



ECHA webinars

EUROPEAN CHEMICALS AGENCY

Webinar: Restriction of per- and polyfluoroalkyl substances (PFASs) in firefighting foams

Questions and answers

ECHA organised a webinar on 5 April 2022 on the [restriction of per- and polyfluoroalkyl substances \(PFASs\) in firefighting foams](#).

This document is presented in the form of 'questions and answers'. It does not address generic restriction issues, or other aspects of REACH, which are addressed on the [ECHA website](#).

It is based on the questions received before and during the webinar. Editorial changes have been made to improve clarity and similar questions have been combined.

If you need further clarification or if a specific question that you asked has not been answered please [contact us](#).

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This document was updated in July 2022 to clarify the basis under REACH by which exports from the EU would be impacted by the proposed restriction (i.e., a restriction on the formulation of firefighting mixtures containing PFASs). Please refer to Section three. For the most up-to-date advice on restrictions, refer to our [support material](#).

1. REACH restriction process-related questions

Question	Answer
How long is the consultation on the Annex XV report open for?	The consultation is open until 23 September 2022.
When do you expect that the restriction will enter into force?	The RAC and SEAC opinion is expected to be finalised in Q2 2023 and will then be sent to the Commission for decision making. The Commission has three months to prepare a draft decision amending REACH Annex XVII. However, agreeing the decision typically takes longer than three months (sometimes >12 months depending on the complexity of decision). Therefore, the proposed restriction could enter into force in 2024 with the duration of transition sector specific periods starting from this point.
When (approx.) will the SEAC draft opinion be published/when will the consultation on the SEAC draft opinion start?	The SEAC draft opinion should be available after SEAC-57 in December 2022. The consultation on the SEAC draft opinion should start around the same time. However, please note that opinion-making timelines may be delayed depending on, for example, the number of comments received during the Annex XV report consultation.
Who is responsible for monitoring, inspection and enforcing the restriction?	Member States are responsible for the enforcement of REACH.
How are confidential contributions to the Annex XV report consultation taken into account?	<p>It is possible to provide confidential information or attach confidential documents to the webform.</p> <p>Your name or your company/association name can also be claimed confidential.</p> <p>We will maintain confidentiality in line with the provisions for EU institutions.</p> <p>Confidential information may be used by the Dossier Submitter to justify revisions to the proposal or by RAC and SEAC when developing their opinions. To ensure that the use of confidential information can be referred to as transparently as possible in the either the Background Document or the RAC and SEAC opinions please also provide, where practicable, 'non-confidential' summaries of confidential information (e.g., in the form of data ranges).</p>
How far in advance of the different RAC/SEAC plenary meetings do we need to send in interim contributions for them to be taken into account?	Please submit information as soon as possible as this will help RAC and SEAC to identify relevant issues for their evaluation. Ideally, consultation comments relevant to the topics scheduled for discussion at a plenary should be available immediately after the previous plenary concludes (i.e., ~ three months before the scheduled plenary). Multiple submissions can be made to the consultation, so you do not have to wait until all parts of your submission are ready. Please consider making 'placeholder' submissions to the consultation that set out what information you are collecting and at what point in the consultation it will be submitted. Please refer to slide 13 of the webinar to see when

Question	Answer
	specific topics are scheduled for discussion in RAC and SEAC as. this may also help you time your contributions.
Do you have a questionnaire with your specific questions available?	Yes, there is an information note for the consultation (https://echa.europa.eu/documents/10162/3d12e975-6a81-b28d-5b6b-1d4a2333f4de) and the consultation itself contains a webform with the specific questions outlined during the webinar. Please follow the instructions provided in the webinar to get access.
How does this restriction affect Norway who are not part of the EU?	Any restriction under REACH will be implemented in Norway, Iceland, and Liechtenstein. REACH is a harmonising Regulation that is directly applicable in all EEA Member States.
How active does the manufacturer / distributor have to "monitor" the uses that a foam is placed onto the market for?	Manufacturers of firefighting foams (termed formulators under REACH) and distributors would not be allowed to formulate and/or place PFAS-containing firefighting foams on the EU market once the longest transitional period has passed (i.e. 10 years after entry into force). It is the responsibility of formulators and distributors to ensure that the foams they formulate and/or place on the market 10 years after entry into force do not contain PFASs above the 1ppm threshold. However, as proposed, it is the sole responsibility of the users of the foams to ensure that they do not use a firefighting foam containing PFASs for a use after the end of a relevant transitional period specified in paragraph three and that six months after entry into force PFAS containing firefighting foams are only used on class B fires.

