

# Candidate POPs

## Long-chain perfluorocarboxylic acids (PFCAs), their salts and related compounds

**CAS No.** 375-95-1; 335-76-2; 2058-94-8; 307-55-1; 376-06-7; 72629-94-8; 141074-63-7; 67905-19-5; 57475-95-3; 16517-11-6; 133921-38-7; 68310-12-3

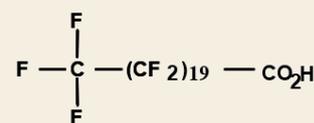
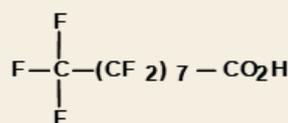
**Chemical identity:** Long-chain PFCAs with carbon chain lengths from 9 to 21 and their salts, are a homologous series of substances with the molecular formula of  $C_nF_{2n+1}CO_2H$  (where  $8 \leq n \leq 20$ ). "Perfluorinated" refers to fluorochemicals in which the hydrogen atoms directly attached to the carbon atoms are all replaced with fluorine atoms. Related compounds are any substances that is a precursor and may degrade or transform to long-chain PFCAs, where the perfluorinated alkyl moiety has the formula  $C_nF_{2n+1}$  (where  $8 \leq n \leq 20$ ) and is directly bonded to any chemical moiety other than a fluorine, chlorine or bromine atom.

### Uses:

PFCAs are members of the per- and polyfluoroalkyl substances (PFAS) chemical class. PFCAs with carbon chain lengths from 9 to 21 and their salts are infrequently used in products. Nonetheless, the ammonium salt of  $C_9$  PFCa was identified as being used for surfactant applications and in the production of fluoropolymers. Substances that are related compounds to long-chain PFCAs have, however, been used in a range of applications, including in coating products, fabric/carpet protectors, textile impregnation agents and fire fighting foams.  $C_{9-14}$  PFCAs, their salts and related compounds may also be unintentionally produced during the manufacturing of PFAS, including those containing a carbon chain of less than nine carbon atoms, and in other industrial processes.

### Hazards and Risks to human health and the environment

Long-chain PFCAs are characterized by their persistence in the environment and their bioaccumulation. Moreover, long-chain PFCAs, their salts and related compounds have the capacity to be long-range transported. Long-chain PFCAs have been detected in surface and ground water, as well as in food grown with contaminated soil or water. Health issues such as hepatotoxicity, developmental/reproductive toxicity, immunotoxicity, thyroid toxicity and others (e.g. cardiovascular, metabolic, renal toxicity) have been linked to human exposure to PFCAs. Effects in wildlife include developmental effects, behavioural effects, hepatotoxicity, immunotoxicity, neurotoxicity, chemosensitivity, altered gene expression and altered thyroid function.



### Reference

1. Proposal to list long-chain perfluorocarboxylic acids, their salts and related compounds in Annexes A, B and/or C to the Stockholm Convention on Persistent Organic Pollutants. UNEP/POPs/POPRC.17/7.



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