

Link Response: UK REACH – PFAS fire-fighting foams Call for Evidence

June 2024

This briefing is on behalf of nature and animal welfare coalition Wildlife and Countryside Link ([Link](#)).

Wildlife and Countryside Link (Link) welcomes the Health and Safety Executive (HSE) and Environment Agency's recommendation to restrict the use of PFAS in fire-fighting foams under UK REACH. The Risk Management Option Analysis (RMOA) identifies that long and short chain PFAS (PFCAs, PFSA's and fluorotelomers) in fire-fighting foams may cause environmental exposure from run off through drainage systems and surface waters, soil absorption leading to groundwater contamination, and end of life disposal.

Although the RMOA contains some positive recommendations to restrict PFAS in fire-fighting foams, the scale and pace of action must be drastically increased, with further delays risking harm to people and nature. The evidence is clear that PFAS, particularly those in fire-fighting foams, are harmful and a source of human and environmental contamination. Link outlines the evidence for this below.

Link is calling for an appropriate ban and swift transition period on PFAS in fire-fighting foams to minimise the risk to human health and the environment. A full restriction would follow the ambitious footsteps of other countries, avoid the risk of the UK being left behind in the transition to effective, safer alternatives, and avoid unnecessarily putting human health and the environment at risk.

Our wider asks on PFAS are included in the [NGO Joint Action Plan for PFAS](#).

Scale of PFAS Contamination

It is now well-established that PFAS are contaminating the environment and the species and biodiversity within it. These chemicals are ubiquitous and found in remote corners of the

Earth. However, PFAS do not break down easily in nature and are a source of legacy pollution – hence their nickname, the “forever chemicals”. Once these chemicals are released into the environment, PFAS become widespread, contaminating species, waterways and habitats, as well as our food chain and even the air we breathe. These chemicals are linked to human health problems and pose a significant risk to nature and wildlife.

Evidence demonstrates that PFAS contamination is likely ubiquitous in the UK. The use of PFAS-based fire-fighting foams unnecessarily adds to this burden, with [studies](#) showing they contaminate surface water, groundwater, wastewater, biota, soil and the environment.

- Link and The Rivers Trust analysis of Environment Agency data in 2023 [found](#) that at least 77% of English river sites contained PFAS at levels that would not meet newly proposed EU environmental quality standards (EQS), with some rivers exceeding this safety level by 10 or 20 times.
- Research has shown PFAS pollution in rivers and seas to negatively impact fish, [marine mammals](#) and other aquatic wildlife and contribute to higher intakes of PFAS via [fish consumption](#) by humans. PFAS pollution is an issue across all food types, but European Food Safety Authority (EFSA) research shows fish (and game) are among those with the highest PFAS levels (see p39-41 of EFSA’s [report](#)).
- The RMOA assumes that for drinking water, the highest impacts of fire-fighting foam contamination is strictly near industrial sites or sites with historical PFAS use, and “whilst there may be PFAS found in actual drinking water in certain countries, the incidences at a UK level are isolated” (p.83). However, the evidence demonstrates otherwise: PFAS are present in our drinking water, with a 2022 [study](#) showing almost half of English drinking water samples exceeded tougher EU safety standards on PFAS contamination. The 2023 Drinking Water Inspectorate [report](#) also evidences PFAS contamination of drinking water across England.
- Studies in laboratories and water testing have also shown that some PFAS can heighten the impact of other chemicals on wildlife. Analysis by Link and the Rivers Trust demonstrated a high presence of known harmful ‘PFAS-included’ chemical cocktails in English rivers – with 1,600 river and groundwater sites in England containing at least one of five harmful PFAS [chemical cocktails](#) tested. Over half of these sites contained three or more of the five harmful chemical cocktails investigated.
- PFAS build up at greater concentrations in animals higher up the food chain, with research finding multiple PFAS in major studies on [otters](#) in England and Wales and [apex predators](#) in the UK.

