

Why forever chemicals aren't going away



The accumulation of harmful chemicals in the environment over time poses serious risks to wildlife, the food chain, and human health. Joanne Beatty explains the nature of forever chemicals and how we engage with companies on this topic.

Setting the scene

Chemicals and pesticides have been used for decades on an industrial scale, but 'forever chemicals' present a threat to the environment, wildlife and human health. These persistent substances – today mostly associated with non-stick pans and cosmetics - have been the focus of US litigation, while in the UK, concerns have grown about the degradation of rivers, lakes and other waterways due to agrochemical runoff from farms, industrial chemical flushing by manufacturers, and sewage dumping.¹ While substances such as DDT have been banned in the US since the 1970s, residues of concern remain. We look at pesticides in more depth in our second article.

We encounter a host of synthetic chemicals in our daily lives, although many of us are unaware how dangerous they can be to our long-term health. There is particular concern about the persistence of certain synthetic long-lasting chemicals called PFAS or per- and polyfluoroalkyl substances, which break down very slowly over time, if at all.²

PFAS production is a key regulatory, reputational, and financial risk for manufacturers and consumer goods companies.

These substances contain a strong carbon-fluorine bond that is hard to break, meaning that other molecules slide off PFAS-treated surfaces. As a result of this useful characteristic, PFAS are often behind any product that boasts waterproof or stain-resistant properties, with manufacturers adding them to non-stick cookware, tapes, electronics, carpets, clothing, cosmetics, furniture and food packaging.

But this characteristic is precisely what makes PFAS so harmful, as the chemicals are virtually indestructible and do not fully degrade in the environment or within living tissue. Instead, they accumulate in the environment and in the bodies of animals and humans over time, posing health risks.³ For this reason they are often referred to as "forever" chemicals.

For further information please contact:



Joanne Beatty
Sector co-lead: Chemicals
joanne.beatty@FederatedHermes.com

¹ <https://www.theguardian.com/environment/2020/sep/17/rivers-in-england-fail-pollution-tests-due-to-sewage-and-chemicals>

² PFAS Explained | US EPA

³ What's the difference between PFAS, PFOS, PFOA, PTFE, and GenX? - EHN

Chemical pollution risks

PFAS were discovered in 1938 and have been used in different consumer, commercial and industrial products since the 1940s.⁴ It is now virtually impossible to avoid them, with thousands of PFAS chemicals in circulation. The US Environmental Protection Agency (EPA) counts more than 12,000 different PFAS compounds.⁵

The ubiquitous and persistent nature of these chemicals means that they have been found in the blood of humans and animals, in the environment, including soil and water, and in food products.⁶ A January 2023 study by the US EPA found dangerously high levels of PFOS (perfluorooctane sulfonate) in freshwater fish.⁷

PFOS and PFOA (perfluorooctanoic acid) are two of the most widely used and studied PFAS chemicals.⁸ Because of their hazardous nature, US manufacturers agreed in the early 2000s to voluntarily stop using these chemicals, and the use of PFOA and PFOS in food packaging was phased out in 2016.⁹ Unfortunately, new PFAS were created that fall outside the voluntary agreement, which are in use today. Concerns have arisen over their safety, most notably the PFAS linked to contamination in North Carolina.¹⁰

Chemical pollution has now breached the safe planetary boundary according to scientific studies, with research ongoing to understand how toxicity thresholds are breached by the combination and accumulation of chemicals within the body.¹¹



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Well-studied PFAS compounds have been found to cause harm to the immune system, including the reduced effectiveness of vaccines. Other issues include liver problems, and harm to reproductive systems, with reduced birth weights and impacts on fertility.¹² According to ChemSec's *Investor's Guide to Hazardous Chemicals*, men's sperm counts have more than halved over the last 40 years due to the "chemical cocktail" to which they are exposed.¹³ Exposure to toxic substances has also been linked to birth defects, cancer, obesity, attention deficit disorders and a range of other conditions.

What are regulators doing to tackle this risk?

PFAS production is a key regulatory, reputational, and financial risk for manufacturers and consumer goods companies. Regulatory requirements for PFAS are expected to increase, although there is an ongoing debate about whether the pace of regulation is fast enough or the restrictions sufficient to have the impact needed.