2. Links to other legislation or REACH processes

Question	Answer
How did the Dossier Submitter ensure that there was no overlap with pre-existing (e.g., PFOS, PFOA, C9-C14 PFCAs) or proposed (e.g., PFHxS or PFHxA) restrictions.	<p>It is not the intention of this restriction proposal to interfere or relax the agreed phase out timelines for already regulated PFASs like PFOA and related substances in firefighting foams. Our regulatory 'baseline' assumes that these will progress as planned.</p> <p>However, for PFHxA and PFHxA related substances (examples of C6 PFASs), the situation is different as currently there is only a proposal for a restriction (by Germany). As such, the proposed restriction of PFHxA and PFHxA related substances by Germany was not part of the Dossier Submitter's regulatory baseline. In practice, this means that ECHA's proposed restriction overlaps with the Germany proposal and the decision maker will need to reconcile them after taking into account RAC and SEAC's opinions on the different proposals.</p> <p>RAC and SEAC have evaluated the German proposal to restrict PFHxA and PFHxA related substances (https://echa.europa.eu/registry-of-restriction-intentions/-</p>

Question	Answer
	<p>/dislist/details/Ob0236e18323a25d). Whilst RAC supported some aspects of the proposal relating to firefighting foams (i.e., to restrict municipal uses of foams containing PFHxA and related substances) it did not support all of the proposals (i.e., to restrict uses of PFHxA foam at industrial sites) as the analysis did not demonstrate that the proposed restriction was the most appropriate EU-wide measure to address the identified risks. SEAC could not conclude on the overall proportionality of the proposed restriction, but made recommendations that should a restriction be implemented there should be a five year transitional period for class B fires (subject to a review before entry into effect) and a 12 year transitional period for foams used to extinguish class B fires in tanks with large surface areas (as well as any bunded area they are contained in).</p> <p>Therefore, we do not know the precise timeline for the phase out of PFHxA. It could either be the timeline proposed by Germany or the timeline proposed by ECHA.</p> <p>In general, in the event of an overlap between restrictions (i.e. where a substance is within the scope two or more restrictions) these would apply without prejudice and the strictest measure would apply.</p>
<p>Upon use of the foam other laws may become applicable (for example, relevant soil or water legislation in a Member State). These laws are often based on ‘duty of care’ meaning complete removal of pollution where it is cost effective to do so. Are these laws considered?</p>	<p>REACH applies without prejudice to other EU and Member State legislation. Where other legal provisions apply then they would continue to do so. However, the Dossier Submitter has concluded that existing legislation is not sufficient to address the risks posed by PFASs in firefighting foams and that a REACH restriction is needed to ensure a consistent high level of human health and environmental protection across the EU.</p>
<p>When equipment previously used with PFAS-foam is cleaned is the allowed concentration after cleaning also 1 ppm?</p> <p>How does this proposal go together with other legislation e.g., the Drinking Water Directive or Environmental Quality Standards under the Water Framework Directive?</p>	<p>Yes, 1 ppm is the concentration of total PFASs in firefighting foams and it applies to equipment after cleaning. All relevant legislation would continue to apply and REACH applies without prejudice to any other legislation. In practice, the restriction could mean that the objectives e.g., of the Water Framework Directive or Drinking Water Directive are met as there is reduced PFAS pollution. Release reduction is in particular expected to avoid drinking water contamination and thereby considerable costs of development and implementation of efficient drinking water purification techniques.</p>
<p>Currently, under POPs PFOS is the only PFAS which required treatment for disposal. Does that mean PFOA foams etc can be discharged to WwTW for treatment? Could this proposal lead to an increase in discharge to sewer?</p>	<p>Please refer to paragraph 4.d of the proposed conditions of the restriction. This requires PFAS-containing waste with a concentration of PFASs above 1 ppm shall be treated adequately during disposal.</p> <p>It is noted that municipal WWTPs are not effective in removing/eliminating PFASs (see section B.4.5 and B.4.2.4).</p>

