Fidra response to the Environmental Audit Committee Inquiry: Addressing the risks from Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS)

Submission text (excluding introduction, headings & references): 2997

Introduction to Fidra & reasoning for our submission

Fidra are an evidence based environmental charity dedicated to reducing chemical and plastic pollution. Fidra works collaboratively with governments, industry, and the public to develop practical solutions that support sustainable societies and healthy ecosystems.

This evidence highlights the urgent need for stronger UK action on PFAS. We are concerned that current efforts fall far short of addressing the scale of the problem and that the UK is falling behind international progress, leaving our natural resources, public health and economy at risk. This submission aims to inform and support the development of effective action to address PFAS pollution in the UK.

Fidra has worked on PFAS for almost a decade through our PFAS-free Project. Using the best available science, we have engaged a broad range of stakeholders in identifying sources of PFAS use and promoting safer alternatives. Our work has centered on three key case studies— PFAS in school uniforms, food packaging, and pesticides—where we have gathered evidence of PFAS use and highlighted viable solutions and alternatives. These case studies, alongside our broader work on PFAS policy, underpin our ask for a universal PFAS restriction in the UK as the most effective solution to protect public health, the environment and the economy.

Understanding the threats and benefits from using Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS)

1. What benefits do PFAS provide and how widely are they used?

PFAS are a group of over 10,000 chemicals internationally recognized for their harmful health and environmental impacts[1]. PFAS, commonly referred to as 'forever chemicals', are highly persistent, mobile and can bioaccumulate along food chains to harmful concentration levels[2]. PFAS are used in a wide range of consumer and industrial products, including food packaging[3], textiles[4], cosmetics[5], and pesticides[6]. The widespread use of PFAS has led to a global chemical pollution crisis, with PFAS being found extensively around the world, from the depths of the oceans [7] to Arctic ice cores[8] and even on the slopes of Mount Everest[9]. In the UK, PFAS have been found in human blood[10], food[11], drinking water[12], and numerous wildlife species, including UK otters[13], fish[14] and bird species[15]. Leading scientists from around the world have warned that PFAS represent one of the most significant and far-reaching threats to human health and the environment today.

PFAS are used for numerous applications in products, including water, heat, and stain-resistance, however they are often used unnecessarily. Fidra's UK-wide survey of over 600 parents and guardians found that PFAS stain-resistant school uniforms provided no meaningful benefit to the consumer, with there being no significant difference found in the washing or replacement rates of treated versus untreated school uniform items[4]. Additionally, most PFAS stain-resistant finishes only last for 10–20 washes, far less than the typical lifespan of the product. After sharing this evidence with some of the UK's leading high-street retailers, many agreed to phase out PFAS treatments in school uniforms, demonstrating an unnecessary and avoidable use of these persistent chemicals. Fidra research also revealed the unnecessary use of PFAS in UK food packaging. Following laboratory testing, PFAS were detected in paper and board food packaging from 8 out of 9 major UK supermarkets and in 100% of takeaway samples tested[3]. Denmark restricted the use of PFAS in food packaging in 2020[16], with PFAS and plastic-free alternatives for food packaging being readily available for years[17]. Given the single-use nature of these items and that many are labelled as recyclable or compostable, this highlights an unnecessary source of PFAS pollution into the environment and within the circular economy. PFAS are also used in industrial products, such as pesticides. Fidra research found that pesticides containing PFAS as active ingredients are used across all agricultural crop sectors in the UK and in 2022, PFAS pesticides were sprayed on the equivalent of more than 10.6 million hectares of arable crops, directly polluting water, soil, crops and the wider environment[6]. Many PFAS pesticides are also known precursors to the problematic, short-chain PFAS, Trifluoroacetic acid (TFA), which has been flagged as the most ubiquitous PFAS in the environment [32].

2. To what extent are UK health and environmental regulators equipped to detect, monitor and understand the risks posed by PFAS?

There are over 10,000 PFAS, however, the UK's environmental regulators only monitor tens of PFAS[18] and have restricted a handful listed under the Stockholm Convention[19]. Lack of UK resources to effectively manage chemicals has been evident from the increasing divergence between UK and EU chemical regulation. Since January 2021, the UK has not introduced a single chemical restriction, whereas the EU has restricted 10 harmful substances in the same time[20]. This highlights how the UK is falling behind EU standards, leading to weaker protection for public health and the environment. To prevent further divergence from the EU and further diminishing of UK environmental and public health standards, NGOs and academics have called for alignment with EU chemical regulation, including the proposed universal PFAS restriction[21].

Given the sheer number of PFAS, continuing with a substance-by-substance approach to regulation is not appropriate or feasible. This approach is ineffective, as has been demonstrated by PFOS and PFOA, two very harmful PFAS, recently classified as carcinogens[22], which have now been restricted. The decades required to research, review and eventually restrict these chemicals has meant that they are already widespread and persisting in the UK environment [23], wildlife[15] and amongst the general population[10], [24], with PFAS remediation extraordinarily difficult to achieve and estimated to cost billions of pound in the UK alone[25], [26].

