



Association pour la santé environnementale du Québec
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Forever chemicals -Part II- Where to find them?

With reference to part I: Polyfluoroalkyl substances (PFAS), or forever chemicals, are widely used to make various types of everyday products. The two most common of them are perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS). Because of the presence of a chain of linked carbon and fluorine atoms, they are very difficult to disintegrate or breakdown in the environment and they are also rather persistent.

During their production, this family of chemicals easily migrate into the environment through the air, soil and water around the manufacturing facilities where they are used. More precisely, these substances have been detected, for example, in sediment downstream of these facilities or in organisms living in these environments (including fish and humans). Note that PFOA and PFOS are detected in many habitats around the world, including oceans and the Arctic environment. The last study, done in 2015, shows that long-distance transport of PFAS is highly possible. Also, polyfluoroalkyl substances have the potential for bioaccumulation and/or bioconcentration in many organisms; for example, a 2008 study that was

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conducted in fish has demonstrated a bioconcentration factor estimated from 1000 to 4000 times higher than the normal state.

In human bodies, they primarily settle into the blood, kidneys and liver. A study directed by the US CDC in 2007 estimated that 98% of the American population has been detected to have PFAS in the blood. There are many ways to be exposed to these substances. Firstly, people can be exposed to low levels of PFAS through food, which can become contaminated through the environment where they are produced or grown or through their packaging contaminated with the pollutant. Secondly, if you work in facilities that use or produce polyfluoroalkyl substances, you may be exposed to them. Also, people can be exposed to these chemical substances if they are released during normal use (see links below), biodegradation or disposal of consumer products containing PFAS. Furthermore, babies born from mothers exposed to PFAS may be exposed to them during pregnancy or while breastfeeding. Finally, you can be exposed to these synthetic substances by contaminated water supplies or in a location at which PFAS were used for firefighting.

In the next article, you will read about the health effects of these substances and how you can reduce them. If you want to know more information on this question, you can consult the followed links. Note that other links will be added in the last part of this subject.

Online links:

- How can I be exposed to PFAS? , Agency for toxic substances and disease registry, US department of health and human services, <https://www.atsdr.cdc.gov/pfas/pfas-exposure.html>
- Basic information on PFAS, US environmental protection agency, <https://www.epa.gov/pfas/basic-information-pfas>
- Technical fact sheet – PFOS and PFOA, US environmental protection agency, https://www.epa.gov/sites/production/files/2017-12/documents/ffrrofactsheet_contaminants_pfos_pfoa_11-20-17_508_0.pdf