3. Scope of the restriction

Question	Answer
<p>Does the restriction proposal include manufacturing of PFASs (including those foreseen for export)?</p>	<p>No, the restriction proposal is limited to PFASs used in firefighting foams only. Please be aware that five Members States (NL, DE, DK, SE and NO) are currently preparing a 'universal' PFAS restriction proposal, which will cover all uses, including manufacturing.</p>
<p>Why is the export of PFASs in firefighting foams included in the scope of the restriction proposal, REACH does not allow the restriction of exports?</p>	<p>The REACH Regulation applies to the manufacture, placing on the market or use of substances. According to Article 3(24) use, amongst other activities, means <i>any processing or formulation</i>. Additionally, according to Article 3(12) import shall be deemed to be placing on the market.</p> <p>As part of the development of the Annex XV report the Dossier Submitter assessed different restriction options (with different scopes) against the criteria for a restriction given in REACH Annex XV: Effectiveness, practicality and monitorability. Restriction option 1 (RO1) was a restriction on placing on the market only. Restriction option 2 supplemented RO1 by also restricting the use of PFAS containing firefighting foams to extinguish fires (restriction at the point of end use). RO3 (the preferred restriction option) supplemented RO2 by also restricting the use of PFAS to formulate firefighting foam mixtures (restriction at the point of end use and at formulation). To ensure that the difference between RO2 and RO3 was clear to stakeholders for the purposes of the consultation this RO was referred to in the Annex XV as including a ban on export, as this was the key difference in terms of the impacts of RO3 compared to RO2. However, the restriction would always have been implemented by means a restriction on use (formulation). As such, it was consistent with the provisions of REACH.</p> <p>The intention of the preferred restriction option is to limit releases of PFASs from firefighting foams to the environment across all relevant lifecycle stages, including formulation. Therefore, the proposal is to restrict placing on the market or formulation of PFASs as a constituent of a mixture for firefighting, including portable fire extinguishers. This means that after entering in force it will be not possible to formulate (produce) firefighting foams containing PFASs. Therefore, there will be no mixture to export. In that way exports of PFAS containing mixtures for firefighting will be impacted by the proposal. This is similar to numerous other previous REACH restriction on use.</p> <p>A revised draft Annex XV text, excluding the term export, has been prepared by the Dossier Submitter based on comments received in the consultation on the Annex XV report and will be the basis for the RAC and SEAC opinions on the proposal. Further details of this revision will be provided in the draft Background Document and Response to Comments (RCOM) that will be published on the ECHA website at the same time as the agreed RAC</p>

Question	Answer
	opinion.
<p>Are portable extinguishers and ready to use firefighting foams mixtures in scope of the restriction proposal?</p>	<p>Yes, all mixtures for firefighting, including portable fire extinguishers are in the scope of the restriction proposal.</p> <p>A revised draft Annex XV text to clarify the scope with respect to ready to use and portable extinguishers has been prepared by the Dossier Submitter and will be the basis for the RAC and SEAC opinions on the proposal. Further details of this revision will be provided in the draft Background Document and Response to Comments (RCOM) that will be published on the ECHA website at the same time as the agreed RAC opinion.</p>
<p>There are reported to be over six million PFASs that meet the OECD definition (see Schymanski et al. 2022 and PubChem. Are these PFASs being considered by ECHA?</p>	<p>All substances meeting the OECD definition of a PFAS are within the scope of the restriction proposal.</p>
<p>How can it be ensured that the foam agents, which can still be placed on the market as refills with a transitional period of 5 years, are only used on fires of fire class B?</p>	<p>The proposal is that it is the responsibility of the users of foams to ensure that PFAS-containing foams are only used on class B fires during the transitional period. The establishment of a "PFAS-containing firefighting foams management plan" (see paragraph 4 c. of the proposal) should address this issue.</p>
<p>In the Annex XV report does paragraph two in the right-hand column on page 51 (the conditions of the proposal restriction) apply to portable and mobile fire extinguishers?</p>	<p>Yes, it is the intention that paragraph one and paragraph two applies to portable and mobile fire extinguishers.</p>
<p>How should the term "use" be interpreted? Does it apply to everyone who handles fire extinguishing foam (suppliers, service organisations etc.) or only the "end users"?</p>	<p>The term use (under Article 3 of REACH) means: processing, formulation, consumption, storage, keeping, treatment, filling into containers, transfer from one container to another, mixing, production of an article or any other utilisation. Please tell us about any implications of this in the consultation on the Annex XV report.</p>
<p>When looking at restriction option three, what about deliveries to EEA countries?</p>	<p>Restriction option 3 bans the formulation and placing on the market of PFAS firefighting foams and thus also indirectly the export of PFAS-containing firefighting foams from 10 years after entry into force. A ban on formulation therefore means a halt of production of PFAS-containing firefighting foams in the EU.</p>
<p>Transitional periods are proposed for a number of sectors. Is there a diversification possible for fire services based on their specific responsibilities? For example, for a rural fire service protecting mainly residential and agricultural area 18 months might be feasible. For a fire service protecting a large industrial ((petro)chemical, harbour -</p>	<p>The proposal includes extended transitional periods for municipal fire services in charge of industrial fires for Seveso establishments. The proposed restriction column 2 paragraph 3.b. states: 18 months after entry into force for municipal fire services (except if also in charge of industrial fires for establishments covered by Directive 2012/18/EU (Seveso III) and for use in these establishments only).</p> <p>Please submit any information regarding a further diversification of the use sectors</p>