Despite decades of research, we have so far made little progress in regulating these chemicals. The persistence of PFAS means their environmental concentration will continue to accumulate, thus requiring urgent action. Limited public resources should therefore be prioritised to prevent further costs of PFAS pollution by aligning with the EU's proposed universal PFAS restriction, as advised by leading scientists[21].

3. How developed is the UK's research base on the science of PFAS and the technology required to monitor their current and future impact?

Extensive research on PFAS is readily available from across the globe and from UK institutions such as University of Lancaster, York, Birmingham, Exeter and Aberdeen. World-leading academics, including those from the UK, have been unified in their call for urgent action on PFAS. In a recent joint letter to UK Government, 59 UK and international experts called for a group-based restriction for PFAS to protect public and environmental health[21].

While ongoing research has value, further studies confirming existing trends should not be a prerequisite for action - scientific experts are clear on this. Instead, future research should operate within the framework of a precautionary approach and a universal restriction, shifting the burden of proof to demonstrate safety rather than harm.

Regarding monitoring technology, the UK is currently equipped to detect and measure some PFAS. However, as stated above, as PFAS are highly persistent, mobile, and bioaccumulative, focusing solely on detection without source control is ineffective and resource intensive. It is therefore advised that a group-based restriction be prioritised ahead of improved monitoring.

4. How sophisticated is current knowledge of how and where PFAS enter the supply chain?

While tracing PFAS through complex global supply chains remains challenging, our understanding is growing. It is often hard for businesses to determine the presence of PFAS in their supply chains because of a lack of chemical transparency. However, this should not be a barrier to restriction but a reason to accelerate it.

Fidra have successfully worked with sectors to engage their supply chains and identify PFAS-free alternatives[4], [27]. This shows that with the right support and incentives, companies can take meaningful steps to eliminate PFAS. Over 100 companies, including IKEA and H&M, are signatories to ChemSec's 'Not to PFAS' movement[28], and many global brands with complex supply chains—such as McDonald's[29] and Patagonia[30]—have already committed to phasing out PFAS. Given that such action is voluntary, this demonstrates that transitioning away from PFAS is not only possible, it is desirable.

Voluntary action alone however is not enough. Without regulation, smaller companies lack the leverage and resources to influence suppliers and implement action ahead of regulation. A wide-reaching restriction is essential to create a level playing field for UK businesses.

5. What is the current understanding of how PFAS are made and then used in terms of product ranges, and geographical and socioeconomic distribution?

PFAS are used in a wide range of consumer and industrial products. PFAS can also be formed as manufacturing by-products, as well as through product breakdown. For example, trifluoroacetic acid (TFA), a short-chain PFAS can form during the manufacture of Fluoropolymers and F-gases[31], [32], and is a common breakdown product of PFAS pesticides[33]. TFA is considered to be one of the most abundant PFAS in the environment[32], and emphasizes the need for a full life-cycle analysis of PFAS when considering regulation.

Geographically, various PFAS hotspots have been identified, including within the UK[23]. High profile UK sites include Bentham, North Yorkshire, with some of the highest PFAS concentrations ever recorded in UK groundwater[34], and Lancashire where residents have been advised to wash and peel locally grown produce before eating due to PFAS contamination concerns[35]. PFAS pollution however, is not confined to industrial sites or hotspots, with PFAS being found to pollute soils[36], waterways[37], wildlife[15] and people across the UK[10].

6. To what extent are the Environment Agency, and other relevant UK bodies and research institutions, resourced to understand the current threat posed by PFAS and to monitor their impact going forward?

Please refer to information provided for Question 2.

Regarding other UK bodies, numerous UK water companies have expressed their concern about PFAS pollution. Water UK recently called for a wide-reaching ban on PFAS, along with a national plan to remove PFAS from the environment, and for polluters to be accountable for high remediation costs[38].

The current status of measures to address PFAS

7. What are the current technologies and solutions to treat PFAS pollution, how cost effective and efficient are they and do they create additional risks?

Existing methods for removing PFAS from the environment are costly, technically challenging, often energy-intensive, and, in many cases, only partially effective. For example, in the Netherlands removing just 34g of PFAS from groundwater cost over 1 million euros[39]. In the UK, annual clean-up costs are currently estimated to be £9.9 billion per year[25], [26]. Additionally, incineration technology is extremely energy intensive, requiring temperatures above 1,100 degrees C due to the high persistence of PFAS[40]. Incineration can also produce hazardous byproducts, such as free radicals, and may still result in residual PFAS being lost to the environment[41], [42], [43].

