

2023: Year in Review of Chemical Pollution

January 2024

This briefing is on behalf of nature coalition Wildlife and Countryside Link ([Link](#)) and provides a birds-eye review of the major chemical issues in 2023.

Executive summary

During 2023, the issue of chemical pollution gained political attention and media traction, rising up the agenda in national, local and trade media. Environmental organisations have also become increasingly concerned with the issue, with mounting campaigning on chemical pollution within the sector. In stark contrast, government policy developments were limited. The UK Chemicals Strategy and National Action Plan for the Sustainable Use of Pesticides - both promised in 2018 - were further delayed last year and have yet to appear, there were limited proposals to tackle PFAS pollution and no new chemical restrictions were proposed, with two proposed in 2021 still to be adopted in legislation.

Currently, not a single UK river is in good chemical status and many of the chemicals found in our fresh and coastal waters are persistent, bioaccumulative and toxic. Research has shown that their presence has detrimental effects on aquatic life, including on growth and reproduction. Several of these toxic chemicals bioaccumulate, building up at greater concentrations in animals higher up the food chain, such as otters, whales and dolphins, and birds of prey.

Freshwater and marine recreation has never been more popular. However, swimmers, paddlers and other water users are all potentially exposed to hazardous chemicals, as well as sewage, while the potential for contamination of fish and shellfish for human consumption is also concerning.

Hazardous chemicals also continue to threaten UK terrestrial landscapes. Some are retained in sewage sludge applied to agricultural land, with concerns that this raises implications for human health. Repeat emergency authorisations of the banned pesticide Thiamethoxam for use on sugar beet farms, and the approved use of bee-killing pesticides in veterinary medicines (despite them being banned for use on crops) continue to put our pollinators and aquatic wildlife at risk.

The gap in health and environmental chemical protections between the UK and other countries continues to grow, despite public concerns about river and ocean pollution in particular. Stronger regulatory action is needed to protect our struggling rivers, seas, soils, pollinators, and human health, and to address interrelated biodiversity and climate emergency challenges.

Hazardous Chemicals

PFAS

A worrying type of chemical pollution comes from per- and poly-fluorinated alkyl substances (PFAS). PFAS (“forever chemicals”) include thousands of industrial chemicals found in everyday products, from Teflon frying pans to bike oil and even our toiletries, including toilet roll. They pose a serious pollution risk and have contaminated the planet and its inhabitants.

PFAS were a particularly hot topic for media, environmentalists and parliamentarians in 2023, with high-profile coverage on research from a wide range of expert organisations, from Watershed Investigations to the Royal Society of Chemistry.

2023 [analysis](#) of Environment Agency data found that 81 of the 105 English river sites where PFAS substances were detected contained levels that would not meet the tougher proposed EU environmental quality standard (EQS), with some breaching it by 10 or 20 times. PFAS (as well as numerous other contaminants) are also found in sewage sludge, which can be used as an agricultural fertiliser. Link members welcomed the December 2023 [EFRA report to its inquiry into soil health](#), which highlighted the need to protect agricultural soils from contaminants and address food security, biodiversity and climate emergency challenges.

Further research revealed that levels of PFOS, or perfluorooctane sulfonic acid (one of 10,000 different types of PFAS) in freshwater fish in England far [exceed](#) safe levels in wildlife (at up to 1000 times higher than proposed thresholds). If just one portion of these freshwater fish were eaten per month, a person would exceed the safe threshold of PFOS for consumption over a year, based on EU proposed standards.

Despite PFOS restrictions for over a decade, other forever chemicals with similar or heightened toxicity remain widely used and continue to accumulate in our environment. Currently, the UK's [drinking water standards](#) for PFAS are much more lenient than those of the EU and USA. Concern over PFAS contamination of drinking water has been covered multiple times in the [news](#) last year and raised in Parliament through [written questions](#).

In 2023, the Government published recommendations in its Regulatory Management Option Analysis (RMOA) on PFAS, which included a grouping approach. However, the RMOA [did not go far enough](#), as recommendations only applied to a narrow range of PFAS for a limited range of uses. Link and members set out a joint [PFAS Action Plan](#) in December 2023, calling for restrictions on PFAS as a group and actions that will deliver a PFAS-free economy by 2035.

