Annex 15 Report
Proposal for identification of a substance of very high concern (SVHC)

Perfluoroheptanoic acid and its salts

EC Number: -

CAS Number: -

July 2026

Contents

1. Proposal

Substance name: Perfluoroheptanoic acid (PFHpA) and its salts

EC number: -

CAS number: -

PFHpA (CAS no. 375-85-9) and its salts are identified as substances of very high concern (SVHC) in accordance with the requirements set out in Annex 15 of EU REACH (European Commission, 2006).

This is based on the substances meeting the following criteria of Article 57 of the regulation:

- Article 57(c) owing to their classification as Toxic for reproduction category 1B (H360D: 'May damage the unborn child')[1].
- Article 57(d) as the substances are identified as persistent, bioaccumulative and toxic (PBT).
- Article 57(e) as the substances are identified as very persistent and very bioaccumulative (vPvB).
- Article 57(f) as the substances are identified as equivalent level of concern to those of other substances listed in points (a) to (e) of Article 57.

This technical report provides an independent scientific assessment by the Agency[2] of PFHpA and its salts. It considers studies presented in the equivalent document produced by the European Chemicals Agency, the EU Member State Committee (MSC) support document (ECHA, 2022a), and information on the mandatory classification and labelling in accordance with GB CLP[3]. Relevant observations on studies made in the EU MSC support document have been summarised and Agency comments have been added where appropriate. Unpublished study reports were not always available and have not been examined unless stated otherwise. A literature search was not performed because the existing information is considered to be sufficient for decision making.

Perfluoroheptanoic acid (PFHpA) is assessed together with its sodium, ammonium and potassium salts because under most environmental and physiological conditions all forms dissociate to the perfluoroheptanoate anion ($PFHpA^-$). Under environmentally relevant pH conditions, this ionic form predominates and the hazard profile is driven by the shared

[1] Classification in accordance with section 3.7 of Annex 1 to Regulation (EC) No 1272/2008

[2] The Health and Safety Executive (HSE) acting in its capacity as the Agency for UK REACH, and with support from the Environment Agency in accordance with Article 2B of UK REACH.

[3] Classification in accordance with Annex 1 to the retained Regulation (EC) No 1272/2008 as amended for Great Britain (hereinafter referred to as GB CLP)

anion. The identification as an SVHC is therefore based on the properties of PFHpA and applies equally to its salts.

It is proposed to identify PFHpA and its salts according to Article 57 (c) of UK REACH and according to Article 57 (f) of UK REACH as posing an equivalent level of concern to those of other substances listed in points (a) to (e) of Article 57.

Summary of how the substances meet the criteria set out in Article 57 of the REACH Regulation

PFHpA and its salts are identified as substances of very high concern in accordance with Article 57(c) owing to the classification of PFHpA as Toxic for reproduction 1B (H360D: 'May damage the unborn child').

PFHpA and its salts are also identified as substances of very high concern in accordance with Article 57(f) of the UK REACH regulation based on the following:

- PFHpA fulfils the persistent (P) and very persistent (vP) criteria of Annex 13 of the UK REACH legislation. Given the known stability of perfluorinated substances, the persistence conclusion of closely related homologues, and the lack of specific evidence, degradation of PFHpA and its salts in the environment is likely to take a very long time.
- PFHpA is moderately soluble in water under environmental conditions, has a low tendency to volatilise from water, and has a relatively low adsorption potential to organic matter with an organic carbon normalised adsorption constant (as log K_{OC}) in the range from 1.63 to 1.80.
- PFHpA is classified as Repro.1B (H360D) and STOT RE 1 (H372; liver).

PFHpA will predominantly reside in the aquatic compartment and has the potential to contaminate surface water and to move through environmental matrices such as soils and sediments to groundwater. It has the potential for long-range transport through the atmosphere or via oceanic currents, leading to contamination of regions such as the Arctic, Antarctic, and other remote areas. The properties and environmental presence of PFHpA lead to the following concerns:

- Increasing and effectively irreversible presence in the environment.

The properties indicate that PFHpA has the potential, on entering the environment, to contaminate surface waters and groundwaters (including drinking water resources), and to undergo long-range transport to remote regions. There is little evidence of any degradation of PFHpA in the terrestrial or aquatic environment, implying that PFHpA is likely to remain in the environment for a very long time and continued releases to the environment will inevitably lead to slowly increasing concentrations that are effectively irreversible.

- Difficulty in removal from drinking water sources

Part 3 of the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 states in relation to water bodies intended to be used for water abstraction that measures must be included ‘with the aim of avoiding deterioration in the quality of the water in that area, in order to reduce the level of purification treatment required in the production of drinking water abstracted from it’. The properties of persistence, tendency to remain in the aqueous environment, and relatively low adsorption potential indicate that it is likely to be difficult to remove PFHpA from drinking water sources during water treatment using conventional treatment processes.

- Potential for toxic effects

There is likely to be long-term exposure of humans and wildlife to PFHpA from its presence and likely slowly increasing concentrations in the environment. Given its hazard profile, this indicates a potential to cause harm.

Conclusion

PFHpA and its salts are proposed to be identified as substances meeting the criteria of Article 57 (c) of UK REACH owing to their classification as Toxic for reproduction 1B (H360D: ‘May damage the unborn child’). In addition, it is concluded that the concerns outlined above are at an equivalent level to those of other substances listed in points (a) to (e) of Article 57 and therefore it is also proposed to identify PFHpA and its salts as an SVHC in accordance with Article 57(f) of UK REACH.

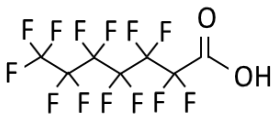
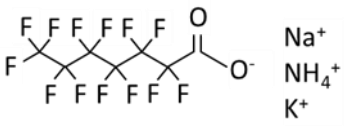
2. Justification

2.1 Identity of the substance and physical and chemical properties

2.1.1 Name and other identifiers of the substance

Table 1: Substance identity

EC number:	206-798-9 (free acid) [1] 243-518-4 (sodium salt) [2] 228-098-2 (ammonium salt) [3] Not assigned (potassium salt) [4]
EC name:	Perfluoroheptanoic acid [1] Sodium perfluoroheptanoate [2] Ammonium perfluoroheptanoate [3] Not applicable [4]
SMILES[a]:	Free acid [1]: O=C(O)C(F)(F)C(F)(F)C(F)(F)C(F)(F)C(F)(F)C(F)(F)C(F)(F)F
CAS number:	375-85-9 [1] 20109-59-5 [2] 6130-43-4 [3] 21049-36-5 [4]
IUPAC[b] name:	Tridecafluoroheptanoic acid [1] Sodium tridecafluoroheptanoate [2] Ammonium tridecafluoroheptanoate [3] Potassium tridecafluoroheptanoate [4]
Index number in GB mandatory classification and labelling (MCL) List[c]:	607-761-00-3 [1]
Molecular formula:	$C_7HF_{13}O_2$ [1] $C_7F_{13}NaO_2$ [2] $C_7H_4F_{13}NO_2$ [3] $C_7F_{13}KO_2$ [4]
Molecular weight:	364.06 [1] 386.04 [2] 381.09 [3] 402.15 [4]
Synonyms:	For the free acid [1]: PFHpA C_7-PFCA Perfluoro-n-heptanoic acid

