Progress beyond

General comments on the restriction option analysis and scope of the PFAS restriction proposal under EU-REACH

The aim of this first submission is to provide Solvay's high-level view on the PFAS restriction proposal recently published under the framework of Regulation (EC) 1907/2006 ('REACH').

We believe that a PFAS restriction should outline a clear segmentation between the different PFAS families and that risk mitigation strategies should be directly proportionate to the (eco)tox profile of the products and products families planned to be regulated. Proposing a "one-size fits all approach" for all PFAS is not scientifically or legally supported, and risks to have a tremendous negative impact on the competitiveness and existence of the industry (in the EU and beyond) as well as on the implementation of the European energy transition ambition.

Additionally, using solely the persistence property ("p-factor") as criteria to justify an EU ban does not find validation in EU law, where persistency *per se* is not defined as a hazard. Lastly, we must consider that *persistency* does not necessarily correlate with a negative connotation, as *persistent* products are more durable, hence reducing the frequency of replacing with new articles and also allowing recycling.

We, Solvay, are fully committed to provide during the public consultations information with regards to the hazard profile of our products, the emission of our plants, the progress we make on our product's End of Life (EoL) and the socioeconomic impact of such broad restriction on our business.

We believe that fluoropolymers (FPs) and perfluoropolyethers (PFPEs) **present low hazard to human health and the environment.** With this first submission we want to boost at the earlier possible stage a science-based discussion about the universal PFAS ban among stakeholders and provide scientific and solid evidence to facilitate the development of rational and scientifically grounded opinion.

Solvay understands the public concern around PFAS and has been taking a number of actions to address those concerns. Most importantly, we have been innovating to find alternatives for the PFAS substances that may trigger concerns, which is why our focus has been on phasing out the use of fluorosurfactants. Over the last years Solvay has been very proactive in developing new polymerization processes (Non-Fluorosurfactant technologies, NFS) that no longer require the use of fluorosurfactants in the manufacture of some very specialized FPs. Since 2019 we have heavily invested in the development of NFS products and we are fully committed to the transition of more than 99% of our FPs portfolio to NFS technologies by 2026. For the remaining 1% of our portfolio, our Research and Innovation (R&I) teams is investing consistent resources to find a viable alternative. We also want to show that FPs and PFPEs manufacturing plants have made tremendous progress in terms of emissions, notably in the last years, and today these are state of the art plants with emissions levels reduced to the maximum extent possible and very strict regulatory monitoring. Finally, with the increasing transition from linear to a circular economy, we are pleased to share multiple projects that Solvay is developing with downstream users on new recycling technologies which will bring future solutions to the End of Life (EoL) of FPs and PFPEs.

Fluoropolymers (FPs, incl. fluoroelastomers) and Perfluoropolyethers (PFPEs) play a critical role in society and for a more sustainable future – including the transition to a low-carbon Europe. Solvay's products mainly serve essential industrial applications for society that contribute to a more sustainable future, including electric vehicle batteries, hybrid vehicle engines, green hydrogen applications, renewable energy installations, semiconductor manufacturing, medical devices, and more.

We believe that Fluoropolymers (FPs, incl. fluoroelastomers) and Perfluoropolyethers (PFPEs) that fulfil the criteria of Polymer of Low Concern (PLC) should be excluded from the scope of the proposal or should be exempted by way of a time-unlimited derogation for all uses, as they do not present an unacceptable risk that needs to be addressed at the EU level by means of a REACH restriction, due to their recognised low hazard to human health and the environment.

Additionally, polymeric PFPEs not meeting all PLC criteria and PFPE substances should be derogated according to DUs requests, where they are solely applied in industrial uses, present low (eco)tox risk according to their conditions of use and have no technically (in terms of performance) and economically feasible alternatives.

The derogation should be extended to all PFAS-based raw materials (i.e. monomers, intermediates and processing aids) that are needed for the industrial synthesis of the products mentioned above, according to the outlined principles. These materials are assessed based on current requirements of REACH regulation.

Based on the same rationale, manufacture and place on the market of future products (i.e. R&I products) that either fulfil the PLC criteria or are not known to pose risks based on their (eco)-toxicological profile and conditions of use, should be considered for the same derogations as exposed above (incl. potential PFAS precursors). We, Solvay are committed in characterizing the human health and environmental hazard properties of our R&I products according to the type of molecule during the performance of the R&I activities and prior to their release on the market.

The statement and data provided in the present dossier will be further substantiated with a second submission which will take place in late August/beginning of September, where additional granularity about our products and business will be made available to the ECHA committees referenced under Articles 70 and 71 REACH and to the general public. In the second submission, further details about emissions, hazard, alternatives and socio-economic aspects will be provided.

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Solvay's fluoropolymers and perfluoropolyethers portfolio

Our portfolio comprises a wide and complex series of FPs and PFPEs which are applied for critical uses and have contributed to technological breakthroughs in the last decades. FPs and PFPEs do not bioaccumulate, do not cross biological membranes, are not mobile and – for the vast majority of products – fulfil the PLC criteria, hence being recognised under OECD standards to pose a low-risk for human health and the environment. The great majority of PFAS manufactured by Solvay fulfil the PLC criteria. Over the last years Solvay has been very proactive in developing new polymerization processes (Non-Fluorosurfactant technologies, NFS) that no longer require the use of fluorosurfactants in the manufacture of some very specialized FPs. We are fully committed to the transition of more than 99% of our FPs portfolio to NFS technologies by 2026.