Flame Retardants

Research in 2023 calculated that flame retardants have been found in more than [100 wildlife species](#) across the world, and these chemicals are known to contribute to population declines in several species. Pollution from older, banned flame retardants is still being detected, demonstrating their sustained impact, alongside widespread contamination from newer chemicals on the market. Continued concerns about the potential human health impacts of flame retardants were also raised in research, with [one study](#) revealing 25 types of toxic flame retardants in human breast milk.

The Environmental Audit Committee challenged the UK government on its [track record](#) in reducing the use of hazardous flame retardants in furniture in December, calling for regulatory reform. There was also widespread support from environmental organisations on sustainable fire safety. Green groups, including [Fidra](#), responded to the proposed [Furniture and Furnishings Fire Safety Regulations](#) consultation and called for better UK fire safety requirements through more realistic furniture flammability testing methods and alternative designs that promote a move away from the current reliance on chemical flame retardants. Further action is supported by industry, with manufacturers, retailers, recyclers and local authorities [supporting calls for changes in the fire safety regulations](#) to reduce the use of harmful chemicals and enable chemical transparency through supply chains thus supporting a safe circular economy.

Bisphenols

Bisphenols are “everywhere chemicals”, used in coatings and plastics including food packaging. Bisphenol A is found in [79% of foods](#) in the US according to research published this month, with [data](#) demonstrating exposure to bisphenol A (BPA) is also widespread in Europe. The ability of BPA to interfere with the [hormone system](#) was discovered in 1938, and its detrimental impacts on [soil microbiology](#), human health and wildlife are well documented.

The UK REACH work programme for April 2022/March 23 committed to a ‘Regulatory Management Options Analysis’ of [bisphenols in thermal paper](#). While Link welcomes the focus on bisphenols as a group and the ban of [BPA](#) in products like thermal paper and baby bottles, we are concerned that BPA has been increasingly substituted with similarly harmful bisphenols. Additionally, the RMOA on bisphenol in thermal paper has still not been published and is dwarfed by proposed regulatory action in the pipeline at the EU level.

There is evidence that exposure to BPA alternatives is increasing, an indication of [‘regrettable substitution’](#). In 2024, the UK has an opportunity to adopt a grouping approach to banning all bisphenols. The EU is making progress on these chemicals, adding a common substitute bisphenol S to the SVHC list this year and is now [pursuing a ban on BPA in food contact materials](#). Banning specific bisphenols for specific uses in the UK will be insufficient to deal with the severity of the risk to health and the environment from the widespread pollution from this group of harmful chemicals.

UK REACH

The UK [continued to fall behind the EU](#) in 2023 regarding its protections for [health and the environment](#) from harmful chemicals, with media covering the growing chemical protection gap in the UK.

The absence of a work programme for the 12 months covering April 2023 to March 2024 means there has been a lack of clarity and transparency about UK regulatory priorities over the past year. Due to a lack of capacity (of staff and chemical safety data) and the deregulatory focus of UK REACH, not a single restriction (or ban) on a harmful substance has been adopted since the UK left EU REACH in 2021, other than PFHxS following its ban internationally. Only two have been initiated, on harmful substances used in tattoo inks and lead in ammunition, but have still not been enacted in the three years since leaving EU REACH. During that period, the EU adopted 8 restrictions or bans on harmful substances in legislation and initiated a further 17.

It is positive that the UK’s [proposed restriction on substances used in tattoo ink](#) and permanent make-up mirrors much of the one implemented in the EU. However, the options going through their final legislative stages remain less protective than the EU restriction. Other restrictions going through UK REACH on [lead in ammunition](#) must be as protective of human health and the environment as possible, across all types of ammunition mentioned in the dossier. Falling behind EU restrictions risks the dumping of unsafe products on the GB market, which no longer meet higher EU standards, resulting in less protection for people and nature from harmful substances compared to the EU.

In December 2023, Link member CHEM Trust set out how the UK could meet, or exceed, chemical protection standards set by the EU through a [Swiss-style regulatory system](#). This system would provide a safer and more sustainable approach to regulating chemicals post-Brexit than the current one.

A new model for registration data (the Alternative Transitional Registration model or 'ATRM') was also announced in late 2023. Link and members are concerned this model [prioritises](#) cost savings to the chemicals industry over health and environmental protection.

