

PFAS Types & Limits

Exeter Fixed Soil Treatment Facility

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1. TYPES AND LIMITS FOR PFAS COMPOUNDS

- There are thousands of fluorinated organic structures that are collectively referred to as PFAS; a total of 4,730 PFAS were recently assessed to be in worldwide use (OECD 2018).
- Approximately 100 individual PFAS were identified by the Environment Agency in 2021 as potentially supplied to the UK market in amounts greater than 1 tonne per year, according to the ECHA database.
- Only a very small proportion of the most common PFAS are currently subject to legislation and/or technical best practice guidance as environmental toxins.
- These include PFNA, PFOA, PFOS, PFHxS and GenX.
- However, both the state of scientific understanding and the legislative environment are moving very rapidly, thus driving the need for more comprehensive remedial treatment.
- To ensure that future proofing is incorporated into the current permit application, we wish to permit the treatment of a broad spectrum of long and short chain PFAS and their precursor compounds, which are frequently found in mixtures of various combinations and thus also co-occur in contaminated soils.
- We wish to ensure that the broad range of compounds that are known to be found in soils and groundwaters will be addressed. These include, but may not be limited to those compounds that are currently identified in the Environment Agency list of compounds for targeted analysis (see Table 1, below), and the compounds that are included on the ECHA REACH proposed restriction list (see Table 2, below).
- For those compounds that are included in these lists, we propose a total (aggregate) upper limit of 50mg/kg, with limits for any individual compound of 10mg/kg.

Table 1: Environment Agency List of PFAS substances in Targeted Analysis (2021 onwards)

Name	Acronyms	CAS number
Perfluorobutanoic acid	PFBA; HFBA	375-22-4
Perfluoropentanoic acid	PFPA, PFPeA	2706-90-3
Perfluorohexanoic acid	PFHxA	307-24-4
Perfluoroheptanoic acid	PFHpA	375-85-9
Perfluorooctanoic acid	PFOA	335-67-1
Perfluorononanoic acid	PFNA	375-95-1
Perfluorodecanoic acid	PFDA	335-76-2
Perfluoroundecanoic acid	PFUnA; PFUdA	2058-94-8
Perfluorododecanoic acid	PFDoA	307-55-1
Perfluorotridecanoic acid	PFTriDA; PFTriA	72629-94-8
Perfluorotetradecanoic acid	PFTeA; PFTreA; PFTeDA	376-06-7
Perfluorohexadecanoic acid	PFHxDA	67905-19-5
Perfluorooctadecanoic acid	PFODA	16517-11-6
Perfluorobutane sulfonic acid	PFBS	375-73-5
Perfluoropentane sulfonic acid	PFPeS	2706-91-4
Perfluorohexane sulfonic acid	PFHxS	355-46-4
Perfluoroheptane sulfonic acid	PFHpS	375-92-8
Perfluorooctane sulfonic acid	PFOS	1763-23-1
Perfluorononane sulfonic acid	PFNS	68259-12-1
Perfluorodecane sulfonic acid	PFDS	335-77-3
Perfluoroundecane sulfonic acid	PFUnDS	
Perfluorododecane sulfonic acid	PFDoS	79780-39-5
Perfluorotridecane sulfonic acid		
Hexafluoropropylene oxide dimer acid (Gen X)	HFPO-DA (Gen X)	13252-13-6
Hexafluoropropylene oxide trimer acid	HFPO-TA	13252-14-7
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	DONA; ADONA	919005-14-4
2H,2H,3H,3H-Perfluorooctanoic acid	5:3 FTCA	914637-49-3
6:2 Fluorotelomer phosphate diester	6:2 diPAP	57677-95-9
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (F-53B Major)	6:2 Cl-PFESA; 9Cl-PF3ONS	756426-58-1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (F-53B Minor)	8:2 Cl-PFESA; 11Cl-PF3OUdS	763051-92-9
4:2 Fluorotelomer sulfonic acid	4:2 FTSA; 4:2 FTS	757124-72-4
6:2 Fluorotelomer sulfonic acid	6:2 FTSA; 6:2 FTS	27619-97-2
8:2 Fluorotelomer sulfonic acid	8:2 FTSA; 8:2 FTS	39108-34-4
10:2 Fluorotelomer sulfonic acid	10:2 FTSA	120226-60-0
Perfluorobutylsulfonamide (perfluorobutane sulfonamide)	FBSA	30334-69-1
Perfluorohexanesulfonamide	FHxSA	41997-13-1
Perfluorooctanesulfonamide	FOSA; PFOSA	754-91-6

N-methylperfluorooctanesulfonamide	MeFOSA; N-MeFOSA	31506-32-8
N-Ethylperfluorooctanesulfonamide	EtFOSA; N-EtFOSA	4151-50-2
2-(N-Methylperfluorooctanesulfonamido)acetic acid	NMeFOSAA; MeFOSAA	2355-31-9
2-(N-Ethylperfluorooctanesulfonamido)acetic acid	NEtFOSAA; EtFOSAA	2991-50-6
N-Methyl-N-(2-hydroxyethyl)perfluorooctanesulfonamide	MeFOSE	24448-09-7
N-Ethyl-N-(2-hydroxyethyl)perfluorooctanesulfonamide	EtFOSE	1691-99-2
Perfluoro[(2-ethoxy-ethoxy)acetic acid], ammonium salt	EEA-NH4	908020-52-0
Perfluorobutylethylene	PFBE	19430-93-4
3,3,4,4,5,5,6,6,7,7,8,8,8-Tridecafluorooctyl methacrylate		2144-53-8
1-Propanamine, 1,1,2,2,3,3,3-heptafluoro-N,N-bis(1,1,2,2,3,3,3-heptafluoropropyl)- [Perfluamine]		338-83-0
Carboxymethyldimethyl-3-[[3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)sulfonyl]amino]propylammonium hydroxide	6:2 FTAB	34455-29-3
N-[3-(Dimethylamino)propyl]-3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctanesulfonamide N-oxide	FTSAAm	80475-32-7

Table 2: List of PFAS Compounds in Proposed ECHA Restriction

Category / Substance Group	Description
All PFAS fulfilling structural criteria	Any substance containing at least one fully fluorinated methyl ($-CF_3$) or methylene ($-CF_2-$) carbon atom without H/Cl/Br/I attached
Perfluoroalkyl carboxylic acids (PFCAs)	Long-chain C9–C21; included via Stockholm Convention and existing REACH restrictions
Perfluoroalkyl sulfonic acids (PFSAs)	Including PFOS (perfluorooctane sulfonic acid) and PFHxS; regulated as POPs
Short-chain PFAS and derivatives with ≥ 1 CF_2/CF_3 unit	E.g. GenX (HFPO-DA and salts), PFBS — listed as SVHCs under REACH
PFHxA and related compounds	Undecafluorohexanoic acid, its salts and precursors – restriction from April 2026
Other PFAS entries identified as SVHCs	PFNA, PFDA, 6:2 FTOH – currently with harmonized CLP classifications