We are Chinese enterprise specializing in the production of fluorine materials. Our main business is hydrogen energy and new energy industry materials such as high-performance fluorinated functional membranes, high-performance fluoropolymers and high-value-added fluorinated fine chemicals.

We have formed a whole industry chain from raw materials, intermediates, monomers, polymers, to film forming technology, functionalization technology, and has unique technical and cost competitiveness in the world. We have developed into a major producer of fluorine-containing functional materials in China and a global supplier.

Our main products include fluorinated functional membranes(hydrogen fuel cell membrane, PEM membrane, ePTFE membrane,etc.), fluoropolymers(perfluorosulfonic acid resin(PFSA), ETFE, PFA, FEVE),fluorinated monomers (tetrafluoroethylene(TFE), Perfluorosulfonic acid(PSVE),perfluorocarboxylic acid(PCVE),perfluoroalkyl vinyl ethers (PAVEs) which include trifluoromethyl trifluorovinyl ether (PMVE), pentafluoroethyl trifluorovinyl ether (PEVE) and heptafluoropropyl trifluorovinyl ether (PPVE),etc),as well as fluorinated fine chemicals(Hexafluoropropylene oxide(HFPO),Fluorosurfactant Perfluoroalkyl ether carboxylic acid(PFECA), trifluoroacetic acid(TFA),hexafluoroacetone(HFAH),bisphenol AF(BIS-AF), hexafluoroisopropanol(HFIP)). They are indispensable for critical applications in the renewable energy (including fuel cells and hydrogen technology industries,photovoltaic (PV), solar applications, wind turbines), architecture, chemical, electronics, semiconductors,healthcare and transport sectors ,the deployment of 5G networks and textiles for example.

The Opinions:

We believe that the proposed restriction of PFAS (Per- and Polyfluoroalkyl substances) proposed is a rused and lack of scientific basis measure,even will have devastating consequences for the EU and the world.

First, A full PFAS restriction would put at risk key applications that are necessary to ensure competitiveness and achieving ambitious EU Green Deal goals, not to mention resulting risks by losing key functionalities that FPs play in ensuring safety and protection in industry and consumer applications.

The European Green Deal goal is to transform the EU into a modern, resource-efficient and competitive economy,to reduce net greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels, Ensuring no net emissions of greenhouse gases by 2050.

However, there are no alternatives that can replace the high performance provided by PFAS,especially fluoropolymers, in “virtually every critical application in which they are used”.

Secondly, unpredictable consequences for the critical sectors relying on fluoride materials and thus undermine the Europe's competitiveness in key areas. This could result in the complete relocation of this industry outside the EU with significant impacts for the whole fluoride materials industry.

And finally, the proposed restriction of PFAS is not consistent with the REACH principles on persistence and risk management, the inclusion of fluoropolymers in

the same regulation as PFAS, but also inconsistent with the OECD principles on polymers of low concern (PLC).

There is no indication in REACH that persistence alone justifies risk management measures. Therefore, persistence on its own does not justify the need for specific Risk Management Measures (RMMs).Per definition Polymers of low concern(PLC) are polymers deemed to have insignificant environmental and human health impacts. Therefore, these polymers should face reduced regulatory requirements (OECD, 2009). Indiscriminate generalization to the whole family, with vastly diverse properties,would not be grounded on sound science.

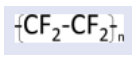
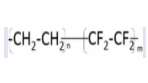
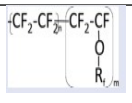
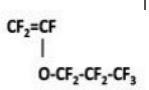
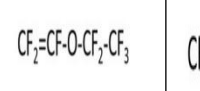
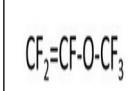
The Propositions:

1.Grouping the fluoropolymers as distinct categories of PFAS and exempting the use of fluoropolymers and the monomers in Europe,especially ETFE,PTFE and PFA which are demonstrated to meet the OECD's criteria for Polymers of Low Concern (PLC).

Fluoropolymers, which are high molecular weight polymers with unique properties, could be regarded as a distinct class under the polymer category of PFAS.A segmentation of the PFAS family according to known properties rather than a structure-based classification alone is needed for a risk-based regulatory approach. According to literature data(Henry et al., 2018),at least four fluoropolymers(PTFE, ETFE, FEP, and PFA) have been demonstrated to meet the OECD's criteria for Polymers of Low Concern (PLC) and satisfy the PLC criteria for low MW leachable by-products.

For these reasons, we strongly advocate for the segmentation of the PFAS family of substances before performing any grouping-based assessment, and place environmentally stable compounds such as fluoropolymers in a separate category. Moreover, an application exemption should be made until an alternative whose performance fully meets the requirements is determined.

