



A new independent initiative to drive societal-wide change

The [Pharma Pollution Hub](#) is a new think tank based in the UK that is dedicated to finding solutions to reduce the environmental impacts of pharmaceutical pollution through a systems-based, social innovation approach. As an independent body, it brings together stakeholders from across industry, government, academia and the civil sector, to collectively understand the broader social, economic, cultural and political drivers of pharmaceutical usage, and co-develop strategies for meaningful and pragmatic societal-wide change.

Finding solutions: the challenges

Pharmaceutical pollution is receiving increasing attention from international (e.g. [United Nations Environment Programme](#), [EU Pharmaceutical Strategy](#)) bodies, particularly as the Planetary Health Boundary that encompasses pharmaceutical pollutants (the “Novel entities” category) is [recognised as already being substantially exceeded](#). This issue is also increasingly entering discussions in the broader societal domain as global environmental sustainability efforts expand beyond carbon to address wider environmental criteria including chemical pollution and sustainable water usage. However, there are considerable challenges in finding solutions.

The main route by which pharmaceuticals used in human health enter the environment is through community wastewater, since [up to 90%](#) of the medicines consumed and their metabolites are excreted, and many are not completely removed by wastewater treatment. Moreover, [recent studies](#) show that a large proportion of unused or expired drugs are inappropriately disposed into household waste instead of being returned to pharmacies. Pharmaceuticals also enter our waterways from diffuse sources (such as septic tanks and leaching from landfill sites). Neither diffuse nor point sources are currently well-monitored.

As well as the lack of comprehensive data on the types and levels of pharmaceuticals found in the environment, defining their relative risks is highly challenging due to the huge diversity of pharmaceuticals being used, the different formulations available for each, of the variability in removal efficacies of different wastewater treatment systems, and the lack of understanding of their fate in the receiving environments. Nevertheless, there is [a growing body of ecotoxicological evidence](#) illustrating the potential environmental risks associated with various human pharmaceuticals, in addition to [known risks associated with antimicrobial pollutants driving global levels of antimicrobial resistance](#).

Perhaps one of the greatest challenges in reducing the environmental impacts of pharmaceutical usage is the diverse interests of stakeholders across the life cycle. The short-term health and economic benefits of pharmaceuticals are enormous and, in the context of so much uncertainty on environmental levels and impacts, it has previously proven difficult to develop, prioritise and implement meaningful solutions to address the longer-term environmental risks. However, with increasing public and political support, and the drive for sustainable finance and healthcare systems that address environmental issues beyond carbon, the Pharma Pollution Hub believes that there is sufficient societal will and need for change.

A systems thinking approach to societal evolution

Research has shown that complex societal issues like pharmaceutical pollution (so-called “wicked” problems) are deeply rooted in our societal structures and processes, and therefore meaningful change is unlikely to be achieved without a co-ordinated approach that considers and addresses the underlying social systems. Therefore, to find solutions, we need to first understand our societal pharmaceutical systems, and then work with all the stakeholders involved to co-develop strategies that will enable the whole system to collectively evolve, or transition, towards greater sustainability.

The approach taken by the Hub considers both the breadth and depth of the system by applying the [systems thinking Iceberg Model](#) across [five working groups](#): i) population health, ii) pharmaceutical design, manufacture and licensing, iii) healthcare decision making, iv) pharmacy sales, use and disposal, and v) environmental monitoring and management. This allows the identification of leverage points for change across the whole system, including operational structures, sectoral goals and wider societal mindsets.

What have we been doing so far?

The Hub’s work to date has been supported by seed funding (from the University of Exeter, the UK Medical Research Council and the Wellcome Trust), to test the feasibility of this approach. Stakeholder engagement is key and therefore the Hub has brought together a [Pharma Pollution Consortium](#) of 70 thought leaders, to collectively explore the system underlying pharmaceutical pollution from UK healthcare. Building upon [UK’s healthcare pharmaceutical system map](#), a UK Roadmap for Action is being developed to be finished later this year.

As well as coordinating the development of strategies for action, the Hub also hopes to accelerate change through harnessing the resources and expertise of the academic community, and facilitate transdisciplinary discussions on particularly challenging topics. It's first event was a workshop on [Integrating Pharmaceutical Pollution into healthcare decision making](#) (particularly life cycle analyses), held in September 2023, with representation from TransPharm members Ad Ragas, Caroline Moermond and Rodrigo Vidaurre. It also recently ran an open discussion on Integrating Pharmaceutical Pollution into Sustainable Finance Initiatives (report to be available on the website soon).

Moving forward as a charity: driving change at all levels of society

The next goal is to take the Hub forward as an independent charity, with the aim to be an open and inclusive forum for driving change across the system, from the top-down (e.g. with policy makers), the bottom-up (e.g. through public and media engagement) and everywhere in between (e.g. through stakeholder workshops and specific research projects). This will of course need funding. Once the charity is up and running the Hub will be looking to expand their Consortium to include as many organisations from the pharmaceutical life cycle as possible. To get the latest updates, you can check their [website](#) and social media:

Email: info@pharmapollution.org - **X:** @pharmapollution - **LinkedIn:** @Pharma Pollution Hub