

PFAS in firefighting foams
Response to comments on the SEAC draft opinion
(ORCOM)

on an Annex XV dossier proposing restriction on
PFAS in firefighting foams

31 May 2023

1. General comments and answers to specific information requests

1.1. Specific information requests

1. SEAC would welcome further information on the availability, technical feasibility and implementability of alternative PFAS-free firefighting foams in the following sectors/activities:
 - a. offshore exploration and exploitation,
 - b. transport of flammable liquids in pipelines,
 - c. (bulk) transport of flammable liquids on rail and road,
 - d. Temporary storage directly related to transportation of dangerous substances,
 - e. "Neighbouring establishments" as defined by Seveso Directive (an establishment that is located in such proximity to another establishment so as to increase the risk or consequences of a major accident)

Based on the information received in the consultation on the Annex XV report, SEAC assessed whether these sectors/activities in some cases may be affected by similar substitution concerns as those justifying a longer transitional period for installations covered by the Seveso Directive. However, so far, SEAC could not identify evidence that sufficiently justifies the recommendation of a 10-year transitional period. In order to be considered, submitted information should contain all of the following:

- Detailed description of the activity, use, location and sector that is considered deserving of a longer transitional period and, where possible, representative examples and case descriptions,
 - Well-justified information on the fire risk, the current performance difference between PFAS-containing and PFAS-free foams in practical application (taking into account recent test results) and the reasons for any identified performance difference (e.g. lacking functionality, etc.),
 - Volume of PFAS-containing foams used in the relevant context per year,
 - Description of the steps that need to be taken in a successful transition to an alternative with durations for each step,
 - List of advantages and disadvantages of a 5-year transitional period,
 - Difference in the cost of the transition (comparing the scenarios of the 5-year transitional period and 10-year transitional period).
2. SEAC would welcome additional corroborated and preferable non-confidential estimates of the additional number of Portable Fire Extinguishers (PFE) that needs to be manufactured to allow the substitution of existing PFAS-containing PFE already present in EU facilities within 5 years after entry into force of the restriction (which is estimated to be in 2024). Submitted information should focus on the following:
 - Information on the amount of existing PFE that have separate containment for the PFAS-containing foam concentrate and would allow for isolation of the corresponding container/bag, thus avoiding the need for complete replacement,

- Information on the amount of non-foam PFE that can be supplied and would be allowed for use instead of existing PFAS-containing PFE,
- Information on the amount of PFAS-free PFE (foam and non-foam) that can be imported to the EU to facilitate a timely phase out of PFAS-containing PFE within 5 years,
- A detailed justification of why manufacturers cannot supply enough quantity of PFAS-free PFE for replacement of existing PFAS-containing ones within 5 years (should that be the opinion of the stakeholder providing the information),
- Information on the manufacturing capacity of PFAS-free PFE (incl. potential overcapacity or standstill times, stocks, supply chain issues, etc.),
- Information on the possibility to revise (national) building codes currently favouring the installation of PFAS-containing PFE even in locations where no class-B fire is expected.

SEAC notes that many factors (including the above-mentioned, but potentially more) need to be considered to come to a reliable conclusion. Without knowledge on certain open issues, there may not be a basis for justifying a longer transitional period.

3. SEAC would welcome additional information on the earliest time point at which the placing on the EU market of new PFAS-containing PFE can be abandoned. In order to justify their answer, comment submitters are expected to provide detailed information on the current number and percentage of PFE sales still relying on PFAS-containing foam agents and the steps required to cease the sale of new PFAS-containing PFE (with durations for each step). SEAC notes that based on currently available information many suppliers of PFE have considerably increased their offer of PFAS-free PFE both in terms of volume and diversity of PFE. It is also noted that customers are being increasingly informed about anticipated regulatory measures to avoid that uninformed buyers are supplied with products that will require premature replacement in the foreseeable future. SEAC considers that well-justified arguments will be needed to justify the continued placing on the market of new PFAS-containing PFE is required given that PFAS-free alternatives appear to generally exist.
4. SEAC would welcome further input on the limit values for PFASs in firefighting foams. To be considered, a proposal of a higher limit value must include well-justified information on
 - Advantages and disadvantages related to the higher limit value,
 - Costs savings achievable by the proposed increase of the limit value as compared to the limit value of 1 mg/l,

SEAC would also welcome input regarding the type of guidance required on sampling and other practicalities to better enable users to adhere to limit values.