It was also concerning that the UK decided not to mirror new EU classifications for better identifying known and suspected endocrine-disrupting chemicals (EDCs) unless adopted globally, which could take many years. This decision will have a knock-on effect on the level of protection for UK consumers and wildlife from EDCs. In contrast, the EU [plans](#) to ban substances identified as EDCs from toys paving the way for better protection of children, who are particularly vulnerable to adverse impacts from EDCs.

Chemical Cocktails

Monitoring of UK freshwaters shows that aquatic organisms are exposed to a mixture of hazardous substances in their natural environment. Multiple chemical exposures can combine, reinforcing and augmenting their toxicity and, therefore, increasing the negative impacts on aquatic life. Due to chemical mixtures (or "cocktails"), the actual risks to aquatic environments may be underestimated, particularly in the absence of [annual water quality monitoring](#) and [rigorous systems of testing](#).

[Recent analysis](#) and [reporting](#) of Environment Agency data by the Rivers Trust and Link quantified the prevalence of five chemical cocktails known to be toxic to aquatic life. Across England, at least one of these cocktails was found in 814 river and lake sites (out of 1,006 sites with data – 81 per cent) and in 805 groundwater sites (out of 1,086 sites with data – 74 per cent). Around 54 per cent of these sites contained three or more of the five harmful chemical cocktails investigated. Moreover, up to 101 chemicals were identified in river samples. There was near blanket media coverage of this analysis, reflecting chemical pollution's increased media traction.

Many of these chemicals emanate from [runoff](#), [pharmaceutical pollution](#), pesticide applications and mixtures of hazardous chemicals that pose significant risks to human health and the environment. Link has [briefed](#) on chemical cocktails, outlining the key issues and asks for reducing the toxic burden on our rivers.

Pesticides

Pesticides build up in river ecosystems and soils and can be highly toxic to wildlife like bees, as well as humans. [Research](#) by the Rivers Trust and Link demonstrated that at least one out of five neonicotinoid pesticides examined (four of which are banned in the EU) were found in more than one in ten English river sites tested by the Environment Agency. Against the [advice](#) of its Expert Committee on Pesticides, the Government continues to [consider](#) emergency derogations for a bee-killing pesticide on sugar beet crops. Multiple environmental groups are [campaigning](#) against a 2024 authorisation.

It is also concerning that pesticides used in veterinary medicines are leaching into the environment. Further 2023 research revealed that three of [five](#) veterinary insecticides that are banned for use in agriculture are [found](#) in English rivers in concentrations that exceed accepted safe limits for wildlife. In the EU, [progress](#) has been made to include several veterinary medicines in updates to the list of priority substances for surface and groundwater and their associated thresholds.

Continued use of PFAS in pesticides also contributes to wider health and environmental concerns of allowing direct application of these harmful and persistent chemicals to UK soil and crops.

Since leaving the EU, the UK has not replaced the £80 million/yr work that was previously undertaken by the European Food Standards Authority. As a result, pesticides being tabled for consideration in the UK are not subject to a peer review by a committee of independent scientists. Equally, there is no public summary of the toxicological evidence produced before a decision is taken. Due to this lack of transparency, as well as suspended reviews and general inactivity, there have been only 5 public consultations on pesticide use in the UK since Brexit, compared with 277 pesticide consultations in the EU. UK pesticide regulation therefore fails to satisfy the public participation in decision-making requirements of the Aarhus Convention, and the public can have little confidence that their interests in a healthy environment are being properly considered.

The pesticide “pre-approval” process has not been amended to close the loophole that allows bee-harming pesticides to be approved. The process also fails to examine the risks of cocktail effects or co-formulants (efficiency/usability elements of pesticides mixtures, e.g., anti-foaming agents) in pesticides. For instance, alcohol ethoxylates are widely used in pesticides, and are known to [be harmful to bees](#), but they are not treated as active ingredients and are therefore not subject to environmental safety tests, nor are they listed as ingredients on pesticide products.

Taking Action in 2024

In 2024, the Government must show leadership on chemicals and take ambitious measures to address the threat that chemicals pose to humans and the environment. The current systems and levels of resources are not delivering the protections needed, meaning the Government must adopt a more pragmatic approach, such as echoing protections from other nations’ legislation (e.g., the PFAS in food packaging ban in Denmark and EU restriction decisions).

