

# Fact Sheet: Draft 2022 Aquatic Life Ambient Water Quality Criteria for Perfluorooctanoic acid (PFOA) and Perfluorooctane Sulfonic Acid (PFOS)

## Summary

As part of EPA's commitment to safeguard the environment from per- and polyfluoroalkyl substances (PFAS), the agency has published draft national recommended aquatic life criteria for PFOA and PFOS for a 30-day public comment period. These draft Clean Water Act criteria reflect the latest scientific knowledge regarding the effects of PFOA and PFOS on freshwater organisms. Elevated concentrations of PFOA and PFOS in aquatic ecosystems can result in death of aquatic organisms and affect their growth and reproduction. When finalized, states and authorized tribes can adopt these criteria into their water quality standards or can adopt other criteria that are scientifically defensible based on local or site-specific conditions. These draft aquatic life ambient water quality criteria are not a regulation, nor do they impose a legally binding requirement.

## Background

On October 18, 2021, EPA Administrator Regan announced the Agency's PFAS Strategic Roadmap—laying out a whole-of-agency approach to addressing PFAS. The PFAS Strategic Roadmap identified development of aquatic life criteria for PFOA and PFOS as a priority EPA action. The 2022 draft PFOA and PFOS aquatic life ambient water quality criteria are being released for a 30-day comment period for the public to provide their scientific views. Following the comment period, EPA will prepare a response to public comments document, update the draft PFOA and PFOS criteria documents considering public comments, and consider new toxicity data published since September 2021 prior to the agency issuing final recommended criteria.

## What are PFOA and PFOS, and How Do They Enter the Water?

PFOA and PFOS are two of the most widely used and studied chemicals in the PFAS group. PFAS have been manufactured and used by a broad range of industries since the 1940s. PFAS are used in many applications because of their unique physical properties such as resistance to high and low temperatures, resistance to degradation, and nonstick characteristics. PFOA and PFOS can enter the aquatic environment during the manufacturing, use, and disposal of industrial and consumer products. Major sources of PFOA and PFOS to aquatic environments include municipal and industrial wastewater treatment plants (WWTPs); landfill leachate, runoff and leachate from contaminated biosolids; and atmospheric deposition.

## How Do PFOA and PFOS Affect Aquatic Life?

PFOA and PFOS are not naturally occurring and have no biologically important functions or beneficial properties to aquatic life. The mechanisms underpinning the toxicity of PFOA and PFOS to aquatic organisms, like other PFAS, is an active and on-going area of research. The draft criteria are based on observed effects of PFOA and PFOS to the survival, growth, and reproduction of aquatic organisms. Based on the available ecotoxicity data, aquatic plants are generally reported to be less sensitive to PFOA and PFOS than fish and other aquatic life.

## What are the Recommended Criteria for PFOA and PFOS in Freshwater for the Protection of Aquatic Life?

The draft criteria documents provide a review of PFOA and PFOS aquatic toxicity data, quantify the

toxicity of PFOA and PFOS to aquatic life, and provide criteria to protect aquatic life from the acute and chronic toxic effects of PFOA and PFOS (individually, not in combination). EPA derived these criteria based on the latest scientific knowledge using the available data on the toxicological effects of PFOA and PFOS on aquatic life. In developing these draft criteria, EPA followed the general approach outlined in the Agency’s *“Guidelines for Deriving Numerical Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses.”*

EPA established the national recommended draft criteria for PFOA and PFOS to be protective of most aquatic organisms in the community (i.e., approximately 95 percent of tested aquatic organisms representing the aquatic community). The draft criteria are protective of aquatic life designated uses for freshwaters. The draft PFOA and PFOS criteria documents contain acute and chronic criteria for freshwaters (see Table 1). The draft criteria documents also contain chronic criteria expressed as tissue-based concentrations to protect aquatic life from PFOA and PFOS bioaccumulation (see Table 1). The chronic freshwater and chronic tissue criteria

are intended to be independently applicable and no one criterion takes primacy.

EPA also derived acute estuarine benchmarks for PFOA and PFOS using available toxicity data supplemented with modeled estimates of acute toxicity. The acute estuarine/marine benchmarks are recommendations for states and tribes to consider as protective values in their water quality protection programs.

The draft criteria reflect the maximum concentrations, with associated frequency and duration specifications, that would support protection of aquatic life from acute and chronic effects associated with PFOA and PFOS in freshwaters (see Table 1).

### Where can I find more information?

Information on the draft PFOA criteria is available at: [www.epa.gov/wqc/aquatic-life-criteria-perfluorooctanoic-acid-pfoa](http://www.epa.gov/wqc/aquatic-life-criteria-perfluorooctanoic-acid-pfoa). Information on the draft PFOS criteria is available at: [www.epa.gov/wqc/aquatic-life-criteria-perfluorooctane-sulfonate-pfos](http://www.epa.gov/wqc/aquatic-life-criteria-perfluorooctane-sulfonate-pfos). Please email any questions to James Justice at [justice.jamesr@epa.gov](mailto:justice.jamesr@epa.gov).

**Table 1. Draft Recommended Freshwater Aquatic Life Water Quality Criteria for PFOA and PFOS**

Criteria Component	Acute Water Column (CMC) <sup>1</sup>	Chronic Water Column (CCC) <sup>2</sup>	Invertebrate Whole-Body	Fish Whole-Body	Fish Muscle
<b>PFOA Magnitude</b>	49 mg/L	0.094 mg/L	1.11 mg/kg ww	6.10 mg/kg ww	0.125 mg/kg ww
<b>PFOS Magnitude</b>	3.0 mg/L	0.0084 mg/L	0.937 mg/kg ww	6.75 mg/kg ww	2.91 mg/kg ww
<b>Duration</b>	1-hour average	4-day average	Instantaneous <sup>3</sup>		
<b>Frequency</b>	Not to be exceeded more than once in three years, on average	Not to be exceeded more than once in three years, on average	Not to be exceeded more than once in ten years, on average		

<sup>1</sup> Criterion Maximum Concentration.

<sup>2</sup> Criterion Continuous Concentration.

<sup>3</sup> Tissue data provide instantaneous point measurements that reflect integrative accumulation of PFOA or PFOS over time and space in aquatic life population(s) at a given site.