

27, 28 AND 30 JUNE 2022
16.00 – 17.00 CEST

What are Safe and Sustainable Flame Retardants?

A sector group of Cefic

Questions & Answers

DAY 1

1. Do you know if the OEL will be harmonized between European countries?
2. Are non-halogenated flame retardants, as a "generic class" (albeit this is not meaningful) included in Cefic's estimation of 12000 substances / 43% of chemical industry turnover ?
3. What impact will CLP changes have on the use and choice of chemicals vs. REACH with "hard" regulatory measures?
4. It is my understanding that only certain POLYMERS will require REACH registration, but that "all" polymers will require simplified notification. How will this apply if an additive flame retardant reacts into a polymer, generating a new chemical (consisting of polymer+additive)?
5. On the point of alternatives, as a chemical cannot be essential if there is an alternative, how are alternatives going to be assessed (and by who)? Will chemical alternatives be assessed or also "not in kind" alternatives, i.e. a completely different product that fulfills the same function?
6. How big is the need for fundamental research and development of new safe and sustainable chemicals compared to the need for regulation enforcement and incentives for the application of available better chemicals?
7. Which four FRs are class 3 for Schneider? Can you please repeat?

Laurent Tribut (LT) : The four PIN FR materials which are classified as benchmark 3 according to my knowledge are magnesium dihydroxide, ammonium diethylphosphinate and ammonium polyphosphate (which seems to

be available in organic and inorganic forms according to new FR51 and FR53 classification in ISO 1043-4. The list of benchmark 3 substances being not fully public it is possible that other substances reach also the right score and I am not aware yet of their availability.

8. Seems that the precautionary principle for chemical toxicity/materials recyclability is going to win over precautionary principle of fireproofing materials for critical application ssuch as transport (automotive, railroad) and building (cf. CPR and Euroclasses). Is the EC ready to lower requirements for building and transporation safety to ease recycling, when these applications have materials with lifetimes well above 10 years?!

9. The Nofia products from FRX are also GreenScreen 3 commonly used in polyester, but suitable for others

LT : thank you very much for the sharing of this very interesting information. I will contact you later to know more about your portfolio.

10. Removal of synergist may impact other properties and cost, is Schnesider ready to compromise ?

LT : For the moment we are keeping the same specifications and evaluating the proposals from our suppliers. If there is no technical solution on the market which is completely fulfilling our requirements we may adapt our requirements but keeping the safety of customers as our top priority

11. Why was boron considered a toxic substance when used as FR?

LT : As far as I know Zinc borate is now classified as Category 2 reproductive toxicant but I am not a toxicologist and I have no additional information regarding the hazardouness of this substance specifically

12. How do you tackle the mixture toxicity, the so called "cocktail effect" for a better protection for human health and the environment? What about the patent protected flame retardant compositions? How will be addressed in terms of REACH Regulation?

13. How the Safe and Sustainable Flame Retardants are linked to the other European Regulations, such as Ecodesign for Sustainable Products Regulation, Construction Products Regulation, the Strategy for Sustainable and Circular Textiles and others?

14. "How will you address the greenwashing statement on a flame retardanst producer's website: "" As the largest global brominated flame retardants producer, the company's brominated flame retardants are readily recyclable, meet the requirements of circular economy and exhibit low carbon footprint. The flame retardants are safe, cost-efficient and sustainable flame retardants used in electronics, electrical devices, passenger vehiles, fabrics, textiles, paints, ceramics, foams, upholstery, mattresses, carpets, curtains, blinds and many other applications""?

For example, the New York State ""Family and Fire fighter protection"" law, 24 Janyary 2022, banned the use of halogenated flame retardants in furniture, mattresses and electronic casings."

DAY 2

15. Allowing only Benchmark 3 in future is a very demanding requirement - will exemptions be granted in "difficult" cases, perhaps on a temporary basis?

Barton Finn (BF) : Yes it is demanding, but we have seen a willingness by the supplier to fill data gaps or discuss stronger surrogates to improve the benchmark scores. A goal of our certification is to continually assess our criteria for relevance and improvement. The setting of only accepting benchmark 3 for FRs is presently under assessment to the increased number of BM3 for FRs. If BM 3 is set for next generation criteria, there will be a transition period where suppliers can apply for an extended period of time to achieve the requirement to consider design cycle alterations.

16. A question about BM3: if the flame retardant contains an additive, should the additive then also be scored as BM3?

Barton Finn : All additives to the flame retardant product above 1000ppm shall appear on the TCO Certified ASL.

17. Do you know if there are other assessment methodology competing with green screen and if green screen might become accepted as the reference worldwide?

Barton Finn : Hazard assessment frameworks (HAFs) are all based on the international GHS system, so there are many similarities to their assessment methodology and rationale, with differences in the number of hazard endpoints they include in a full assessment. What can separate HAFs is their method transparency and assessor independence. Examples of other hazard assessment frameworks similar to GreenScreen and used by industry are Scivera GHS+ and Chemforward. We assess alternatives compared to GS to see if we can also accept others, but they must first meet our method transparency and assessor independence requirements first.

18. EU is developing an own sustainability scoring system for electronic products with the ESPR. Ecolabels might be a reference for the best score. How does TCO fit to that exercise not basing on REACH?