Structural formula:		Perfluoroheptanoic acid [1]
		Tridecafluoroheptanoate: - sodium salt [2] - ammonium salt [3] - potassium salt [4]

[a] SMILES: Simplified Molecular Input Line Entry System
[b] IUPAC: International Union of Pure and Applied Chemistry
[c] GB MCL list in accordance with the retained Regulation (EC) No 1272/2008 as amended for Great Britain

2.1.2 Composition of the substance

Substance type: mono-constituent

Although PFHpA is a mono-constituent substance, this report considers the free acid and its salts. The identification as SVHC is primarily based on the properties of the free acid and other possible constituents or impurities are not considered relevant for this assessment.

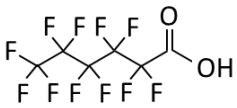
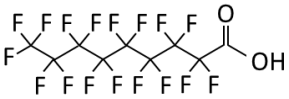
2.1.3 Identity and composition of degradation products/metabolites relevant for the SVHC assessment

No transformation products were considered in the EU MSC support document. No transformation products of PFHpA have been identified.

2.1.4 Identity and composition of structurally related substances (used in grouping or read-across approach)

PFHpA is part of a homologous series of perfluorinated carboxylic acids (PFCAs). Its nearest homologues are perflurohexanoic acid (PFHxA) and perfluorooctanoic acid (PFOA). Much of the assessment of PFCAs has been made by read across from PFOA and there is some information available for PFHxA and perfluorononanoic acid (PFNA). The identities of PFHxA, PFOA, and PFNA are presented in Table 2 and relevant physicochemical and environmental properties are summarised in Appendix A.

Table 2: Identity of structurally related PFCAs

EC number:	206-196-6	206-397-9	206-801-3
EC name:	Perfluorohexanoic acid	Perfluorooctanoic acid	Perfluorononanoic acid
SMILES:	O=C(O)C(F)(F)C(F)(F)C(F)(F)C(F)(F)C(F)(F)F	O=C(O)C(F)(F)C(F)(F)C(F)(F)C(F)(F)C(F)(F)C(F)(F)C(F)(F)C(F)(F)F	O=C(O)C(F)(F)C(F)(F)C(F)(F)C(F)(F)C(F)(F)C(F)(F)C(F)(F)C(F)(F)C(F)(F)F
CAS number:	307-24-4	335-67-1	375-95-1
IUPAC name:	2,2,3,3,4,4,5,5,6,6,6-undecafluorohexanoic acid	2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluoro-octanoic acid	Heptadecafluoro-nonanoic acid
Index number in GB MCL List	No mandatory classification	607-704-00-2	607-718-00-9
Molecular formula:	$C_6HF_{11}O_2$	$C_8HF_{15}O_2$	$C_9HF_{17}O_2$
Molecular weight (g/mol):	314.05	414.07	464.08
Synonyms:	PFHxA C_6-PFCA	PFOA C_8-PFCA	PFNA C_9-PFCA
Structural formula:			

2.1.5 Physicochemical properties

Physicochemical property information presented in the EU MSC support document for PFHpA is summarised in PFHpA will be present in the aquatic environment in almost entirely ionic form at relevant pH values (between pH 4 and 9) as the estimated pKa value for PFHpA is < 1.6.

The estimated log KOW value for PFHpA from KOWWIN v1.69 of EPISuiteTM is 4.15 but is lower for the salts, for example 0.33 for the sodium salt. The Agency notes that the KOWWIN model estimates log KOW values from the sum of coefficient values of fragments of the test molecule. The correction factors for larger or more complex structures than the atom/fragments do not cover the surface-active properties of perfluorinated acids and therefore the free acid and ionic form of PFHpA are likely to be outside the applicability domain of the model.

The water solubility of the free acid and sodium salt are estimated using WSKOWWIN v1.42 of the EPISuite tool. The method uses the log KOW value and therefore PFHpA and

its salts are likely to be outside the applicability domain of the model. On dissolution, it is noted that all of the salts will form the same anion.

Table 3. The support document notes that as PFHpA has surface active properties, experimental measurement of properties such as water solubility and the n-octanol-water partition coefficient (K_{OW}) are likely to be complicated by micelle formation. For these properties and also for the acid dissociation constant, estimated values are presented.

PFHpA will be present in the aquatic environment in almost entirely ionic form at relevant pH values (between pH 4 and 9) as the estimated pK_a value for PFHpA is < 1.6.

The estimated log K_{OW} value for PFHpA from KOWWIN v1.69 of EPISuite™ is 4.15 but is lower for the salts, for example 0.33 for the sodium salt. The Agency notes that the KOWWIN model estimates log K_{OW} values from the sum of coefficient values of fragments of the test molecule. The correction factors for larger or more complex structures than the atom/fragments do not cover the surface-active properties of perfluorinated acids and therefore the free acid and ionic form of PFHpA are likely to be outside the applicability domain of the model.

The water solubility of the free acid and sodium salt are estimated using WSKOWWIN v1.42 of the EPISuite tool. The method uses the log K_{OW} value and therefore PFHpA and its salts are likely to be outside the applicability domain of the model. On dissolution, it is noted that all of the salts will form the same anion.

Table 3: Overview of the physicochemical properties of PFHpA presented in the EU MSC support document; measured values unless stated

Property	Value
Physical state at 20°C and 101.3 kPa	Beige crystalline solid
Melting/freezing point (°C)	31-36
Boiling point (°C)	177
Vapour pressure (Pa at 15°C)	17.7
Density (kg/m^3 at 20°C)	1,32
Water solubility (mg/L at 20°C)	3.65 (free acid) 1,936 (sodium salt) Estimated values (see text)
n-Octanol–water partition coefficient (log K_{OW})	4.15 (free acid) 0.33 (sodium salt) Estimated values (see text)

Acid dissociation constant (pK_a)	< 1.6

2.2 Mandatory classification and labelling

PFHpA, as the free acid, is listed on the GB MCL list. Classification is summarised as follows:

Table 4: Mandatory classification in the GB MCL list

Index No	International Chemical Identification	EC No	CAS No	GB MCL list Classification		Aligned with EU CLH[a]
				Hazard Class and Category Code(s)	Hazard statement code(s)	Y/N
607-761-00-3	Perfluoroheptanoic acid; tridecafluoroheptanoic acid	206-798-9	375-85-9	Repr. 1B STOT RE 1	H360D H372 (liver)	Y

[a] EU CLH is harmonised classification and labelling in accordance with Regulation (EC) 1272/2008

Further information regarding the classification is available in HSE's GB MCL Technical Report (HSE, 2021).

