



Fluoropolymers in PFAS restriction proposal

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Date: 03.05.2023





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We do not defend PFAS

- Regulators and environmentalists are mainly concerned about PFAS that are mobile, bioaccumulative and toxic
- Fluoropolymers have nothing in common in terms of risk when compared to such PFAS of Concern
- Fluoropolymers are included in the PFAS restriction proposal due to PFAS emission concerns during their lifecycle
- GFL supports initiatives aimed at regulating PFAS of concern that pose an unacceptable risk
- GFL does not defend PFAS of concern (For example: PFOA and SvHCs)





Fluoropolymers in EU PFAS restriction proposal

1. Fluoropolymers are banned with some time limited derogations
2. Intentional use of PFAS as polymerization aids in fluoropolymers is banned with derogations
3. Unintentional presence of PFAS in fluoropolymers is regulated



Time limited derogations on fluoropolymers



	6,5 YEARS AFTER EIF	13,5 YEARS AFTER EIF
Time limited derogations	food contact materials for the purpose of industrial and professional food and feed production	implantable medical devices (not including meshes, wound treatment products, tubes and catheters)
	proton-exchange membrane (PEM) fuel cells	tubes and catheters in medical devices
	textiles for the use in filtration and separation media	coatings of Metered Dose Inhalers (MDIs)
		applications in petroleum and mining industry
		additives to hydraulic fluids in aircraft and aerospace industry
		Lubricants in certain categories
		diagnostic laboratory testing
		textiles used in personal protective equipment (PPE)
Potential derogations marked for reconsideration	non-stick coatings in industrial and professional bakeware	hernia meshes
		wound treatment products
		coating applications for medical devices other than Metered Dose Inhalers
		Rigid gas permeable contact lenses and ophthalmic lenses, PTFE in ophthalmic solutions packaging
		PCTFE-based packaging for medicinal preparations, medical devices and medical molecular diagnostics
		packaging of terminally sterilized medical devices
		applications affecting the proper functioning related to the safety of transport vehicles, and affecting the safety of operators, passengers or goods
		textiles for the use in engine bays for noise and vibration insulation used in the automotive industry
		membranes used for venting of medical devices
		the semiconductor manufacturing process



Intentional use of PFAS as polymerization aids

1. PTFE, PVDF and FKM produced with fluorinated polymerization aids are banned from 18 months after Entry into Force (EiF)
2. All other fluoropolymers can be produced with PFAS polymerization aids until 6.5 years after EiF

** More than 50% of fluoropolymers do not require the use of polymerization aids*



Unintentional presence of PFAS

Ban on manufacture, use and placing on the market

- As substances on their own

- As a constituent
- A mixture
- An article

≥ 25 ppb for any PFAS

≥ 250 ppb for the sum of PFASs

≥ 50 ppm for PFASs



ECHA's request for information in Public Consultation



Data on emissions across lifecycle

- Share of emissions (as percentages) attributable to these three different stages
- Share of the waste (as percentages) treated through incineration, landfilling and recycling
- Abatement technologies – cost and efficacy

Tonnage and emissions data on proposed derogations

Analysis of alternatives and socio-economic analysis

- Missing uses, Potential derogations marked for reconsideration, Other identified uses

Analytical methods

- Any new or additional information on analytical methods



Main concerns related to fluoropolymers during lifecycle



1. PFAS emissions during manufacturing of fluoropolymers

Intentional use of PFAS as polymerization aids

Presence of unreacted monomers, oligomers and other byproducts

2. PFAS emissions at the end of life of fluoropolymer applications

Complete degradation of fluoropolymers during incineration

Leaching of PFAS during landfill due to potential degradation





PFAS emissions during manufacturing

Intentional use of PFAS as polymerization aids

- Hundreds of tons of PFAS are intentionally used as polymerization aids leading to serious environmental pollution
 - PFOA as depicted in the movie, Dark Waters
 - GenX and other C6 compounds as regrettable substitutions to PFOA
- Manufacturing of PFAS polymerization aids are also contributing to PFAS emissions
 - Raw materials to manufacture PFAS polymerization aids are also PFAS
 - Packaging, Storage and transportation of these PFAS polymerization aids also contribute to emissions
- Intentional use of PFAS as polymerization aids is the main cause of PFAS emissions linked to fluoropolymer lifecycle
- Suitable regulations on intentional use of PFAS as polymerization aids will drastically reduce PFAS emissions





GFL's position on polymerization aids

- GFL has developed Non-Fluorinated Polymerization Aid technology to manufacture the following fluoropolymers:
 - PTFE
 - PVDF
 - FKM
 - PFA
- GFL commits to completely stop the intentional use of PFAS as polymerization aids from 2024





