection limits/reporting limits mean, they can ask someone at UW, their physician, and numerous others around this highly educated city that understand lab reports. This is particularly important for pregnant women, parents of infants, etc. They should be able to access all relevant information needed to make informed decisions, without having to file open records requests.

There are no current plans to change the operation of other Madison wells based on the presence of PFAS.

As stated above, people drinking from any Madison well with PFAS detections should receive complete information about types/levels of PFAS found in their well (and open, easy access to full lab reports if they want them) so that they can make informed decisions about whether or not they want to drink this water, filter it, serve it to their children, etc. If they don't know what detection limits/reporting limits mean, they can ask someone at UW, their physician, etc. This is particularly important for pregnant women, parents of infants, etc. They should be able to access all relevant information needed to make informed decisions, without having to file open records requests.

Treatment technologies to remove PFAS from drinking water include granular activated carbon and reverse osmosis. These technologies are expensive to install and will involve high annual operating costs.

The U.S. Department of Defense should be asked to research and fund treatment technologies needed to filter PFAS from Well 15. Truax ANG is also likely the source of the VOCs in this well and should be asked to pay for the VOC air stripper as well.

B. Fire Training Areas (FTAs) – know by August if WI Air National Guard has funds to investigate.

Two former FTAs are located at Truax Airfield – Darwin Drive @ International Lane and Pearson Street; **these FTAs have not been used for firefighter training in nearly 30 years.**

This is likely correct for the Darwin burn pit, but the newer MATC burn pit on Pearson, adjacent to the older one, is definitely still being used by MATC, Truax ANG, and the Madison Fire Department for firefighter training right now (I drive past it periodically and see these entities there). Does this statement actually mean that the Pearson site is not being used for firefighting training with AFFF? Please clarify. If so, what evidence do we have that they stopped using AFFF there 30 years ago? If they are no longer doing fire training with AFFF there, where are they doing it now?

WI Air National Guard, Dane County, and the City of Madison have been identified by WDNR as potential responsible parties and ordered to investigate these areas.

Yes, all of these entities used these burn pits. Also, again Madison Fire Department used both of these burn pits. Has the city asked them for full records of their use of the burn pits, how much and what kinds of AFFF they used, how often they trained there, etc?

☒ WI Air National Guard is taking the lead on investigating potential PFAS releases from these sites. Currently, there is no funding to perform the work, but **WI ANG will know by August if funds will be available** to complete a scope of work by the end of the federal fiscal year (September 30).

It is troubling that we won't know till August whether they will have funding to complete a scope of work by the end of the fiscal year. What if funding isn't available? Then what? No investigation? Do the city and county plan to investigate if this occurs?

☒ **City, county, airport, and state staff provided input into the scope of work** required to investigate the fire training areas.

What input did all these public agencies provide? Why doesn't the public have any input on the nature/extent of the investigations on this publicly owned (county) land? Given that the public has been offered no opportunity for input, can we at least see what input our government public servants provided to the military about these important investigations—highly relevant to our drinking water quality, Starkweather Creek, its fish and wildlife, and our community's public and environmental health overall?

C. Truax/WI Air National Guard Contamination – no timeline for remediation established

DNR's NR 700 laws on investigation and remediation of polluted sites include clear timelines, which are being violated by the ANG. Other states are fighting back against military resistance to following state environmental remediation laws. Why is our DNR acting helpless to do anything about this?

Also, the city and county could do some PFAS testing now in soils, sediments and Starkweather Creek water on city and county owned land adjacent to/downstream of the base (and in/along city and county storm and sanitary pipes discharging from it) to get a sense of the levels of PFAS there and spatial extent of the contamination. This wouldn't cost that much, and city and county do not need to wait or get permission from anyone on their own land or in their own storm/sanitary drains. Why won't they do it? The community deserves to know now—not at some indefinite date in the future determined by the U.S. military.

☒ A preliminary site investigation identified significant PFAS contamination of soil and shallow groundwater at nine potential release locations investigated at Truax.

☒ **Six PFAS chemicals were tested**; combined PFOA + PFOS measured up to 40,000 ppt while the total PFAS concentration was a maximum of 46,000 ppt.

Why has Truax ANG not been asked to assess more than six PFAS compounds, given that more than these six have been found in Well 15?

☒ **Temporary monitoring wells at two base boundary locations** found PFOA + PFOS levels of 635 – 664 ppt while the total PFAS range was 1,970 – 4,840 ppt.

When was this data gathered? By whom? Where are these temporary monitoring wells? How deep are they? What PFAS compounds were included in the "total PFAS" analyses? The public deserves this information. Why is it not publicly available?

☒ **No PFAS testing has been conducted outside the base boundary**; the lateral and vertical extent of the PFAS contamination has yet to be investigated.

Again, the city and county can do PFAS testing now in soils, sediments and Starkweather Creek water adjacent to the site to get a sense of the levels of PFAS and spatial extent of the contamination. Why

won't they do it? PFAS pollution outside of the Truax base is the most important thing to know because it affects us all! People canoe, kayak, fish, and even wade in Starkweather Creek right now.

☒ Ultimately, the Department of Defense is responsible for investigating and remediating the contamination; no funding has been appropriated to initiate this effort. Overall, Truax is low on the priority list compared to other DOD sites across the country where PFAS levels are significantly higher AND have resulted in private and community water supplies exceeding the EPA health advisory level.

Yes, Well 15 is extremely deep (752 feet deep) and it probably took years for the PFAS to seep this far into the deep aquifer where the well draws up water. Shallower private and public drinking water wells elsewhere are more contaminated because the PFAS reached them faster. How long will it be before higher levels of PFAS reach Well 15 and/or other Madison wells?

