PFAS Site Profile

PFAS Site Profiles were developed as part of the Environment Agency PFAS Risk Screening Project and represent an understanding of PFAS uses and occurrences from specific industry sectors at the time of writing in March 2024. This profile focuses on Refineries and Fuel Sites.

Refineries and Fuel Sites

1. INTRODUCTION

1.1 Overview

Per- and poly-fluoroalkyl substances (PFAS) are a broad group of more than 12,000 synthetic fluorinated organic chemicals. PFAS have been used in a wide variety of consumer products and industrial applications since the 1940s because of their unique chemical and physical properties, including oil, water and stain repellence, temperature and chemical resistance, and surfactant properties. These properties mean they are also extremely persistent in the environment. Some PFAS are bio-accumulative and toxic, and/or highly mobile.

Increasing awareness of the widespread presence of PFAS has heightened regulatory concerns about their potential risks to human health and the environment. To ensure effective actions are implemented the Environment Agency needs to better understand the potential sources of PFAS, the mechanisms of transport (pathways) and the relative significance of these substances in the environment.

As part of the Environment Agency PFAS risk screening project (Phases 1 to 4 carried out between 2020 to 2025) Jacobs developed individual site profiles for several potential high risk site types. They focus on specific industry sectors, representing potentially important sources of PFAS, whether from use or manufacture, with the potential for release into the environment.

The primary aim of these profiles is to help those parties involved in the regulation, investigation and remediation of sites where these problem chemicals present a risk to health and the wider environment. These are not definitive studies, but they introduce some of the technical considerations that need to be borne in mind when assessing a particular type of facility. Representing an understanding of PFAS at the time of writing (March 2024) and with published literature notably increasing continuously as practitioners and regulators seek to improve their understanding of PFAS, users must make their own appropriate assessments with current knowledge and specific to their site.

The reader is referred to Ross and Hurst (2019) and ITRC (2023) for more detailed information on PFAS chemistry, properties, fate and transport, risk assessment and remediation, to Glüge et al. (2020) for a review of the diversity of uses of PFAS, and to Ross (2023) for an overview of the uses of PFAS to assist with identification of sites of concern.

1.2 Site Profile Selection and Preparation

The site types for which site profiles have been developed in this project have been selected to represent potentially important users and sources of PFAS release to the environment in terms of quantity, frequency and historical records available.

Technical and scientific publications, fact-sheets, regulations, product websites, articles and online newspaper reporting interviews on the PFAS discussions were researched and reviewed to obtain information on the use of PFAS, with particular reference to the United Kingdom.

Each site profile includes site background information focused on PFAS use and identification of specific zones (where applicable), description of the processes involving PFAS, types of PFAS likely to be present, and an indication of the impact to water and soil. Brief examples and case studies from the literature are also provided.

For each site type a number of zones or activities have been identified where PFAS may be used. It should be recognised that not every site of this type will have all the activities identified. For example, a fire station site may be anything from a building where fire tenders containing Aqueous Film-Forming Foam (AFFF) are based (but filling, maintenance and training happen elsewhere) to a hub with a wide range of activities such as fire practice training, concentrate storage etc. in addition to vehicle storage.

Site profiles have been created for the following site types identified as potentially important potential sources of PFAS release to the environment:

- Civil and Military Airfields and Airports;
- Control of Major Accident Hazards (COMAH) Regulated Sites;
- Fire-fighting Grounds and Fire Stations;
- Landfills;
- Metal Manufacturing and Finishing;
- Military Bases (other than Air Transport Sites);
- Oil and Gas Industry (onshore exploration and extraction operations);
- Paper and Cardboard Manufacturing;
- Refineries and Fuel Sites;
- Textiles, Upholstery, Leather, Apparel and Carpets (TULAC) Manufacturing; and
- Waste Water Treatment Works.

Additional site profiles which do not relate directly to a particular site type have been developed for the following subject areas, which have potential applications within many different site types:

- Aqueous Film-Forming Foam (AFFF); and
- Fire Suppression Systems.

1.3 Methodology for Calculating Source Potential

For the purposes of the risk prioritisation project for which these site profiles were originally developed, an overall source potential has been developed for each site profile, based on professional judgment informed by the literature review. The source potential is constructed considering the magnitude and likelihood of PFAS presence and use in site profile zones.