2.3 Human health hazard assessment

Please see Section 2.2 (mandatory classification and labelling). Given the classification, no further assessment has been undertaken for the purpose of this report.

2.4 Environmental fate properties

2.4.1 Degradation

The carbon-fluorine bond is very strong, and it is well established that the extent of substitution allows the electronegative fluorine to protect the carbon chain from chemical attack, meaning that perfluorinated carbon chains are inherently resistant to degradation.

2.4.1.1 Abiotic degradation

The information on abiotic degradation presented in the EU MSC support document is summarised in Table 5. There are no studies available for PFHpA and a read-across approach from data for the chemically similar longer chain acids PFOA (ECHA, 2013) and PFNA (ECHA, 2015) was used to conclude that PFHpA is abiotically stable under environmental conditions. The Agency notes that there was also no evidence for abiotic degradation presented in the EU REACH Annex 15 restriction report for the shorter chain PFHxA (ECHA, 2019).

Phototransformation of PFHpA was estimated using AOPWIN v1.92 of EPISuite™. The Agency notes that there isn't a rate constant available for the CF_2 fragment and therefore PFHpA is not likely to be within the applicability domain of the model.

The Agency agrees with the conclusion stated that PFHpA is abiotically stable under environmental conditions.

Table 5: Summary of abiotic degradation data presented in the EU MSC support document

Abiotic degradation process	Source	Results / conclusions
Hydrolysis	Hori *et al.* (2008): Hydrolysis of PFNA in hot water (80°C) Reliability: 2	Little or no decomposition after 6 hours (97% of PFNA remaining)
	ECHA (2013): Hydrolysis of PFOA Reliability not stated[a]	Hydrolysis half-life of PFOA concluded to be > 92 years
Oxidation	No data	-
Phototransformation in air	Estimation using AOPWIN v1.92 of EPISuite™	For PFHpA: atmospheric half-life of 20.57 days using a 12 h day and 1.5 x 10^{-6} OH radicals / m^3.
	Hurley *et al.* (2003) presented in ECHA (2013): Experimental study of abiotic degradation of C_2-C_5-PFCAs	Results used to predict the atmospheric lifetime of PFOA as 130 days (ECHA, 2013b)
Phototransformation in water	No data under conditions relevant for an aqueous environment	-

[a] Reported in the OECD screening information dataset (SIDS) initial assessment report (OECD, 2006)

2.4.1.2 Abiotic degradation

2.4.1.2.1 Biodegradation in aqueous media

2.4.1.2.1.1 Estimated data

The EU MSC support document presents results from BIOWIN v4.10 for PFHpA, PFHxA, and PFOA. PFHpA has the potential for persistence because of the combination of BIOWIN 2 < 0.5 and BIOWIN 3 < 2.25 and also the combination BIOWIN 6 < 0.5 and BIOWIN 3 < 2.25. The support document states that the training set is incompletely implemented for perfluorinated carbon chains, in particular because there is no non-terminal perfluorinated carbon in the BIOWIN models. It gives the example of the contribution of the perfluorinated carbon chain to the biodegradability score by 5 fragments of 'carbon with 4 single bonds and no hydrogens'. BIOWIN 1-4 has a specific fragment for a trifluoromethyl group while BIOWIN 5 and 6 have 13 fragments of fluorine. Despite the incomplete training set, the support document concludes that the modelling adds to the weight of evidence that PFHpA is potentially slow to biodegrade.

Table 6: BIOWIN v4.10 modelling results for PFHpA, PFHxA, and PFOA presented in the EU MSC support document

Model	Result			Conclusions
	PFHpA	PFHxA	PFOA	
BIOWIN 1	-0.7932	-0.5854	-1.0009	Does not biodegrade fast
BIOWIN 2	0.0000	0.0000	0.0000	Does not biodegrade fast
BIOWIN 3	1.1857	1.5083	0.8631	Recalcitrant
BIOWIN 4	2.6665	2.892	2.4409	Weeks – Months
BIOWIN 5	0.3742	0.4206	0.3278	Not readily degradable
BIOWIN 6	0.0000	0.0000	0.0000	Not readily degradable
BIOWIN 7	-0.6483	-0.3141	-0.9825	Does not biodegrade fast

2.4.1.2.1.2 Screening tests

The EU MSC support document states that there are no biodegradability screening studies for PFHpA and so consideration is made based on read across to PFHxA, PFOA, and PFNA. The studies are summarised in Table 7.

The Agency notes that for the modified OECD Test Guideline (TG) 301D study (Sáez *et al.*, 2008), 45% degradation of PFHxA was reported after 15 weeks. However, similar degradation was reported for the sterile control in the original academic paper and this casts some doubt on the reliability of the study itself and the degradation reported for PFHxA.

In conclusion, by read across to PFOA and PFNA, it is concluded that a very low level of mineralisation may be expected over 28 days under the conditions of OECD TG 301. PFHpA is therefore considered to be not readily biodegradable.

Table 7: Summary of screening test results presented in the EU MSC support document

Author / year	Study	Results / conclusions
Sáez *et al.* (2008)	Based on OECD TG 301D; test substances PFHxA, PFOA, PFNA, and PFOS. Reliability score 2	Degradation after 3 weeks: PFHxA: 5%; PFOA: 5%; PFNA: 10% Degradation after 15 weeks: PFHxA: 45%; PFOA: 0%; PFNA: 10%
Stasinakis *et al.* (2008)	OECD TG 301F; test substances PFOA and PFNA Reliability score 2	No degradation was seen after 28 days
MITI (2002)	28-d OECD TG 301C; test substance PFOA and its ammonium salt Reliability score 2	Degradation after 28 days: PFOA (free acid): 5% PFOA (ammonium salt): 7%

2.4.1.2.1.3 Simulation tests

The EU MSC support document states that there are no simulation tests available for PFHpA in either water, sediment, or soil and so consideration is based on read across to two studies for PFOA, summarised in Table 8. The Agency notes that both of these studies are screening tests and not simulation tests.

Table 8: Summary of additional screening tests presented in the EU MSC support document

Reference	Study type	Results / conclusions
Liou *et al.* (2010)	Anaerobic degradability study using PFOA (110 or 259 days) Inoculum sourced from municipal sewage Reliability score 2	No clear evidence of degradation
Wang *et al.* (2005)	Biodegradation study of the ammonium salt of PFOA in mixed bacterial culture and activated sludge under aerobic conditions	Less than 0.6% mineralisation after 28 days

	Reliability score 4	

- Liou *et al.* (2010)

This was a study of the anaerobic biodegradability of PFOA (100 mg/L) and its ammonium salt. The premise of the study was that PFOA might be susceptible to reductive defluorination by anaerobic microbial communities. Environmental samples from a municipal waste-water treatment plant, industrial site sediment, an agricultural soil, and soils from two fire training areas were used as inoculum sources and there were a range of different electron donors. There was little evidence of any degradation of PFOA in preliminary screening (tests up to 259 days) or in a further test concentrating on sewage treatment plant samples as inoculum and acetate as electron donor (test duration 110 days). Some loss of PFOA was observed during co-metabolism of PFOA and trichloroethane dichlorination but this apparent decline was not confirmed by identification of candidate transformation products. The study concluded that under the conditions examined, PFOA is microbiologically inert, hence environmentally persistent. The Agency agrees that under the conditions of the study, PFOA was persistent.

