APPLiA contribution to the Per- and polyfluoroalkyl substances (PFAS) consultation: comments for Annex XV restriction report.

APPLiA contribution to Per- and polyfluoroalkyl substances (PFAS) consultation

APPLiA, the home appliances manufacturers European association, would like to provide its first contribution to the per- and polyfluoroalkyl substances (PFAS) consultation to feed into RAC and SEAC opinions.

Please note that this is a majority contribution paper as one APPLiA member, Electrolux, cannot support the paper in its entirety.

GENERAL COMMENTS:

APPLiA, the European association of home appliances manufacturers, represents more than 983.695 employees (direct & indirect) in the EU-27 with 3.214 enterprises, that manufacture home appliances which could contain certain fluoropolymers included but not limited to – PTFE, PVDF, FEP, FKM, PFA – in a wide range of products (refrigeration appliances, air conditioners, washing and/or drying appliances, cleaning appliances, cooking appliances) and components (electrical, lubricants, plastic and/or rubber materials, non-stick coatings).

Specifically on socio-economic aspect, we acknowledge that a general ban under REACH is expected to affect a number of industries, including the home appliances sector and pose certain challenges, e.g. a need for adjustment of the technological process, replacement of fluoropolymers as raw materials with alternative that might not yet have been fully assessed or might not be able to demonstrate the same intrinsic and unique properties as fluoropolymers and might lead to end products with altered and downgraded features and performance. A universal restriction of PFAS could have profound economic implications on the home appliances sector in the EU-27 and the time provided is too short to properly implement the changes needed coupled with the uncertainty coming upstream to make the proper design change of our products. Based on available evidence, even if the sector transformed, it is unlikely that substitutes with the same or similar levels of performance could be placed on the market quickly. This would consequently reduce the availability and supply of home appliances in the EU-27, negatively affect the EU economy and impact the everyday life of EU residents. *The socio-economic impacts are expressed in questions 6 and 7.*

It must be highlighted that there is **no single recognised definition of PFAS** in existing chemical legislations or provided by the competent authorities. The actual definition used for PFAS in the restriction proposal has a potentially important role for biomonitoring, providing problem scoping, although there are practical limitations such as sample sizes, cost, availability of standards, detection limits, etc. There are important challenges around clarity and feasibility of regulating substances as a class. Ambiguities in how a definition is interpreted and applied can lead to misinterpretations by stakeholders, raising the likelihood

of legal ramifications and ultimately slowing the process, potentially defeating the original goal of accelerating regulation through assessing PFAS on the basis of classes rather than individual chemicals. This is already well illustrated in the actual Restriction Dossier that does not make a clear distinction between polymerised and non-polymerised PFAS that present different chemical characteristics and behaviour. Indeed, PFAS vary substantially in their physicochemical properties and may include polymers and non-polymers; solids, liquids, and gases; volatile and non-volatile compounds; compounds that are water soluble and water insoluble substances.

Based on our internal literature review, we can affirm that fluoropolymers are:

- Distinctly different from non-polymeric chemical substances of low molecular weight due to their thermal, chemical, photochemical, hydrolytic, oxidative and biological stability. They have negligible residual monomer and oligomer content and low to negligible leachability[1];
- Structurally different from the non-polymer PFAS, have different safety and environmental considerations and unique and intrinsic properties and are largely deployed as raw material in various industries, making them extremely pertinent;
- They have very high molecular weights and are not subject to long-range transport. Based on current information, the molecules of these fluoropolymers are believed to be too large to cross cell membranes and are therefore believed to pose less risk to human and ecological health relative to non-polymer PFAS[2];
- Considered to be non-mobile in the environment, not bio-accumulative and unable to bioconcentrate[3]. Stability studies reported fluoropolymers stability in terms of light, hydrolysis, heat, oxidation, and biodegradation. Little or no data has been found as regards adsorption/desorption of fluoropolymers, their presence in sewage and soil and volatilisation;
- Demonstrated by certain studies (Ebnesajjad 2015, Sina Ebnesajjad 2017, PlasticsEurope, Fluoropolymers Product Group (FPG) 2021, Korzeniowski, et al. 2022) as not toxic or exhibit low toxicity;
- Meeting the Polymer of Low Concern criteria[4];
- Chemically, thermally, and biologically stable and therefore are not expected to transform to dispersive non-polymeric PFAS when disposed of in a landfill.