5. SEAC would welcome further well-justified and preferably non-confidential information on the ability of foam users in the defence sector to attain exemptions in line with Art. 2(3) REACH if needed after a 5-year transitional period. This includes representative information on the timeline and costs of relevant exemption procedures as well as further detail on the advantages and disadvantages compared to an extended transitional period.

- 6.** SEAC would welcome further information on the availability, technical feasibility and implementability of alternative PFAS-free firefighting foams in the marine sector and more specifically the transport of flammable liquids in bulk via ships. Based on the information received in the consultation on the Annex XV report, SEAC assessed whether a transitional period longer than 3 years is justified. However, so far, SEAC could not identify evidence that sufficiently supports the recommendation of a longer transitional period. In order to be considered, submitted information should contain all of the following:
- Detailed description of the use that is considered deserving of a longer transitional period and, where possible, representative examples and case descriptions,
 - Well-justified information on the fire risk, the current performance difference between PFAS-containing and PFAS-free foams in practical application (taking into account recent test results) and the reasons for any identified performance difference (e.g. lacking functionality, etc.),
 - Volume of PFAS-containing foams used in the relevant context per year,
 - Description of the steps that need to be taken in a successful transition to an alternative with durations for each step,
 - The concrete length of a transitional period that is considered required and appropriate,
 - List of advantages and disadvantages of a 3-year transitional period,
 - Difference in the cost of the transition (comparing the scenarios of the 3-year transitional period and a specified longer transitional period).
- 7.** For municipal fire brigades, in the consultation on the Annex XV Dossier, some stakeholders claimed that an 18-month transitional period is too short, in particular considering the need for training and gaining practical experience during emergencies. Transitional periods of 8 or 10 years were requested but no substantiation was provided. Therefore, an extended transitional period does not currently seem sufficiently justified, also considering that municipal fire services will benefit from a longer transitional period when they have to fight a fire at Seveso establishments. If stakeholders still consider it relevant, SEAC would require concrete information to assess the option of setting a longer transitional period of a specific length, with thorough justification of the requested length where non-Seveso sites are concerned. In order to be considered, submitted information should contain all of the following:
- Detailed description of the use that is considered deserving of a longer transitional period and, where possible, representative examples and case descriptions,
 - Well-justified information on the fire risk, the current performance difference between PFAS-containing and PFAS-free foams in practical application (taking into account recent test results) and the reasons for any identified performance difference (e.g. lacking functionality, etc.),
 - Volume of PFAS-containing foams used in the relevant context per year,

- Description of the steps that need to be taken in a successful transition to an alternative with durations for each step,
- The concrete length of a transitional period that is considered required and appropriate,
- List of advantages and disadvantages of a specified longer transitional period,
- Difference in the cost of the transition (comparing the scenarios of the 18-month transitional period and a specified longer transitional period).

8. SEAC would welcome further well-justified information regarding a potential reporting requirement on the sales of PFAS-containing firefighting foams, by foam formulators during the transitional periods. In particular, SEAC welcomes information regarding the number of formulators that would be affected and the cost and practicability of such a reporting scheme.

1.2. Overview of the comments received

20 comments were received during the SEAC Draft Opinion consultation (see also Table 1).

Table 1 Type of stakeholders responding to consultation

Type of stakeholder	Number of comments received
Trade association	3
Industry association	7
National authority	2
Company	5
NGO	1
Individual	1

The following themes were identified in the comments and the ORCOM is structured accordingly, providing responses by theme rather than per individual comment:

- The proposed concentration limit value and analytical methods
- Portable fire extinguishers
- Exemption for defence sector
- Transitional periods and review
- Overlap with other planned regulatory measures
- Disposal and treatment

2. SEAC rapporteurs' responses to comments

The SEAC rapporteurs would like to thank the many interested parties that contributed to the consultation on the SEAC draft opinion.