- Wang *et al.* (2005); reliability score 4 (due to insufficient reporting detail)

This was a biodegradation study of the ammonium salt of PFOA (^{14}C labelled) in mixed bacterial culture and activated sludge under aerobic conditions. Less than 0.6% mineralisation was observed after 28 days ($^{14}CO_2$ capture and measurement). The study was given a reliability score of 4 because of limited reporting but the Agency agrees that it indicates that PFOA is persistent under the conditions of this test.

2.4.1.2.2 Biodegradation in soil

The EU MSC support document states that there are no simulation studies in soil available for PFHpA. It discusses the detection of PFOA in either soil or groundwater at sites contaminated with perfluorinated substances (summarised in Table 9). It also presents information from the OECD SIDS initial assessment report (OECD, 2006) from site specific monitoring at different company sites in the USA that indicate the persistence of PFOA in soil for decades.

Table 9: Summary of studies concerning of PFOA in soil and groundwater presented in the EU MSC support document

Reference	Study details	Results / conclusions
Moody and Field (1999)	Analysis of groundwater samples (1 to 3 m) at two sites impacted by firefighting foams	PFOA detection: Maximum concentrations from 116 to 6,750 µg/L

	Reliability not stated[a]	
Moody *et al.* (2003)	Analysis of groundwater samples at a site impacted by firefighting foams Reliability score: 2	Perfluorinated surfactants present in the groundwater for at least 5 and for up to 15 years.

[a] Reported in the OECD SIDS initial assessment report (OECD, 2006)

- Moody and Field (1999)

The study states that there was inactivity at the two sites where firefighting foam had been used for between 7 to 10 years before detection of PFCAs in the groundwater. The Agency agrees that this provides evidence for the persistence of PFOA in the environment, given its likely use in firefighting foams. The Agency notes that other PFCAs including PFHpA were detected in the groundwater but it is not clear if it was present in the original foams or formed as a degradation product from other components of the firefighting foams so no direct conclusion can be made concerning persistence.

- Moody *et al.* (2003)

The study reports concentrations of PFOA between 8 and 105 µg/L and a detection frequency of 90% from 10 groundwater sites up to approximately 500 m from the fire-training area. The Agency agrees that this provides evidence for the persistence of PFOA in groundwater, given the time of at least 5 years since active firefighting activity at the site.

2.4.1.3 Summary and discussion of degradation

There are no studies available for PFHpA so a read-across approach using data for the chemically similar PFCA homologues PFHxA, PFOA and PFNA is used to fill the information gaps. PFHpA sits between PFHxA and PFOA in this series.

PFHpA is expected to be abiotically stable under environmental conditions, based on evidence for PFOA and PFNA. It has no readily hydrolysable functional groups, and the fluorinated carbon chain is resistant to chemical attack. There was also no evidence for abiotic degradation of PFHxA.

Quantitative structure-activity relationships suggest that PFHpA is slow to biodegrade, although the model training sets are not ideal.

Little degradation was observed in ready biodegradability studies with PFOA and PFNA and the criteria for ready biodegradability were not fulfilled. A modified OECD TG 301D study reported a higher level of degradation for PFHxA over 15 weeks, but this still did not meet the criteria to be considered readily biodegradable, and the study is of doubtful reliability as similar degradation was reported for the sterile control. There was no

information from other sources that would indicate ready biodegradability and therefore the Agency concludes that PFHpA is not readily biodegradable.

There are no simulation degradation studies available for PFHpA and therefore persistence has to be considered based upon weight of evidence including read across from non-standard studies using PFOA and its salts. The continued detection of PFOA in groundwater at sites where its use in firefighting foams had been discontinued for at least 5 years provides evidence for its persistence. PFOA was stated to be “persistent” in the OECD SIDS assessment report (OECD, 2006) and it has been identified internationally as a persistent organic pollutant (POP) under the Stockholm Convention (UN POPS, 2022) where the criteria are half-lives greater than 2 months (water) and 6 months (soil and sediment). Since PFHpA is only one carbon atom shorter in chain length than PFOA, it is highly likely to be similarly persistent.

Further supporting evidence about the persistence of PFCAs is available in an EU REACH Annex 15 restriction report for PFHxA (ECHA, 2019) and EU MSC support document for PFNA (ECHA, 2015). The Agency agrees with the conclusion that this type of substance is highly persistent in both cases.

Overall, the stability of perfluorinated substances is widely accepted by the international scientific community. The lack of specific evidence for degradation of PFHpA means that reliance must be placed on the evidence for closely related homologues, none of which degrades significantly under environmentally relevant conditions. The Agency concludes that PFHpA and its salts will undergo very slow degradation in the environment (e.g. half-lives significantly longer than 60 days in freshwater).

2.4.2 Environmental distribution

2.4.2.1 Adsorption/desorption

2.4.2.1.1 Batch adsorption studies

The EU MSC support document summarises four batch sorption studies from academia for a range of different PFCAs including PFHpA; results for PFHpA are summarised in Table 10.
In all four studies, the test substance was a mixture of PFAS. Except for the study by Guelfo and Higgins (2013), analysis concentrated on the aqueous phase and mass balance was reported in limited detail or not at all, and there was insufficient detail to check how calculations were performed. The Agency acknowledges that there was no specific attempt to follow OECD TG 106 in any of the studies and concludes that all could be considered of reliability score 2. The studies all reported organic carbon-water partition coefficient (log K_{OC}) values for PFHpA that were between 1.6 and 2.

- Guelfo and Higgins (2013)

A number of perfluoroalkyl acids (PFAAs) were applied as a mixture at five concentrations from 0.5 to 1,000 µg/L to three soils with organic carbon content of 0.8, 1.7, and 4.5%. The

vessels were shaken for 10 days before analysis of both the water phase and the soil phase. The mass balance for PFHpA was 117 ± 9% and the reported log K_{OC} for PFHpA was 1.63 ± 0.15 (values for individual soils were not reported).

- Higgins and Luthy (2006)

The distribution of three classes of PFAS, including several PFAAs, were investigated for 5 different sediments (organic carbon content from 0.56 to 9.66%). The initial aqueous concentrations were approximately 0.5 to 100 µg/L and the vessels shaken for up to 10 days. Log K_{OC} values were calculated from analysis of the aqueous phase, although the sediment was also analysed in approximately one third of samples to determine mass balance (reported as 63 to 120% overall). The shortest chain PFCA investigated was PFOA, for which a log K_{OC} of 2.06 mL/g was reported. The Agency agrees with the EU MSC support document that although not examined directly, the likely log K_{OC} of PFHpA would have been lower than that for PFOA, i.e. below 2.

