

Table 1: Chemical cocktails identified in English river sites

Chemicals	What are these chemicals?	Proven impact	TOTAL number of site detections	Number of river and lake site detections	Number of ground-water site detections
perfluorooctane sulfonate (PFOS) + perfluorooctanoate (PFOA)	PFOS and PFOA belong to a large family of over 10,000 substances known as PFAS. PFOS is banned in the UK, and PFOA has mostly been phased out by industry, but both continue to persist and be very prevalent in our waters.	Shown to inhibit connective tissue cell activity in amphibians in Hoover et al study 2019. And to negatively impact Zebrafish embryo growth in Ding et al study 2012.	1113	811	302
perfluorooctane sulfonate (PFOS) + 2,4-D	PFOS belongs to the PFAS family (as detailed above) 2, 4-D is a pesticide which was widely used to kill broad leaf weeds. It is now banned in the UK.	Mixture proven toxic to <i>Anabaena</i> , a nitrogen-fixing bacteria, helpful for plant growth, in Rodea-Palomares et al study 2012.	417	314	103
perfluorooctane sulfonate (PFOS) + Perfluorobutane sulfonic acid (PFBS)	PFOS(banned) and PFBS belong to the PFAS family. PFBS - while very similar to PFOS - is still allowed for use in a range of household and consumer items e.g. cleaning products.	Inhibits growth of algae and damages its ability to perform photosynthesis. Shown in Zhang et al study 2023.	885	113	772
Ibuprofen + perfluorooctanoate (PFOA)	PFOA belongs to the PFAS family Ibuprofen is an anti-inflammatory pain relief medication, widely sold and used in the UK.	Mixtures of PFOA and ibuprofen inhibited the growth of the microalga <i>P. subcapitata</i> in Gonzalez-Naranjo & Boltes study 2014.	81	81	0
perfluorooctane sulfonate (PFOS) + Perfluorohexane sulfonate (PFHxS)	PFOS and PFHxS belong to the PFAS family, both are banned in the UK.	Shown reduced survival in midges McCarthy et al 2021	881	108	773