

From: [REDACTED] (ENV)
To: [REDACTED]
Subject: RE: Questions on the PFAS in firefighting foams report
Date: 04 December 2020 12:36:00

Dear [REDACTED]

Good, thank you for your feedback. I will make a suggestion to Wood.

Best regards

[REDACTED]

From: [REDACTED] (ENV)
Sent: 04 December 2020 12:26
To: [REDACTED]
Subject: RE: Questions on the PFAS in firefighting foams report

Dear [REDACTED]

I think that indeed it would be better to discuss with Wood. On Monday I'm more free in the afternoon, but it is not absolutely necessary that I join.

I agree that the situation is going to be complicated with the two restrictions (and the same is going to happen for the other uses of PFHxA, which will be covered by the broad restriction). What I expect is that, since our restriction is going to focus only on fire-fighting foams, we have more time to refine the assessment compared to the PFHxA restriction. If there are inconsistencies, I think that at the end we'll take the most protective approach (as we did when we included PFQA in the POPs Regulation). Having said that, we should try to limit such inconsistencies as much as possible, but I realise it is not always going to be possible.

Kind regards

[REDACTED]

From: [REDACTED]
Sent: Friday, December 4, 2020 11:53 AM
To: [REDACTED] (ENV)
Subject: FW: Questions on the PFAS in firefighting foams report

Dear [REDACTED]

From Wood's offer to your contract proposal they listed both Wood and Ramboll as responsible for the emission calculation task but not sure who actually did the work. I'd like to have a call with [REDACTED] and [REDACTED] to explain our needs in terms of emission calculations. Are you interested in participating Monday and Tuesday work best for me any time.

I also had a discussion with Kalle this morning on the differences between the PFHxA restriction (both RAC and SEAC side) and Wood's report. We will need to compare these in more details after the SEAC plenary, the underlying assumptions and calculations are not always very clear. We realise that it is really challenging to have two separate restriction initiatives for the same use going in parallel using different hypotheses and methodologies. We will make our best in reflecting the differences in our firefighting foam dossier and will see how this looks like.

Best regards

[REDACTED]

From: [REDACTED]
Sent: 03 December 2020 13:10
To: [REDACTED]
Cc: [REDACTED]
Subject: RE: Questions on the PFAS in firefighting foams report

Dear [REDACTED] and [REDACTED]

Thank you for being patient while we have reviewed the model and composed a response. Regarding the emission module and estimates, I believe you had two questions:

- In the Source-flow emission model in Table E.15 - Estimate of total PFAS emissions from fire-fighting foams, you mention a calculated 26% emissions of PFAS from the foam in the environment (with 13% and 39% as alternative estimates). I understand this is the outcome of the model and assumptions you used and described in Annex B.9 and that the calculations take into account the spread of foam among the different sectors of use (oil/petrochemical, maritime, etc.), percentage of type of use (live incidents, training, etc.) and distribution of emissions among the different environmental compartments based on phys-chem properties. Is this right?
- Is it possible to get the underlying calculations/Excel sheet to reach these numbers? We are considering using these emission rates to estimate emission reductions under the restriction scenario 2 with different review periods for the different sectors of use. Do you think it makes sense to use this sector-averaged emission percentage to make these simulations? Alternatively, do you have sector-specific emission percentages that we could use? Any advice on this would be appreciated.

The calculations in the model take a life-cycle approach to quantifying emissions during the manufacture, use, and waste-cycle, with the point of manufacture and sale (assumed to occur in the same year) as the starting point. The study used market data, along with literature values for emission factors and physical data to assess the emissions for 12 chemical species of non-fluorinated chemicals and two PFAS species. For the two PFAS species the value of 26% is total emissions to environment per annum for all stages of the life-cycle, which are presented in the simplified table below:

	Tonnage manufactured and sold per year in the EU	Emissions per year in the EU	Emissions / tonnage used
1-Propanaminium N-(carboxymethyl)-N-dimethyl-3-[[[3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl]sulfonyl]amino]-inner salt	21100	5500	26%
1-Propanaminium 3-amino-N-(carboxymethyl)-N-dimethyl-N-[[[gemma-omega-perfluoro-6,6,6-trifluoro-4-ethylthio]acetyl] derivatives, inner salts	17200	4491	26%

Please note, however, that these calculations were done to inform the cost-effectiveness analysis, and were not intended to be a precise estimate of emissions.

In terms of the second question regarding a sector-averaged emission percentage, I think a good solution could be to use Table 5.1 (see below) from our report:

Sector	Percentage share of the total (sales)	Annual usage rates	Live incidents (as a percentage of total use)	Training (as a percentage of total use)	Efficacy of bunding/control measures for training
Military	6%	17.5%	7%	93%	50%
Civil Aviation	9%	17.5%	7%	93%	97%
Municipal Fire service	13%	60%	93%	7%	90%
Chemical/petrochemical	59%	17.5%	7%	93%	97%
Marine applications	12%	17.5%	7%	93%	0%
Ready-to-use applications	1%	17.5%	100%	0%	N/A

The efficacy of wastewater treatment works is considered extremely poor against PFAS (the model assumes 0%). The WWTWs in the model are assumed to simply partition the PFAS between treated effluent and sludge, so the columns on live training and efficacy are not directly relevant to help work up a sector-averaged emission percentage.

It should be possible to use the market shares from the first column and the annual usage rates from the second column to arrive at a sector-averaged emission percentage.

Regards

[REDACTED]

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