Question	Answer
transport, ...) area 18 months is short - can this be prolonged to the 5 years (for other sectors)?	identified by the Dossier Submitter.
Paragraph 4d of the proposed restriction requires adequate treatment of PFAS-containing waste. How will it take effect? Does it only apply to end users or does it affect all actors working with waste management? Does it mean that municipal wastewater treatment is excluded, irrespective of pre-treatment and what results pre-treatment achieves (for example, if drinking water quality is achieved)?	<p>The proposed restriction column 2 paragraph 4.d requires adequate treatment of collected PFAS-containing waste with a concentration of PFASs above 1 ppm. Municipal wastewater treatment is indeed excluded, irrespective of any pre-treatment, due to its low efficiency at removing PFAS from wastewater. Instead, PFAS-containing waste will need to undergo other adequate treatment (please refer to Appendix 2 and 3 of the Background Document).</p> <p>If possible, please provide information on treatment (and pre-treatment) technologies which are effective and efficient at removing PFASs from wastewater (with reference to Appendix 2 and 3).</p>
How will the import of raw materials involved in the manufacturing processes of firefighting foam concentrates (type AFFF/AR) be restricted and what restriction terms will be handled?	The proposal aims to restrict the formulation of PFAS-containing firefighting foam concentrates and the placing on the market and use of firefighting foams. The proposed restriction would not apply to the manufacture of PFAS ingredients of firefighting foam concentrates per se as these could also be used in other types of applications/mixtures.
What about fire services operating at airports? And those belonging to the petrochemical industry/Seveso? What transitional periods apply to these uses?	<p>Fire services operating at airports would need to switch to PFAS-free firefighting foams within 5 years after entry into force (see paragraph 3 (f) of the proposed restriction).</p> <p>Firefighting activities for industrial fires for establishments covered by Seveso (this includes petrochemical installations) would be able to continue to use PFAS-containing firefighting foams for Class B fires until 10 years after entry into force (see paragraph 3 (e)). This includes municipal fire services in charge of industrial fires at such establishments but only for use in these establishments.</p>
Is there any list of PFASs available, which contains all concerned substances (similar to the Candidate list of SVHCs)?	<p>There have been indicative lists published by ECHA for some PFAS 'arrowheads', such as for PFOA and related substances and PFHxA and related substances, but we cannot guarantee that they are comprehensive.</p> <p>See Annex B.1 of the Background Document to the RAC and SEAC opinion on the PFOA restriction proposal available at https://www.echa.europa.eu/documents/10162/e40425c6-590f-8df7-2cd9-0eef79527685.</p> <p>See also the indicative non-exhaustive list of substances belonging to the PFHxA restriction proposal available at https://echa.europa.eu/documents/10162/7da473c1-7f27-df34-9e6a-46152ef10d4b.</p> <p>We recommend that you refer to the OECD definition of PFASs instead, which is based on a specific chemical structure.</p>
Regarding paragraph 4c of the proposed restriction: Will a site-specific 'PFAS-containing	The proposed restriction would require a site-specific 'PFAS-containing firefighting foams management plan' to be ready six months after entry into force. Such a plan would need