The SEAC rapporteurs note that many of the comments received were similar in nature and concerned common topics. In line with the approach to respond to comments received during the Annex XV report consultation, the SEAC rapporteurs prepared general

responses to these common topics. The general responses summarise the nature of the comments received and how the SEAC rapporteurs responded to them, e.g. by amending or complementing the SEAC opinion where considered justified and necessary.

To assist interested parties in understanding how their comments were assessed, the general responses include indicative lists of comment numbers that are associated with a specific topic. These lists are not meant to be exhaustive. Nevertheless, it should be understood that the SEAC rapporteurs considered all of the comments received in the consultation when preparing the general responses.

The SEAC rapporteurs responded to comments by revising the wording of the 'conditions of the restriction' (i.e. the wording of the restriction as proposed by SEAC in section 1.2 of the opinion). Respondents should note that the wording of the conditions of the restriction in the SEAC opinion is intended to express the intention of SEAC. The European Commission will ultimately decide on the precise legal wording used to update Annex XVII of REACH if a restriction was adopted.

The SEAC rapporteurs considered also comments that included only confidential information. However, no specific reference to confidential information can be made in the non-confidential responses.

2.1. The proposed concentration limit value and analytical methods

Comments submitted include for example comments #1189, #1191, #1205 and #1213. Some of these comments have been handled as confidential as per the respondent's request.

2.1.1. Summary of comments received

In the comments it was highlighted that the way the PFAS content is analysed shall be practicable and reliable to enable all stakeholders to prove compliance. The difficulty in collecting a reliable, representative sample of foam concentrate from operational systems was highlighted. The request for guidance on how to measure the limit made in the consultation on the Annex XV Dossier was repeated, but explicit input regarding the type of guidance required was not recorded.

Advantages and disadvantages related to a higher limit value were discussed at a general level. Also, the proposal to change the limit value to 3 ppm made in the consultation on the Annex XV Dossier was repeated but not justified in detail. Furthermore, a suggestion was made to raise the level to at least 50-100 ppm for existing equipment, claiming that no rational explanation is provided why residual PFAS concentrations should be a factor of 50 - 1000 lower than for known hazardous chemicals such as SVHCs or POPs. Overall, appropriately justified proposals of another fixed limit value were not received.

It was requested that the limit value should be expressed in terms of mg/kg instead of mg/l or ppm to simplify laboratory processes and enhance reproducibility.

2.1.1. SEAC rapporteurs' response

SEAC thanks for the further information submitted.

SEAC agrees that a functioning analytical process is necessary to enable the enforcement of a restriction. However, the committee considers that the processes can be developed during the transitional period and the incompleteness at this point cannot be considered a reason to impede the prescription of a restriction.

SEAC notes the claims that it is not clear how analytical testing should be carried out in practice. SEAC observes that RAC recommends that guidance is provided on analytical methods; SEAC agrees to that recommendation and also states it in the opinion.

In relation to the claim that the limit value should be more comparable to limit values for SVHC or POP, SEAC highlights that the evaluation of the level of the limit value in terms of risks is entirely in the remit of RAC. SEAC also points out that according to other comments, 100 ppm of PFAS could already provide functionality to the foam. Therefore this kind of limit would not exclude intentional use.

Relative to the request to raise the limit value to 3 ppm, without further information on the origins of the PFAS, the committee expects it to be contamination that could be avoided, and does not find it an appropriate justification to raising the limit value.

While SEAC considers that the proposed limit value of 1 mg/l appears appropriate for mixtures placed on the market, SEAC concludes that the limit value applicable to cleaning and foam discharged from already contaminated systems and equipment should be set higher at 50 mg/l for the offshore sector. SEAC highlights that the higher limit is solely intended to help avoid the high costs of cleaning and underlines that the foam concentrates used should comply to the limit value of 1 mg/l when purchased and until fed into the equipment at the site of use.