Link has been vocal about [our asks on chemicals for the next General Election](#). In the meantime, we are calling for Defra to commit to the following:

- **Deliver an effective and ambitious UK Chemicals Strategy:** *The Chemical strategy is not only severely delayed, but it is also not being transparently created*, with no public consultation. There are also concerns that the strategy will be less ambitious than that of other countries. 2024 is an opportunity to deliver an ambitious strategy, with transparent delivery timelines and engagement on implementation. See our [joint letter](#), and [12 key asks for the UK Chemicals Strategy](#), which include:
 - **Phasing out known toxic chemicals** (such as **bisphenols, flame retardants and PFAS**) from all but vital uses, including adopting the NGO action plan to [achieve a PFAS-free economy by 2035](#).
 - **Regulating similarly structured chemicals in groups**, to prevent replacing damaging chemicals with others.
 - **Adopting specific measures to address the chemical cocktail effect:** including [assessments](#) of possible interactions before any new chemical is allowed on the market.
 - **Strengthening UK REACH:** The Government must put human and environmental health first in the new model for registering chemicals in the UK and to ensure, as a minimum, it aligns with the EU’s REACH and related chemical laws and standards.

- **Action on pesticide use, including:**
 - **Publishing and delivering on the National Action Plan for the Sustainable Use of Pesticides**, now five years late despite repeated reassurances of its imminent publication.
 - **Phasing out damaging pesticides and reducing overall use of pesticides:** Setting criteria and national targets to phase out the use and application of highly hazardous pesticides and other damaging and persistent classes of pesticides. National reduction targets should align with international targets (Target 7 of the Kunming-Montreal Global Biodiversity Framework) to ensure the UK plays its role in reducing global pollution risks.
 - **Phasing out the use of pesticides in urban areas:** Committing to a phase out, and ultimately a ban on, the use and application of amenity pesticides in urban areas and providing support for local authorities to meet this goal.
 - **Ratcheting up Environmental Land Management and agricultural regulation on pesticides:** Establishing an ambitious regulatory baseline, support and incentives for sustainable and targeted pesticide use, which will benefit both the farm business, society and the environment.
 - **Banning insecticides that are already banned for crops from veterinary medicine use.**
 - **Ending Thiamethoxam emergency authorisations** and emergency authorisations of other banned pesticides.
 - **Prohibiting the use of PFAS in pesticide formulations.**
 - **Strengthening regulatory coordination:** Regulators – including the Health and Safety Executive, the Department for Health and Social Care, and other health bodies – urgently need to improve the ‘pre-approval’ pesticide tests, scale up coordination to improve public engagement and consultation and more effectively manage and reduce the impacts of pesticides on human health and the environment.

- **Provide more rigorous and better-funded monitoring**, to ensure chemical pollution is effectively monitored, reported and assessed in water, soil and air, including (for pesticides) an alert system integrated with PEWS.

- Develop a work programme to incentivise **coordinated action across the pharmaceutical, healthcare and environmental sectors to reduce contamination of waste waters and sewage**. This would ultimately protect freshwaters, soils and the wider environment from the potential impacts (e.g., antimicrobial resistance) of pollution from pharmaceutical and healthcare products, including:
 - Developing **measures to reduce the loss of pharmaceutical substances into the environment** as part of a cross-industry strategy to address the use of pharmaceuticals and remove substances through wastewater treatment.
 - Delivering **consumer education** on the correct usage and disposal of pharmaceutical products and **disposal schemes**.
 - Delivering **policy and regulation** on the availability of the most prevalent pharmaceuticals with the worst environmental impact.
 - Enacting measures to **prescribe less environmentally damaging drugs** where the option exists.
 - Recommending scientifically proven **alternate treatments, such as green and blue social prescribing**, where appropriate.

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.

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The following Link members have inputted into this briefing and support stronger action on chemicals in 2024:

Angling Trust

Buglife

CHEM Trust

Fidra

Rivers Trust

RSPB

WDC, Whale and Dolphin Conservation

The following Link partners have inputted into this briefing and support stronger action on chemicals in 2024:

Pesticide Action Network UK

Pesticide Collaboration