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Eurofeu Secretariat General

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ECHA's firefighting foams restriction proposal: questions related to the use of firefighting foams

Dear Sir/Madam,

The European Chemicals Agency (ECHA) is currently investigating the use of per- and polyfluoroalkyl substances (PFAS) in fire-fighting foams^{1,2}. As part of this ongoing work, Eurofeu, is welcome to share information, supported by available evidence, on the following issues (see appendix for further details):

- Foam annual usage rate
- Types of use of PFAS firefighting foams
- Amount of firefighting foam stock in the EU
- Definitions of sectors of use and types of applications
- Manufacture, import and export of firefighting foams in the EEA
- Disposal of PFAS-containing AFFF
- Cleaning of equipment

Please use the following web-form to provide information:

https://comments.echa.europa.eu/comments_cms/documentswebform.aspx

You can split your contribution in separate submissions (using the same webform) if some pieces of information are available before others.

Thank you for your cooperation. Please do not hesitate to contact us if needed.

Yours sincerely,

[redacted] [redacted]

Risk Management Unit II

[redacted]

¹ See Registry of restriction intentions until outcome for dossier update <https://echa.europa.eu/registry-of-restriction-intentions/-/dislist/details/0b0236e1856e8ce6> and the following page for generic information and timelines of the REACH restriction process: <https://echa.europa.eu/restriction-process>

² Please note that other regulatory measures at EU level, which might impact the use of firefighting foams have already been initiated (e.g. the restriction on undecafluorohexanoic acid (PFHxA), its salts and related substances. Any information provided to ECHA in the context of the restriction work on PFAS in firefighting foams will only be used for this specific proposal and not for other regulatory measures. See status at <https://echa.europa.eu/registry-of-restriction-intentions/-/dislist/details/0b0236e18323a25d>

Appendix

1. Foam annual usage rate

In the report prepared for EC-ECHA³ table 5.1 page 73, average annual usage rates expressed as percentage of total quantities sold per year are assumed to be 17.5% for all sectors of use, except for municipal fire services, assumed to be 60%. This implies that all the foams stock are used within 5.7 years maximum, i.e. before reaching expiry date. Therefore no foams are assumed to be disposed of due to reaching expiry date without being used, as indicated page 74: *"A number of references (RPA, 2004; Buser et al 2009; and BiPRO, 2010) suggest usage rates of around 15-20% of existing stocks per annum, with an AFFF shelf-life of up to 15 years, which would suggest all foam concentrate is used before expiration (on average)".*

Annual sales of PFAS-based foams are assumed to be between 14 000 and 20 000 t/y (see e.g. page 65).

However, Eurofeu's contribution No. 2983 to the PFHxA consultation on the restriction report⁴ indicates very different figures:

- Page 6: *"According to the firefighting industry only **10% on average of the stocked volume** of a foam are typically **used up in service during the life span** of a foam concentrate (~15 years)."*
- Footnote 15 page 10: *"Field experts estimate the amount of foam to actually be used in **emergency** over the course of the product's lifespan is roughly **10% of the stocked volume**."*
- Pages 13-14: *"According to the experience of our members the fraction actually **used on fire** is the least fraction of the total volume. Our members estimate that fraction to be about **10% of the total annual demand** of fluorine containing firefighting foam concentrates. This equals to 1,250 t/a."*

We would appreciate any clarification supported by available evidence (i.e. data gathered by surveys among your members, published reports, etc) that could clarify the aforementioned discrepancy. This includes information on the reference used for the percentage calculation (either stocked volume or annual sales) and the type of use taken into account (actual emergency accident fires only or all types of uses including accidental fires, testing and training), ideally broken down by sector of use (oil/petrochemical, marine, etc.).

³ https://echa.europa.eu/documents/10162/28801697/pfas_flourine-free_alternatives_fire_fighting_en.pdf/d5b24e2a-d027-0168-cdd8-f723c675fa98

⁴ See « Comments submitted to date on restriction report - Part 2 » document available at <https://echa.europa.eu/restrictions-under-consideration/-/substance-rev/25419/term>

2. Types of use of PFAS firefighting foams

The same table 5.1 page 73 referred above assumes that most of the firefighting foam is used for training purposes (93% for all sectors, except municipal brigades: 7%), the rest being used for live incidents.