2.2. Portable fire extinguishers

Comments submitted include for example comments #1170, #1181, #1183 and #1189. Some of these comments have been handled as confidential as per the respondent's request.

2.2.1. Summary of comments received

Respondents provided information on the necessary timelines for transitioning to fluorine-free alternatives in portable fire extinguishers. Both a 5-year transitional period for use and a 6-month transitional period for placing on the market got support from some industry stakeholders.

Other stakeholders highlighted difficulties that would be expected if the transitional periods were not extended. The issues with manufacturing capacity reported in the consultation on the Annex XV Dossier were further explained. The calculations provided demonstrate the temporary production increase that would be needed to manufacture the necessary number of units in 5 years or 7 years respectively. Also the technical feasibility of PFEs for fires in alcoholic fluids or polar fluids more generally, and of frost-proof foams were claimed to be inadequate.

Information was submitted on the potential impact that PFE that have separate containment for the PFAS-containing foam concentrate might have on the necessary manufacturing volumes. Stakeholders discussed issues related to market volumes, limitations to the possibility to convert PFAS-based PFEs into non-PFAS PFEs and local legal requirements and agreed that there would not be a significant impact.

2.2.2. SEAC rapporteurs' response

SEAC thanks for the further information submitted, specifically related to response to the specific information requests.

SEAC agrees that it is important that the transition period for **use** is neither too short (leading to potential shortage of suitable equipment and resulting in fire damages, or moving business away from small local manufacturers to big international groups owning manufacturing sites also outside of EU) or too long (losing the momentum for substitution). It appears that the respondents to the consultation stated that the necessary length of the transition period would be either 7 years from now or 5 years (presumably) from entry-into-force. SEAC expects that considering the time that the decision-making process takes, these could be quite close to each other, but the exact length of the decision-making process cannot be known. Based on the information collected and to ensure that sufficient time is given to supply the necessary volume of alternative extinguishers, SEAC supports a transition period lasting until the end of 2030.

As comes to **placing on the market**, SEAC infers that 6 months would be a suitable length of the transitional period in general, but recognizes that a slightly longer transition time is needed in cases where the ability to extinguish fires in alcoholic fluids is required.

2.3. Disposal and treatment

Comments submitted include for example comment #1189. Some of these comments have been handled as confidential as per the respondent's request.

2.3.1. Summary of comments received

SEAC notes several comments (1189, 1197, 1213) on the challenges relative to handling high amounts of PFAS foam waste resulting from the transition to alternatives, and the preoccupation regarding incineration capacity and resulting possible consequences.

2.3.2. SEAC rapporteurs' response

SEAC thanks for the further information submitted.

The concerns mentioned in the comments are reflected in SEAC's opinion (also by reference to RAC opinion). SEAC is conscious about the general problem of "waste tourism" but limitations to the information available to SEAC regarding incineration also impede to provide considerations on the impact of the proposed restriction on this issue.

2.4. Exemption for the defence sector

Comments submitted include for example comments #1172, #1200, #1202, #1204, #1205 and #1209. Some of these comments have been handled as confidential as per the respondent's request.

2.4.1. Summary of comments received

Several comments highlighted the importance that PFAS-based foams still have in the defence sector and explained that a full transition is not feasible. Some comments discussed the possibility of using exemptions according to Art. 2(3) but on a very general level only. It was stated that using that approach would be laborious, but the related inconveniences were not described further. It was claimed that a legal act of the European Union would help ensure legitimacy and transparency and create legal certainty.

2.4.2. SEAC rapporteurs' response

SEAC thanks for the further information submitted.

First, SEAC highlights that the committee entirely understands that there are scenarios in the defence sector in which transition to fluorine-free foams may not be feasible in the foreseeable future. Continued use in those cases could be allowed under exemptions according to Art. 2(3) of REACH.

SEAC notes the claim that the national approval of an exemption according to Art. 2(3) is associated with a great deal of effort. In the absence of further explanation and expecting that Art. 2(3) exemptions might be necessary even after a 10-year transition period anyway, SEAC does not see a justification for extending the transition period provided. Related to a potential complete derogation (without a time limit), SEAC finds that substitution should be sought also in defence scenarios and implemented as the availability of suitable fluorine-free alternatives allows. This is understood to be the situation in some defence uses already now.