Question	Answer
<p>firefighting foams management plan' have to be prepared for inspection just after the six months or industry has to start preparing it six months after entry into force?</p>	<p>to include details of the conditions of this use including how emissions are minimised. The plan must also be revised annually and kept available for inspection upon request.</p>
<p>The proposal refers to firefighting foam "concentrates". How should this be interpreted? Are these paragraphs only applicable to users of concentrates and not of ready-to-use (or premix) applications such as handheld fire extinguishers?</p>	<p>The proposed restriction is intended to apply to all firefighting foams, including concentrated foams that are further processed before they are used. This includes ready-to-use applications and thus handheld fire extinguishers.</p>
<p>In the Annex XV report on page 51, what is the difference between paragraphs 1 and 2 in column 2 (the conditions of the proposed restriction)?</p>	<p>Paragraph 1 applies to placing on the market of firefighting foams. In other words, any actions related to supplying or making available, whether in return for payment or free of charge, to a third party including import.</p> <p>Paragraph 2 applies to use of such foams, e.g., processing, formulation, consumption, storage, keeping, treatment, filling into containers, transfer from one container to another, mixing.</p> <p>Please tell us about any implications of this in the consultation on the Annex XV report.</p>
<p>Is there an official method to analyse PFASs on packaging materials? Is there a specific list of PFASs that should be analysed?</p>	<p>The restriction proposal applies to firefighting foams and the proposed limit value applies to concentration of PFASs in firefighting foam concentrates. It does not apply to packaging materials. For testing methods please consult Annex E.7.</p>
<p>As part of restriction option 4, would it be possible/relevant to include a restriction on export? (Restriction on placing on market, use and export (transitional periods per sector of use) with derogation mechanism for Seveso/defence). Could it have an impact on the emission reduction assessment under option 4?</p>	<p>Please provide your proposal via the consultation. It will be considered by the Dossier Submitter and RAC and SEAC.</p>
<p>Under restriction opinion three, why is it proposed that the ban on export would apply at the end of the longest transitional period applicable for the placing on the market in the EU (i.e. 10 years)?</p>	<p>The proposed transitional periods are set to allow the development of fluorine-free firefighting foams and the adaptation of existing firefighting systems while providing a similar level of fire protection as under the use of PFAS-containing foams. Formulation (and thus export) is proposed to be allowed until the end of all transitional periods. A ban of formation and placing on the market for specific sectors with shorter transitional periods was not considered by the Dossier Submitter to be practical. Please provide any comments or additional information you have regarding transitional periods.</p>

Question	Answer

4. Concentration limit, analytical methods and sampling, cleaning of equipment

Question	Answer
<p>When cleaning equipment, we are always asked how we analyse the remaining fluorine on the surface of the components like tubes, valves, etc. Testing rinse water may therefore not be representative, in particular for a generic testing method like TOF. Will there be a definition on how to collect appropriate samples from a system (e.g. from which part of a system)? Will a specific analytical method be enforced?</p>	<p>For the purposes of compliance with the proposed restriction the operator would need to ensure that the foam inside the installation or ready-to-use application does not exceed the 1 ppm limit for PFASs, not the quantity of PFASs on the internal surfaces of equipment. If the installation or application previously contained PFAS-containing firefighting foam then it is unlikely that it will be possible to achieve the concentration limit without first cleaning the equipment.</p> <p>The proposed restriction does not prescribe a sampling method nor a specific analytical method. The intention is to enable the use of generic analytical methods (such as for example total organic fluorine by combustion ion chromatography). Note that non-PFAS fluorinated substances may be contained in the foam. For such cases, a labelling requirement was introduced (see column 2 paragraph 7 of the proposed restriction) to avoid the need for PFAS-specific methods.</p> <p>Please submit any information regarding the analytical method, the enforceability of the proposed concentration limit and/or the requirement to clean equipment prior to (re-)filling with PFAS-free alternative foams.</p> <p>Guidance on decontamination would also be welcomed (please refer to Appendix 1 in this context).</p> <p>Please make sure to submit relevant data underpinning your information and justify why it may be relevant for specific sectors or uses.</p>
<p>Can the proportionality of the 1 ppm concentration limit be explained?</p>	<p>Regarding an appropriate concentration limit for PFASs in foams and equipment that previously used PFAS-containing firefighting foams, stakeholder input suggests that a PFAS concentration of 1 ppm can be achieved using a relatively simple cleaning process and would avoid the majority of emissions. Lower concentration limits are achievable with more complex and costly cleaning processes. However, setting a lower concentration limit would lead to a relatively small additional reduction in PFAS emissions, compared to the overall reduction achieved by the restriction and is therefore less desirable from a cost-effectiveness perspective.</p> <p>There is no European (or internationally) standardised analytical method for PFASs in</p>