However, some stakeholders claim that most users have transitioned away from PFAS foams to fluorine-free foams for training and – to a certain extent- testing purposes. Has Eurofeu recently undertaken any survey among its members (which may be shared with ECHA) or could share other type of evidence-based information on the type of use of the PFAS and fluorine-free foams (live incidents, training, testing, any other type of use) at the EEA/EU level?

Any other specific evidence-based comments on the information related to table 5.1 page 73 is also welcome.

3. Amount of firefighting foam stock in the EU

In EC-ECHA's report page 138, it is assumed that *"Given that between 14,000 and 29,000 tonnes of PFAS-based foam have historically been replaced per year, and assuming an average lifespan of foams of 15 years, indicates that the existing European stocks of PFAS-based foam may be between 210,000 and 435,000 tonnes . These volumes of stock are used in the SEA calculations."*

However, in the PFHxA restriction proposal the Dossier Submitter estimates stock to be in the order of 62,500 tonnes only, which is a major difference.

Could Eurofeu provide recent and evidence-based information on the amount of PFAS and non-PFAS firefighting foams held in stock in the EEA/EU?

4. Definitions of sectors of use and types of applications

In EC-ECHA report page 61, a split of PFAS-based foams per sector is described based on Eurofeu's data and the terms "training" and "testing" are used across the report.

Could Eurofeu provide clarification on the exact scope of these sector categories in terms of industrial/professional installations covered and how the terms "training" and "testing" could be best defined, acknowledging Eurofeu's comment 2983 page 12 on the definition of testing? These definitions are key in defining the types of use possibly related to different transition periods.

- In particular, the term "chemical/petrochemical" is very broad, possibly encompassing companies only concerned by small-scale fires to very large industrial installations concerned by extensive fire accidents.
- The term "marine applications" is also unclear: does it include ports and off-shore oil/gas extraction platforms and terminals?
- Does the "military" sector include military marine or is it included under "marine applications"?
- Under which category would the aerospace sector be covered?

EC-ECHA's report depicts different substitution potentials and possible transition periods for the different sectors or types of uses (see pages 191-194). Large fires such as large atmospheric tank fires or fires involving different types of flammable liquids are understood to be particularly challenging to be controlled with the current fluorine-free

alternatives (alternatives not having been fully tested/approved for some conditions of use) so that longer transitional periods might be needed for this type of use.

In Eurofeu's view, how could the installations possibly leading to these types of fire accidents be best defined? (sufficiently narrow definition to exclude installations/fire situations for which a transition to fluorine-free foams could be envisaged within a short or medium timeframe but broad enough to encompass all the ones requiring more time).

Can Eurofeu also provide information regarding the proportion of foams used and stocked in these installations within the broader sectoral category of "chemical/petrochemical".

5. Manufacture, import and export of firefighting foams in the EEA

Starting from page 59 the EC-ECHA report discusses tonnages of fluorosurfactants used in fire-fighting foams production. The data provided is based to a large extent on data provided by Eurofeu (data collected in 2018). In this regard,

- Can Eurofeu give an update on tonnages of firefighting foams manufactured/imported/exported for:
 - PFAS-based foams (including a breakdown per main types of PFAS substances concerned, and especially for PFHxA-based foams)
 - fluorine-free foams (no breakdown needed per type of substance),
- Can Eurofeu give an update on the associated economic value of firefighting foams manufactured/imported/exported for:
 - PFAS-based foams (including a breakdown per main types of PFAS substances concerned, and especially for PFHxA-based foams)
 - fluorine-free foams (no breakdown needed per type of substance),

The EC-ECHA report discusses on page 60 sales of fire-fighting foams by user sector. However, no clear overview on number of actors is given.

- Can Eurofeu provide more information on number of actors concerned (manufacturers/importers) and their market shares?
- Can Eurofeu comment on whether companies manufacture /import only PFAS foams OR fluorine-free foams or both.

The EC-ECHA report discusses on page 148 potential costs expected to be incurred by the EU market as a whole through purchasing volumes of fluorine free foam in an annual cycle. The associated costs are estimated at between €21 million and €30 million per year, with c. €27 million considered to be the most likely average cost for the EU market as a whole.

- Can Eurofeu comment on estimated costs for manufacturers/importers for a full transition from PFAS firefighting foams to fluorine-free foams

6. Disposal of PFAS-containing AFFF

In EC-ECHA report page 160, incineration is mentioned as the most likely disposal option for PFAS-containing foams. Further, it seems that for PFAS contaminated run-off water, waste water treatment seems to be the only disposal option.

