

The Family Tree of Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) for Environmental Health Professionals

Names and Abbreviations

8/1/17

This fact sheet tells you about chemical names within the family of per- and polyfluoroalkyl substances (PFAS) and their basic chemical structure. It also spells out abbreviations for common PFAS.

PFAS are a family of man-made chemicals that contain carbon, fluorine, and other elements.

The family tree image, Figure 1, shows some of the different families of PFAS. For simplicity, it does not include all PFAS subfamilies. Follow along – starting at the “fallen apple” of PFC and then continuing up the tree trunk into the branches.

PFC

In the past, PFC stood for perfluorinated chemicals.

However, using the abbreviation PFC can be confusing. This abbreviation is also used to mean perfluorocarbons. Perfluorocarbons are a different family of chemicals, also known as greenhouse gases.

The term PFC has fallen off the family tree, but it remains in the diagram as a reminder of past use. You may still see informational materials using the term “PFC” instead of PFAS.

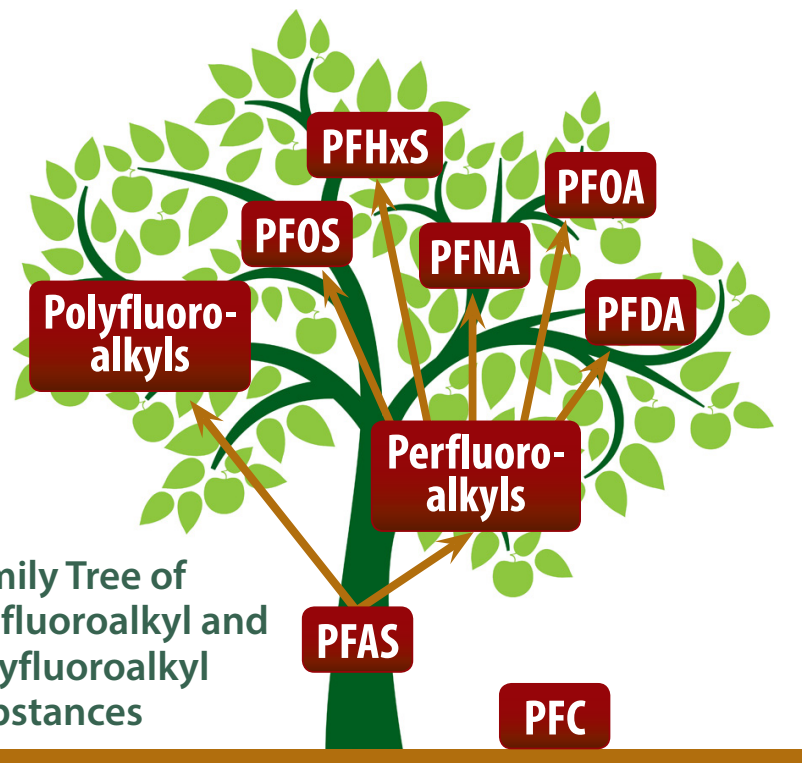


Figure 1

PFAS

Current nomenclature favors “PFAS” which are per- and polyfluoroalkyl substances. The PFAS family includes hundreds of chemicals. See Table 1 (next page) for some abbreviations and chemical names.

Table 1. Common PFAS: Abbreviations and Names

Abbreviation	Chemical name
PFOS	Perfluorooctane sulfonic acid
PFOA (aka C8)	Perfluorooctanoic acid
PFNA	Perfluorononanoic acid
PFDA	Perfluorodecanoic acid
PFOSA (aka FOSA)	Perfluorooctane sulfonamide
MeFOSAA (aka Me-PFOSA-AcOH)	2-(N-Methyl-perfluorooctane sulfonamido) acetic acid
Et-FOSAA (aka Et-PFOSA-AcOH)	2-(N-Ethyl-perfluorooctane sulfonamido) acetic acid
PFHxS	Perfluorohexane sulfonic acid

Chemical Structure

All PFAS contain a chain of carbon atoms bonded to fluorine atoms. Some also have a functional group at the end of the chain. These structures are the basis for different chemical properties and different chemical names.

In perfluoroalkyl substances all carbons except the last one are attached to fluorines. The last carbon attaches to the functional group. See Figure 2.

In polyfluoroalkyl substances at least one (but not all) carbons are attached to fluorines.

Figure 2. **Perfluorooctanoic acid (PFOA), a perfluoroalkyl substance**

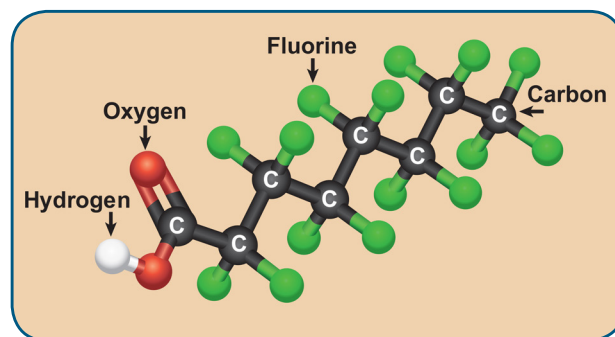


Image credit: NIEHS.

Note about Plurals

PFAS is the abbreviation for per- and polyfluoroalkyl substances (plural), so you don't technically need another "s." You may see "PFASs" written, but ATSDR's preference is to use PFAS. When you write about PFAS make sure you use correct subject-verb agreement – PFAS is a plural noun, so it must be used with a plural verb. For example "These are the most common PFAS found in people."

You can also use the term "PFAS family" with a singular verb.

It may feel awkward to use PFAS as a plural when it sounds singular, but with practice, it will feel right.

References

Buck et al 2011. *Perfluoroalkyl and Polyfluoroalkyl Substances in the Environment: Terminology, Classification, and Origins*. Integrated Environmental Assessment and Management. v7, (4), pp. 513–541.

CDC. 2009. *Fourth National Report on Human Exposure to Environmental Chemicals*. Atlanta, GA: Centers for Disease Control and Prevention. p. 247 – 257.