The magnitude has been developed with a score of 1–5 (1 – low; 5 – high) based on the expected quantum of PFAS in the activity in the zone. For example, fire training practice using AFFF is recorded as high magnitude, because of the high volume and concentration of PFAS in this activity. Aircraft maintenance using hydraulic fluids containing PFAS is low magnitude because of the relatively low volume and concentration.

The likelihood for each activity is scored 1–5 (1 – low; 5 – high) based on the likelihood of a release to the environment occurring, taking into account frequency of activities where release may occur, and likelihood of loss of containment. For example, fire training practice using AFFF is likely to take place regularly at the same location over a period of years, with potential loss to ground or surface water, so is scored high. Although aircraft maintenance is likely to be undertaken all the time, significant accidental loss of containment is likely to be infrequent, so this is scored low.

The magnitude and likelihood are then multiplied to give the source potential (scored 1–25). It should be noted that these scores are generic and subjective and are based on professional judgment and should continue to be refined as more information becomes available. Further refinement could include expansion to consider changes in practice over the years as pollution prevention practices have improved.

2. BACKGROUND TO REFINERIES AND FUEL SITES

The oil and gas industry can be divided into three sectors: upstream, midstream and downstream. This site profile relates to downstream activities, excluding the distribution of fuel to the point of sale. The midstream and upstream sectors are covered in the site profile for the Oil and Gas Industry (onshore exploration and extraction operations) (CL:AIRE, 2026g).

Activities included in the downstream sector are oil and gas refining, fuel gasification and liquefaction, petroleum distillation, crude oil storage and gathering stations for processing oil and gas. It also includes fuel storage sites. These sites are usually regulated under the Environmental Permitting Regulations (2016) as part A(1) installations, refinery sites are also likely to be COMAH establishments (refer to the site profile for COMAH Regulated Sites (CL:AIRE, 2026b)). In the past, some petrochemical sites are also likely to have been referred to as refinery sites.

The Department of Environment (DoE) Industry Profile 'Oil Refineries' (DoE, 1995) provides a snapshot of oil refinery activities and contamination potential in the early 1990s. Oil refining has been carried out at relatively few locations in the UK, with the location largely dictated by proximity to deep water ports and product markets. Refinery capacity grew in the 1950s and peaked in the 1980s and then declined. In 1995, the DoE stated that most refineries in operation in the UK had been developed over a period of 15–40 years (DoE, 1995). Even where refinery operations had ceased at a site, some site operations such as specialist processes or use as an oil or product terminal continued. This continues to be the case, with a relatively small number of sites, each with a long history of use in oil refinery and storage. According to CONCAWE (2024), there were seven operational refineries in the UK in 2023.

2.1 Use of PFAS

PFAS have uses in the energy industry within evaporation inhibitors, as surfactants, and in fire prevention and protection including foam fire suppression systems (refer to the site profile for Fire Suppression Systems (CL:AIRE, 2026m)).

The key use of PFAS at refinery sites, and other related facilities handling large volumes of flammable and combustible liquids with the potential to cause environmental impact, is associated with the use of AFFF for fire prevention, protection and incident response liquids, and for flammable vapour suppression during 'hot work' (CONCAWE, 2016) (reference should be made to the site profiles for AFFF (CL:AIRE, 2026l) and Fire Suppression Systems (CL:AIRE, 2026m)).

Activities particular to refinery sites, with the potential for loss of PFAS to ground and groundwater are detailed below:

- Fire stations and fire training areas – it was common practice for sites to have their own on-site fire brigade, with associated fire training grounds, where training exercises would take place. Also foam storage, vehicle filling and vehicle washing.
- Foam training exercises associated with emergency planning for incident response – these could take place on the main site as well as in the fire training ground. Modern practice requires containment of foams and runoff, this is likely to have been given less consideration in the past.
- Automatic fire suppression systems associated with fuel storage and activities, requiring regular testing, and maintenance. Accidental loss from fire suppressions systems, including rupturing of pressurised systems.
- Incident response including the standard practice of applying a foam layer to chemical spills and leaks as a fire prevention measure.
- Use of PFAS for flammable vapour suppression during 'hot work'.
- Response to actual fire incidents, where large quantities of foam would potentially be used in firefighting.
- The site drainage and liquid effluent systems will not have been designed for removal of PFAS. Historically, the emphasis on environmental management of refinery site drainage systems is likely to have focused on hydrocarbon separation and treatment through the use of interceptors and oil water

separators in effluent treatment plants. These will have been ineffective in removing PFAS from the waste water. While oil contaminated water will have been disposed of via the oily water treatment system, foam-containing firewater is likely to have been flushed to stormwater drainage systems. Even now where discharges from sites are managed through discharge consents, PFAS are not usually considered within the consented substances.