Remediation is therefore unsuitable as a primary strategy for managing widespread PFAS use. The most effective and pragmatic solution is to prevent PFAS pollution at its source through a group-based restriction. This would prevent additional accumulation in the environment and reduce the long-term burden on already overstretched waste management systems. Only once we control PFAS at source can we make meaningful remediation efforts in contaminated areas.

8. How well equipped is the UK's research and development base to improve existing approaches to dealing with PFAS?

It is assumed for the purposes of this question, that 'dealing with PFAS' refers to PFAS remediation.

Leading UK institutes are contributing to global PFAS research and are well-positioned to collaborate with international partners. However, it's crucial to recognize that even improved remediation techniques cannot justify continued use of PFAS, given the already far-reaching PFAS pollution seen in the UK and globally[44]. The persistence of PFAS means levels of contamination are only due to increase with continued use, making remediation alone ineffective. This also overlooks human exposure through product use[45], food sources[11], and through accumulation in household dust[45]. While research and development will continue to play a role in understanding and managing legacy contamination, it must be paired with regulation that prevents further environmental and human exposure.

Is the current regulatory regime for PFAS fit for purpose?

9. Is the current regulatory regime for the use and disposal of PFAS, including UK registration, evaluation, authorisation and restriction of chemicals (UK REACH), adequate? If not, how can it be improved?

The current regulatory regime for the use of PFAS in the UK is failing. The implementation of UK REACH has proved unsuccessful, with a lack of chemical data and over-stretched resources resulting in the UK falling significantly behind EU REACH and thus EU standards of public and environmental protection. Since January 2021, the UK has not restricted any harmful chemicals while the EU has restricted 10 in the same timeframe [20]. Additionally, the EU is currently progressing towards a universal restriction on all 10,000+ PFAS, whereas the UK has so far proposed one sector-specific restriction on PFAS in firefighting foams – a restriction dossier for PFAS in firefighting foams was due in March 2025 but at the time of writing, this has yet to be published.

Current PFAS disposal regimes are also ineffective. PFAS pollution occurs throughout waste streams, such as via landfill leachate [46] and contaminated sewage sludge application to agricultural lands[47]. Continued use of PFAS also threatens the safety and integrity of the circular economy; PFAS containing products labelled as recyclable, such as food packaging, risk PFAS becoming locked in the circular economy and undermining the safety and value of materials[48].

Lack of source control, alongside an allowance of PFAS industrial emissions – Angus firefighting foam plant in North Yorkshire and AGC chemicals manufacturing plant in Lancashire both being associated with some of the worst PFAS pollution hotspots in the UK – have resulted in widespread PFAS pollution across the UK [34], [35]. Not one river in England is considered to be achieving good chemical status[49], [50], and the River Mersey Basin has been cited as one of the most PFAS polluted watersheds in the world[51]. PFAS has been found in UK water[34], soil[36], food[11], wildlife and people[10], [15], with environmental remediation costs expected to reach billions of pounds[25], [26]. Although many PFAS remain understudied, those that have been researched in-depth have been linked with a myriad of significant health concerns including cancer, immunotoxicity and fertility issues[52], [53], [54]; health-related costs of inaction on PFAS have been estimated to be 52 – 84 billion EUR for the European Economic Area (UK included at the time of the report)[55].This demonstrates a clear failing of current regulatory regimes to protect public health and the environment, consequently resulting in significant financial costs to the taxpayer.

Fidra is calling for the UK Government to align with EU chemical regulation, including the proposed universal PFAS restriction. Better source control of harmful chemicals, including PFAS, would help ensure high standards of health and environmental protection, reduce the burden of remediation costs, and protect loss of clean materials which will be essential for the circular economy. EU alignment will also require fewer resources for administrators, reducing pressure on already over-stretched regulators, and help avoid unnecessary data duplication. Additionally, aligning with EU chemical regulation could help facilitate trade with our closest and largest trading partner, by aligning product standards and creating greater certainty for UK businesses. Finally, alignment would ensure the UK retains its status as an international leader in chemicals – paving the way for further growth and innovation into safe and sustainable solutions[56].

10. Is a precautionary approach to PFAS desirable or is an approach that uses regulation to assess their benefits and risks more appropriate?

A precautionary approach to PFAS is not only desirable but necessary if the UK is to prevent further harm to public and environment health. PFAS contamination is already widespread [23], with effects ranging from endocrine disruption[57] to bioaccumulation in humans and wildlife [13], [15], [58], [59]. These far-reaching impacts are a result of chronic exposure to a multitude of PFAS, which has failed to be addressed under the current risk-based, substance-by-substance approach to chemical regulation.