- Zhang *et al.* (2013)

This was a batch adsorption study of 5 sludges with total organic carbon content ranging from 12.60 to 55.86%. Seven test PFCA concentrations (10 to 1000 nmol/L) were used to determine adsorption isotherms and vessels were shaken for 48 hours. Although analysis of both aqueous phase and sludge was indicated, no mass balance data was reported. The mean Freundlich log K_{OC} values reported for PFHpA in the EU MSC support document were checked and agreed by the Agency (mean log K_{OC} = 1.80 ± 0.20).

- Campos Pereira *et al.* (2018)

A mixture of PFAS including a number of PFCAs at an aqueous concentration of 1.25 µg/L were shaken for 7 days with a single soil at different pH values (adjusted using nitric acid) and in the presence of different added metal ions (Al^{3+}, Ca^{2+} and Na^{+}). Sorption constants were determined from analysis of the aqueous phase only. The mean log K_{OC} value for PFHpA from the different conditions used was 1.7.

The EU MSC support document also reports log K_{OC} values determined from a desorption experiment for $C_{6\text{-}10}$-PCFAs from a biosolid amended soil (Sepulvado *et al.*, 2011). The log K_{OC} values averaged 1.63 to 2.35 for PFHxA, 2.22 to 2.82 for PFHpA, 2.42 to 2.59 for PFOA, 2.42 to 2.59 for PFNA, and 3.14 to 3.32 for PFDA. Other values are presented from monitoring studies in sediment in Tokyo Bay (Ahrens *et al.*, 2010) and in river and canal sediments in China (Li *et al.*, 2011); results are summarised in Table 10.

Table 10: Summary of log K_{OC} values for PFHpA presented in the EU MSC support document

Reference	Reliability score	Matrix	Log K_{OC}
Batch sorption studies			
Guelfo and Higgins (2013)	2	Soil (n =3)	1.63 ± 0.15
Higgins and Luthy (2006)	4	Sediment (n = 5)	< 2 (estimated by extrapolation)
Zhang *et al.* (2013)	2	Sewage sludge (n = 13)	1.80 ± 0.20
Campos Pereira *et al.* (2018)	2	Soil (n =1)	1.7 (mean from different conditions)
Other studies			
Sepulvado *et al.* (2011)	2	Sewage sludge amended soil	2.22 to 2.82 (desorption based)
Ahrens *et al.* (2010)	2	Marine sediment (n = 1)	2.9
Li *et al.* (2011)	2	River and canal sediment	3.0 to 3.6

2.4.2.1.2 Column leaching studies

The EU MSC support document also includes two column leaching studies, one considering a riverbank filtration system and the other either a loamy sand soil or sewage sludge.

- Vierke *et al.* (2014)

This study investigated the transport of $C_{4\text{-}10}$-PFCAs and $C_{4,6\text{-}8}$-PFSAs in a water-saturated sediment system representing a riverbank filtration scenario. PFHpA concentrations in blank samples were considered to be high and it was excluded from further evaluation. The leaching of PFHxA and PFOA were evaluated and distribution coefficients (K_d) reported and log K_{OC} values determined (3.0 and 3.6 for PFHxA and 4.0 and 3.9 for PFOA, respectively, from sampling at a depth of 40 cm and 80 cm). The MSC support document considered these values were not reliable as the organic matter content of the sediment was very low (0.07%) and the Agency agrees with this conclusion.

- Gellrich *et al.* (2012)

The mobility of several PFCAs was investigated using a column filled with loamy sand (organic carbon concentration was 2.16%). Perfluorobutanoic acid, perfluoropentanoic acid and PFHxA were not retained by the loamy sand and eluted together with the tracer. PFHpA eluted almost completely over a period of 70 weeks with a fast first desorption followed by a slower second desorption. The desorption of PFOA commenced after 33 weeks, while >C_8-PFCAs could not be detected in the percolating water after 140 weeks. The EU MSC support document gave this a reliability score of 4. The Agency has not accessed the study so cannot comment on reliability but notes that the relative mobility of different PFCAs in the column is consistent with other sorption studies.

2.4.2.2 Volatilisation

The EU MSC support document states that there is no experimental data available for the Henry's law constant (HLC). Estimated values from HenryWin (v3.20) and based on vapour pressure and solubility values are presented in Table 11. It was concluded that the values for the ammonium salt were most relevant for a realistic assessment of potential for volatilisation from water, given that PFHpA in the aquatic environment will be present in anionic form at environmentally relevant conditions. The bond contribution method includes all of the fragments present in free PFHpA and therefore it appears to be within the applicability domain of the model. However free PFHpA is not environmentally relevant as it will be present in ionised form in the environment. The bond contribution method does not directly consider ionised substances and likely misrepresents the type of bonding present in its estimated bond contributions. This is manifested in the inexplicable large difference between the estimated HLC values for the sodium and ammonium salts. The Agency concludes that the HLC values for the salts are not within the domain of the model and should be considered unreliable.

The alternative approach to estimating HLC in the EU MSC support document uses the estimated water solubility for the free acid and ammonium salt to calculate HLC values. The estimated water solubility values are unlikely to be within the applicability domain of the model used (WSKOWWIN v1.42 of the EPISuite tool; see Section 2.1.5) and therefore these values are also considered not reliable.

However, given that PFHpA is present in ionised form in the aqueous environment, the Agency agrees with the conclusion that PFHpA has a low to moderate tendency to volatilise from water.

Table 11: Summary of Henry's Law constant values presented in the EU MSC support document (except where stated)

Source	Description	Henry's Law Constant (HLC) ($Pa.m^3/mol$)
HenryWin (v3.20) of EPISuite™	Estimated data	Free acid: 1.75×10^3 Sodium salt: 1.76×10^3 Ammonium salt: 8.42×10^{-6}
ECHA (2016)	Equation R.16-4a: $HENRY = \frac{Vapour\ pressure\ (VP)\ x\ MWt}{Solubility}$ MWt = 364.06 g/mol (PFHpA) MWt = 381.09 g/mol (NH_4^+ salt) Solubility = 3.65 mg/L (PFHpA) Solubility = 330.2 mg/L (NH_4^+ salt)	Free acid estimated (VP = 17.7 Pa): 1.765×10^3 Ammonium salt: estimated (VP = 0.064 Pa): 7.39×10^{-2} (value calculated by the Agency)

2.4.2.3 Removal during water treatment processes

The low adsorption potential of PFHpA combined with its low potential for biodegradation and low to moderate ability to volatilise from water suggest that it may not be effectively removed from the aqueous phase during wastewater treatment. This is borne out by the evidence presented in the EU MSC support document, which references several publications that have shown that short and long chain PFCAs are released to receiving waters in effluents (Arvaniti and Stasinakis, 2015; Bossi *et al.*, 2008; Eriksson *et al.*, 2017). The support document also references work that has shown increases in PFCAs, including PFHpA, in effluents compared to influents, providing evidence for both the difficulty in removing PFCAs and the presence of precursor substances that degrade to PFCAs during the treatment process (Bossi *et al.*, 2008; Eriksson *et al.*, 2017; Sinclair and Kannan, 2006). The Agency concludes that PFHpA is unlikely to be efficiently removed by most current wastewater treatment plants (WWTPs) in the United Kingdom.