While some of these activities will be limited to specific areas of the site (for example, the site fire stations), others, such as incident response and emergency training, could take place anywhere on the site. Furthermore, flushing of PFAS-containing water to drainage systems is likely to have resulted in dispersing the PFAS through the site. Leakage from the drainage system can result in loss to ground at some distance from the area of use of the AFFF. PFAS absorbed in silt built up in the drainage system can also act as a long-term source of PFAS release.

The properties of PFAS mean that they may be sorbed onto other materials, for example PFAS may be dissolved in or sorbed onto non-aqueous phase liquids present in the ground, particularly where the AFFF had been applied to the leak or spill and was then lost to ground. PFAS may also be adsorbed onto construction materials including concrete on pavements and in drainage systems, and leached over time.

Modern facilities are expected to have systems in place for the containment of firewater or accidental discharges. This may include use of below ground drainage systems for temporary containment. The effectiveness of containment will be dependent on the condition of site surfaces, bunding, and drainage systems. However, with older sites, improvements may still be in progress and as such there may continue to be credible pathways for PFAS contaminated runoff or firewater to enter the water environment.

3. CASE STUDIES

Case studies identified from a literature review, with examples of PFAS associated with refineries and fuel sites are listed in Table 1.

Table 1. Case studies.

1. Porvoo Refinery, Finland
Reinikainen et al. (2022) describe a case study of a PFAS occurrence at a 1,300 ha refinery site at Porvoo in Finland. The refinery had a fire-fighting training site used by the fire brigade from the 1980s until 2015. The fire training site was remediated in 2016 when a new power plant was constructed, with soil excavation and the removal of an estimated 60 kg of PFOS. Fire-fighting foams were also reported to have been used elsewhere on the site associated with emergency response to fires. In particular, a large fire occurred in 1989 at an isohexane storage tank about 700 m north-east of the former fire training ground. It was reported that an estimated 260 m^3 of AFFF (estimated as up to 2000 kg PFOS) were used to extinguish the fire. The underlying geology comprises heavily modified, fractured bedrock. Most of the surface runoff flows in the uppermost fractures through which the water discharges into ditches or directly into the sea. The majority of surface runoff and waste waters from the refinery are discharged into the sea through three controlled discharge points. According to the conceptual site model, water from the area of the 1989 fire is discharged at a different point from the discharge which received water from the fire training area and the refinery waste water treatment plant. The study focused on surface water discharged from the site sampled between 2016 and 2019. PFOS and PFHxS were the predominant PFAS identified, although the suite of 23 PFAS also included fluorotelomers as well as long and short chain PFSAs and PFCAs. The ratio of PFAS at the northern discharge point (receiving drainage from the area of the 1989 fire) remained fairly constant throughout the monitoring and it was concluded that this indicated a single primary source associated with the fire. PFAS ratios in the southern drainage point were much more variable and were interpreted as indicating a source related to multiple unidentified sources of AFFF used during the site's operational history. Surface water runoff was also monitored upgradient of the third discharge point, a tunnel for cooling water discharge. This surface water was found to have the highest overall PFAS concentrations, and was interpreted as derived at least in part from the fire training ground, indicating that the remediation by soil excavation may not have been successful in terms of PFAS removal. Key observations from this case study include: • The continuing predominance of PFOS in environmental samples despite restrictions in the past two decades; • The relative impact of a single major fire event in 1989 compared to 40 years' use of AFFF at the fire training ground; and • Continuing impact from unidentified sources in the main refinery site even after major soil removal from the identified source area at the fire training ground.
2. Operational refinery, Germany
A research project undertaken by the German Environment Agency (UBA) (2020) on PFAS contamination includes brief details of PFAS contamination associated with an un-named operational refinery in Germany. The refinery site is reported to be diffusely contaminated with PFAS in many areas, associated with use of AFFF in several training areas and also the use of fire extinguishing agents in other areas of the site. The site conceptual model includes 2 m to 4 m of unsaturated soil, and groundwater within a Quaternary aquifer. A groundwater plume has been identified extending about 1.3 km beyond the approximately 1 km long refinery site. Surface water was formerly discharged into a nearby surface watercourse but is now discharged into the site sewage treatment plant, and the surface watercourse is now largely not impacted by PFAS contamination. According to UBA (German Environment Agency, 2020), the refinery operator is being required to install hydraulic containment at the site and further source remediation at individual hotspots is being considered.