PFAS in fire-fighting foams: A risk to nature

PFAS used in fire-fighting foams, like PFOS, PFOA and PFHxS, are scientifically linked to toxic impacts on wildlife and people. Given that fire-fighting foams are one of the greatest volumes of PFAS available on the Great British market, with high estimated emissions concerning water and land,¹ it is imperative to appropriately regulate these products to avoid adding to the burden of toxic legacy contamination in the environment and people.

PFOS (which were used in fire-fighting foams and remain a concern regarding lasting contamination) and PFOA are known to have a range of negative health impacts for [people](#) and wildlife like [fish](#). The International Agency for Research on Cancer has also [found](#) that exposure to PFOA and PFOS are both linked to cancer in animals. PFOS has been phased out and banned from fire-fighting foams since 2011, though legacy pollution from PFOS still remains a problem. PFOA, despite being classed as a persistent organic pollutant (POP) under the Persistent Organic Pollutants (POPs) Regulation (EU) 2019/1021 and Stockholm Convention can still be used for Class B fires involving flammable liquids where the foam can be contained or collected after a fire is extinguished, meaning contamination from this use is still possible and will continue to be a risk until the full ban is enacted in 2025. An exemption also exist for PFOA in foams placed on the market before 4 July 2020 or used in the production of other fire-fighting foams, meaning that exposure and contamination routes in the environment persists.

The RMOA (p.87) also acknowledges the potential for exposure to PFAS such as PFHxS from fire-fighting foams. Studies suggest that PFHxS (which was classified as a POP in 2022, meaning it is [banned in the UK](#) and EU as partners to the Stockholm Convention) may be [toxic](#) to invertebrates and soil microbial processes. It may [cause](#) oxidative stress and developmental toxicity in fish, as well as [other](#) toxic impacts. Research shows PFHxS is likely to [bioaccumulate](#) in air-breathing organisms, and another study indicated it may be [toxic](#) to certain bird species in mixture form. High concentrations of PFHxS have been [found](#) in otters in English rivers.

Substitutes for PFOS and PFOA that are used in newer fire-fighting foams (like C6 fire-fighting foam) with shorter carbon chains also pose [risks](#) to humans and nature and persist in the environment, particularly where collection of the runoff and residual foam and disposal

¹ P. 7 & P. 148 RMOA (on emissions, see table 2.3.2)

thereof is not possible, or compromised.² For example, short-chain fluorotelomers (such as 6:2 fluorotelomer alcohol, which may be used in foams) and their metabolites are highly persistent and studies have [found](#) that they may be similar or more toxic in animal studies than long-chain PFAS.³ The persistence, mobility and potential toxic effects⁴ of short-chain PFAS mean they are a regrettable substitute for their long-chain counterparts and should not be used as an alternative.

The recent discovery of the extreme extent of PFAS contamination near a [fire-fighting testing facility in Bentham, UK](#) (with 2,500 ng/l of PFOA, 10,700 ng/l of PFOS and 63,4000 ng/l of total PFAS detected in the site's groundwater in 2018) demonstrates that regulatory action on PFAS as a group in fire-fighting foams cannot be delayed further. With groundwater [supplying](#) a third of England's drinking water (in some areas, up to 80% of drinking water), it is concerning that these levels are significantly above the Drinking Water Inspectorate, EU and US drinking water limits.⁵ PFAS pollution is not limited to the older PFAS - in 2008 the site contained 737,500 ng/l of 6:2 FtS, which is used as an alternative to PFOS and can transform in the environment to PFHxA.

For these reasons, a grouping approach based on the precautionary principle (as embedded in the Stockholm Convention) to the regulation of PFAS in fire-fighting foams is the safest option and will avoid regrettable substitution through a cycle of replacing one potentially harmful PFAS with another similar PFAS. This approach would be aligned with the conclusions outlined in the RMOA to undertake a group approach to avoid regrettable substitution (p.174).