The EU MSC support document states that conventional and advanced wastewater treatment processes cannot remove PFCAs like PFHpA, giving examples of processes as coagulation/flocculation/sedimentation, raw and settled water ozonation, biological activated carbon (BAC) filtration, and disinfection by medium-pressure UV lamps and free chlorine. The Agency has considered several of the publications presented, summarised as follows:

- Eschauzier *et al.* (2012) investigated the behaviour of perfluoroalkyl acids (PFAAs) from intake to finished drinking water, taking samples from influent and effluent of several treatment steps. Longer chain PFCAs such as PFNA and PFDA were removed by granular activated carbon (GAC) treatment but shorter chain acids including PFHpA were not. The concentration of PFHpA in the finished drinking water was similar to or greater than that present in the intake water.

- Appleman *et al.* (2014) determined the effectiveness of a variety of water treatment processes by taking grab samples from before and after each treatment process at 20 different treatment sites. The study concluded that full-scale conventional treatments such as coagulation followed by physical separation, chemical oxidation, aeration, and disinfection were unable to remove PFAS. Advanced technologies were able to remove most PFHpA (> 89% for GAC and > 81% for reversed osmosis (RO)) while anion exchange (AIX) resulted in partial removal (38% and 54% at two different sites).
- Quiñones and Snyder (2009) measured the presence of a series of PFCAs in influent and effluent of drinking water utilities (n = 7) in the United States. PFHpA was not measured but there was no evidence that PFHxA was removed by treatment at any site, whereas PFOA was completely removed at 3 out of 6 sites where it was detected in the influent but not removed at the other sites.
- Shivakoti *et al.* (2010) studied 11 PFAS including PFHpA in several WWTPs in Japan and Thailand. Samples were collected after different treatment processes in addition to influent and final effluents. The general conclusion was that the adopted aerobic and anaerobic biological treatment processes by WWTPs were ineffective at treating PFCAs. Other treatment processes such as sand filtration, chlorination, ozonation, and activated carbon adsorption were also ineffective.

The Agency notes that other publications reaffirm the conclusion that drinking water treatment processes do not remove all PFAS. For example:

- Sadia *et al.* (2023) investigated the concentrations of 56 target PFAS including PFHpA in raw and produced drinking water at 18 different full scale production locations in the Netherlands with either advanced treatment (for river water sources) or conventional treatment (for groundwater sources). Advanced treatments included powder activated carbon (PAC), GAC, UV, and RO. Advanced treatments resulted in removal efficiencies for PFHpA from approximately -70% (PFHpA greater in the produced water) to approximately 80%. GAC alone or in combination with other techniques was the most efficient treatment.
- Pan *et al.* (2016) examined the removal of a range of PFAS at two drinking water treatment plants. There was little removal of PFHpA at a drinking water treatment plant involving coagulation, sand filtration, ozonation, and GAC processes. At a plant using coagulation, sand filtration, GAC, and PAC, there was little evidence of removal except for the PAC process, which alone reduced PFHpA concentrations by over 80%.

The Agency concludes that PFHpA is unlikely to be efficiently removed by conventional wastewater and drinking water treatment processes. Efficiency can be improved by using more energy intensive advanced treatment methods, but even these cannot always deliver high levels of removal.

2.4.2.4 Field monitoring data

The EU MSC support document states that PFHpA is detected in surface waters all over the world and refers to the field and monitoring data presented in the ECHA Annex 15 restriction report for PFAS in firefighting foam (ECHA, 2022b), stating that it is consistently identified in the ng/L range in European surface waters. The summary of data for Europe is presented in Table 12. It refers to the same document for examples of concentrations of PFHpA in groundwater from various countries. The upper range of concentrations in groundwater are much higher generally than for surface water. This probably reflects the monitoring of groundwater around sites influenced by PFAS contamination such as firefighting facilities at airfields.

The Agency is aware of recent developments in the reliability assessment of monitoring data using Criteria for Reporting and Evaluating Exposure Datasets (CREED; Merrington *et al.* (2024)). It would normally be appropriate to use this approach to carry out an assessment of the studies available. However, given the volume of data and general consistency in findings, the Agency does not consider this to be necessary in this case.

Table 12: Summary of surface water and groundwater concentrations presented in the EU restriction dossier for PFAS in firefighting foam

Country	Surface water			Groundwater	
	Number of studies	Type of water	PFHpA (ng/L)	Number of studies	PFHpA (ng/L)
Austria	2	river	0 to 6.6	-	-
Bulgaria	3	river	0 to 1.3	-	-
Croatia	3	river	0 to 19	-	-
Czech Republic	1	river	2 to 2.6	-	-
France	1	river	0 to 7	6	< LOQ to 224
Germany	1	seawater	0.15 to 0.2	1	300 to 560
Hungary	3	river	0 to 10	-	-
Italy	1 2	not stated river water	0.3 to 946 0 to 36	2	0.88 to 761
Netherlands	1	lake	0 to 25	1	< LOQ to 318
Sweden	-	-	-	3	< LOQ to 740

There is also evidence for the widespread presence of PFHpA from extensive Environment Agency monitoring data (2021 to 2025; Table 13) where it was above the reported limit of quantification (LOQ) in 36% of surface water samples (median value 4.4 ng/L) and above the LOQ in 7.5% of groundwater samples (median value 3.3 ng/L). It is

detected less frequently than its nearest homologues PFHxA and PFOA (presented for comparison), which is likely to reflect the more limited sources of PFHpA rather than differences in properties. However, average concentrations are similar (in the range of 1 to 10 ng/L).

Table 13: Summary of Environment Agency monitoring data for PFHxA, PFHpA, and PFOA (2021 to 2025)

Parameter	Surface water			Groundwater		
	PFHxA	PFHpA	PFOA	PFHxA	PFHpA	PFOA
Number of samples	5,073	5,049	5,103	8,650	8,639	9,270
Reported LOQ (µg/L)	0.0005	0.001	0.0005	0.0005	0.001	0.0005
Detection rate (%)	61.86	36.19	68.76	25.66	7.45	16.95
Mean (µg/L)	0.0050	0.0038	0.0037	0.0079	0.0057	0.0073
Median (µg/L)	0.0022	0.0044	0.0017	0.0017	0.0033	0.0013

2.4.2.5 Summary of environmental distribution

Although standard studies are not available, several academic studies indicate that PFHpA has a low potential for adsorption to organic matter in soils, with log K_{OC} values around 1.6 to 1.7, rising to around 2.8 when sewage sludge is included in the matrix. As it exists as an anion in the environment, it can therefore move relatively easily through soils (since they are generally negatively charged). Slightly higher log K_{OC} values (up to 3.6) have been reported in sediments. One column leaching study of unknown reliability provides supporting evidence of relatively low sorption potential.