Table 1. Case studies (continued).

3. Former refinery / petrochemical site, England
Part of a former refinery / petrochemical site is proposed for mixed use redevelopment. The site operated from the 1940s up until the 1980s. A substantial amount of ground investigation has taken place at the site, however this has largely focused on 'conventional' contamination including NAPL. PFAS were not included in groundwater monitoring or ground investigations until 2019. The following potential sources of PFAS contamination have been identified at the site: • the on-site fire station, with associated foam storage areas; • fire training areas; • foams applied to leaks and spills; • response to fire incidents; • PFAS dissolved in NAPL; • drainage networks; and • remobilisation of PFAS from impacted soil and concrete during rainfall events. The drainage networks were identified as both a secondary source and pathway for potential PFAS contamination. The drainage networks were known to leak and thought to be a pathway by which PFAS enters shallow groundwater. Conversely, shallow groundwater flooding of the drainage network is also thought to contribute to dispersal of PFAS and discharge of PFAS impacted water to surface water.
4. Fuel depot subject to fire, southern England
The depot is used for oil storage and transfer, it includes a tank farm and other related infrastructure. On 11 December 2005, an explosion and fire occurred at the site. The fire was extremely severe, engulfed over 20 fuel tanks and burnt for several days. As a result, a large quantity of water and firefighting foams were used to bring the fire under control (HSE, 2008). Some 250,000 litres of AFFF concentrate were used together with an estimated 25 million litres of water. PFOS was present in some of the foam used (Major Incident Investigation Board, 2008), and according to a report by the Environment Agency (2021), a large proportion of the national inventory of PFOS-related fire-fighting foam was used up in the incident. In addition, a large quantity of fuel was lost to ground. Contaminated firewater was collected in bunded areas on-site. A large volume of this bunded water was removed by tanker off-site post incident and therefore this did not present an ongoing source of potential PFAS contamination on-site. However, a secondary source was formed by the release of fuel and firewater to ground around damaged bunds, and overflow and release via the site drainage system. Substantial remedial works have been undertaken at the site following the incident, including the demolition and removal of existing structures damaged during the fire and removal of soil from contaminated areas. The main pathways for contaminant migration from the on-site source include migration via man-made below ground pathways – e.g. drains, soakaways and along the interface between the ground and buried structures – extending through the largely cohesive superficial deposits resulting in direct infiltration to the underlying chalk; and through leaching/infiltration/leakage of contaminated soil and perched groundwater through the superficial deposits and the vadose zone within the chalk. The main receptors that were impacted by the contamination caused by the incident include groundwater in the Chalk aquifer, and surface waters within 4 km of the site. Monitoring indicates continuing presence of PFAS at these receptors.

4. PROCESS

PFAS may contaminate groundwater through leaching from sites where fire-fighting foams have been applied, including the slow release of PFAS from concrete or other semi-porous surfaces where fire-fighting foams have been used. PFAS may enter rivers, streams, lakes and coastal waters in the form of water runoff and waste water discharge.

5. KEY PFAS CONTAMINANTS OF CONCERN

There is the potential for a wide range of PFAS to be present, with the majority released via AFFF use (refer to the site profile for AFFF (CL:AIRE, 2026l)). The actual PFAS present at any one site will be variable dependent on the AFFF formulations used, which will have varied over time. While some generalities may be drawn associated with the dates of operation and use, and the date of phasing out of PFOS-based AFFF and the introduction of fluorotelomer chemistry, actual practice varied. The operation of UK refinery sites during the 1970s and 1980s means that PFOS is likely to have been in widespread use in a period when environmental controls were fewer, and documented case studies show PFOS to be a predominant contaminant.

As foams have a relatively long shelf life of 10 to 20 years, there is likely to be a substantial stock of legacy long-chain PFAS foams at refineries which have since been withdrawn from the market. A shift to fluorine-free alternatives could be problematic for operators in terms of replacement and disposal costs of legacy PFAS foams (Economics for the Environment Consultancy, 2019) and there is some uncertainty on their technical feasibility for large-scale fire incidents at petrochemical industry sites (Wood Environment and Infrastructure Solutions, 2020).