2.5. Transitional periods and review

Comments submitted include for example comments #1179, #1192, #1196, #1197, #1202, #1204, #1205, #1208, #1209 and #1213. Some of these comments have been handled as confidential as per the respondent's request.

2.5.1. Summary of comments received

Comments were received requesting an extension of the transitional period, or a review, for at least one of the following sectors: non-Seveso industrial installations, neighbouring establishments to Seveso industrial installations, offshore, transportation of flammable liquids.

Regarding **neighbouring installations**, the comments overall claimed that they can present significant hazards and represent a risk to Seveso III installations, and that it can create a risk if neighbouring installations and Seveso III installations do not use the same foams and therefore cannot share foam resources during an incident.

For the **transportation of flammable liquids in pipelines and in bulk in road and on rail**, in the consultation on the SEAC draft opinion it was claimed that pipelines and bulk transport represent a high hazard fire for population and that no fluorine-free alternatives can currently meet the long-term storage requirements at elevated temperatures, i.e., 30-60°C (#1202). Other comments received were related to temporary storage (#1204, #1196).

For the **offshore industry**, stakeholders provided further underpinning to claims made earlier and also presented further arguments to justify applying a 10-year transition period (with a review at the end) also to the offshore sector. It was reported that to use fluorine-free foams effectively requires gentle applications, well aspirated (not non-aspirated), slower (not rapid) attack, and closer engagement with the fire (#1192, #1204). It was explained that for fluorine-free foams, higher expansion ratios compared to fluorinated firefighting foams are often required, resulting in lighter foams, making them more sensitive to wind conditions (#1202). It was also pointed out that high winds are prevalent in the offshore setting and stated that therefore forceful, non-aspirated application is however typically necessary in practice (#1204). It was explained that fluorine-free foams are typically highly viscous under winter temperatures and this impedes their use (#1192, #1204). Also challenges with using sea water were highlighted (#1204, #1179). It was explained that the hardness of water used to prepare the foam solution negatively affects

the quality of the expanded foam, i.e., expansion ratio and drain time (#1202). It was also highlighted that only seawater is available for firefighting operations in winter temperatures that often drop to -18°C in North Sea and Baltic areas (#1192). The claim that to date no PFAS-free foam concentrates providing both alcohol resistance and high freeze protection level seem to be available was repeated (#1189, #1214). It was also claimed that larger storage capacity will be needed after transition, because higher application rates are required with fluorine-free foams, and this may be difficult due to space and weight limitations (#1192, #1204, #1208). It was reported that a variety of flammable fuels are stored and used on these offshore installations (incl. crude oil, condensate, Jet A1, methanol, diesel) which increases the difficulty for a single fluorine-free foam to be adequately effective on all fuels (#1204). Furthermore it was explained that fluorine-free foams require system designs dedicated to a specific fluorine-free foam agent, and therefore different fluorine-free foams cannot be used in one site, and that this could have major implications on re-supply following a fire event. Also, this could prevent mutual aid collaboration amongst platforms during emergencies, which is reported to be the practice currently, even across different operators (#1204, #1192, #1208). It was highlighted that containment basins, floor dividers and other coaming devices reduce the risk of leakage of both firewater runoff and hydrocarbon liquid fuels into the environment (#1202). Finally, it was reported that many offshore installations are scheduled for decommissioning before 2030 and it was claimed that the costs of transition and re-training would be disproportionate in these cases (#1192, #1204).

Regarding **civilian shipping**, it was pointed out that vessels carry wide-ranging bulk flammable fuel cargos, which may change with different voyages including hydrocarbons and polar solvents (#1204). It was also reported that since different fluorine-free foams cannot be mixed, it may be difficult to make a refill at the next harbour after a fire at sea (#1204). It was also explained that, at sea, forceful non-aspirated application of firefighting foam is often necessary due to effects of wind, whereas the appropriate performance of fluorine-free foams often requires that they are applied well aspirated. Furthermore, it was reported that using sea water for firefighting is less effective when fluorine-free foams are used (#1204, #1205).