Estimates of the Henry's Law constant suggest that PFHpA has a relatively low tendency to volatilise from water, although the reliability of the estimates is unknown.

The combination of low adsorption potential, moderate water solubility, and likely low Henry's Law constant mean that PFHpA will predominantly reside in the aquatic compartment following release, and that it will be mobile.

Coupled with very limited potential for biodegradation, these properties also mean that conventional water treatment techniques (e.g. coagulation, physical separation, chemical oxidation and aeration) are unlikely to efficiently remove it from wastewater and drinking water. This is supported by monitoring data from multiple locations. Advanced (more energy intensive) technologies such as GAC, RO and PAC are able to remove >80% of PFHpA in some cases, though they are not always effective. In any case, these techniques do not destroy the PFHpA.

Any environmental emission is therefore expected to lead to contamination of the water environment, and this is confirmed by its widespread and frequent detection at ng/L levels in surface water and groundwater.

2.4.3 Data indicating potential for long-range transport

The EU MSC support document presents environmental monitoring data (Table 14) which provides evidence that PFHpA is widely detected at low concentrations in remote areas. All of the studies that directly reported monitoring data were relevant and included the data required under the CREED reliability assessment framework but were missing some of the recommended data. Overall, the Agency concludes that in general the studies are 'usable with restrictions' at the CREED silver assessment level.

As well as direct transport of PFHpA itself, the EU MSC support document notes that there is evidence for other means of transport. For example, one possibility is transport of neutral volatile PFAS such as fluorotelomer alcohols (FTOHs), which may then form PFHpA as a degradation product after they have deposited. Another possibility is the degradation of precursors in the atmosphere and subsequent transport of PFHpA bound to particles or dissolved in droplets of water (cloud, rain, or fog).

Table 14: PFAS monitoring data from remote regions presented in the EU MSC support document

Reference	Study details	Results / conclusions
Kirchgeorg *et al.* (2013)	European Alps in a 10 m long firn core from Colle Gnifetti in the Monte Rosa Massif (4455 m above sea level) away from human activity	Annual data (1996 to 2008): 60 to 340 pg/L
Kwok *et al.* (2013)	European Arctic (Svakbard, Norway); surface snow and surface water	Melted glacier (n =4): 110.1 ± 6.01 pg/L Glacier surface snow: 17.1 ± 6.01 pg/L
Xie *et al.* (2020)	Surface snow, Dome C, Antarctica	PFOA: 358 ± 71 pg/L PFHpA: 183 ± 60 pg/L PFHxA: 222 ± 97 pg/L
Joerss *et al.* (2020)	Spatial distribution of 29 PFAS between Europe and the Arctic and Fram Strait between Greenland and Svalbard.	PFHpA detected at all sampling locations.

The estimated atmospheric half-life of PFHpA is 20.57 days using the AOPWIN model, although the Agency notes that PFHpA is not likely to be within the applicability domain of the model (see Section 2.4). The EU MSC support document notes that experimentally derived atmospheric lifetimes for C_3 to C_5-PFCAs was 130 days and so the predicted half-life is likely to be an underestimate. The Agency agrees, despite the uncertainty in

estimated values, that the atmospheric half-life is very likely to be much greater than the criterion for potential transport to remote areas (atmospheric half-life > 2 days) stated in Annex D, Section 19d of the Stockholm Convention on Persistent Organic Pollutants (POPs) (UNEP, 2025).

The OECD long range transport tool was used to estimate long-range transport potential of PFHpA. The input values used were log D_{OW} = 0.33, log K_{AW} = -2.2 and molecular weight = 364.05. The half-life values used are presented in Table 15 alongside the results. Modelling with the shortest half-lives for water and air (the cutoff criteria for a very persistent substance given in Annex 13 of UK REACH) are highly likely to be an underestimate of actual half-lives but still show a characteristic travel distance (CTD) of 26,165 km. This implies that PFHpA can reach any part of the planet before significant degradation occurs. The Agency carried out additional modelling with the estimated half-life in air and this still showed a CTD of 8,313 km, and so an ability for PFHpA to reach remote regions.

The MSC support document notes that the estimations of log K_{AW} and log K_{OW} are known to be difficult to estimate for PFAS and therefore the modelling should be treated with reservations. The log D_{OW} value was estimated using KOWWIN v1.68 and is unlikely to be reliable, while the K_{AW} value was estimated using COSMOtherm with reliability not clear. The Agency agrees that there is some uncertainty in the modelling but notes that the potential for long range-transport suggested by the modelling is consistent with the monitoring data that shows the presence of PFHpA in remote regions.

Table 15: Summary of results from studies summarised in the EU MSC support document

Scenario	Half-life inputs (days)			Model outputs	
	air	water	soil	CTD[a] (km)	Overall half-life (P_{OV}; days)
MSC support document modelling (‘best case’)	130	60	180	26,165	128
Agency modelling (estimated air half-life value)	20.57	60	180	8,313	70

[a] CTD indicates the distance from a point source at which the chemical’s concentration has dropped to 38% of its initial concentration.

2.4.3.1 Summary of long-range transport potential

Modelling of atmospheric half-life and long-range transport using internationally accepted methods suggests that PFHpA has the potential for long-range transport. The reliability of the atmospheric half-life estimate is uncertain but it may have been under-estimated by analogy with measured data for shorter chain PFCAs. The modelling uses indicative half-

life data for water and soil that are likely to be significant underestimates for PFHpA too. Long-range transport potential is indicated by its reported presence at low concentrations in remote regions (including wildlife – see Section 2.4.3), although this may also be the result of transport of other precursor substances.

2.5 Conclusions on the SVHC properties

2.5.1 CMR assessment

Perfluoroheptanoic acid (PFHpA) is assessed together with its sodium, ammonium and potassium salts because under most environmental and physiological conditions all forms dissociate to the perfluoroheptanoate anion ($PFHpA^-$). Under environmentally relevant pH conditions, this ionic form predominates and the hazard profile is driven by the shared anion. The identification as an SVHC is therefore based on the properties of PFHpA and applies equally to its salts.

Therefore, as PFHpA (as the free acid) is covered by the index number 607-761-00-3 in the GB MCL list and is classified as Toxic for reproduction category 1B, the Agency concludes that PFHpA and its salts satisfy the criterion in Article 57 (c) of UK REACH.