Question	Answer
	<p>firefighting foams.</p> <p>Analytical methods are further described in Annex E.7.</p>
<p>A risk-based approach does not seem to be included in the assessment of the threshold value of 1000 ppb. Shouldn't the threshold value in a mobile system be different from a fixed system with secondary containment or on-site water treatment system?</p>	<p>Please submit information via the consultation that would justify setting different threshold values for fixed systems. (E.g. can all fire-water be contained? Which methods are used to treat it? What is their efficiency in decomposition of PFASs?)</p>
<p>May premix fire extinguishers be refilled with fluorine-free extinguishing agents?</p>	<p>Yes, premix fire extinguishers can be refilled with PFAS-free extinguishing agents. However, it is important to note that refilled extinguishers need to comply with the concentration limit of 1 ppm, which will most likely require cleaning of the extinguisher prior to the refill. Please submit any information you consider relevant in this context.</p>
<p>If a 1 ppm concentration limit for PFASs in the firefighting foam is established, when will it be tested? The foam may contain less than 1 ppm when first placed in the fire suppression system, but then in 3 months could have 50 ppm and 2 years 2 000 ppm.</p>	<p>Operators need to ensure that the firefighting foam always meets the proposed concentration limit of 1 ppm.</p> <p>See also the answer to the first question in this section on "Analytical methods and sampling" above.</p> <p>Please submit any information you consider relevant regarding this issue.</p>
<p>Is surface sampling necessary? Local regulators may not be experts, and there may be a need for guidance on surface sampling.</p>	<p>No, surface sampling is not necessary. Please submit information as to whether the proposed restriction would be more effective, practical and monitorable if surface sampling were to be implemented.</p>
<p>Will the restriction make it impossible to use old foam-extinguishers with PFAS-free foam?</p>	<p>No, but the extinguishers will likely need to be cleaned before refilling them to achieve the proposed concentration limit.</p> <p>See also the answer to the first question in this section on "Analytical methods and sampling" above.</p> <p>Please submit any information you consider relevant in particular if you envisage difficulties regarding the disposal (rather than refill) of extinguishers.</p>

5. Environmental impact / aspects

Question	Answer
<p>The Annex XV report assumes that the entire 18 000 tons of PFAS-containing fire-fighting foam ends up in the environment. A figure of 470</p>	<p>18 000 tons is the total amount of PFAS-containing firefighting foam concentrates sold in the EU per year. These 18 000 tons are estimated to contain 470 tons of PFAS (i.e. they also contain other ingredients).</p>

Question	Answer
<p>tonnes per year in the EU is also mentioned. Please can you explain the different figures?</p>	<p>In the exposure assessment, the Dossier Submitter assumes that all PFAS-containing firefighting foams currently placed on the EU market replace depleted stock (live incidents and training) or expired stock. The limited information available to the Dossier Submitter regarding the disposal of collected fire-water from either live incidents and training, as well as regarding the disposal of expired stock indicated a widespread reliance on municipal sewage treatment plants, which are not effective in removing PFAS. Fire-water not collected is assumed to either enter the soil or surface water or marine water. For this reason, the entire figure of 470 tons of PFAS contained in firefighting foams sold in the EU annually is assumed to be released into the environment.</p> <p>Please submit any information you consider relevant regarding these assumptions and make sure to underpin it with reliable data. Please also justify why the information you submit is representative of a sector or use.</p>
<p>Have the emissions from portable fire extinguishers, including use by SMEs and households been estimated?</p>	<p>Yes, these emissions have been estimated and are included in the estimate for ready-to-use applications. However, please note that individual estimates are not available for sub-categories of emissions i.e. SMEs and households, for example.</p>
<p>Does the PFAS content of water used for diluting firefighting foam concentrate (e.g. in fire extinguishers) also count towards the proposed concentration limit?</p>	<p>Yes, operators must ensure that the resulting firefighting foam adheres to the proposed 1 ppm concentration limit.</p>
<p>Is the incineration of PFAS foams considered as a safe disposal?</p>	<p>Incineration of PFAS foams is considered to minimise releases of PFAS associated with the waste lifecycle stage, if conducted appropriately. Please refer to Appendix 2 and 3 of the Annex XV report. Please submit any additional information you have regarding the safe disposal of PFAS-containing firefighting foams in the consultation.</p>
<p>Is it of interest if we submit information to the consultation about the extent of soil and groundwater pollution, that we have measured in a broad inventory exercise in our region?</p>	<p>Yes, please submit any monitoring data and accompanying information via the consultation. The Dossier Submitter and Committees will consider this information during the opinion-making.</p>

