



EurEau position paper on PFAS in the urban water cycle

Summary

PFAS is a large group of very persistent chemicals that tend to accumulate in the environment and in human and animal bodies. They therefore pose a serious threat to the environment and human health. The emission of this group of chemicals needs to be drastically reduced, using the principles of control-at-source and polluter-pays. An EU-level ban on all non-essential use of PFAS is therefore necessary.

1. What are PFAS and why are they used?

PFAS - short for per- and polyfluoroalkyl substances - is a chemical family consisting of almost 5,000 individual substances. They are a group of widely used, man-made, persistent chemicals that accumulate over time in humans and in the environment.

In manufacturing, PFAS are favoured for their durability and useful properties such as non-stick, water repellence and anti-grease on many domestic products, including skin creams and cosmetics, car and floor polish, rinse aid for dishwashers, textile and fabric treatments, food packaging and microwave popcorn bags, cupcake forms, frying pans, outdoor gear and shoes. They similarly have very many and widespread uses in industry, and notably in firefighting foam.

The persistent nature of these substances means that they are very resistant to biodegradation and they are now ubiquitous in the environment. Concerns raised regarding the most popular (PFOS* and PFOA**) led to a voluntary phase-out of PFOS by the largest producer in 2001; nonetheless its widespread use in long-life domestic products, particularly carpets and furniture, means that it represents a major legacy issue to be managed.

2. Why is the water sector concerned about PFAS?

PFAS either are, or degrade to, very persistent chemicals that accumulate in humans, animals and the environment and may cause adverse effects at elevated concentrations.

The European Food Safety Agency (EFSA) recently launched an open consultation (24 February 2020) on the draft scientific opinion on the risks to human health related to the presence of PFAS in food. EFSA proposes a stricter tolerable weekly intake (TWI) of 8ng/kg body weight per week for the sum of four PFASs (PFOA, PFNA, PFHxS and PFOS). EFSA concludes that parts of the European population exceed this TWI.

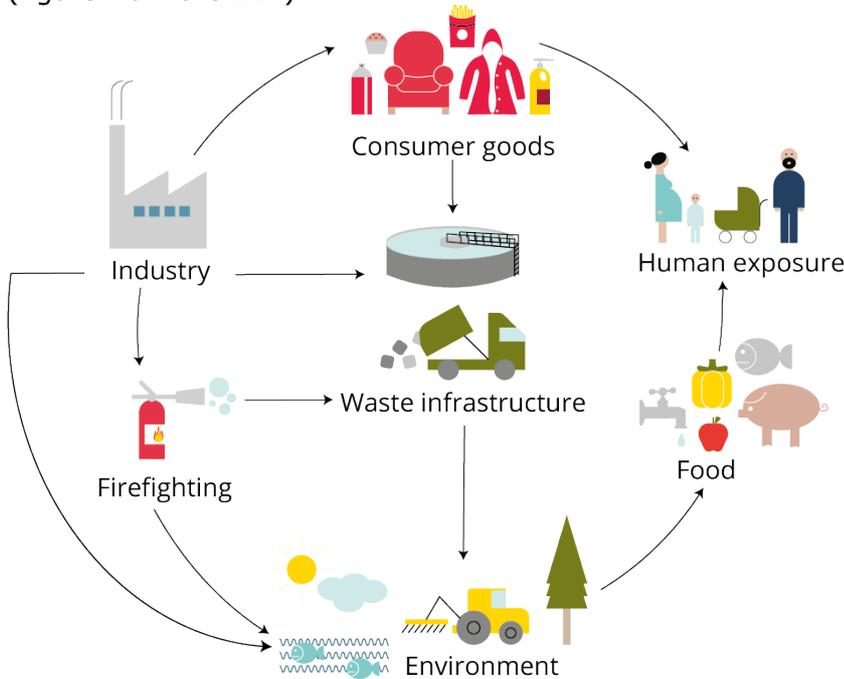
Read more [here](#).



Quantification of the importance of the different routes of human and environmental exposure is lacking but the diagram below illustrates some simple pathways.

Typical PFAS exposure pathways

(figure from the [EEA](#))¹



There are well-documented instances of localised groundwater/drinking water contamination related to specific producers/users/disposals, allied to reported health impacts, but it is clear that small concentrations of PFAS are ubiquitous in the environment and most humans. Their presence in many domestic and food items will present the largest potential source of exposure in most cases.

Whilst the water sector does not use or generate PFAS, unless PFAS are specifically removed by water treatment, their presence in the water environment, (including source waters) and the use of modern analytical capability will mean that they will be detectable in potable water albeit in small quantities.

Equally, the waste water sector will be a conduit that conveys them from one medium to another, and notably from domestic and industrial premises to the environment. This is because PFAS are not amenable to conventional waste water treatment technologies; any apparent benefit of passage through urban waste water treatment is likely to be simply the separation of PFAS from the aqueous phase into sewage solids.

¹* Perfluorooctane sulphonate; **Perfluorooctanoic acid



3. PFAS - Regulatory controls and restrictions

At EU level, only a few of the nearly 5,000 PFAS are restricted today. PFOS is restricted under the EU POPs Regulation (Persistent Organic Pollutants Regulation). PFOA and its precursors are currently restricted under the REACH Regulation, including their presence in products made or imported into the EU. This will soon be replaced by a new restriction under the POPs Regulation, which will have more limited derogations, following a decision taken at the Stockholm Convention.