☒ PFAS releases are associated with AFFF (firefighting foam) equipment testing, discharges during military, commercial, and civilian aircraft emergencies, accidental releases and/or spills, and a documented fuel spill. PFAS is also released in stormwater discharged from the site—e.g., every time it rains and stormwater flows over contaminated soils into stormdrains that go into Starkweather Creek. The airport/Truax site has 38 stormwater outfalls into the creek. The highly contaminated shallow groundwater at Truax Field is also connected to the creek underground—in other words, it leaches directly into the creek. Until the site is thoroughly remediated, this will continue to happen.

Several sanitary sewer and water pipe reconstruction projects (some occurring now, others in the last year) on or near Truax Field have involved “dewatering,” or sucking shallow PFAS-contaminated groundwater up and releasing it into the surface or directly into the creek.

These are PFAS releases. The DNR and city have permitted these releases with apparently no concern about further spreading PFAS into soils, surface waters, and groundwater.

☒ Well 15 is located about one mile southeast of the base/airport. PFAS contamination at the well is likely related to PFAS releases at the base/airport.

☒ The AFFF formulation has been changed to eliminate some long chain PFAS; however, replacement PFAS chemicals are now being used as required by FAA regulations.

The replacement PFAS compounds (shorter chain compounds) are even more mobile than the longer chain compounds—and will move even faster from the site via the surface water and groundwater. They are also more volatile and likely to travel from contaminated areas via air. Though some have said that these shorter chain compounds are less toxic, not enough scientific studies have been done to support these claims.

☒ Except for emergencies involving civilian, commercial, and military aircraft, **releases of PFAS at Truax have been virtually eliminated.**

What evidence do we have that releases to sanitary and storm sewers have been “virtually eliminated?” Again, see above. PFAS releases are occurring from the Truax site via stormwater every time it rains—going into stormdrains and then into the creek (as the Starkweather section below admits). There is also evidence that releases of AFFF to sanitary drains inside base buildings could still be occurring. Has anyone really worked to verify that these releases are no longer occurring, or is the city just taking the ANG’s word for it?

D. Starkweather Creek – expect results of fish tissue study by the end of summer

High levels of PFAS were first measured at Truax ANG in 2017. It’s very troubling that we won’t have fish PFAS results till after the bulk of the 2019 fishing season. Protecting anglers and their families from PFAS exposures as soon as possible does not seem to be a priority for the city, county, or state. The city could have tested the fish by now (coordinating with UW scientists if needed)—passing this off onto the state is passing the buck.

This raises another critical question for city leaders. Madison surrounds four heavily fished lakes. Why doesn't Public Health Madison Dane County have the knowledge and expertise to test fish for toxic contaminants to make sure its residents, especially subsistence anglers, are not consuming harmful levels of these toxins? Or a program to work with UW to do this testing? DNR's fish testing program is too sparse and limited to comprehensively address risks to Madison and Dane County anglers. The city should work to assure that PHMDC has the training and capacity to do this testing to protect these anglers.

☐ Drainage runs through areas adjacent to FTAs; water and sediments may have PFAS

Yes, correct--as I said above.

The Madison Water Utility recently completed a repair project on a very old water main that runs under the airport's main runway. On the east side of the runway, this line runs right through a PFAS hotspot on the Truax base. On the west side, it runs right next to the Darwin burn pit. The project required "dewatering" of shallow water along the pipe's path for its duration.

The Water Utility engineer told us they received a permit for this project without any PFAS testing. They were allowed by permit to discharge the water—certain to be very contaminated with PFAS, given its location-- into Starkweather Creek.

☐ Primary concern is potential PFAS in fish tissue particularly with subsistence fishing

Subsistence fishing should be the priority as far as the most potentially at risk, but a lot of recreational anglers also fish from the mouth of Starkweather Creek and a considerable number eat their catch at times.

☐ WDNR to conduct fish tissue sampling from fish harvested from Starkweather Creek

Again, the public and anglers are in the dark about this sampling—and have been allowed no input whatsoever into it. How many fish will be tested? What kinds? Where will the fish be caught? How will the fish be analyzed? Will the whole fish, or just fillets, be analyzed? This is a critical issue. PFAS levels are different in different parts of fish. While many Midwesterners only eat fillets, some cultures (including some that eat fish for food here in Madison) eat most or all of the fish—so this decision is critical to assessing health risks. What PFAS compounds will be analyzed? What labs will do the testing? Will the public have access to full details about the fish testing? How will results be communicated to the public, especially anglers?

The public, especially anglers who fish in Starkweather Creek and Lake Monona, should have input on this fish PFAS testing. Anglers have valuable knowledge and experience to contribute to these investigations. Their input would improve the testing and assure that it is done in a way that addresses the kinds of fish people eat, how they eat it, where they catch it, etc.

Unfortunately, we know from over two decades of working on fish contamination issues in Madison (and Wisconsin) that the DNR is not likely to consider diverse cultural fishing traditions, perspectives, and/or varied fish consumption patterns among subsistence anglers in their decisions in this project about PFAS assessments, risk communication, fish advisories, etc.—forget about engaging them.

MEJO originally recommended and advocated for this fish testing in spring 2018. If city staff hadn't handed this project over to DNR, not only some fish testing results be available by now (which could be used to incorporate into fish advisories this fishing season if needed), but some local subsistence anglers could have been engaged in helping to design the project so that the results are relevant to diverse anglers who fish in Starkweather/Lake Monona, especially the most vulnerable subsistence anglers and their families.