- Could Eurofeu provide quantified information on the use of the various disposal methods for PFAS-containing AFFF and run-off waters such as incineration (including incineration in cement kilns), treatment with granulated activated carbon (GAC), reverse osmosis or precipitation, etc...?

It is important to know which method is the current "go-to" for the disposal of AFFF-concentrates and whether this disposal option is different for fire extinguisher run off-water.

On the same page of the EC-ECHA report the by-products of incomplete destruction (fluorinated gases, smaller PFAS products) are mentioned.

- In this context can Eurofeu also share information on the removal/destruction efficiency (e.g. in %, what threshold value can be reached) of the PFAS for any of these methods?
- Do you have information on the identity and quantities of unintentionally generated substances from these processes (e.g. F-gases, other PFAS, HF, etc.)?

The EC-ECHA report mentions on page 163 that the average cost for the incineration of AFFF is 0.3-1.5 €/L.

- Does Eurofeu also have shareable information on the destruction costs of AFFF per m³ (or liter, kg, etc..) for the incineration (including cement kilns), GAC treatment, precipitation, reverse osmosis, etc...?

On page 161 of the EC-ECHA report the plasma arc furnace technique is mentioned.

- Is Eurofeu aware of and can share knowledge about any emerging technique for the disposal of PFAS-containing AFFF concentrate?

The EC-ECHA report mentions on page 163 that the literature indicates 808 incineration facilities across EU28.

- Can Eurofeu provide information on the availability of any of the mentioned methods (incineration AND any other relevant emerging technique)
- number of facilities in Europe, capacity per hour/day etc...? Please see for this also the data in the report⁵

The EC-ECHA report mentions on page 163-164, that data was not available to determine the share of EU incineration facilities that achieves 1,100-1,400°C.

- Can Eurofeu provide more information on the share of suitable incineration facilities? Any data also for single EU Member states would be helpful.

⁵ Information obtained from stakeholder consultation indicates that an incinerator operating at around 850-1800°C can process one tonne of foam per hour and an incinerator operating at around 6000°C has a throughput of around 25l per hour. It is assumed that 1kg = 1l; and it is also assumed that incinerators continuously operate with the same processing capacity and at the same temperature, 24 hours a day.

7. Cleaning of equipment

Starting from page 141 the EC-ECHA report discusses cleaning of equipment: costs and remaining contamination. In this context, we would also like to ask Eurofeu's input. The EC-ECHA report mentions only two techniques identified to clean PFAS-containing foam from equipment.

- Can Eurofeu provide additional information on other available techniques or any current research in this field?

One of the techniques reported has been published by the Bavarian Ministry of the Interior, Sport and Integration and Bavarian Ministry of the Environment and Consumer Protection, name of the report "Environmentally friendly use of fire-fighting foams". Concerning the techniques described within this document:

- Is Eurofeu aware of any Eurofeu member that cleaned its equipment according to this guideline? Is there any data on the achieved PFAS levels (if available)?

The cited guideline requires to rinse equipment until the rinsing water is no longer foaming.

- Is Eurofeu aware to what (no foaming) PFAS-level this might correlate? (any range in e.g. ppm/b would be helpful)

Another technique mentioned in the report is a 32-stage legacy foam decontamination process. This technique is reported to result in all appliances achieving PFAS levels below 1000ppt and one-third of appliances being below 70ppt. An independent body oversees the process and measures the PFAS concentrations achieved.

- Is Eurofeu aware of the actual usage of this process in the EU?

Further, the report assumes that based on the cost of this technique (€12,300) "the costs of cleaning could be in the region of €1 billion (based on an assumed 100,000 appliances needing cleaning)."

- Can Eurofeu comment on any of those numbers? Is the number of appliances sensible?

The EC-ECHA report mentions on page 143 that costs of cleaning of equipment will depend on the contamination thresholds requirements. Further the report states, that one stakeholder that has transitioned to fluorine-free foams (in the petrochemicals sector) reported that they achieved a level of 0.001% (10,000 ppb).

- Can Eurofeu comment on any achievable contamination thresholds (also based on the cited number above)?

8. Specific comments on EC-ECHA report

If you have specific comments on EC-ECHA report⁶ we invite you to send them, making reference to the concerned paragraphs and substantiating your arguments with evidence.

⁶ https://echa.europa.eu/documents/10162/28801697/pfas_flourine-free_alternatives_fire_fighting_en.pdf/d5b24e2a-d027-0168-cdd8-f723c675fa98