² <https://pubmed.ncbi.nlm.nih.gov/21627958/> and <https://pubmed.ncbi.nlm.nih.gov/26079316/>

³ <https://www.sciencedirect.com/science/article/pii/S0041008X20300028?via%3Dihub> and <https://www.sciencedirect.com/science/article/pii/S0278691520300983?via=ihub>

⁴

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5834591/#:~:text=Short%2Dchain%20PFAAs%20are%20extremely%20persistent&text=The%20possible%20risks%20of%20such,is%20impossible%20to%20reverse%20exposure>.

⁵ The current voluntary Drinking Water Inspectorate (DWI) guidance limits are 100 nanograms of PFAS per litre (100 ng/L). The EU and US have enacted more ambitious regulations on PFAS in drinking water, setting stricter limits than the DWI's 100 ng/L requirement in England and Wales. In its Drinking Water Directive, the EU has set a stricter limit of 100 ng/L for a group of 20 PFAS in drinking water. EU member states have gone further with Denmark setting a limit of 100 ng/l for 22 PFAS and Italy setting 100 ng/L for 24 PFAS. The US has also recently finalised new drinking water standards, with limits on PFOS and PFOA to 4 ng/L and 10 ng/L for PFHxS, PFNA, PFBS and HFFPO-DA.

Conclusion: From PFAS in fire-fighting foams to safer alternatives

The UK needs strong, immediate action on PFAS in fire-fighting foams. The UK should follow the ambitious footsteps of other countries, to transition swiftly and prevent risks to human health and the environment. Other countries, such as the USA and EU, are demonstrating strong ambition on PFAS in fire-fighting foams. For example, the USA is [phasing out](#) all PFAS in fire-fighting foams by October 2024.

Link advocates for a grouping restriction proposal following this call for evidence. With so many alternative [fluorine-free, non-persistent](#) fire-fighting foams and dry chemical agents without PFAS already available on the market and widely used in UK airports (e.g., Edinburgh, Manchester, London Heathrow, London City and London Gatwick), fire services and businesses, including the oil, gas and petrochemical industry (e.g., BP, Total, and ExxonMobil),⁶ a decisive move to restrict PFAS should be straightforward to implement in practice. Fluorine-free (F3) foams [are similar or less cost per litre compared to aqueous-film forming foam](#), with reductions in both risk and liability for end-users using these alternatives.

Examples of such alternatives include (but are not limited to):

- [LIQUID – 100% ecological fire-fighting agent \(A, B, C, D and F\)](#)
- [FireEx C-M fire-fighting foam concentrate](#) and [marine counterpart](#)
- [Chemguard NFF 3x3 UL 201](#), which may be used for Class B, polar solvent and hydrocarbon fuel fires

The restriction should set out a full ban of PFAS in fire-fighting foams with a swift, but fair transition time. A full ban will ensure that the HSE fulfils the statutory purpose of UK REACH, ensuring a high level of protection for human health and the environment in Great Britain.

Wildlife and Countryside Link (Link) is the largest nature coalition in England, bringing together 82 organisations to use their joint voice for the protection of the natural world and animals. Wildlife and Countryside Link is a registered charity number 1107460 and a company limited by guarantee registered in England and Wales number 3889519.

⁶ IPEN White Paper presented at the UN Stockholm Convention POPs Review Committee meeting in Rome in September 2018

For questions or further information please contact:

Hannah Blitzer, Senior Policy Officer, Wildlife and Countryside Link E:

hannah.blitzer@wcl.org.uk

Wildlife & Countryside Link, Vox Studios, 1 – 45 Durham Street, Vauxhall, London, SE11 5JH

www.wcl.org.uk

The following organisations have inputted into this briefing and support stronger action on PFAS in fire-fighting foams:

Angling Trust

Fidra

Marine Conservation Society

Soil Association

The Rivers Trust