Considerations on missing uses

Solvay would like to shed a light on all FPs and PFPEs sub-uses and sub-groups that are missing or have not been adequately described in their full complexity in the PFAS restriction proposal. Some key industrial sectors for Solvay, such as lithium-ion batteries, semiconductors, automotive, electronics, wastewater filtration membranes and industrials sub-uses and sub-groups, have not been described in their complexity or are missing, leaving unanswered questions regarding the impact of a PFAS ban on those sectors with no detailed view of potential available alternatives. Where there is no assessment of a sub-use or sub-group, it cannot be considered that the demonstration required by Article 68(1) REACH (unacceptable risk/need for action at Community level/lack of alternatives) has been made.

Consideration about other potential risk management measures

As a Responsible Manufacturing company, we continue to invest in state-of-the-art technologies enabling us to control PFAS emissions in the environment, while preserving the use of these valuable products within the EEA. Solvay, alongside other fluoropolymer industry members, is committed in using Best Available Techniques (BAT) to reduce to the minimum all potential PFAS emissions that might derive from the production of FPs and PFPEs at our EU industrial plants. The emissions at our industrial sites comply with the strict limits set by EU regulations, as well as those set by national and local authorities where our industrial operations take place. Finally, as previously mentioned, Solvay has massively invested in NFS technologies, and we publicly announced to transition more than 99% of our products to NFS technologies by 2026. For the remaining 1% of products still utilising fluorosurfactants as polymerization aids, R&I efforts continues to develop alternatives.

Considerations on End of Life (EoL)

Solvay implements full waste management procedures to ensure minimal environmental exposure from PFAS via recycling, incineration and landfill. As a part of the transition from linear to a circular economy, the fluoropolymer industry and Solvay are developing new recycling technologies in addition to historically used mechanical recycling. These technologies include physical recycling and chemical recycling such as pyrolysis, depolymerization, gasification and mineralization.

Considerations on REACH requirements for restriction of substances, quality of data and methods used to support the proposal, proportionality and enforceability

Although a restriction may be applied to any substance, REACH requirements imply that the manufacture / use / placing on the market of an identified substance must entail an unacceptable risk to human health and/or environment that needs to be addressed at the EU level, in order to be restricted or banned. Besides assessments on hazards and risks, appropriateness of the risk management measures must be evaluated based on clear criteria and Annex XV REACH report effectiveness, practicality and monitorability criteria must be thoroughly evaluated. We notice that no robust assessment for FPs and PFPEs against those criteria has been included in the restriction proposal. Additionally, using solely the persistence properties ("p-factor") as criteria to justify an EU ban does not find validation in the text of REACH, where persistency *per se* is not defined as a hazard.

We acknowledge and support the vision of other regulatory agencies (e.g. UK HSE RMOA on PFAS) that recommended the adoption of a more pragmatic approach with regards to a potential PFAS ban, where low hazard PFAS groups and low risk uses have been recommended for exclusion from the scope of a future restriction proposal.

Due to limited research on FPs and PFPEs, many statements within the Annex XV report introducing this restriction have been drawn without a quantitative assessment, based on outdated literature studies, limited to only one type of fluoropolymer. Difficulties linked to data availability are reflected within the text of Annex XV and the supporting Annex B. Additionally, availability of data on the degradation of FPs and PFPEs are non-existent as the proposal focuses on limited research regarding the persistence and disposal of the substances.

The proportionality assessment included in the Annex XV report was elaborated based on assumptions only and not specifically for the different PFASs in the scope of the restriction. As a consequence, uncertainties arise when addressing the impacts of the restriction options on users and actors within the supply chain, as well as the balance of effort from the actors and authorities versus any potential adverse effects targeted with the restriction proposal; the balance of costs and benefits and cost-effectiveness necessary for the completeness and robustness of the proposal. With regards to FPs and PFPEs, considering the benefits related to the uses, implemented abatement measurements, waste management and recycling practice as well as the characteristics of these substances (the great majority being PLC), it seems that the proportionality principle that should inform the administration's decision-making process under the EU laws is not respected.

Lastly, introducing a wide restriction on PFAS does not only impact industry, but also enforcement at local level. National authorities will have to shoulder the responsibility of enforcing the restriction. As the restriction proposal stands, there is no clear information on how enforcement will be conducted. We believe that, as currently phrased and structured, the enforceability of the PFAS restriction proposal will be challenging and this would frustrate both the EU principles of legal certainty and legitimate expectation for both the EU industry and civil society.

Considerations about policy contradictions

FPs and PFPEs play a crucial role in the electrification of Europe, a key aspect of the European Green Deal. Additionally, due to their durability and longevity, they also increase the lifecycle of a product, contributing to the Circular Economy Action Plan, another pillar of the Green Deal. FPs and PFPEs present the advantage of being non-bio accumulative nor toxic, making their use suitable in medical

devices. Lastly, their use is fundamental in the semiconductor industry, a key strategic market for EU as outlined in the EU Chips Act.

The confidential attachment provides additional granularity on Solvay's position with regards to the PFAS restriction proposal.