A precautionary approach, which is embedded in UK environmental law through the Precautionary Principle [60], would support a group-based restriction of PFAS based on the substantial evidence of harm already available and the well documented history of 'regrettable substitution' within the PFAS group; replacing one restricted PFAS with another unrestricted PFAS that is later found to have similar potential for harm. For example, GenX, a common alternative PFAS for PFOA after it was banned, has now been identified as highly persistent and toxic in animals, prompting the EU to list it as a Substance of Very High Concern (SVHC)[61]. This highlights the shortcomings of a risk-based approach to chemical management in responding to harm retrospectively and providing short-lived interventions, rather than proactive and future-proof solutions.

The known persistence of PFAS, and their observed accumulation in air[62], water[34], soil[36], food[11], [63] and our bodies[10], means comprehensive action is urgently required. This is supported by leading scientists. In a recent letter to UK Government, 59 scientific experts called for a group-based restriction on PFAS in the UK, due to the shared molecular characteristics that make PFAS persistent and prone to accumulation[21], [64].

The UK is well positioned to support a PFAS-free economy. PFAS-free alternatives are readily available across multiple sectors, such as food packaging, waterproof textiles, and refrigerants[17], [65], and many companies have already begun phasing PFAS out of their product lines (see question 4). A clear commitment to restrict PFAS in the UK would support existing voluntary action and ensure a level playing field for all UK businesses. It would also create regulatory certainty that boosts investor confidence, encourages innovation, and opens opportunities for growth. This was echoed in a recent statement from global investors managing over US$8 trillion in assets, who have urged chemical manufacturers to phase out PFAS [66].

By adopting a precautionary approach, the UK can embed effective and sustainable principles at the core of its chemicals policy—phasing out harmful substances and promoting inherently safer materials and processes. This aligns with the UK's legal obligations under the Environment Act[67] and supports a circular, sustainable economy.

11. Is there any regulatory divergence across the UK in terms of PFAS? If so, what are the implications, and is there a need for a more joined-up approach?

Drinking water standards on PFAS vary across the UK. In Scotland, there is a drinking water standard of 0.1 µg/l for the sum of 20 PFAS[68]. In March 2025, the Drinking Water Inspectorate published an updated guideline value of 0.1 µg/l for the sum of 48 named PFAS in drinking water for England and Wales, however, there remain no statutory standards[69].

Cross-border trade is of concern in relation to Northern Ireland, where alignment with EU chemical regulation under the Windsor Framework is creating trade barriers due to the rest of UK diverging from the EU's higher standards. The outdated proposals to de-couple the EU from the UK with regards to Classification Labelling and Packaging (CLP) should also be reconsidered in light of the EU reset, to prevent additional challenges between Northern Ireland and the rest of the UK.

A joined-up approach across the devolved nations would help ensure equal and robust protection from PFAS, as well as greater certainty for UK businesses. There is support for alignment with EU chemical regulation from the devolved nations[70].

12. How do other jurisdictions around the world, including the EU and US, regulate PFAS use and disposal, and what lessons, if any, can the UK learn?

The most robust action currently proposed on PFAS is the EU universal restriction. This proposal covers all 10,000+ PFAS, and outlines provisions for derogations and implementation periods where necessary. Alignment with EU chemical regulation, including the proposed universal PFAS restriction, offers a host of benefits, including effective protection for environmental and public health, growth opportunities for innovation and uptake of safer alternatives, improved certainty for UK businesses, support of clean materials for a circular economy, and a reduction of administrative and resource burdens on regulators through avoiding substance-by substance assessments and minimizing future clean-up costs. This approach is supported by health, environmental[21] and economic experts[66].

EU member states have begun introducing sector-specific PFAS restrictions to reduce emissions as soon as possible. Denmark introduced a restriction on PFAS in food packaging in 2020 and have since announced a restriction on PFAS in clothing, footwear and waterproofing agents, due to come into effect in 2026 and remain in place until it is superseded by the EU's universal restriction. Denmark has also launched a National Action Plan to improve environmental PFAS monitoring and remediation, and to support companies in adopting safer alternatives[71]. France have similarly announced a restriction on PFAS in cosmetics, clothing and ski waxes[72]. To begin reducing PFAS exposure immediately, the UK Government could commit to EU alignment and a universal PFAS restriction whilst progressing with sector-specific restrictions, including food packaging, firefighting foams and pesticides. It is important to emphasize that sector-specific restrictions alone are not enough. It has been estimated that, should the French ban be implemented on an EU scale, this would still only account 20% of PFAS emissions[73]. Sector-specific action can therefore only be seen as complimentary to a broader restriction.

What lessons can the UK learn from other countries on how they monitor and treat PFAS?

13. What lessons can the UK learn from other countries in terms of resourcing and supporting the detection, monitoring and treatment of PFAS pollution?

Please see information provided in previous questions regarding monitoring, remediation, EU alignment and the Danish PFAS action plan.

14. How does the UK compare to other countries in terms of funding research and new technologies to improve outcomes?

Please see information provided in previous questions regarding UK research institutions.

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