We suggest to exempt the use of fluoropolymers and the monomers are as follows:

Fluoropolymer/ monomer	PTFE (ePTFE)	ETFE	PFA	PPVE	PEVE	PMVE
CAS	9002-84-0	25038-71-5 68258-85-5	26655-00-5 31784-04-0	1623-05-8	10493-43-3	1187-93-5
Structure						

2.Fluoropolymers(especially PFSA and PFCA) are speciality plastics that underpins electrolyser and fuel cell systems. As no substitute is available today, It is necessary to exempt the use of these fluoropolymers,the related monomers and chemicals in Europe, until alternatives with comparable targets become available.

Fluoropolymers are key elements for the decarbonization and climate change objectives of the EU,for example in development of alternative energy elements (fuel cell technology, lithium-ion batteries). Fluoropolymers are also critical components of PV cells in renewable energies, including clean hydrogen.

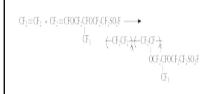
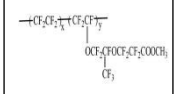
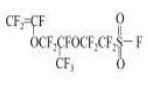
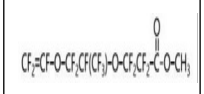
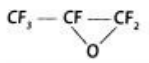
Hydrogen fuel cells and water-electrolytic hydrogen electrolysers applications are the

hydrogen industry's fundamental technologies, will also be a cornerstone in achieving EU energy and climate objectives. A very large proportion of technologies involving electrolysers and fuel cells are based on this proton exchange membrane (PEM) technology.The core of both PEM water electrolysers and PEM fuel cells is an electro-chemical reaction through a ionomer membrane that consists of perfluorinated copolymers(PFSA) carrying sulfonic acid groups and most commonly reinforced by porous polytetrafluoroethylene (ePTFE). So they can act as ion exchanger and are therefore called ionomers. perfluorinated resin(PFSA) membrane which carry sulfonic acid groups (SO3H) provid the best association of conductivity, chemical stability and mechanical strength.

Moreover,fluoropolymers use in the hydrogen industry is substantial due to their unique characteristics. A variety of fluoropolymers(ETFE,PTFE,PFA,FFKM) are being used as valves, seals and other membranes in all stations in the value chain, from through production through infrastructure applications to hydrogen-specific end-uses.

The Chloralkali electrolysis industry typically uses a membrane process too. Yet, unlike PEM electrolysis, Chloralkali electrolysis process is based on two layers: one made of a perfluoro sulfonic acid ionomer and the other one of perfluoro carboxylic acid (PFCA) ionomers.

As a major manufacturer of fluorine materials from China,we strongly recommend to exempt the use of following fluoropolymers,the related monomers and chemicals in Europe,until alternatives with comparable targets become available.

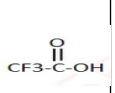
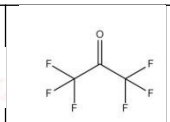
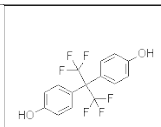
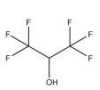
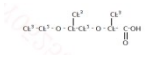
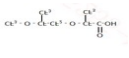
Fluoropolymer/ monomer	PFSA	PFCA	PSVE	PCVE	HFPO
CAS	31175-20-9	——	16090-14-5	63863-43-4	428-59-1
Structure					

3.As for fluorinated fine chemicals, A minimum exemption period of 5 years or 12 years or more must be granted, to ensure a smooth and safe transition in these industries.

Many of the derivatives of hexafluoropropylene oxide(HFPO), such as TFA,HFAH,BIS-AF,HFIP and PFECA, are playing the important roles in the fields of medicine, pesticides, electronics, semiconductors and fluoropolymers production.The material properties of perfluorinated fine chemicals are unique and impossible to replace in the near future. A minimum exemption period of 5 years or 12 years or more must be granted, to Ensure a smooth and safe transition in these industries.

We suggest to exempt the use of perfluorinated fine chemicals are as follows:

perfluorinated fine chemicals	TFA	HFAH	BIS-AF	HFIP	PFECA-1	PFECA-2
CAS	76-05-1	13098-39-0	1478-61-1	920-66-1	2479-74-5	2479-73-4

Structure						

4.As fluorine materials pruductor,should commit voluntarily to responsible manufacturing principles in term of continuously improve and develop best available techniques, management of environmental emissions, the increase recyclability and reuse of its products in line with the objectives of circular economy.

Such as legislation should frame and incentivise best practices fostering minimum risk and waste and limiting emissions from processing aids. This should be a path to follow for the industry Another,adsorption techniques (e.g., ion exchange resin) could be used to remove trace amounts of PFAS from effluent streams. And Maximising recycling and Proper incineration of fluorinated material at end of life , should be the best practice,in which the fluorinated materials burn and release hydrofluoric acid (HF), which is captured by reaction with calcium hydroxide resulting in calcium fluoride,which is used again as a raw material for production of fluorine-containing material. It is necessary to stress that both performance and environmental and health related trade-offs need to be considered.

References: Henry et al. (2018), A critical review of the application of polymer of low concern and regulatory criteria to fluoropolymers, Integrated Environmental Assessment and Management published by Wiley Periodicals, Inc., Volume 14, Number 3, pp. 316-334.