



Testing for PFAS in Drinking Water to Assess the Health Canada Drinking Water Objective

Health Canada PFAS Drinking Water Objective

On August 9, 2024, Health Canada released a much-anticipated new Canadian Drinking Water Objective for PFAS (per- and polyfluoroalkyl substances), which was established at 30 ng/L for the sum of twenty-five of the most studied and toxicologically potent PFAS, and which also includes the most commonly detected PFAS in drinking waters. Due to the limited availability of toxicological data for many PFAS, Health Canada recommends that PFAS levels in drinking water be maintained “as low as reasonably achievable” (ALARA).

The new objective follows through on Health Canada’s intention (stated April 2021) to address PFAS as a class, due to information that suggests replacements of regulated PFAS such as PFOS and PFOA may also be associated with environmental and human health impacts, and to protect against possible cumulative or synergistic effects.

Health Canada’s drinking water objective for PFAS is externally peer reviewed and was developed in collaboration with the federal, provincial, and territorial committee on drinking water, through extensive review of existing scientific literature and international regulatory criteria. The new objective replaces existing Canadian drinking water guidelines for PFOS and PFOA, as well as screening criteria for nine other PFAS, and has been issued as temporary guidance while more formal drinking water guidelines are developed.

Coverage Includes Full EPA 1633 Analyte Lists

The standard ALS Canada PFAS drinking water test now includes all forty PFAS from US EPA Method 1633. Health Canada advises utilities to test for a broader list of PFAS beyond the twenty-five substances evaluated by the Drinking Water Objective to provide more comprehensive information about the PFAS that may be present in drinking waters. The ALS global PFAS expert team is keeping a close



watch on global drinking water testing regulations, with the UK already regulating up to 48 PFAS analytes. ALS may add additional key analytes to this method as appropriate.

Analytical Protocols Based on EPA Methods 533 & 1633

The ALS test for PFAS in drinking water combines the most important elements of the US EPA 533 and 1633 methods, using anion-exchange Solid Phase Extraction (SPE) and LC/MS/MS.

EPA Method 533 is the latest US EPA PFAS method approved and intended for the analysis of drinking waters, and is the primary reference for the ALS drinking water method. Health Canada recommends EPA 533 over EPA 537.1, an older drinking water method which does not utilize current best practices such as isotope dilution. The ALS PFAS drinking water method includes dechlorination using sodium thiosulfate, which has been endorsed by Health Canada and validated by ALS for use with the broader EPA 1633 analyte list.

The ALS drinking water PFAS method incorporates all elements of EPA 1633 that are applicable to drinking waters, including its broader analyte list, its extensive list of extracted and non-extracted isotopically labelled internal standards, and its LC/MS/MS conditions. Our drinking water PFAS method does not utilize the carbon cleanup from Method 1633, which is intended for complex matrix samples. Method 1633 states that carbon cleanup may remove some PFAS from samples with low organic carbon content, which includes most drinking water samples. ALS meets all QC requirements from Method 1633, but we adhere to Method 533 requirements where they are more stringent, because tighter quality control is expected and achievable for drinking waters.

Total PFAS for Health Canada Objective

Total PFAS for comparison to the Health Canada Objective is calculated as the sum of the twenty-five EPA Method 533 PFAS analytes, as listed in Table 2. Values of zero are assigned to PFAS with “non-detect” results below the laboratory’s Limits of Reporting. The detection limit for Total PFAS is computed using the root sum of squares method, as per the CCME analytical methods guidance manual (*Guidance Manual for Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment, Volume 4 Analytical Methods, Determination of MDL for Summed Parameters, p. 125, CCME 2016*).

Sampling Requirements

Sampling requirements for PFAS in drinking water are summarized in Table 1. Samples are collected in 3 x 250 mL HDPE sample containers, which are pre-charged with sodium thiosulfate for dechlorination (Three bottles per sample are required to meet EPA 533 and Ontario MECP quality control requirements). Our 14-day hold time follows the shortest current US EPA hold time for PFAS in drinking water.