2.5.2 Equivalent level of concern under Article 57(f)

PFHpA is identified as a substance of very high concern in accordance with Article 57(f) of the UK REACH regulation as there is scientific evidence of probable serious effects to the environment and human health which give rise to an equivalent level of concern to those of other substances listed in points (a) to (e) of Article 57 of the regulation. The properties of PFHpA that lead to the very high concern can be summarised as follows:

- PFHpA fulfils the persistent (P) and very persistent (vP) criteria of Annex 13 of the REACH legislation. Given the known stability of perfluorinated substances, the persistence conclusion of closely related homologues, and the lack of specific evidence for degradation of PFHpA, degradation of PFHpA and its salts in the environment is likely to take a very long time.
- PFHpA has a relatively low adsorption potential (log K_{OC} 1.63 to 1.80), has a high water solubility, and a low tendency to volatilise from water.
- PFHpA is classified as toxic for reproduction Repro 1B and STOT RE 1 (liver).

PFHpA will predominantly reside in the aquatic compartment and has the potential to contaminate surface water and to move through environmental matrices such as soils and sediments to groundwater. PFHpA or precursor substances have the potential for long-range transport through the atmosphere or via oceanic currents, leading to contamination of regions such as the Arctic, Antarctic, and other remote areas. The properties and environmental presence of PFHpA lead to the following concerns:

- Increasing and effectively irreversible presence in the environment.

The properties indicate that PFHpA has the potential, on entering the environment, to contaminate surface waters and groundwaters (including drinking water resources), and to undergo long-range transport to remote regions. There is little evidence of any degradation of PFHpA in the terrestrial or aquatic environment, implying that PFHpA is likely to remain in the environment for a very long time and continued releases to the environment will inevitably lead to slowly increasing concentrations that are effectively irreversible.

- Difficulty in removal from drinking water sources

Part 3 of the Water Environment (Water framework Directive) (England and Wales) Regulations 2017 states in relation to water bodies intended to be used for water abstraction that measures must be included ‘with the aim of avoiding deterioration in the quality of the water in that area, in order to reduce the level of purification treatment required in the production of drinking water abstracted from it’. The properties of persistence, tendency to remain in the aqueous environment, and relatively low adsorption potential indicate that it is likely to be difficult to remove PFHpA from drinking water sources using conventional treatment processes.

- Potential for toxic effects

There is likely to be long-term exposure of humans and wildlife to PFHpA from its long-term presence and likely slowly increasing concentrations in the environment. Given its hazard profile, this indicates a potential to cause harm.

3. Information on use, exposure and alternatives

3.1 UK and EU REACH registration status and tonnage

No registrations were identified under UK REACH and no Downstream User Import Notifications (DUINs)[4] have been submitted for the following substances:

- perfluoroheptanoic acid (EC no. 206-798-9, CAS no. 375-85-9),
- sodium perfluoroheptanoate (EC no. 243-518-4, CAS no. 20109-59-5),
- ammonium perfluoroheptanoate (EC no. 228-098-2, CAS no. 6130-43-4),
- potassium tridecafluoroheptanoate (CAS no. 21049-36-5).

Likewise, no registrations have been identified for these substances under EU REACH.

3.2 General description of uses and exposure

The ECHA Annex 15 report for perfluoroheptanoic acid and the associated salts did not provide any information on the known uses of the substances.

Whilst PFHpA is not registered under UK or EU REACH, it is a potential transformation product of substances that contain a perfluorinated linear chain of six carbon atoms connected by a terminal perfluorinated carbon atom to another non-fluorinated carbon atom.

3.3 Alternatives

No information available.

[4] GB-based companies who imported substances from EU-based suppliers before UK REACH became law on 1 January 2021 had no EU REACH registration obligations as they were classed as Downstream Users (DUs). As they are now importers from outside of GB, they may have registration obligations under UK REACH. However, a transitional measure allows former DUs to suspend the registration until one of three deadlines (depending on tonnage and hazard). Where the identity of these imported substances was known, they could be included in a Downstream User Import Notification (DUIN) submitted to the Agency.

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Glossary

Agency, the	HSE
AIX	Anion exchange
B	Bioaccumulative
CREED	Criteria for reporting and evaluating exposure datasets
CTD	Characteristic travel distance
DU	Downstream User
DUIN	Downstream User Import Notification
DT_{50}	Half life
ECHA	European Chemicals Agency
EU	European Union
FOCUS	Forum for the co-ordination of pesticide fate models and their use
FTOH	Fluorotelomer alcohol
GAC	Granular activated carbon
HLC	Henry's law constant
IUPAC	International Union of Pure and Applied Chemistry
K_{OC}	Organic carbon normalised adsorption coefficient
K_{OW}	n-Octanol–water partition coefficient
MCL	Mandatory classification and labelling
MSC	Member State Committee
OECD	Organisation for Economic Cooperation and Development
P	Persistent
PAC	Powdered activated carbon
PFAA	Perfluoroalkyl acid
PFAS	Perfluoroalkyl substance
PFCA	Perfluorocarboxylic acid
PFHpA	Perfluoroheptanoic acid
PFHxA	Perfluorohexanoic acid

PFNA	Perfluorononanoic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulphonic acid
pK_a	Acid dissociation constant (logarithmic form)
POP	Persistent organic pollutant
REACH	Registration, evaluation, authorisation and restriction of chemicals
RO	Reverse osmosis
SFO	Single first order
SIDS	Screening information dataset
SMILES	Simplified Molecular Input Line Entry System
SVHC	Substance of very high concern
TG	Test guideline
UV	Ultraviolet
vB	Very bioaccumulative
vP	Very persistent
vPvB	Very persistent and very bioaccumulative
WWTP	Wastewater treatment plant

Appendix A

Physicochemical properties for PFHxA, PFOA, and PFNA are presented in the EU MSC support document and incude experimental and calculated data. Here, only calculated data from the EPISuite™ models are included (except for the dissociation constant) to allow for direct comparison (Table A1). The uncertainty of the values for log K_{OW} and water solubility are discussed in Section 2.1.5.

Table A1: Overview of physicochemical properties of PFHxA, PFOA, and PFNA

Property	PFHxA	PFOA	PFNA
Physical state at 20 °C and 101.3 kPa	Solid	Solid	Solid
Melting/freezing point (°C)[a]	23.07	27.28	38.94
Boiling point (°C)[a]	165.05	203.77	221.92
Vapour pressure (Pa at 25°C)[a]	263	34.3	6.75
Water solubility (mg/L at 25°C)[b]	27.12	0.4813	0.06258
n-Octanol–water partition coefficient (log K_{OW})[c]	3.48	4.81	5.48
Dissociation constant (pK_a)	-0.16	0.5 to 2.8	< 1.6 (experiment) 0.82 (calculated)

[a] calculated by the Agency using MPBPVP v1.43 in EPISuite™
[a] calculated by the Agency using KOWWIN v1.69 in EPISuite™
[a] calculated by the Agency using WSKOWWIN v1.42 in EPISuite™

Further information

This publication is available on the HSE website here.

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