6. SOURCE POTENTIAL FOR REFINERIES AND FUEL SITES

Following the methodology set out in section 1.3, source potential has been developed for each site profile zone and detailed in Table 2.

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IMPORTANT NOTES FOR READERS OF THE PFAS SITE PROFILES

The PFAS Site Profiles are based on available online literature and review of readily available technical publications at the time of writing (2020-2024). The authors recognise that additional information may be available that has not been used in this study.

The published literature on PFAS occurrence and distribution is vast and continually expanding. For example, the Interstate Technology and Regulatory Council web resource cited in the PFAS Site Profiles as "ITRC (2023)" was substantially updated in January 2026.

Table 2. Site Profile Zone Source Potential.

Site Profile – Zones	Magnitude	Likelihood	Source Potential	PFAS presence and use
Fire training grounds	5	5	25	Historically foams were used directly on the ground and in pits where fire was staged for training. The area would have been washed down after use to remove visible foam, but wash water simply discharged to ground or via an interceptor to the site drainage system. Volume and frequency of use not known. Intense usage of PFAS on concrete pads is likely to have resulted in adsorption of PFAS to the concrete which may continue to be released by leaching over many decades.
Emergency exercise areas	5	5	25	Foam use when testing systems and practicing emergency response in diverse areas of the site, not necessarily restricted to a fire training area. Large quantities of AFFF may have been used and released to the ground.
Foam applied to leaks and spills	4	4	16	A foam blanket was commonly applied to chemical or fuel spills to prevent ignition. Foam and spills could subsequently be lost to ground. PFAS may be dissolved in NAPL.
Fire incidents	4	4	16	AFFF applied to fires of all magnitudes – from fire extinguishers to major incident response. Major incidents have potential for use of very large volumes of AFFF.
Waste water / effluent treatment plants	3	5	15	On-site effluent plants generally designed for treatment of oily water and may be ineffective in reducing PFAS discharge. PFAS may be found in effluent sludge. Below ground drainage network can sometimes form part of the containment system on site during an emergency.
Fire suppression systems	3	3	9	Foam fire suppression systems may be a source of release during testing and maintenance, system failure, or accidental triggering. In the past, testing is likely to have required active release of foam. Foam released due to accidents or testing is likely to have been collected and discharged via site drainage system. Even if foam suppression systems have been converted to PFOS-free or fluorine-free foams, there may still be carryover of PFAS from previous foams used.
Fire stations (including foam storage)	2	4	8	Foam containing PFAS stored in tanks within fire stations, fire engines and pumps at vehicle fill points. Release to the environment may be via accidental spills. It is considered that low quantities of PFAS may be released at these locations. Current tanks may be provided with leak alarms and fire engine with sophisticated systems to avoid spills.
Tank farms / fuel farms	5	1	5	Fuel farms are likely to have foam fire suppression systems with foam stored in tanks. Major release may occur during an accident, with minor releases from accidental spills from the tanks or during system tests.
Surface water drainage	1	3	3	Surface runoff and fire water draining to stormwater drainage systems. Sediments likely to be contaminated by PFAS and to slowly release PFAS to the water environment.
Concrete or other hardstanding areas where PFAS have been used	1	2	2	Past adsorption of PFAS to concrete or other semi-porous surfaces. Slow release of PFAS from concrete can potentially impact surface water and groundwater.

PFAS Site Profile

The purpose of the PFAS Site Profiles is to provide regulators and other interested parties with researched advice on how to assess problem sites that may be impacted by legacy use or release of PFAS. The profiles do not seek to address the specific circumstances of each site as these will be unique. As such, the PFAS Site Profiles should be read with the following reservations in mind:

- Practices can vary between different sites and therefore individual sites may not have been exposed to the typical PFAS contaminants of concern as detailed in each site profile;
- Site exposure to PFAS contaminants of concern may vary based on practices and equipment used on site; and
- Given the longevity of PFAS in the environment, site profiles may refer to practices which are no longer followed, and subsequently may omit current practices which avoid contamination.

DISCLAIMER

The information, views and conclusions drawn concerning the PFAS Site Profiles are based, in part, on information supplied to Jacobs by third parties; and from publicly available information. Jacobs has proceeded in good faith on the assumption that this information is accurate and complete. Jacobs accepts no liability for any inaccurate conclusions, assumptions or actions taken resulting from any inaccurate information supplied to Jacobs by third parties or available from public sources.