Barton Finn : GreenScreen® for Safer Chemicals is a method for comparative chemical hazard assessment that builds on the U.S. Environmental Protection Agency's Design for Environment (DfE) approach and other national and international precedents including but not limited to the Organisation for Economic Cooperation and Development (OECD), Canada Domestic Substances List Methodology, the International Joint Commission, the European Union's Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) and Classification, Labeling and Packaging (CLP) Regulations, the Stockholm Convention on Persistent Organic Pollutants and the Globally Harmonized System of Classification and Labelling of Chemicals (GHS). It is freely and publicly accessible, transparent and peer-reviewed.

19. As potential replacement for PVC cables you probably look for other elastomers as alternative cable materials, not for alternatives for plasticizers used in PVC?

Barton Finn : We are reviewing the possibility to require PVC free power cables, which means also researching the alternatives and their chemical impact.

20. What are the typical criteria causing problems for materials ranking BM2 to achieve BM3?

Barton Finn : It is difficult to highlight specific hazard endpoints that drive the BM2 scores. What is a problem with BM2 is it has a broad scoring that allows for a greater number of data gaps than BM3. Unfortunately there

is no BM 2.5. Our public list of safer alternatives has driven competitiveness and willingness to submit chemical data to fill data gaps not originally available to the assessor in order to improve scores.

- 21. How do you tackle the mixture toxicity, the so called cocktail effect for a better protection for human health and the environment? How about the patent protected flame retardant compositions? How will be addressed in terms of REACH?**
- 22. Chemsec ignores the potency of hazards. Ethanol and Beryllium are both carcinogens but the limit values are 6 orders of magnitude apart. Therefore are you going to include that to differentiate between the worse and the better substance?**
- 23. On the ChemSec Marketplace: do have numbers on how successful this approach is? have you measured how many of the searches for alternatives lead to actually using them?**
- 24. Perhaps the classification of formulated products deals with the issue of potency?**
- 25. To ChemSec: proposed sustainability parameters do not seem to cover contribution to product life duration, nor end-of-life recycling. How are these taken into account ?**
- 26. Can you comment on how the grouping of OPFRs compares to other chemicals like PFAS or phthalates?**

Peter Fisk : the cases are different. PFAS have a common feature for all, which is the ultrapersistence of the perfluoro moiety. Phthalates are different because they have a common toxicological mechanism for all. The OPFRs do not have any single hazard-related property.

DAY 3

- 27. What is the reaction of established hazard assessment schemes like GreenScreen, C2CC, ...? Are they supportive and do they collaborate?**

Lauren Heine & Stacy Glass : Cradle to Cradle allows for the use of the C2CC material health assessment view in ChemFORWARD. GreenScreen has not been collaborative to date but we continue to engage in discussions.

- 28. How do you assess potential cocktail effect of substances?**

Lauren Heine & Stacy Glass : That is a huge challenge. We have developed a methodology for assessing botanicals that are complex mixtures. We use a combination of test data on the formulated product and individual constituents. There is much work still to be done in this area. Beauty and Personal Care products provide some useful precedents for other sectors because of the safe use limits that can help with concern for cocktail effects. That said, we do NOT try to calculate risks from exposure from other sources. That is another argument to moving to inherently low hazard chemicals.

- 29. Is it possible to use these tools for polymer mixtures?The tools are very much hazard based, but risk has also an exposure in the equation, how is this taken into consideration.**

Lauren Heine & Stacy Glass : Our polymer assessment methodology looks at residual monomers and additives in addition to the chemical hazard assessment of the base polymer. This gets at some of the issues associated with compounded materials. We also think it is best to assess polymeric materials at the trade name level because there can be significant differences in residuals, oligomers, etc in materials made by different manufacturers.

30. What is the cost for a) manufacturers and b) users? Do existing ratings get automatically transferred (e.g., Greenscreen 3)

Lauren Heine & Stacy Glass : Existing ratings, ie Publicly available GreenScreen and USEPA Safer Chemical Ingredient List chemicals are automatically transferred into ChemFORWARD with the goal of making a "one stop shop". All existing chemical hazard assessments in ChemFORWARD to accessible to subscribers regardless of the industry vertical. There are two subscription levels; the lower level includes all information except for summary hazard table data for locked chemicals. IN the higher subscription level, all summary tables are "unlocked" Pricing can range from \$2500 to \$10,500 depending on the number of seats. There are also discounts for subscribers who sponsor new chemical hazard assessments to be added to the repository. We tend to use external proxies like List Translator to identify substances of very high concern because we prefer not to invest money in chemical hazard assessments of chemicals that are already known to be toxic. We prefer to use resources to identify and assess safer alternatives.

31. Are you in contact with regulatory organization like ECHA and do they consider to use your assesement to select the most critical substances to be regulated?

Lauren Heine & Stacy Glass : Currently ChemFORWARD is not engaged directly with ECHA. We would welcome contacts that you can provide. Our chemical hazard assessments are of high quality and we think they would be very useful to regulators.

32. Can we solve the paradox by creating FR which are sensitive to specific radiation or substance which are not supposed to be seen in normal use?

33. What if the scope of SCIP database will be extended to other hazards then what is currently in scope (SVHC), then FR components/materials will be put out of scope for mechanical recycling?

34. ECHA is looking at the different chemistry groups within the flame retardants class and will set out a strategy that will determine which subclasses need regulating and which do not - how are flame retardant producers preparing for this and is there likely to be specific subclasses regulated under this strategy and will this impact downstream companies?

35. Is there a scope for using electrochemical methods for recycling of flame retardants or multi-component materials as an extension of current research or would this be unattainable on larger scales?