



PFAS: Navigating the New Drinking Water Health Advisories

Jacobs provides guidance on the EPA's new health advisories, which include much lower levels for two common PFAS compounds.



On June 15, 2022, the U.S. Environmental Protection Agency (EPA) released new drinking water Health Advisories for four per- and polyfluoroalkyl substances (PFAS): PFOA, PFOS, PFBS, and GenX. For PFOA and PFOS, the Health Advisories are considered interim and updated from the previous – and much higher – values that have existed since 2016. Whereas, for PFBS and GenX, the Advisories are newly developed and considered final as part of the EPA's October 2021 PFAS Strategic Roadmap. The values are provided in the table below.

Compound	Previous Value	Current Value
PFOA	70 ng/L	0.004 ng/L
PFOS	70 ng/L	0.02 ng/L
PFBS	Did not exist	2000 ng/L
GenX	Did not exist	10 ng/L

What is a Drinking Water Health Advisory (HA) and how does it relate to a Maximum Contaminant Level (MCL)?

EPA defines a HA as a non-enforceable and non-regulatory value which provides technical information to states agencies and other public health officials on health effects, analytical methods, and treatment technologies associated with drinking water contamination. The HA is the minimum concentration of a compound which may present health risks to an individual over a lifetime of exposure. Because there is uncertainty of the health effects associated with long-term exposure to compounds, EPA can set very low HA values.

In contrast, a maximum contaminant level (MCL) is a regulatorily enforceable standard. The EPA has stated its intent to establish a National Primary Drinking Water Regulation for PFOA and PFOS in its Strategic Roadmap. The agency recently reiterated its intent to propose a draft MCL before the end of 2022.

The HA is often the starting point for establishing a new MCL. First, the EPA must identify an MCL goal (MCLG). An MCLG can be a very low target value or even zero. It is important to remember that a goal of zero is just that, a goal. In reality, achieving zero is a target that cannot be measured or practically implemented. Thus, MCLs can be higher factoring in economics and/or can be a technology-based regulation.

Why are the new HAs for PFOA and PFOS so much lower?

The previous 2016 values were based on mice studies which were translated to human populations and focused on effects such as low birthweight. Additional science available since 2016 has incorporated studies on human populations and now identifies reduced immune response in children 0-5 years old as the basis. Although the science of toxicology is complex, the HA equation is quite simple:

$$HA = (A / (B * C)) * D$$

A = human equivalent dose known as HED (mg/Kg-day)

B = drinking water intake known as DWI (L/Kg-day)

C = Uncertainty Factor. A/C is known as chronic reference dose (RfD)

D = relative contribution. How much intake is associated with drinking water

A comparison of the relative values for PFOA shows the resulting difference.

Parameter	2016	2022	Difference
A (RfD)	10 ⁻³	10 ⁻⁸	100,000x lower
B (DWI)	10 ⁻²	10 ⁻²	Same
C (UF)	10 ²	10	10x less uncertain
D (RSC)	0.2	0.2	Same
HA	70	0.004	~10,000x lower

Interpretation of these complex health studies can be subjective, and there is rarely a clear answer. A [recent statement](#) published by the American Water Works Association (AWWA) indicated that the PFOA and PFOS advisory levels are extremely low and do not reflect the draft recommendations of EPA's own expert Science Advisory Board review.

How can we confirm if a sample is less than the HA value?

The current analytical method detection capabilities are approximately 0.3 ng/L or greater. This is not only for current methods of 537.1 and 533, but also for the proposed Method 1633. So, for PFOA and PFOS, the short answer is that we cannot detect concentrations at the new HA values; the HAs are 2-3X lower than the lowest detection limit. Thus, for PFOA and PFOS, a value below analytical detection (i.e., ND) does not mean below the new interim HA.

However, the new HAs for PFBS and GenX can be measured with existing analytical capabilities.

In a recent inquiry to some top academic PFAS chemists, it was confirmed that values of 0.004 to 0.02 ng/L (or 4 to 20 parts-per-quadrillion) are not being measured in advanced research laboratories.

Guidance for Utilities

For utilities in states with State-Level MCLs, these MCL values are enforceable and are your criteria for finished drinking water.

For utilities in states with State-Level criteria (non-MCL values) these values are your primary consideration. Remain in contact with your primacy agency for future guidance. States may be reviewing the science behind the new HAs to see if adjustments to current state-issued values are required.

For utilities operating in states awaiting federal MCLs for action, it is anticipated these will be developed in the near future. And since there is no way to impose criteria that cannot be measured, it is likely that MCLs for these compounds will be lower than the previous health advisory of 70 ng/L, but certainly at a level quantifiable with current technology. In the meantime, the EPA currently recommends taking action to reduce concentrations in drinking water when compounds are detected above the minimum reporting level (4 ng/L or greater for PFOA and PFOS).



How Jacobs can Help

For all utilities, concerns may be raised by the public trying to understand the recent changes and/or why the EPA values are now lower than State values. It is also understood that there is now a gap in being able to confirm that drinking water treatment is still meeting its intended purpose.

To support our clients with these new concerns, Jacobs can develop documents to assist with website and public meetings communications or provide additional guidance on the regulatory requirements in respective states. We are also supporting clients as they look to secure a portion of the \$10 billion of funding allocated to PFAS monitoring and treatment in the [Infrastructure Investment and Jobs Act](#) (IIJA, or Bipartisan Infrastructure Law).

For more information on PFAS considerations in the water sector, Jacobs previously hosted an "In the KNOW" webinar on the topic which can be viewed [here](#).

Jacobs' environmental and water-focused technologists have been supporting clients with PFAS assessments at thousands of potential release locations around the globe. Our leadership is predicated on deep knowledge of our clients' industries and processes combined with a thorough understanding of PFAS chemical behavior, regulatory issues and treatment approaches.

Contact our team of experts to find out more:

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