



# Water Talk

## Drinking Water Screening Values: Perfluoroalkylated Substances

### *Perfluoroalkylated substances (PFAS)*

Perfluoroalkylated substances (PFAS) are synthetic chemicals, the most common being perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). PFAS are used in a wide variety of industrial and consumer products such as adhesives, cosmetics, cleaning products, and in specialized chemical applications, such as fire-fighting foams. PFAS are also used in water-, stain-, and oil-repellent coatings for fabrics and paper.

Environmental concentrations of PFAS may be higher in areas near facilities that use large amounts of these chemicals, and near locations where fire-fighting foams containing PFAS were used to put out a fire.

### *Drinking water screening values*

Health Canada's drinking water screening values are provided as guidance, and apply to water intended for human consumption. They are developed at the request of a federal department or a province or territory when there is a need for a quick response, and there are no existing formal guidelines.

Because of the need for a quick response, screening values are a rapid assessment to help an organization identify a level at which no health effects are expected. They are based on a limited review of existing science and don't undergo peer review or public consultation as would formal guidelines. However, they are still based on similar risk assessment approaches as formal guidelines. Screening values are based on available scientific studies, as well as assessments conducted by other jurisdictions. As with guidelines, when screening values are developed, Health Canada includes a margin of safety (or 'buffer zone'). As such, screening values are established at a level designed to protect the health of Canadians, including children, based on a lifetime's exposure to the substance.

For more information on drinking and recreational water quality issues:

Visit Health Canada's Water Quality Web site at:  
[www.canada.ca/en/health-canada/services/environmental-workplace-health/water-quality/drinking-water.html](http://www.canada.ca/en/health-canada/services/environmental-workplace-health/water-quality/drinking-water.html)

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## Drinking Water Screening Values: Perfluoroalkylated Substances

PFAS Name	Acronym	Drinking Water Screening Value	
		(milligrams/litre) (mg/L)	(micrograms/litre) (µg/L)
perfluorooctanoic acid	PFOA	0.0002*	0.2*
perfluorooctane sulfonate	PFOS	0.0006*	0.6*
perfluorobutanoate	PFBA	0.03	30
perfluorobutane sulfonate	PFBS	0.015	15
perfluorohexanesulfonate	PFHxS	0.0006	0.6
perfluoropentanoate	PFPeA	0.0002	0.2
perfluorohexanoate	PFHxA	0.0002	0.2
perfluoroheptanoate	PFHpA	0.0002	0.2
perfluorononanoate	PFNA	0.0002**	0.2

\* Full health risk assessments have been developed by Health Canada for PFOS and PFOA as part of the *Guidelines for Canadian Drinking Water Quality*. These two assessments underwent public consultation in 2016 and are expected to be published in 2018.

\*\* Under review to incorporate new science.

### *Health Canada's drinking water screening values for PFAS*

Health Canada has developed screening values for a number of PFAS at the request of several jurisdictions.

Scientific information is limited on the majority of PFAS. Only PFOS and PFOA have been studied sufficiently to develop comprehensive health risk assessments. For PFOS and PFOA, the screening values were based on newly developed draft guidelines, which have been posted for public consultation and are expected to be published in 2018. The drinking water screening values for most other PFAS were developed using PFOS and PFOA as surrogates.

### *Water testing results and the drinking water screening values*

Exposure to PFAS in drinking water is not considered to pose a risk to Canadians if levels fall below the Health Canada screening values outlined above.

The health effects of PFOS and PFOA are similar and well documented. Based on recent science (2015), we know that PFOS and PFOA affect the same organ in similar ways. Thus, when PFOS and PFOA are found together in drinking water, the best approach to protect human health is to consider both chemicals together when comparing to the screening values.

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This is done by adding the ratio of the monitoring result for PFOS to its screening value with the ratio of the monitoring result for PFOA to its screening value; if the result is below or equal to one, then the water is considered safe for drinking. Science currently does not justify the use of this approach for other PFAS.

Short-term exposure to PFAS in drinking water at levels slightly higher than the above screening values is not expected to have health effects as screening values are based on a lifetime of exposure to the substance. Potential health risks from exposure significantly above the screening values depend on how much PFAS a person was exposed to, and for how long he/she was exposed. High levels of PFAS have been linked with negative health effects in animal studies, including liver damage and impacts on neurological development.

Activities like bathing, showering, washing dishes, brushing teeth and doing laundry do not pose a health concern. PFAS stay in the water, so you can't breathe them in and they won't be absorbed through the skin. Ingesting water, such as through drinking, using it in food preparation and in infant formula, does not pose a health risk so long as the levels of PFAS in drinking water do not exceed the screening values over an extended period of time.

If drinking water testing results are above these screening values, there are treatment systems available that can remove PFAS from drinking water.

PFAS can be removed from water by using either: an activated carbon filter installed at the tap or where the water enters the house; or a reverse osmosis system installed at the drinking water tap. Reverse osmosis systems should only be installed at the tap, as the treated water may cause corrosion to the plumbing and cause other contaminants, like heavy metals, to leach into the water.

Before installing a treatment system, the water should be tested for the presence and concentration of PFAS. Once the system is in place, both the water entering the system and the treated water should be tested periodically to ensure the system is, and continues to be, effective.