

Marine Conservation Society position statement on:

PFAS (Per- and Poly- fluorinated alkyl substances)

This document constitutes the formal expression of a Marine Conservation Society position on an issue of concern to us, at a particular point in time. It is not to be edited altered or misconstrued. Please get in touch if you wish to discuss it, or need any clarifications. We are always open to constructive discussion and our views may change over time, in light of new evidence or changes in policy context.

Date Approved:

November 2019

Geographical extent: UK

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The MCS View:

PFAS (Per- and poly- fluorinated alkyl substances), nicknamed the 'forever chemical' are a highly persistent group of over 4000 chemicals. PFAS chemicals are known to bio-accumulate, bio-magnify and are extremely unreactive, resulting in their high persistence. As an example of the degree of persistence, some have a half-life of more than 1,000 years in soil.¹ PFAS are found in numerous industry and consumer products including firefighting foam, non-stick pans, greaseproof packaging and coatings on waterproof clothing. Their release into the environment can be during their production, direct environmental release from firefighting foams or from diffuse sources such as consumer product release down the drains. PFAS are extremely mobile and have been found in rivers, seawater and even drinking water, because currently water treatment plants are unable to effectively remove them. Their high mobility has meant they have been found in polar regions, miles from any industrial or consumer behaviour involving these chemicals. PFAS are a priority and need to be singled out from other synthetic chemicals due to the sheer extent of their uses and occurrence in everyday products. They are currently impossible to remove from the ocean and regulating them is taking too long due to a chemical-by-chemical approach being taken.

All PFAS share the similarity of containing a fluorine-carbon bond which is chemically an extremely strong bond (requiring temperatures in excess of 1,000°C to break). This makes PFAS highly persistent. Their unreactive nature also makes them very difficult, if not impossible, to clean up. Therefore, the MCS view is that the only option to prevent PFAS presence in the environment is to stop them at source.

Currently, only 2 PFAS chemicals have been banned, PFOS (perfluorooctane sulfonate) in 2009 and PFOA (perfluorooctanoic acid) in 2019,¹ due to their toxicological data proving a link between exposure to them and effects on the liver, gastrointestinal tract and thyroid in humans. PFOS and PFOA have been shown to have carcinogenic effects. They have also been shown to cross the placenta in some animals and have been detected in human milk.² For marine animals specifically, a study conducted on Atlantic bottlenose dolphins in Charleston USA showed that there was a link between increased levels of PFAS and effects on immune, blood, kidney and liver function.³ Other studies have also linked PFAS exposure to health implications in sea otters⁴ seals⁵ and polar bears.^{6,7} These studies show there is significant evidence to support PFAS being banned from all non-essential uses.

Previous examples of the impact of persistent chemicals includes PCBs (Polychlorinated biphenyls), which, amongst other impacts, were cited as being correlated to decreasing orca populations due to effects on reproduction.⁸ The adverse effects of PCBs were not realised until long after they were put on the market. In contrast to this we are already aware of the toxicological implications of some PFAS and therefore we must act faster than we did for PCBs.^{1,9} Even though PCBs were phased out in the 1970's¹⁰, the impact of their persistence in the environment is still being felt today. Therefore, for the reason of persistence alone, the MCS believe that PFAS chemicals should be banned from being used in consumer and industry products (with exceptional exemptions) and alternatives should be sought immediately.



MCS asks:

UK and Devolved Administration Governments to:

- Remain aligned with EU REACH regulations to ensure any restriction of PFAS in the EU is also applied to the UK (ongoing).
- Enhance the regulatory framework for persistent chemicals by implementing a grouping approach rather than banning the individual PFAS one at a time, to ensure PFAS are banned in all non-essential uses by 2025.
- Encourage the addition of all PFAS chemicals rather than individual ones as an amendment to the Stockholm convention at the next and any necessary future meetings.

Retailers and manufacturers to:

- Commit to immediately phasing out all PFAS chemicals in products and begin replacing them with safer alternatives, with all products containing alternatives to PFAS by 2022.
- Label products containing PFAS (or not) clearly so that consumers can make informed decisions about buying PFAS-free products, taking immediate effect to bridge the gap of a complete phase out by 2022.

Water companies to:

- By the end of 2021 improve testing criteria to include total fluorine content, so ensuring monitoring of the full spectrum of PFAS, rather than just a select few PFAS chemicals.

Individuals to:

- Make conscious decisions to choose PFAS-free products where possible e.g. purchasing stainless steel pans rather than non-stick ones. Not buying stain resistant clothing. Look for fluorine-free cosmetics and waterproof clothing.

What MCS is doing:

- MCS is working alongside CHEM Trust, who are advocating change to legislation surrounding PFAS to follow a grouping approach rather than banning each individual PFAS in turn.
- We aim to provide information about better alternatives to PFAS in products to industry, consumers and regulators.
- We will increase awareness among the general public in order to allow people to make better choices when it comes to products with alternatives to PFAS.

References:

[1] https://chemtrust.org/wp-content/uploads/PFAS_Brief_CHEMTrust_2019.pdf

[2] <https://www.gov.uk/government/publications/pfos-and-pfoa-properties-incident-management-and-toxicology>

[3] Fair, P. A., et al. (2013) Associations between perfluoroalkyl compounds and immune and clinical chemistry parameters in highly exposed bottlenose dolphins, *Environmental Toxicology and Chemistry*, 32.

[4] Kannan, K., et al. (2006) Association between Perfluorinated Compounds and Pathological Conditions in Southern Sea Otters, *ES&T*, 40.

[5] Ishibashi, H., et al. (2008) Contamination and Effects of Perfluorochemicals in Baikal Seal (*Pusa sibirica*) 2. Molecular Characterization, Expression Level and Transcriptional Activation of Peroxisome Proliferator-Activated Receptor α , *ES&T*, 42.

[6] Pederson, K. E., et al. (2016) Per- and polyfluoroalkyl substances (PFASs) –New endocrine disruptors in polar bears (*Ursus maritimus*)? *Environ. Int.*, 96.

[7] Fair, P., et al. (2018) Chapter 5: Poly- and Perfluoroalkyl Substances in Marine Mammals, *Marine Mammal Ecotoxicity*.

[8] Jepson, P. D., et al. (2016) PCB pollution continues to impact populations of orcas and other dolphins in European waters, *Scientific Reports*, 6.

[9] <https://www.atsdr.cdc.gov/pfas/health-effects.html>

[10] EPA press release: EPA Bans PCB Manufacture; Phases Out Uses, (1979) Accessed: <https://archive.epa.gov/epa/aboutepa/epa-bans-pcb-manufacture-phases-out-uses.html> (01/11/19)