Related to the **municipal fire services**, statements were made (#1213) but no information supporting a transitional period other than 18 months was received.

2.5.1. SEAC rapporteurs' response

SEAC thanks for the further information submitted.

SEAC in its final opinion notes that, based on risks that are seen as similar to Seveso sites, on a similar lack of certainty regarding the availability of alternatives, there were several requests for extending to 10 years the transitional period for some or all of the following sectors: non-Seveso industry, Seveso neighbouring sites, transportation of flammables, offshore industry.

Regarding **neighbouring installations** to Seveso III industrial sites, SEAC lacks information to decide for a longer transitional period but recognizes the uncertainty and recommends that the survey carried out to inform the review of the transitional period for Seveso III installations also covers the case of neighbouring installations. However, taking information from the Background Document into account, SEAC does not find justified to change the transitional period or conditions of the restriction for **other non-Seveso industrial sites**. SEAC however discusses in its opinion whether it is appropriate to use coverage by the Seveso directive as a cut-off line between different durations of transitional periods.

Regarding **transportation** SEAC agrees that high temperatures can be relevant for some

transport scenarios but also notes that heat-resistant fluorine-free alternatives have been reported to be available (see Background Document, Annex E.2.4., p. 309ff). Also, in transport scenarios the volumes of flammable liquids simultaneously present are expected to be lower than, e.g., in tank farms, and therefore the risks may not be comparable.

For **offshore industry**, SEAC agrees that there could be a similar risk level compared to Seveso III installations and that the comments bring information about possible difference in performance between PFAS-foams and alternatives, and about adaptation challenges that might be difficult to overcome in 5 years. SEAC also agrees that relative to installations to be decommissioned before 2030 the cost of transition would indeed be disproportionate considering that the remaining time after the 5-year transition period would be very short. SEAC concludes in its final opinion that it would be appropriate to apply the same timelines as for the similar onshore activities (i.e., a 10-year transition period with a review).

For **civilian shipping**, SEAC acknowledges the challenges related to carrying different flammable liquids, firefighting agent refills at harbours and fighting fire under high wind conditions at sea. SEAC also recognises that fire systems may be integral to the ships and designed for foams of a specific type, whereby changing the firefighting medium depending on cargo would be difficult. SEAC finds that considering also the information submitted in the consultation on the Annex XV dossier it is justified to extend the transitional period for this sector to 5 years.

For **municipal fire services**, SEAC sees no reason to extend the transitional period over 18 months.

2.6. Overlap with other planned regulatory measures

Comments submitted include for example comments #1183, #1189 and #1214. Some of these comments have been handled as confidential as per the respondent's request.

2.6.1. Summary of comments received

Respondents expressed concern on potentially facing a very complicated and confusing legal environment in the future deriving from several new restrictions regulating the manufacture, placing on the market and use of firefighting foams (PFHxA, the present proposal, the new UPFAS proposal). Several stakeholders underlined that they prefer the current proposal to be taken forward instead of any other.

2.6.2. SEAC rapporteurs' response

SEAC agrees that it is important to have a legal framework that is understandable, implementable and practicable to the community but highlights that it is in the competence of the European Commission to make the decision on the approach to be taken.

2.7. Other

Comments submitted include for example comment #1210.

2.7.1. Summary of comments received

Some comments (in particular #1210) claim that the scope of the restriction is too wide because it refers to a definition of PFAS that comprises all PFAS substances based on persistency, in accordance with the OECD definition, but that covers substances that are

not used in fire-fighting foams. 7).

2.7.2. SEAC rapporteurs' response

SEAC thanks for the further information submitted.

SEAC points out that the topic of the correct definition of substances in scope is in RAC remit but however notes that if some PFAS substances are not used in fire-fighting foams, their restriction in fire-fighting foams will entail no costs and no benefits and this has therefore no impact on SEAC conclusions.