All users must make their own appropriate assessments specific to their site (or group of sites).

For the avoidance of doubt none of CL:AIRE, Jacobs or the Environment Agency accept liabilities resulting from the use or interpretation of the contents of the PFAS Site Profiles.

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PFAS Site Profile

ACRONYMS AND ABBREVIATIONS

Note: this list of acronyms and abbreviations includes those used across all the site profiles and therefore may include some acronyms and abbreviations not used within this profile.

General Acronym / Abbreviation	Definition	General Acronym / Abbreviation	Definition
AFFF	Aqueous Film-Forming Foam	HSE	Health and Safety Executive
ALARP	As Low As Reasonably Practicable	ITRC	Interstate Technology and Regulatory Council
AR-FFFP	Alcohol resistant film-forming fluoroprotein foam	LCMS	Liquid Chromatography Mass Spectrometry
BOW	Bilge and oily waste water	LPG	Liquified Petroleum Gas
CA	Competent Authority	MAPP	Major accident prevention policy
CAS	Chemical Abstracts Service	MILSPEC	Military Specification
CAFS	Compressed Air Foam System	MSDS	Material Safety Data Sheets
CDOIF	Chemical and Downstream Oil Industries Forum	NAPL	Non Aqueous Phase Liquid
CIMAH	Control of Industrial Major Accident Hazards	NCM	Nordic Council of Ministers
CIP	Chemicals Investigations Programme	NIHHS	Notification of Installations Handling Hazardous Substances Regulations
CLP	Classification Labelling and Packaging	NORM	Naturally occurring radioactive material
CO_2	Carbon dioxide	OECD	Organization for Economic Cooperation and Development
COMAH	Control Of Major Accident Hazards	ONR	Office for Nuclear Regulation
CPI	Confederation of Paper Industries	PCM	Paper and Cardboard Manufacturing
DoD	Department of Defence (Australia)/Defense (USA)	PNEC	Predicted No-Effect Concentrations
DoE	Department of Environment	PPB	Parts Per Billion
DWS	Drinking Water Standards	PPE	Personal protective equipment
ECF	Electrochemical fluorination	RAAF	Royal Australian Air Force
EOF	Extractable Organic Fluorine	REACH	Registration, Evaluation, Authorization and Restriction of Chemicals
EPA	Environmental Protection Agency (for Denmark)	STM	Surface treatment of metals
EPR	Environmental Permitting Regulations	TOP	Total Oxidisable Precursor
EQS	Environmental Quality Standard	TULAC	Textiles, Upholstery, Leather, Apparel and Carpets
EU	European Union	UBA	Umwelt Bundesamt (German Environment Agency)
FCM	Food Contact Material	UK WIR	United Kingdom Water Industry Research
FFF	Fire-Fighting Foam	UMD	University of Maryland
FFFP	Film-Forming Fluoroprotein	US EPA	United States Environmental Protection Agency
FP	Fluoroprotein	WWTP	Waste Water Treatment Plant
FPP	Fire Prevention Plans	WWTW	Waste Water Treatment Works
FRS	Fire and Rescue Service		

PFAS Site Profile

ACRONYMS AND ABBREVIATIONS

Note: this list of acronyms and abbreviations includes those used across all the site profiles and therefore may include some acronyms and abbreviations not used within this profile.