6. Costs and benefits

Question	Answer
<p>Are remediation costs of PFAS polluted soil and polluted groundwater considered in the cost-benefit analysis of this proposal?</p>	<p>Remediation costs are considered qualitatively in the impact assessment. The dossier submitter considers that there are potentially significant benefits in terms of the reduced remediation costs that will arise from the restriction of PFAS-containing firefighting foams. According to past research efforts, the order of magnitude of avoided remediation cost could be hundreds of millions of euros (assuming tens of sites across the EU requiring</p>

Question	Answer
	<p>remediation at the cost of tens of millions of € per site) to billions of euros (assuming hundreds of sites across the EU requiring remediation at the cost of tens of millions of € per site). Further information, e.g. on the total number of sites, on the use of PFAS-containing foams per site or on the implementation and effectiveness of best practices in terms of containment and clean-up would be required to assess to which extent remediation is avoided given this particular restriction proposal. In the absence of detailed information, remediation costs are acknowledged qualitatively and must be considered to be covered by the quantitative estimate for reduced releases which is used as proxy of human health and environmental impacts.</p> <p>The Dossier Submitter would be interested in evidence on this topic (see no. 6 in the list of specific information requests). If you are able to share additional information on the costs of removing PFAS from soil and water, please submit your contribution in the context of the ongoing consultation.</p> <p>Link to the list of specific information requests in the information note on restriction report: https://echa.europa.eu/documents/10162/3d12e975-6a81-b28d-5b6b-1d4a2333f4de</p>
<p>Are the costs of removing PFASs from drinking water and during wastewater treatment considered in the socio-economic impact assessment?</p>	<p>Yes, the costs of removing PFASs from water resources are considered qualitatively in the impact assessment. The Dossier Submitter considers that the use of PFASs in firefighting foams contributes to the general PFAS exposure to a relevant extent. Due to their properties, most PFASs are difficult to remove from drinking water. To avoid exposure via drinking water it would be necessary to develop effective treatment techniques or develop uncontaminated water resources. Both of these options are costly to society. However, these avoided costs have not been quantified due to lack of data. In the absence of detailed information, removal costs are acknowledged qualitatively and must be considered to be covered by the quantitative estimate for reduced releases which is used as proxy of human health and environmental impacts.</p> <p>The Dossier Submitter would be interested in evidence on this topic (see no. 6 in the list of specific information requests). If you are able to share additional information on the costs of removing PFAS from drinking water, waste water and sewage sludge, please submit your contribution in the context of the ongoing consultation.</p> <p>Link to the list of specific information requests in the information note on restriction report: https://echa.europa.eu/documents/10162/3d12e975-6a81-b28d-5b6b-1d4a2333f4de</p>

