

A GUIDE TO UNDERSTANDING PFAS TERMINOLOGY

USE CAMERA

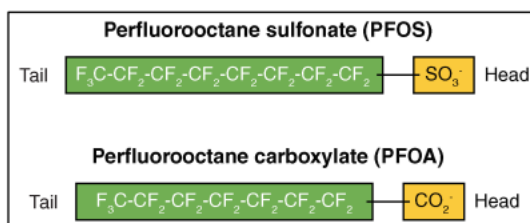
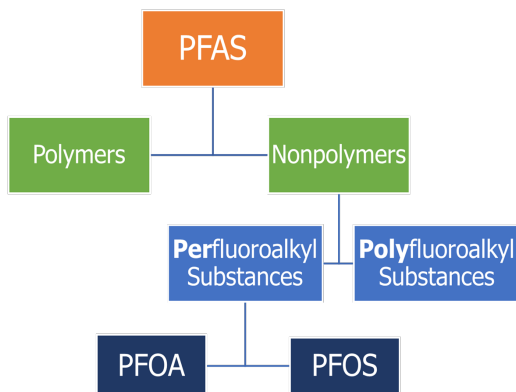


TO SCAN CODE



WHAT IS PFAS?

- Per- and polyfluoroalkyl substances (commonly called PFAS) are a large family of complex, man-made chemicals.
- PFAS were first synthesized in a lab in 1938 and can be easily modified to create compounds with certain properties. PFAS are generally used to make coatings or products that resist heat, oil, stains, grease, and water and have many widespread uses including in nonstick cookware, fire fighting foams, clothing, furniture, food packaging, and many others.
- PFAS are extremely chemically and thermally stable, so they do not easily break down, and therefore have been detected in low concentrations throughout the environment as well as in humans and animals.
- Exposure to PFAS through direct contact or ingestion has been linked to several health effects, including developmental delays, impacts to the organs and immune system, and cancer.



PFOA vs PFOS vs PFAS

- PFAS is an umbrella term for all polymer and non-polymer Per- and Polyfluoroalkyl substances.
- PFAS are first divided into two major classes: polymers and non-polymers. Nonpolymers are then divided into Per- and Polyfluoroalkyl Substances.
- Perfluoroalkyl substances are fully fluorinated carbon-chain molecules. Their basic structure is a chain (tail) of two or more carbon atoms with a charged head at one end. Two of the most common and well-known perfluoroalkyl substances are PFOA and PFOS.
- Perfluorooctane sulfonate (PFOS) have a sulfonate head, whereas perfluorooctane carboxylate (PFOA) have a carboxylate head.

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SHORT vs LONG CHAIN

- “Short-chain” vs “Long-chain” PFAS refers to the number of carbon atoms in the molecule’s chain (tail).
- Perfluoroalkyl carboxylic acids (PFCAs) contain a carboxylate head. Short-chain molecules have 7 or less carbon atoms and long-chain molecules have 8 or more.
- Perfluoroalkane sulfonic acids (PFSAs) contain a sulfonate head. Short-chain molecules have 5 or less carbon atoms, and long-chain molecules have 6 or more.
- PFOS and PFOA are both long-chain PFAS with 8 carbon atoms.

POTENTIAL SOURCES: MODELS OF RELEASE TO THE ENVIRONMENT

- Industrial Facilities – Manufacturing facilities where PFAS-containing products are synthesized or used can produce air emissions, wastewater, or spills that contain PFAS.
- Fire Fighting Foams – Class B Aqueous Film Forming Foams (AFFF) contain PFAS and have been widely used by the US military, airports, industrial facilities, and some municipal fire departments. Firefighting foams can enter the environment through spills or during emergency response, and can contaminate soils, as well as surface water and groundwater.
- Waste management facilities – PFAS-containing products in landfills can leach into soils and contaminate soil and groundwater.
- Wastewater treatment plants (WWTP) – WWTPs which receive PFAS-containing industrial wastewater have the potential to create PFAS-concentrated sludge.
- Consumer products – Products such as car cleaning agents, waxes and polishes, pesticides, household cleaning products, etc. may contain PFAS. These products may release PFAS into the environment via general use and discharge to septic systems and WWTPs.

Number of Carbons	4	5	6	7	8	9	10	11	12
PFCAs	Short-chain PFCAs				Long-chain PFCAs				
	PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFUnA	PFDoA
PFSAs	PFBS	PFPeS	PFHxS	PFHpS	PFOS	PFNS	PFDS	PFUnS	PFDoS
	Short-chain PFSAs		Long-chain PFSAs						

REFERENCES

[HRP – PFAS A Basic Review](#)

[HRP – Aqueous Film Forming Foam \(AFFF\) Fact Sheet](#)

[States Adopting PFAS Standards to Reduce Exposure](#)

[PFAS Factsheet](#)

[Technical Resources for Addressing Environmental Releases of PFAS](#)

[PFAS Naming Conventions](#)