PFAS Acronym / Abbreviation	PFAS Definition	PFAS Acronym / Abbreviation	PFAS Definition
10:2 FTOH	10:2 Fluorotelomer alcohol	HFPO-DA	Hexafluoropropylene oxide-dimer acid
10:2 FTS	10:2 Fluorotelomer sulfonate or sulfonic acid	HFPO-TA	Hexafluoropropylene oxide-trimer acid
10:2 FTUCA	10:2 Fluorotelomer unsaturated carboxylic acids	MeFOSAA	Methylperfluorooctanesulfonamidoacetic acid
11Cl-PF3OUdS	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (F-53B Minor)	PAP	Polyfluorinated alkyl phosphates
12:2 FTS	12:2 Fluorotelomer sulfonate or sulfonic acid	PASF	Perfluoroalkane sulfonyl fluoride substances
14:2 FTS	14:2 Fluorotelomer sulfonate or sulfonic acid	PFA	Perfluoralkoxy polymer
12:2 FTAB	12:2 Fluorotelomer sulfonamido betaine	PFAA	Perfluoroalkyl acid
4:2 FTS	4:2 Fluorotelomer sulfonate or sulfonic acid	PFAS	Perfluoroalkyl and Polyfluoroalkyl Substances
5:3 FTCA	5:3 Fluorotelomer carboxylic acid	PFBA	Perfluorobutanoate or Perfluorobutanoic acid
6:2 FTAB	6:2 Fluorotelomer sulfonamidoalkyl betaine (see also CMDFPAH)	PFBS	Perfluorobutyl sulfonate or Perfluorobutyl sulfonic acid
6:2 FTCA	6:2 Fluorotelomer carboxylic acid	PFC	Perfluorinated Compound
6:2 FTOH	6:2 Fluorotelomer alcohol	PFCA	Perfluoroalkyl carboxylic acid
6:2 FTS	6:2 Fluorotelomer sulfonate or sulfonic acid (see also TDFOSA)	PFDA	Perfluorodecanoate or Perfluorodecanoic acid
6:2 FTUCA	6:2 Fluorotelomer unsaturated carboxylic acids	PFDoA	Perfluorododecanoate or Perfluorododecanoic acid
6:2 diPAP	6:2 Fluorotelomer phosphate diester	PFECA	Perfluoroalkyl ether carboxylic acid
8:2 Cl-PFESA	8:2 Chlorinated perfluoroalkyl ether sulfonic acid	PFECHS	Perfluoroethylcyclohexane sulfonate
8:2 FTOH	8:2 Fluorotelomer alcohol	PFESA	Perfluoroalkyl ether sulfonic acid
8:2 FTS	8:2 Fluorotelomer sulfonate or sulfonic acid	PFHpA	Perfluoroheptanoate or Perfluoroheptanoic acid
8:2 FTUCA	8:2 Fluorotelomer unsaturated carboxylic acids	PFHpS	Perfluoroheptane sulfonate or Perfluoroheptane sulfonic acid
9Cl-PF3ONS	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (F-53B Major)	PFHxA	Perfluorohexanoate or Perfluorohexanoic acid
ADONA	4,8-Dioxa-3H-perfluorononanoic acid	PFHxS	Perfluorohexane sulfonate or Perfluorohexane sulfonic acid
CMDFPAH	Carboxymethyldimethyl-3-[[(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)sulphonyl]amino]propylammonium hydroxide; a synonym of 6:2 FTAB used in UKWIR reports	PFNA	Perfluorononanoate or Perfluorononanoic acid
EtFOSA	N-ethyl-perfluorooctane sulfonamide	PFOA	Perfluorooctanoate or Perfluorooctanoic acid
EtFOSAA	N-ethyl-perfluorooctane sulfonamido acetic acid	PFOS	Perfluorooctane sulfonate or Perfluorooctane sulfonic acid
EtFOSE	N-ethyl-N-(2-hydroxyethyl) perfluorooctane sulfonamide	PFOSA	Perfluorooctane sulfonamide (FOSA)
F-53B	Trade name for chlorinated polyfluoroalkyl ether sulfonic acids (9Cl-PF3ONS and 11Cl-PF3OUdS)	PFOSE	Perfluorooctane sulfonamido ethanol
FASA	Perfluoroalkane sulfonamide	PFPA	Perfluoropentanoate or Perfluoropentanoic acid
FBSA	Perfluorobutane sulfonamide	PFPE	Phosphate ester salts
FOSA	Perfluorooctane sulfonamide	PFPeA	Perfluoropentanoic acid
FOSAA	Perfluorooctane sulfonamidoacetic acid	PFPeS	Perfluoropentane sulfonate or Perfluoropentane sulfonic acid
FOSE	Fluorooctane sulfonamido ethanol	PFPS	Perfluoropentane sulfonate
FTCA	Fluorotelomer carboxylic acid	PFSA	Perfluoralkane sulfonic acid
FTMAC	Fluorotelomer methacrylate	PFUnDA	Perfluoroundecanoate or Perfluoroundecanoic acid
FTOH	Fluorotelomer alcohol	POSF	Perfluorooctane sulfonyl fluoride
FTS	Fluorotelomer sulfonate	PTFE	Polytetrafluoroethylene
FTSA	Fluorotelomer sulfonic acid	TDFOSA	3,3,4,4,5,5,6,6,7,7,8,8,8-Tridecafluorooctane-1-sulfonic acid; a synonym for 6:2 FTS used in UKWIR reports
Gen-X	Trade name for HFPO-DA		