The EU Persistent Organic Pollutants Regulation restricts substances that are listed by the Stockholm Convention and the Aarhus Protocol, two international treaties aiming to restrict certain persistent organic pollutants, including PFOA and PFOS.¹⁴ At the beginning of 2023, two pieces of legislation came into force in the EU to limit human exposure to harmful amounts of PFAS in food and drinking water.¹⁵ In February, it also proposed other restrictions on PFAS substances.¹⁶ If adopted, this would result in a ban on the manufacture, use and placing on the EU market of around 10,000 kinds of PFAS.¹⁷ This would have global consequences, and there is already opposition from the chemical industry. The sector is pushing for a narrower definition, and arguing that not all PFAS should be regulated the same way.¹⁸

⁴ Our Current Understanding of the Human Health and Environmental Risks of PFAS | US EPA

⁵ CompTox Chemicals Dashboard (epa.gov)|New Report Calls for Expanded PFAS Testing for People With History of Elevated Exposure, Offers Advice for Clinical Treatment | National Academies

⁶ Locally caught fish are full of dangerous chemicals called PFAS | CNN

⁷ Locally caught fish are full of dangerous chemicals called PFAS | CNN

⁸ The new generation of 'forever chemicals' – toxicity, exposure, contamination and regulation | Environmental Working Group

⁹ PFAS: A guide to chemicals behind nonstick pans, cancer fears (usatoday.com)

¹⁰ NCDHHS: DPH: Epidemiology: OEE: GenX and other PFAS in the Cape Fear River Basin

¹¹ Persistent Organic Pollutants (POPs) Regulation in the EU: A Summary (compliancegate.com)

¹² PFAS Testing in the EU: Overview of Regulations | Measurlabs

¹³ Annex XV reporting format 040615 (europa.eu)

¹⁴ Chemical pollution has passed safe limit for humanity, say scientists | Pollution | The Guardian

¹⁵ The new generation of 'forever chemicals' – toxicity, exposure, contamination and regulation | Environmental Working Group

¹⁶ The-Investors-Guide-to-Hazardous-Chemicals-1.pdf (chemsec.org)



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In the UK, which is a signatory to the Stockholm Convention and Aarhus Protocol, the regulatory landscape for PFAS is fragmented. PFAS falls within the scope of UK REACH, the framework for managing the risks from chemical substances in Great Britain, but PFAS are not presently subject to any UK REACH restrictions imposing controls on their use.¹⁹ An April 2023 report set out in detail the extent to which forever chemicals are being used in the UK, and makes several recommendations including limiting PFAS in certain uses.²⁰

A PFAS-free initiative led by Fidra, a UK environmental charity working to reduce chemical and plastic pollution in oceans and the environment, has prompted several UK supermarkets to commit to removing PFAS from their own-brand food packaging.²¹ However some grocery chains continue to use PFAS in their food packaging and are yet to make a formal commitment.²²

US and Canadian regulators have increased their focus on PFAS as public concern has grown. The fact-based 2019 legal drama *Dark Waters* helped to raise awareness about the dangers of chemical contamination, bringing PFOA to wider attention in the US. In 2023 the EPA proposed a national primary drinking water regulation for PFOA and PFOS, plus four additional PFAS and their mixtures.²³ This is a positive start, but environmentalists and scientists say that more needs to be done. They advocate for the regulation of PFAS as a single class in drinking water and the environment, as well as a complete phase out of PFAS except for essential uses.²⁴ The Canadian government is considering regulating all PFAS, rather than specific chemicals, and in May 2023 released a draft "State of PFAS" report, inviting public comment.²⁵

In addition to regulation-related compliance risks, producers of persistent chemicals potentially face increased costs associated with reformulating products and modifying processes, which can have significant implications for company performance. But this is expected to generate opportunities to formulate safer chemicals and a reassessment of whether using PFAS is essential in every application.

Our engagement approach

EOS has been engaging on hazardous chemicals for over a decade. Recently this engagement has been in collaboration with the International Chemical Secretariat (ChemSec), an independent non-profit organisation that wants to see toxic and persistent chemicals replaced by safer alternatives.²⁶

In 2023, we joined the Investor Initiative on Hazardous Chemicals (IIHC), as one of 50 signatories representing more than US\$10tn in assets under management or advice.²⁷ The IIHC was formed primarily to encourage manufacturers through engagement to increase their transparency on hazardous chemicals and cease producing forever chemicals such as PFAS.

