Group A Public Water Supplies • Chapter 246-290 WAC

DOH Approach to Developing PFAS State Action Levels

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In October 2017, the State Board of Health (board) accepted a petition from ten organizations requesting that the state establish drinking water standards for per- and polyfluoroalkyl substances (PFAS).

To support the board, the Department of Health (department) developed draft recommendations for state action levels (SAL) for five PFAS detected in Washington drinking water. The SALs represent health protective levels—expected to be without appreciable health effects over a lifetime of exposure for the general population, including in sensitive subgroups.

Determining health protective values

The five PFAS with SALs (see Table 1, next page) are the best studied of the PFAS commonly detected in our state's drinking water. Our approach to developing SALs involved evaluation of the primary PFAS scientific literature and review of recent assessments by federal agencies and several U.S. states. We selected health protective values from high-quality recent science assessments. We found sufficient information to recommend SALs for PFOA, PFOS, PFNA, PFHxS, and PFBS. Because the first four of these PFAS are highly bioaccumulative in humans and may harm development, the SALs account for unique PFAS exposure pathways of early life stages including placental and lactational transfer using a peer-reviewed model developed by the Minnesota Department of Health. The PFBS SAL has been revised to account for the higher intake of drinking water by infants.

The health protective values for these five PFAS were derived from studies in laboratory animals with support from epidemiological data when available. The primary health concerns with these PFAS are reproductive and developmental toxicity, immune toxicity, liver toxicity, alterations in thyroid hormone levels, and altered serum lipids. PFOA is considered "possibly carcinogenic to humans" by the International Agency for Research on Cancer. Carcinogenicity of other PFAS is less studied.

The SALs in Table 1 define a level in daily drinking water expected to be without appreciable health effects for any of these outcomes. They are comparable to a health advisory level or maximum contaminant level goal (MCLG) in the federal Safe Drinking Water Act. Taking action at these levels is consistent with the mission of providing safe and reliable drinking water.

Table 1
Draft SAL for PFAS

Individual PFAS	Draft State Action Level for Drinking Water
PFOA	10 ng/L
PFOS	15 ng/L
PFNA	14 ng/L
PFHxS	70 ng/L
PFBS	860 ng/L

PFAS frequently appear as mixtures in drinking water. Use of these five SALs, together with the broad mitigation technologies available, provides a reasonable initial approach to protect the public from PFAS mixtures in drinking water. Less is known about the other PFAS although many can be removed by the same mitigation technologies employed to remove the PFAS with SALs. When water systems take public health action based on a PFAS SAL, we encourage them to choose mitigation options that are effective at removing many PFAS such as activated granular carbon and anion exchange resin filtration. Ultimately, a more comprehensive grouped approach to regulation is preferred to a chemical-by-chemical approach given the large size of the PFAS class of chemicals. As the science advances, PFAS could be grouped according to subclasses based on key characteristics such as chemical structure, bioavailability, bioaccumulation potential, toxicity, or mechanism of action. We will consider a grouped approach to regulating PFAS mixtures if a method becomes available that is supported by science.

We prepared a much more detailed technical support document that describes our approach, assumptions, and the derivation of each PFAS SAL. This is available at our PFAS rulemkaing webpage.

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For more Information visit our PFAS rulemaking webpage.