

**Marine Conservation Society position statement on:**

# PFAS (Per- and polyfluoroalkyl 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.

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**Geographical extent:** UK

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## The Marine Conservation Society View:

PFAS (per- and polyfluoroalkyl substances), nicknamed ‘forever chemicals’ are a highly persistent group of several thousand substances. 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.<sup>1</sup> 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 (e.g. from firefighting foam). Or from diffuse sources such as consumer product release down the drains, ultimately residing in waste water effluent or sewage sludge (see our paper on sludge here: [https://media.mcsuk.org/documents/MCS\\_sewage\\_sludge\\_paper\\_june\\_2021\\_final.pdf](https://media.mcsuk.org/documents/MCS_sewage_sludge_paper_june_2021_final.pdf)). 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 are banned in the UK, PFOS (perfluorooctane sulfonate) in 2009 and PFOA (perfluorooctanoic acid) in 2019,<sup>1</sup> 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.<sup>2</sup> The EU however, have gone even further and in their 2020 Chemicals Strategy for Sustainability, committed to banning the entire group of PFAS from all uses considered not essential for society. This is the best way to prevent one chemical simply being replaced by an equally harmful chemical (aka regrettable substitution). In terms of the impact of PFAS on marine mammals 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.<sup>3</sup> Other studies

have also linked PFAS exposure to health implications in sea otters<sup>4</sup> seals<sup>5</sup> and polar bears.<sup>6,7</sup> 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.<sup>8</sup> 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.<sup>1,9</sup> Even though PCBs were phased out in the 1970's<sup>10</sup>, the impact of their persistence in the environment is still being felt today. Therefore, for the reason of persistence alone, 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.
- Submit a proposal to the Stockholm convention for global elimination of ALL PFAS.

### 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:

- Immediately change procurement policies to exclude the use of PFAS.
- To test for a much wider and more representative range of PFAS in waste-water and sludge (biosolids).

## What MCS is doing:

- MCS is working alongside many other NGO's, who collectively are calling for change to legislation surrounding PFAS to follow a grouping approach rather than banning each individual PFAS in turn.
- We are asking businesses to consider their uses of PFAS and revise procurement policies to ensure fewer PFAS are being used.
- We will increase awareness among the general public to make it harder for Governments to avoid a grouping ban and harder for industry to continue using PFAS.

## References:

[1] [https://chemtrust.org/wp-content/uploads/PFAS\\_Brief\\_CHEMTrust\\_2019.pdf](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  $\alpha$ , *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)

