

Staff Report

AMES WATER AND NEW PFAS STANDARDS

June 28, 2022

BACKGROUND:

In January, staff provided Council with a briefing on some preliminary testing performed by the Iowa Department of Natural Resources (IDNR) on a selected few wells in Ames. The IDNR was (and still is) undertaking a statewide sampling initiative looking to determine the prevalence of a class of chemicals known as Per- and Polyfluoroalkyl Substances, commonly referred to by the acronym “PFAS.” This is a huge class of manmade compounds that includes more than 5,000 individual chemicals. **PFAS compounds have been extensively used for more than 70 years in applications such as: non-stick coatings; stain-resistant carpeting; water-repelling clothing and fabrics; paper packaging for food; metal plating operations; and, in aqueous fire-fighting foams (AFFF’s). There is emerging scientific data indicating that in small concentrations, PFAS can pose a health risk.**

In 2016, the U.S. EPA issued a lifetime Health Advisory (HA) for two specific PFAS compounds: PFOA and PFOS. The 2016 advisory stated that the summed concentration of those two compounds in drinking water consumed over a lifetime should not exceed 70 parts per trillion (ppt). **On June 15, 2022, the US EPA stunned the drinking water profession by releasing revised health advisory levels for these two chemicals, and issued new health advisories for two additional chemicals, PFBS and HFOA. The fact that EPA issued new advisories wasn’t a surprise; it was the staggering degree by which they lowered the PFOA and PFOS standards. Now, PFOA has a HA level of 0.004 ppt (or, 4 parts per quadrillion!), and PFOS has a HA level of 0.0202 ppt (20 parts per quadrillion).**

The finished (fully treated) drinking water in Ames was tested for these and 21 other PFAS chemicals on four separate occasions between December 2021 and April 2022. ***The drinking water in Ames exceeds the Health Advisory Levels for two chemicals, PFOA and PFOS.*** The average values of the four chemicals covered by the Health Advisory are shown in the table that follows.

It is both important and challenging to note that EPA’s Health Advisories are non-regulatory, non-enforceable numbers. They do not carry the same obligations as a formal Maximum Contaminant Level (MCL) or mandatory Treatment Technique (TT). Those regulatory standards will follow in the next few years. However, that is an exceedingly difficult and confusing message to convey to consumers, and the U.S. EPA has provided very little in suggested messaging.

Chemical	Ames Drinking Water (Avg Dec '21 – Apr '22)	Old EPA Health Advisory	New EPA Health Advisory
Perfluorooctanoic acid (PFOA)	2.2 ppt	70 ppt	0.004 ppt
Perfluorooctane sulfonate (PFOS)	4.6 ppt	70 ppt	0.02 ppt
Perfluorobutane sulfonate (PFBS)	1.3 ppt	None	2,000 ppt
Hexafluoropropylene oxide (HFPO or GenX)	Not detected	None	10 ppt

Even before this dramatic lowering of the HA’s for PFOA and PFOS, the Ames Water Plant was already acting. **These actions are all a part of our commitment to be “the most transparent utility in Iowa” when it comes to PFAS.**

Response 1: Posting All Results Online. In January, we created a PFAS-specific page on the City’s webpage with a table showing every PFAS chemical detected; not just in our finished water, but in each individual well. We also included PFAS background materials and a substantial FAQ section. We have continued to update that page, including a substantial revision last week based on the June 15, 2022, EPA actions. The page was created with a “friendly URL” to make it easy for us to share and for customers to remember.

www.cityofames.org/pfas

Response 2: Full and Complete Testing of All Wells. The IDNR testing in December only looked at the wells that the IDNR felt had the highest potential to contain PFAS compounds. City staff wanted a more complete picture, and initiated a series of sampling events to test all 22 of our wells. Since not all wells are running simultaneously, the sampling took place on three different days in March and April 2022. Staff also took the opportunity to test the finished (fully treated) drinking water on each of those sampling days. The full results of all detected compounds are included on our webpage.

Response 3: Source Characterization. Staff has contracted with Iowa State University to perform a complete source water characterization. The work will be performed by Dr. Joe Charbonnet and Master’s student Daria Dilparic. Daria is also a student operator at the Water Plant, and her in-depth knowledge of our sources and treatment process make her an ideal investigator.

The research has three goals: 1. Characterize PFAS profiles in each well, 2. Systematic comparison of PFAS fingerprints with known source profiles. (Sources of environmental PFAS often have known chemical profiles which reflect the way they were manufactured, distance in time and space from the source to the sampling point, and intended use of the PFAS compounds detected. The research will compare the PFAS fingerprints of each

well to those of candidate PFAS sources), and 3. Create a visual representation of the wells and their PFAS fingerprints alongside candidate point sources of contamination.

This research that will be performed over the next 18 months may potentially allow the determination of likely geographical sources of contamination.

Response 4: Restricted Use of Well 17. Water Plant staff have made the decision to halt the use of Well #17 indefinitely. It would still be available in the event of an emergency, but as a matter of routine operations, it will not be used. This is significant proactive measure, because our testing revealed that when Well 17 is taken out of service the summed total of PFOA+PFOS in the drinking water decreases by 75%.

While this was an easy way to make a dramatic reduction in PFAS concentrations, it has ramifications in terms of the utility's developed source water capacity. Well 17 has a capacity of around 700,000 gallons per day. The new wellfield project that will hopefully begin construction later this year will have a capacity of roughly 2.6 million gallons per day and was intended to provide a combination of new capacity and replacement capacity as older wells fail. The loss of Well 17 immediately reduces the net gain from the new well field project.

Response 5: Investigation into Potential Treatment Alternatives. With the release of the new Health Advisory levels, staff from the Ames Water Plant have reached out to FOX Strand, a local engineering firm, for assistance in preparing a very high-level review of treatment options for the Ames Water Plant. There is no intention to initiate any modifications at this time, as the final regulatory limits are still at least two years away. But having this information allows us as a community to understand the cost implications, and the technology limitations, of attempting to achieve the Health Advisory levels as they exist today.

To put these new Health Advisory levels in perspective, they can be compared against other, more familiar, contaminants. The HA level for PFOA is 500,000 times lower than the Maximum Contaminant Level for mercury, 2,500,000 times lower than the Maximum Contaminant Level for arsenic, and 25,000,000 times lower than the Maximum Contaminant Level for chromium.