The ALS Waterloo laboratory carries CALA accreditation for this method to the ISO 17025 standard and is licensed by MECP for the analysis of drinking water in Ontario, including all forty of the Method 1633 analytes, as shown in Table 2. Please refer to our [scope of accreditation](#) for current status.

Please contact your ALS Canada Project Manager for more information about testing to meet the new Health Canada Objective for Canadian Drinking Water Quality.

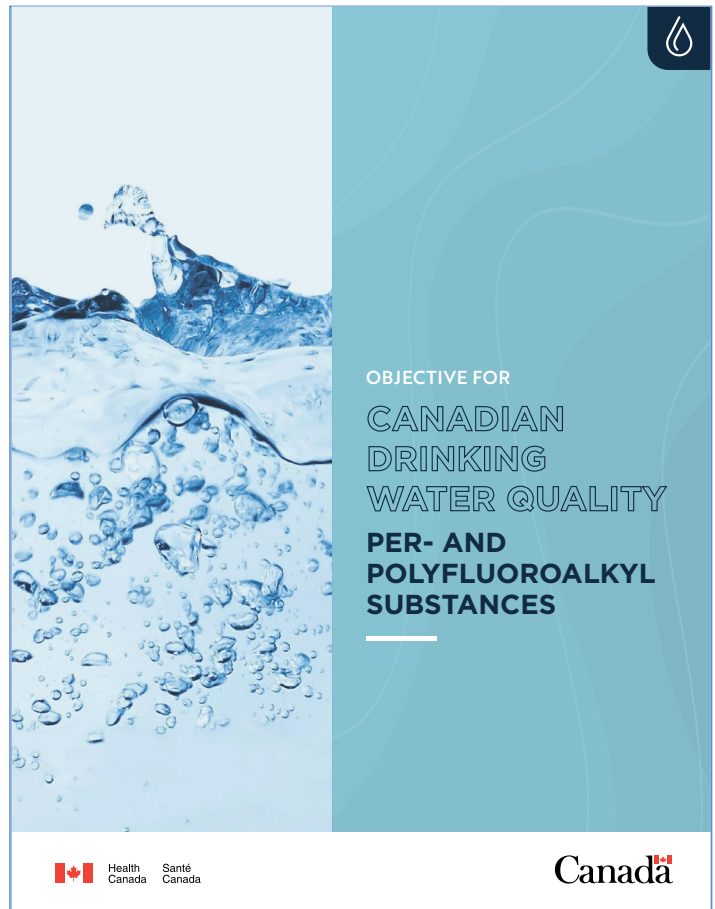


Table 1. PFAS Drinking Water Sampling Requirements

ALS Test Code	E745DW
Method References	EPA 533 (mod) + 1633
Sample Containers	3 x 250 mL (HDPE)
Preservation	Sodium Thiosulfate (dechlorination)
Hold time	14 days



Table 2. PFAS Analytes in Drinking Water by EPA Methods 533 & 1633 (modified)