Other PFAS emissions during lifecycle

Unintentional generation of PFAS during manufacturing

- *Regulators have suggested a limit of 250 ppb for the sum of PFASs*

$$250 \text{ ppb} * 50000 \text{ tons} = 12,5 \text{ kgs of PFAS}$$

Unintentional generation of PFAS during processing

- *?? (Data collection under progress)*

Unintentional generation of PFAS at End of Life

- *?? (Data expected by middle of May 2023 – GFL incineration study)*



GFL's contribution to Public Consultation

Safety of fluoropolymers during its lifecycle mainly manufacturing and end of life phases

	Risks	Information on remediation
Manufacturing & Processing phases	Use of PFAS Polymerization aids (FPA) & its emissions thereof	Substitution of FPA with Non-FPA
		Implementation of abatement technologies to control emissions
End-of life phase	Potential degradation into small PFAS molecules	Fluoropolymers do not degrade
	Incomplete incineration	GFL's incineration project in collaboration with KIT and other stakeholders
	Leachate from landfills	Fluoropolymers are inert, non-toxic and do not leach





GFL's Incineration project

Initiated & funded by	Gujarat Fluorochemicals (GFL)
Research partner	Institute for Technical Chemistry (ITC), at Karlsruhe Institute of Technology (KIT)
Laboratory partner	SGS, PFAS Competence Centre
Feed sampling	Pro-K, Fluoropolymer processing and downstream user association
Incineration Advisor	Dr. Phillip Taylor, P Taylor & Associates, LLC
Academic Consultant	Dr. Bruno Ameduri, Senior Researcher at ICGM, University of Montpellier
Observers	UBA, German Federal Environment Agency
PFAS analysis collaboration partner	BAM, Federal Institute for Materials Research and Testing
Study Report generation	Institute for Technical Chemistry (ITC), KIT
Project Report generation	Chemservice GmbH, Germany



Contribution of Fluoropolymer DU industry



- Provide data on all uses of fluoropolymers
- Provide details on performance criteria, function, and benefits
- Provide information on standards, specifications set by end use industries
- Provide information on non-availability of alternatives to fluoropolymers
 - If alternatives exist, what are the expected tradeoffs in terms of safety and health, performance, lifespan, impact to environment, decarbonization, innovation and technology
- Provide data on economic impacts due to a restriction – loss of jobs and revenue
 - It is important to cover the entire value chain
- Public consultation period – **22 March to 25 September 2023**

https://comments.echa.europa.eu/comments_cms/AnnexXVRestrictionDossier.aspx?RObjctId=0b0236e1885e69de



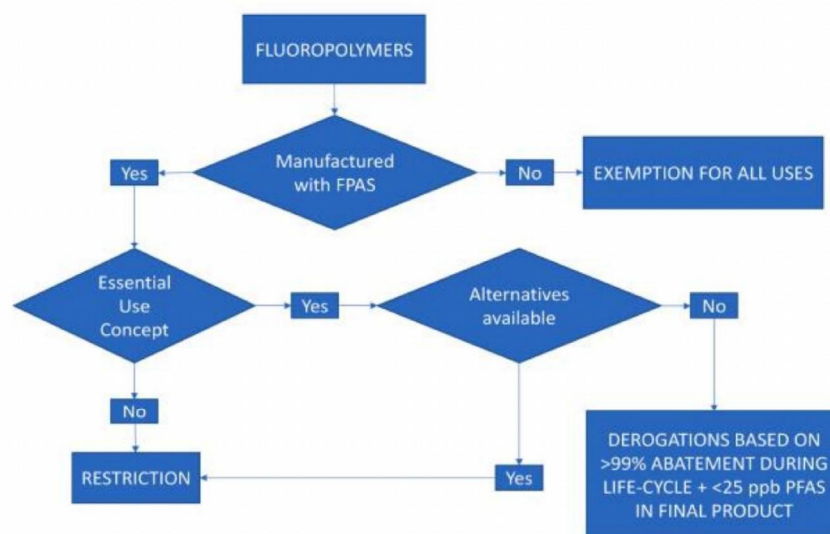
Key messages



- Fluoropolymers are safe and should be exempted
- Instead, Intentional use of PFAS as polymerization aids should be regulated
- Unintentional presence of PFAS should be controlled during manufacturing and processing by investing into abatement technologies
- Fluoropolymers fully degrade at their end of life - incineration



Decision tree for fluoropolymer regulation



*Ameduri 2023, Fluoropolymers: A special class of per- and polyfluoroalkyl substances (PFASs) essential for our daily life



Thank you