A number of other PFAS are on the REACH list of Substances of Very High Concern (SVHCs). In June 2019, the PFAS GenX, was the first chemical added to the SVHC list on the basis of its persistent, mobile and toxic properties posing a threat to drinking water and the environment.

These restrictions mean that the concentrations of the most common, studied and regulated PFAS - PFOA and PFOS - are decreasing, whilst concentrations of more 'novel' PFAS may be increasing.

4. Control-at-source must be the guiding principle

While the substance-specific approach followed so far by the EU means that only very few PFAS are regulated at the source, stringent end-of-pipe thresholds were set to protect the health of water consumers. The revised EU Drinking Water Directive (DWD) includes the following requirements for a maximum amount of PFAS in the drinking water: 0,5 µg/litre for PFAS total or 0,1 µg/litre for the sum of 20 PFAS.

EurEau fully supports the need to limit exposure of consumers to PFAS. It is however unacceptable, that these thresholds are set at the end of the exposure pathways, while the use of many of the substances covered is not regulated at the source.

The thresholds in the DWD will ensure that human exposure via drinking water is limited. At the same time, we want to stress that PFAS are a challenge for drinking water operators. The impact assessment of the DWD does not take into account which technologies will have to be applied to reach the parametric values nor the associated costs that consumers will have to bear through their water bills.

Water services may have to treat water through the energy-intensive reverse osmosis, since it is the only technology capable of treating some short-chain PFAS and ensure compliance with the proposed parametric value.

This will in turn entail doubling the costs of water treatment, hampering the affordability and sustainability of water services without providing additional benefits for human health since other paths of exposure are not regulated. As the WHO remarks², "drinking water is not the only source" of exposure and if these substances are not controlled at the source (at the level of the factory emitting them) citizens will continue to be exposed through other paths (food for instance). "WHO is aware that new PFCs are under development but these should be prevented from reaching the environment under other

² https://ec.europa.eu/environment/water/waterdrink/pdf/20171215_EC_project_report_final_corrected.pdf.



legislation for controlling such ingredients and breakdown products” (page 88).

EurEau estimates that reverse osmosis will make the price of water treatment rise by between €0.5 and €1 per cubic metre. For an average household consuming around 200 m³ per year, the water bill will increase between €100 and €200 per year.

This means that the Polluter Pays Principle will be replaced by the Consumer Pays Principle. In fact, these substances should be controlled or banned at the source, before entering the water cycle, and the costs should be borne by the polluters.

There is a very stringent environmental quality standard (“EQS”) established for PFOS which is also a designated ‘priority hazardous substance’ and hence allied to an aim to eventually cease all emissions. Studies from the UK indicate that the EQS is routinely exceeded in many rivers, and that this is the case even upstream of waste water discharges. This suggests that the application of treatment obligations at waste water treatment plants – which would require novel and very expensive treatment technologies – is unlikely to be sufficient to address concerns of environmental exposure.

End-of-pipe control is not likely to be practicable or affordable, and if control needs to be exerted, the correct intervention is at source.

5. The EU must take bold action now

Due to the large number of PFAS chemicals, a **substance-by-substance risk assessment and management approach is not the way forward** to efficiently prevent risk to the environment and human health from a single PFAS or mixtures of them. Taking **precautionary risk management actions for groups of chemicals** and promoting the use of chemicals that are ‘safe-and-circular-by-design’ is the only viable way to limit future pollution. The Netherlands announced at the December 2019 Environment Council the intention to prepare a comprehensive proposal to restrict all uses of and products with PFAS except where essential. The competent authorities in Denmark, Germany, Sweden and Norway, and the ECHA, have indicated their willingness to cooperate.

EurEau supports this initiative and calls on the European Commission to present an action plan announcing the swift **ban of all non-essential use of PFAS**. With this in mind, EurEau has recently co-signed a [declaration](#) to call to end the use of PFAS chemicals.

Furthermore, EurEau insists on the **application of the Polluter Pays Principle**, as enshrined in the TFEU article 191.2. Whenever drinking water or waste water operators need to take specific action to prevent the exposure of water consumers and the aquatic environment to PFAS, producers should cover the cost through extended producer responsibility schemes.



The text and facts are mainly based on the following sources:

<https://www.eea.europa.eu/themes/human/chemicals/emerging-chemical-risks-in-europe>

<http://norden.diva-portal.org/smash/get/diva2:1295959/FULLTEXT01.pdf>

<https://norden.diva-portal.org/smash/get/diva2:1118439/FULLTEXT01.pdf>

<https://chemsec.org/the-netherlands-has-had-enough-wants-to-restrict-all-pfas-chemicals/>

Read also:

EurEau position paper: Addressing micropollutants: a holistic approach

<http://www.eureau.org/resources/position-papers/3828-the-holistic-approach-to-addressing-micropollutants-2019-update-of-source-control/file>.

EurEau briefing note: Moving Forward on PMT and vPvM Substances

<http://www.eureau.org/resources/briefing-notes/3934-briefing-note-on-moving-forward-on-pmt-and-ppvmsubstances/file>.

About EurEau

EurEau is the voice of Europe's water sector. We represent drinking water and waste water operators from 29 countries in Europe, from both the private and the public sectors.

Our members are 34 national associations of water services. At EurEau, we bring national water professionals together to agree European water sector positions regarding the management of water quality, resource efficiency and access to water for Europe's citizens and businesses. The EurEau secretariat is based in Brussels.



With a direct employment of around 476,000 people, the European water sector makes a significant contribution to the European economy.