

Perfluorinated Compounds (PFCs) and PFAS (Per-and Polyfluorinated Substances)



Background:

There is a family of chemicals called perfluorinated compounds (PFCs), which include specific variants such as PFAS (Per-and polyfluoroalkyl substances), PFOA (perfluorooctanoic acid), and PFOS (perfluorooctane sulphonate). PFAS are used in a wide variety of consumer products and industrial applications because of their unique chemical and physical properties, including oil and water repellence, temperature and chemical resistance, and surfactant properties.

PFAS have received a lot of media attention recently due to being found in drinking water and in the natural environment. PFAS are a large group of thousands of synthetic chemicals that are used throughout society and accumulate over time in humans and in the environment. PFAS substances are being classed as 'forever chemicals' because of their persistence in the environment. Measures to reduce PFAS contamination are in place, with further measures being investigated globally.

Current Position:

The vast majority (99%+) of paper and packaging manufactured by CPI Member Companies do not intentionally add PFAS substances.

There are a few minority speciality applications which use PFAS, where the PFAS provide either water or grease resistance which are needed for the products to deliver their technical requirements. Both companies involved are actively looking for replacement processes, but suitable alternatives are proving difficult to identify. However, it is worth noting that these two products are extremely unlikely to be present in recycling streams and so are unlikely to be a source of PFAS in recycled product or packaging.

The Environment Agency funded a sampling regime that involved five CPI Members including one tissue

mill, a recycled fibre mill, a graphical paper mill, and two specialty paper mills. A total of 65 samples were taken from the paper mills between November and December 2022 representing a variety of operational scales, type of input paper, and geographic locations in England. The samples included input paper, crumb, input water, effluent, and output product samples in order to provide data on both the inputs and outputs of the processes. A copy is available upon request.

The key message is that the sector is not likely to be a significant source of PFAS in the environment. UK mills look like being a much smaller potential source than reported in other literature.

- All 65 samples had concentrations of PFAS well below 1 mg/kg, including PFOS, PFOA, and PFHxS which are listed as persistent organic pollutants. When identified above the limit of detection PFOS, PFOA and PFHxS were <0.001 mg/kg.
- PFOS, PFOA and PFHxS were not identified above the limit of detection in any of the 15 input paper samples analysed. However, those compounds were found to be present in several input water samples, albeit at very low concentrations. The dataset suggests that PFOS, PFOA and PFHxS are not present in a wide range of input paper types, including food packaging and coffee cups.
- Papers mills are a discharge point for a small amount of PFOS, PFOA and PFHxS. Based on this dataset, the PFOS, PFOA and PFHxS originated in the input water rather than the recycled wastepaper stream and may be concentrated into effluent and crumb during the process.
- Polyfluoroalkyl phosphate esters (PAPs) were identified in several samples. Further analysis maybe required, particularly for 10:2 diPAP, to quantify the concentrations due to the lack of available standards at the time of analysis.

CPI Position:

Our position is clear that, in the vast majority of applications, the UK Paper and Board Industry has long since moved away from using PFCs/PFASs. The key message from the PFAS project is that the sector is not a significant source of PFAS in the environment.

The vast majority (99%+) of paper packaging manufactured by CPI Member Companies does not use PFCs/PFAS. The UK Paper and Board Industry has a long and successful history in the manufacture and supply of safe materials for use in the food industry in a wide range of applications.

We support the [Industry Guideline for the Compliance of Paper & Board Materials and Articles for Food Contact](#) which provides a methodology for establishing the suitability of Paper and Board for specific food contact applications.

The UK Paper and Board Industry continues to work closely with government, both at national and European levels, and with other regulators, particularly the UK Food Standards Agency, to ensure the necessary levels of consumer protection.

Further Information

Further information is available from Jo Scott, Director of Sustainability jscott@paper.org.uk.

Confederation of Paper Industries

- The Confederation of Paper Industries (CPI) is the leading trade association representing the UK's Paper-based Industries, comprising paper and board manufacturers and converters, corrugated packaging producers, makers of soft tissue papers, and collectors of paper for recycling.
- CPI represents an industry with an aggregate annual turnover of £11.5 billion, 56,000 employees, which supports a further 93,000 jobs in the wider economy.
- For facts on the UK's Paper-based Industries please visit: www.paper.org.uk.

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