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The IIHC builds on action from 2022 when collaboratively we wrote to over 50 companies regarding their involvement in the manufacture of hazardous chemicals.^{28,29} The companies were targeted based on their ChemScore, a system administered by ChemSec that ranks the world's 50 largest chemical producers on their work to reduce their hazardous chemical footprint.³⁰

We are asking companies to improve their transparency around the chemicals they produce globally, including by disclosing any action taken to improve their ChemScore rankings. We also want them to set and disclose a time-bound commitment to phase out PFAS from production. In the first half of 2023 and in conjunction with IIHC signatories, we engaged with Bayer, DuPont de Nemours, Dow, Solvay, Sika, Shin-Etsu, and Umicore on their ChemScores, focusing on increased transparency, and eliminating PFAS and hazardous chemicals.

¹⁷ [Nothing lasts forever: Proposed ban of PFAS in the EU – Productwise \(cooley.com\)](#)

¹⁸ [EU proposal would ban 10,000 PFAS \(acs.org\)](#)

¹⁹ [PFAS: UK Regulatory Snapshot | Fieldfisher](#)

²⁰ [Regulator's report on "forever chemicals" published | HSE Media Centre](#)

²¹ [PFAS-free Food Packaging - is your supermarket taking action? \(pfasfree.org.uk\)](#)

²² [PFAS-free Food Packaging - is your supermarket taking action? \(pfasfree.org.uk\)](#)

²³ [Drinking Water Health Advisories for PFOA and PFOS | US EPA](#)

²⁴ [PFAS: A guide to chemicals behind nonstick pans, cancer fears \(usatoday.com\)](#)

²⁵ [Industry knew about risks of PFAS 'forever chemicals' for decades before push to restrict them, study says | CBC News](#)

²⁶ [About ChemSec](#)

²⁷ [Investors launch initiative to tackle chemical pollution crisis \(chemsec.org\)](#)

²⁸ [Investors with \\$8 trillion call for phase-out of dangerous "forever chemicals" – ChemSec](#)

²⁹ [Investors pressure top firms to halt production of toxic 'forever chemicals' | PFAS | The Guardian](#)

³⁰ [ChemScore \(chemsec.org\)](#)



CASE STUDY

3M



We have engaged with US conglomerate 3M on hazardous substance management. It was one of the first companies to make a commitment, announcing in December 2022 that it was exiting all PFAS-manufacturing and that it would work to discontinue the use of PFAS across its product portfolio by the end of 2025.

The company said it would facilitate an orderly transition for customers in meeting that commitment, intending to fulfil its current contractual obligations during the transition period. It has disclosed the financial impact from the decision. Annual sales of manufactured PFAS were estimated at approximately US\$1.3bn at the time of the announcement.

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3M will continue to innovate for new non-PFAS solutions for its customers and remains committed to ensuring that its products are safe for their intended use. Our engagement on PFAS and hazardous substances continues to be a priority focus for chemical sector companies.

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CASE STUDY

Umicore



We participated in a collaborative engagement with Belgium's Umicore on hazardous substance management. We were joined by four investors and the company's head of ESG. It was the first meeting for the new IIHC and followed our Q3 2022 letter to the company on the topic.

We reiterated IIHC's three requests to EU chemical companies, namely: increased transparency on the disclosure of hazardous substances; the phase out of persistent chemicals; and an overall improvement in the company's year-on-year ChemScore. The company had made a notable improvement in its 2022 ChemScore, boosting its ranking from seven out of 48 in 2020, to 16 out of 48 in 2022, and gaining a C-

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To improve its disclosure on hazardous substances, Umicore said that it had undertaken a gap analysis of the substances it uses and had discussed providing more transparency internally. The company added that it manufactures catalysts used in chemical processes and by disclosing the volume and use of these catalysts, it would reveal commercially sensitive information, a position other chemical companies have taken to limit disclosure.

We cited best practice disclosure examples and urged the company to review these. The company said that there were no PFAS in its end products, to the best of its current knowledge, although there were PFAS in some of the equipment it buys, and in some of its processes. Umicore is seeking more certainty on EU eco-labelling regulations and is looking to do more with recycled content, noting that there are limitations with respect to post- versus pre-consumer waste.

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