PFAS Drinking Water Parameters Reported	Abbreviation	CAS Number	LOR (µg/L)	Health Canada DW Objective Analytes	US EPA Method 1633 Analytes
Perfluoroalkyl carboxylic acids					
Perfluorobutanoic acid	PFBA	375-22-4	0.002	✓	✓
Perfluoropentanoic acid	PFPeA	2706-90-3	0.002	✓	✓
Perfluorohexanoic acid	PFHxA	307-24-4	0.0004	✓	✓
Perfluoroheptanoic acid	PFHpA	375-85-9	0.001	✓	✓
Perfluorooctanoic acid	PFOA	335-67-1	0.001	✓	✓
Perfluorononanoic acid	PFNA	375-95-1	0.002	✓	✓
Perfluorodecanoic acid	PFDA	335-76-2	0.002	✓	✓
Perfluoroundecanoic acid	PFUnA	2058-94-8	0.001	✓	✓
Perfluorononanoic acid, 4,8-dioxa-3H-	ADONA	919005-14-4	0.0004	✓	✓
Perfluorododecanoic acid	PFDoA	307-55-1	0.002	✓	✓
Perfluorotridecanoic acid	PFTrDA	72629-94-8	0.002		✓
Perfluorotetradecanoic acid	PFTeDA	376-06-7	0.001		✓
Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	151772-58-6	0.004	✓	✓
Perfluoro-4-methoxybutanoic acid	PFMBA	863090-89-5	0.0004	✓	✓
Perfluoro-3-methoxypropanoic acid	PFMPA	377-73-1	0.0004	✓	✓
Hexafluoropropylene oxide dimer acid	HFPO-DA (GenX)	13252-13-6	0.004	✓	✓
Perfluoroalkyl sulfonic acids					
Perfluorobutanesulfonic acid	PFBS	375-73-5	0.001	✓	✓
Perfluoropentanesulfonic acid	PFPeS	2706-91-4	0.002	✓	✓
Perfluorohexanesulfonic acid	PFHxS	355-46-4	0.002	✓	✓
Perfluoroheptanesulfonic acid	PFHpS	375-92-8	0.002	✓	✓
Perfluorooctanesulfonic acid	PFOS	1763-23-1	0.002	✓	✓
Perfluorodecane sulfonic acid	PFDS	335-77-3	0.002		✓
Perfluorononanesulfonic acid	PFNS	68259-12-1	0.002		✓
Perfluorododecanesulfonic acid	PFDoS	79780-39-5	0.002		✓
Perfluorooctane sulfonamides					
Perfluorooctanesulfonamide	PFOSA	754-91-6	0.002		✓
Methyl perfluorooctanesulfonamide, n-	NMeFOSA	31506-32-8	0.002		✓
Ethyl perfluorooctanesulfonamide, n-	NEtFOSA	4151-50-2	0.002		✓
Perfluorooctane sulfonamidoacetic acids					
Methyl perfluorooctanesulfonamidoacetic acid, n-	NMeFOSAA	2355-31-9	0.004		✓
Ethyl perfluorooctanesulfonamidoacetic acid, n-	NEtFOSAA	2991-50-6	0.004		✓
Perfluorooctane sulfonamide ethanols					
Methyl perfluorooctanesulfonamidoethanol, n-	NMeFOSE	24448-09-7	0.002		✓
Ethyl perfluorooctanesulfonamidoethanol, n-	NEtFOSE	1691-99-2	0.002		✓
Ether sulfonic acids					
Hexadecafluoro-3-oxanonane-1-sulfonic acid, 9-chloro-	9CL-PF3ONS	756426-58-1	0.0004	✓	✓
Eicosafuoro-3-oxaundecane-1-sulfonic acid, 11-chloro-	11CL-PF3OUdS	763051-92-9	0.0004	✓	✓
Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	113507-82-7	0.0004	✓	✓
Fluorotelomer sulfonic acids					
Fluorotelomer sulfonic acid, 4:2	4:2 FTS	757124-72-4	0.001	✓	✓
Fluorotelomer sulfonic acid, 6:2	6:2 FTS	27619-97-2	0.003	✓	✓
Fluorotelomer sulfonic acid, 8:2	8:2 FTS	39108-34-4	0.001	✓	✓
Fluorotelomer carboxylic acids					
Fluorotelomer carboxylic acid, 3:3	3:3 FTCA	356-02-5	0.01		✓
Fluorotelomer carboxylic acid, 5:3	5:3 FTCA	914637-49-3	0.004		✓
Fluorotelomer carboxylic acid, 7:3	7:3 FTCA	812-70-4	0.004		✓
PFAS, Total [Health Canada Objective / EPA 533 list]			0.010	<0.030	n/a