CWWA INFO-SHEET
Updated 2025

PFAS IN DRINKING WATER
(PER- AND POLYFLUOROALKYLATED SUBSTANCES)

PREPARED BY CWWA DRINKING WATER QUALITY COMMITTEE

Purpose of this Info-Sheet

There has been growing interest and concern in the drinking water industry in North America and globally over a group of compounds called Per- and Polyfluoroalkylated Substances (PFAS). This information sheet was prepared by the CWWA Drinking Water Quality Committee and is intended to provide general information to CWWA members, while also referencing more detailed sources of information that will help members and their associated utilities prepare their own responses to questions about PFAS compounds they may encounter from their customers, municipal leaders, political leaders, media, and other concerned stakeholders. Note that a parallel information sheet has been prepared by the CWWA Biosolids Committee and can be referenced also for more information on PFAS and biosolids.

Background on PFAS

PFAS are a family of thousands of man-made substances that contain linked fluorine and carbon atoms. This chemical link results in a very stable molecule that is essentially unreactive and persists in the environment – which is why they are known as the “forever chemicals”. Because of their unique properties, PFAS are ubiquitous and used in a wide-range of applications, as illustrated below, including as surfactants, lubricants, repellents for dirt, water, grease, fire fighting foams, textiles, cosmetics, and food packaging materials. Due to their persistence and stability, PFAS tend to biomagnify in food chains and have the potential to adversely affect both wildlife and human health. As such, in following the precautionary principle, it is recommended that treatment plants strive to maintain PFAS concentrations in drinking water as low as reasonably achievable. Note that on April 10, 2024 the Environmental Protection Agency (EPA) in the United States finalized it’s National Primary Drinking Water Regulation for six PFAS compounds. This has resulted in a lot of media interest about PFAS in drinking water. Additional information on the Canadian context is provided in the following sub-sections.

Additional Sources of Information on PFAS

Our understanding of the environmental and health effects associated with PFAS continues to evolve, as new research emerges. To stay informed, take note of the publication date of reference materials, and reference the most recent versions. Canadian references should be consulted, as the prevalence and regulations around PFAS differ globally.

- Health Canada Water Talk: Per- and polyfluoroalkyl substances in drinking water - Canada.ca
- Draft state of per- and polyfluoroalkyl substances (PFAS) report - Canada.ca
- Public Health Ontario, Focus on Per- and Poly-Fluoroalkyl Substances (PFAS)
- US EPA PFAS Explained
- Interstate Technology Regulatory Council – Technical Resources for Addressing Environmental Releases of PFAS Compounds

Health Canada Activity on PFAS

In 2018 and 2019, Health Canada established drinking water guidelines for perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA), and screening values for nine other PFAS compounds. In April 2021, the Government of Canada issued a notice of its intent to move forward with activities that address PFAS as a class. In August 2024, Health Canada set an objective of 30 ng/L for the sum of total PFAS detected in drinking water. The rationale for this approach is that given the potential for exposure to multiple PFAS at the same time, the potential for negative health impacts, the uncertainty and the limited data on many PFAS, a precautionary group-based approach to PFAS is warranted. Total PFAS is calculated using the 25 PFAS listed in the objective, such that the sum of their concentrations does not exceed 30 ng/L. For the purposes of this objective, a result of non-detect is considered to have a value of zero. This objective replaces the two previous drinking water guidelines and nine screening values derived for individual PFAS noted above. The Health Canada objective document can be accessed via the following link: objective-for-canadian-drinking-water-quality-en-final.pdf (canada.ca)

Note that Guidelines for Canadian Drinking Water are developed by the Federal-Provincial-Territorial Committee on Drinking water and published by Health Canada. Provision of drinking water falls under provincial jurisdiction and regulatory enforcement. These federal guidelines are considered by the Provinces and Territories as they each establish their own water quality guidelines and regulations.

What Water Utilities Can Do:

As the science and our understanding on PFAS compounds and their associated health effects continues to evolve, there are several steps that water utilities in Canada may want to consider. These include:

- **Understand the issue:** become familiar with the issues and the background information on PFAS in the various sources cited above
- **Share accurate information:** be prepared to answer questions from customers and municipal leaders, politicians, and other stakeholders on PFAS compounds. This may include preparing media briefs
- **Know your source:** carry out proactive monitoring, as practical and feasible, to determine if PFAS are present in your source and finished water, and if so, at what concentration. Health Canada recommends that monitoring of the source and treated water for PFAS be conducted annually, at minimum

Water Quality Monitoring:

Testing for PFAS compounds in drinking water requires specialized laboratories with sophisticated instruments capable of detecting and measuring these compounds at very low levels. Health Canada recommends the use of USEPA Method 533 as it follows current best practices . The sampling protocols used to determine PFAS concentrations should consider potential cross-contamination from sampling materials and incidental contact with PFAS during sampling. Special care must be taken when sampling to avoid such cross-contamination. Additional details on this and other standardized USEPA methods for the analysis of PFAS in water are outlined in the Health Canada objective document: objective-for-canadian-drinking-water-quality-en-final.pdf (canada.ca)

The science on measuring PFAS is continuously evolving. Nevertheless, commercial labs are available that can carry out PFAS testing. Water utilities should seek an ISO/IEC 17025:2017 accredited laboratory in Canada via the following websites and confirming that their analysis methodology aligns with the above:

- Canadian Association of Laboratory Accreditation (CALA
- Standards Council of Canada (SCC)
- Quebec Accreditation Program for Analytical Laboratories (CEAEQ-PALA) Accreditation domains 184,185 and 186
- A2LA also accredits labs. In Canada (mostly in BC) to the ISO/IEC 17025:2017 standard

Municipal Water Treatment:

An overview of municipal water treatment considerations is provided in the above referenced Health Canada draft objective document.

In brief, the most effective treatment technologies (> 90% removal efficiencies for certain PFAS) are granular activated carbon (GAC), membrane filtration (reverse osmosis [RO] and nanofiltration [NF]), and anion exchange (AIX). Generally, the key issues to consider when selecting treatment technologies for PFAS removal are the presence of competing anions and PFAS species, organic matter and the frequency of regeneration or replacement required for the sorptive medium used. The effectiveness of drinking water treatment for PFAS removal will depend on several factors, including source water characteristics, concentration and type of PFAS, treatment goals and proper operation of the system at all times.Common drinking water treatment technologies (for example, coagulation, flocculation and oxidation) are not effective for PFAS removal. While there are treatment technologies that can effectively remove certain PFAS, no single treatment can remove a wide range of PFAS. Additionally, disposal or manipulation of sorptive media, concentrates or residuals is also a consideration when selecting a treatment technology for PFAS removal.

What CWWA Drinking Water Quality Committee is Doing:

- Monitoring the issue of PFAS in drinking water as it continues to evolve including guidelines in other jurisdictions, analytical methods and accredited laboratories, occurrence in water and the environment, and water treatment considerations
- Communicating routinely with Health Canada experts on this topic
- Providing current information and reference to additional sources of information to our membership to enhance understanding of PFAS, develop strategies to assess impact on their system, and provide support in communicating this topic to stakeholders