7. Alternatives

Question	Answer
<p>Fluorine-free foams are mainly synthetic foams based on mixtures of surfactants and, in many cases, the use of polysaccharides. Do you think this could be a possible alternative?</p>	<p>The assessed alternative substances to PFASs in firefighting foams have been grouped into 4 general groups:</p> <ol style="list-style-type: none"> 1. Hydrocarbons; 2. Detergents; 3. Siloxanes; and 4. Protein foams. <p>Please refer to Annex E.2 for more information.</p> <p>The dossier submitter would be interested in any new evidence on this topic. If you are able to share additional information on synthetic foams based on mixtures of surfactants and the use of polysaccharides, please submit your contribution in the context of the ongoing consultation.</p> <p>Please make sure to submit relevant data underpinning your information and justify why it may be relevant for specific sectors or uses.</p>
<p>Do you have information on alternatives to PFAS containing firefighting foams with comparable performance for defence purposes with seawater / salt water?</p>	<p>Annex E2 of restriction report contains several sector-specific analyses of the technical feasibility of alternatives. Among the covered sectors are the following: defence applications, marine applications, and off-shore oil extraction.</p> <p>If you are able to share additional information on defence purposes with seawater / salt water, please submit your contribution in the context of the ongoing consultation.</p>
<p>How about compressed air foam systems (CAFS) primarily focused on Class A fires? Special foams are used in these systems. A 6-month period may be problematic for an effective transition to structural firefighting foam (SFFF) in these systems.</p>	<p>Could you please provide information on this issue as the answer to specific information request 2 in the consultation on the Annex XV report: <i>Are the proposed transitional periods (see Table 3 and Section 2.8.2 of the Annex XV report) appropriate to implement alternative (PFAS-free) firefighting foams (incl. any time required for additional performance testing and/or adaptation of the fire extinguishing systems/process)?</i></p>
<p>Are silicones or siloxanes being used as a substitutes for PFAS.</p>	<p>Section E.2.2.3 in Annex E.2 of the restriction report covers the assessment of siloxanes in the context of the analysis of alternatives, although there is limited information available. Certain siloxanes are identified as SVHC based on their PBT and/or vPvB properties (cyclic D4, D5, D6) and others (linear siloxanes) are currently undergoing PBT-assessment (e.g. octamethyltrisiloxane). Furthermore, D4, D5, D6 are subject to an ongoing restriction process that would not allow their use in firefighting foams if adopted. The restriction is subject to decision making.</p>

Question	Answer
	If you are able to share additional information on the potential of siloxanes / silicones as alternatives, please submit your contribution in the context of the ongoing consultation.
Does the transition periods proposed for civilian and defence ships take into account the difference in storage volume required between PFAS-based and PFAS-free foams, and the possible impact on the stability of existing ships?	<p>The Dossier Submitter would be interested in information on this topic (see no. 2 in the list of specific information requests). If you are able to share additional information on relevant transitional periods, please submit your contribution in the context of the ongoing consultation. Please include an analysis of the impacts of any inappropriate transitional period and a justification for the representativeness of the provided information for the sector or use in the EU/EEA.</p> <p>Link to the list of specific information requests in the information note on restriction report: https://echa.europa.eu/documents/10162/3d12e975-6a81-b28d-5b6b-1d4a2333f4de</p>
For my organisation the performance of fluorine free foams in comparison to the PFAS-containing foams is crucial. If there is not enough accepted proof, would this influence the scope and transitional periods of the proposal?	Please submit any information regarding alternatives and their technical feasibility. Remember to provide data to support your claims as well as a justification for why your information is valid for the whole sector or use.

8. General issues

Question	Answer
How will this restriction proposal feed into the discussions on a universal restriction of PFASs under REACH?	A restriction proposal for PFASs in other uses ('universal' PFAS restriction) is currently being developed by five countries (Germany, the Netherlands, Denmark, Sweden and Norway) and is scheduled to be submitted to ECHA in January 2023 for opinion making by RAC and SEAC. The restriction on firefighting foams prepared by ECHA is based on the same approach to substance grouping, hazard and risk assessment as is planned for the broader restriction. The RAC and SEAC opinions on the firefighting foams proposal may prompt revisions to the universal restriction.
Do you have a recommendation to evaluate what is considered as "PFAS free"? Of course, if it is below the restriction values, a chemical is not necessarily "PFAS free". Nevertheless, this slogan is being used for advertisement. Should there be a clear definition of what is meant by "PFAS free"?	ECHA recommend that manufactures advertise their products in relation to compliance with applicable or proposed legislation, such as the existing restrictions under the POPS regulation or REACH.
What legal consequences should be expected for non-compliance?	Enforcement is the responsibility of Member States.

Will the EU add a specific waste-code (like for waste containing PCB) for waste containing PFAS? If not is there not a problem for the traceability and for the proof of an "adequate treatment"?	ECHA does not consider that this is necessary for operators to comply with the conditions of the restriction. However, please tell us why you think that this is important in the consultation.
It appears that there may be limited capacity for the destruction of PFAS containing foams. How should the end user deal with the limited capacity in relation to the phase-out periods?	ECHA does not consider that there is limited capacity for foam disposal in the EU. Please provide any information you consider relevant in this context, in particular information regarding the availability of adequate disposal methods or capacity.