

#### **PFAS** = <u>Per</u>fluoroalkyl and <u>poly</u>fluoroalkyl substances

Perfluoro = Compounds for which all hydrogens on <u>all</u> carbons have been replaced by flourines (with the exemption of carbons in functional groups).

Polyfluoro = Compounds for which all hydrogens on at least one, but not all, carbons have been replaced by fluorines.

## **PFAS 101**

#### Why are we talking about PFAS?

- PFOS and PFOA are two "long chain PFAS" found globally in the environment.
- A need to identify how they came to be in the environment, including the substances that break down in the environment to form them (the <u>precursors</u>).
- The PFAS terminology was created to help define the group of relevant substances and establish a common lexicon.

## **Clear, Specific and Descriptive**

# The term "PFAS" includes many different substances with <u>very different</u> properties

#### Differences



## Hydrocarbons: C-H Substances

### **A Big Universe of Very Different Substances**



We would never group them together and say, "They are the same," because they are <u>NOT</u> the same.

## Fluorocarbons: C-F Substances

#### Fluorocarbons – Also a Big Universe of Very Different Substances



We should <u>NOT</u> group them together, because they are <u>NOT</u> "the same."

#### Perfluoroalkyl and Polyfluoroalkyl Substances in the Environment: Terminology, Classification, and Origins

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**GROUP** - Per- and Poly-fluoroalkyl substances (PFAS) **Non-Polymers Polymers** CATEGORY Perfluoroalkyl Substances Fluoropolymers CLASS including fluoroelastomers Compounds for which all hydrogens on Carbon-only polymer backbone all carbons (except for carbons with fluorines directly attached associated with functional groups) have been replaced by fluorines Perfluoropolyethers • (Aliphatic) perfluorocarbons (PFCs) Perfluoroalkyl acids Carbon and oxygen polymer • Perfluoroalkane sulfonyl fluorides backbone with fluorines directly Perfluoroalkane sulfonamides attached to carbon • Perfluoroalkyl iodides Perfluoroalkyl aldehydes Side-chain Fluorinated Polymers Polyfluoroalkyl Substances Variable composition non-Compounds for which all hydrogens on fluorinated polymer backbone with at least one (but not all) carbon have fluorinated side chains been replaced by fluorines • Fluorinated acrylate and Perfluoroalkane sulfonamido methacrylate polymers derivatives • Fluorinated urethane polymers • Fluorotelomer-based compounds • Fluorinated oxetane polymers • Semifluorinated *n*-alkanes and alkenes