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EnviroNote News

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New US EPA National Drinking Water Regulation for PFAS

What is new?

On April 19, 2024, the US Environmental Protection Agency (EPA) announced it was taking another step in its efforts to protect people from the health risks posed by exposure to "forever chemicals" in communities across the USA. Exposure to per-and polyfluoroalkyl substances (PFAS) has been linked to cancers, impacts to the liver and heart, and immune and developmental damage to infants and children.

It published the first-ever national, legally enforceable drinking water standard, the National Primary Drinking Water Regulation (NPDWR) for PFAS. The regulation covers the six individual PFAS compounds: **PFOA (Perfluorooctanoic Acid), PFOS (Perfluorooctanesulfonic Acid) and PFHxS (Perfluorohexanesulfonic Acid) , PFNA (Perfluorononanoic Acid), PFBS (Perfluorobutanesulfonic Acid) and GenX (Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)** as outlined below:

- For **PFOA** and **PFOS**, the EPA is setting a **Maximum Contaminant Level Goal (MCLG)**, a non-enforceable health-based goal, at zero. This reflects the latest studies showing that there is no level of exposure to these contaminants without risk of health impacts, including certain cancers.
- EPA is setting enforceable **Maximum Contaminant Levels (MCL)** at **4.0 parts per trillion (ppt, ng/L)** for **PFOA and PFOS**, individually. This standard will reduce exposure from these PFAS in drinking water to the lowest levels that are currently able to be analysed and thus feasible for effective implementation.
- For **PFNA, PFHxS**, and **GenX (HFPO-DA)**, EPA is setting the **MCLGs** and **MCLs** at **10 parts per trillion (ppt, ng/L)**.

Because PFAS can often be found together in mixtures, and research shows these mixtures may have combined health impacts. The EPA is also **setting a limit for any mixture of two or more** of the following PFAS: **PFNA, PFHxS, PFBS, and GenX (HFPO-DA)**.

- The **Hazard Index (HI)** calculation is based on the summation of the relative numbers obtained by division of the measured level by the health-based water concentration for the substance as shown in the equation below:

$$\text{Hazard Index (1 unitless)} = \left(\frac{[\text{HFPO} - \text{DA}_{ppt}]}{[10\ ppt]}\right) + \left(\frac{[\text{PFBS}_{ppt}]}{[2000\ ppt]}\right) + \left(\frac{[\text{PFNA}_{ppt}]}{[10\ ppt]}\right) + \left(\frac{[\text{PFHxS}_{ppt}]}{[10\ ppt]}\right)$$

- These health-based concentrations are the same as the MCL for all but PFBS. The resulting sum should not exceed 1. In addition, there are Maximum Contaminant Level Goals (MCLG), a non-enforceable health-based goal, that are zero for PFOS and PFOA and the same as the MCL for the rest.

There are legally binding Maximum Contaminant Levels (MCL) for five of the six compounds and a Hazard Index (HI) for four (see table).

Table 1: Overview: US EPA National Primary Drinking Water Regulation (April 2024)

Chemical	Maximum Contaminant Level Goal (MCLG) (ppt, ng/L)	Maximum Contaminant Level (MCL) (ppt, ng/L)
PFOA	0	4.0
PFOS	0	4.0
PFNA	10	10
PFHxS	10	10
HFPO-DA (GenX chemicals)	10	10
Mixture of two or more: PFNA, PFHxS, HFPO-DA, and PFBS	Hazard Index of 1	Hazard Index of 1

Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety and are non-enforceable public health goals.

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology and taking cost into consideration. MCLs are enforceable standards.

Hazard Index (HI): The Hazard Index is a long-established approach that EPA regularly uses to understand health risks from a chemical mixture (i.e., exposure to multiple chemicals). The HI is made up of a sum of fractions. Each fraction compares the level of each PFAS measured in the water to the health-based water concentration.

What are the compounds monitored and where were they used?

PFOA, PFOS and PFHxS have historically been used in the production of non-stick coatings like Teflon and in other industrial processes, including the manufacture of stain-resistant fabrics but also as firefighting foams. All three have been listed as POPs under the Stockholm Convention.

PFNA and PFBS were used in similar applications to PFOA and PFOS, including in the production of non-stick coatings, firefighting foams, and other industrial processes.

GenX (HFPO-DA) has replaced PFOA in fluoropolymer production. In the US, the compound has been the major contaminant in the Cape Fear River (North Carolina) case, while in the EU, it has been associated with emissions from the Chemours plant in Dordrecht, the Netherlands (NL). The MCL for GenX (10 ppt) is lower than earlier estimates in both NL and US, but coincides with the Dutch guideline value for surface water from 2022 (RIVM).

What is the timeline for Implementation?

Regarding implementation, the involvement of public water suppliers is crucial. By **2027** the initial monitoring, should be completed. Thereafter, the monitoring becomes compulsory and public information on the concentrations should be made available. In **2029**, if the drinking water exceeds the MCLs, action needs to be taken by the provider and the consumers notified. The cost for monitoring and treatment technologies has been estimated to 1.5 billion USD per year by the US-EPA.

What are the Australian guidelines?

The Australian Drinking water quality guidelines are regulating PFOS, PFHxS and PFOA. Here, the sum of **PFOS + PFHxS is 70 ng/L** and **560 ng/L for PFOA** as shown in the table below:

Table 2: The health-based guidance values for use in site investigations in Australia are:

Health-based guidance value	Total PFOS+PFHxS	PFOA
Tolerable daily intake *(ng/kg bw/day)*	20	160
Drinking water quality guideline value *(ng/L)*	70	560
Recreational water quality guideline value *(ng/L)*	2000	10000

What methodologies are we using for our Drinking Water suites?

Eurofins Environment Testing is accredited to perform a PFAS in drinking water that follows EPA Methods 537.1, 533 and 1633 that utilise isotope dilution Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS).

We can calculate the HI to assess your water supply against these EPA MCLs when this becomes a requirement in Australia.

Contact Eurofins PFAS experts!

If you have questions about PFAS or want to make an enquiry about testing please contact our Technical or Sales Team at

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