In conclusion, we consider the restriction proposal disproportioned compared to the properties of the fluoropolymers that are not demonstrated to pose an unacceptable risk for environment and/or human health.

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[1] Barbara J Henry, Joseph P Carlin, Jon A Hammerschmidt, Robert C Buck, L William Buxton, Heidelore Fiedler, Jennifer Seed, Oscar Hernandez, A critical review of the application of polymer of low concern and regulatory criteria to fluoropolymers (2018), Integr Environ Assess Manag14.

[2] Barbara J Henry, Joseph P Carlin, Jon A Hammerschmidt, Robert C Buck, L William Buxton, Heidelore Fiedler, Jennifer Seed, Oscar Hernandez, *A critical review of the application of polymer of low concern and regulatory criteria to fluoropolymers (2018),* Integr Environ Assess Manag14

[3] Stephen H. Korzeniowski, Robert C. Buck, Robin M. Newkold, Ahmed El kassmi, Evan Laganis, Yasuhiko Matsuoka, Bertrand Dinelli, Severine Beauchet, Frank Adamsky, Karl Weilandt, Vijay Kumar Soni, Deepak Kapoor, Priyanga Gunasekar, Marco Malvasi,10 Giulio Brinati,10 and Stefana Musio, *A critical review of the application of polymer of low concern regulatory criteria to fluoropolymers II: Fluoroplastics and fluoroelastomers*. (2022), Integrated Environmental Assessment and Management — Volume 19, Number 2, 326-354

[4] https://setac.onlinelibrary.wiley.com/doi/full/10.1002/ieam.4035

SPECIFIC INFORMATION REQUEST 1:

- Food contact materials & articles of kitchen and cooking appliances, including but not limited to appliances accessories (e.g. accessories for ovens) & consumers cookware, as identified in the Restriction Proposal;
- Electronics & semi-conductors;
- Lubricants;

However, as detailed in question 6, fluoropolymers used in the home appliances are much broader:

Home appliance sector* deploys certain fluoropolymers – most of which PTFE, PVDF, FEP, FKM, PFA – in a wide range of products (refrigeration appliances; air conditioners; washing and/or drying appliances; cleaning appliances; cooking appliances) and components (electrical, lubricants, plastic and/or rubber materials, non-stick coatings).

Six clusters of domestic appliances are thus outlined in a non-exhaustive list, as follows:

1. **Refrigeration appliances**: Refrigerators, freezers, ice-cream makers.
2. **Cooling, heating and/or dehumidifying appliances**: Air conditioners (double duct, fixed single, multi split, etc.), water heaters, heat pump water heaters, purifiers and dehumidifiers.
3. **Washing and/or drying appliances**: Washing machines, dryers, washer-dryers, dishwashers, all with/without heat pump technology.
4. **Cleaning appliances**: Vacuum cleaners.
5. **Personal care appliances**: electrical toothbrushes, shavers, clippers, trimmers, hair-dryers, etc.
6. **Cooking appliances**: Sandwich toasters, waffle irons, electrical *planchas*, electrical grills, air fryers, coffee machines, and others for consideration such as ovens, Blenders, Food processors, Mixers, Cookers -slow cooker, rice cooker.

Component types with fluoropolymer content are used in the manufacturing of products in Clusters 1 to 6, namely electrical components containing PTFE/PVDF, like temperature resistant, weather resistant, scratch resistant and pumps, electrovalve, insulation sleeves or resistive cables, lubricants, membrane vents (indispensable to design water proof battery powered devices), batteries, containing PTFE and plastic and rubber materials containing PTFE/FEP/KFM/PVDF. The portfolio also includes non-stick coatings for sliding surfaces containing PTFE/FEP/PFA are used in the manufacturing of products in Cluster 6.

Additionally, applications with temperature resistant, chemical resistant, sealing - or non-stick - properties are used in various steps during the manufacturing process of home appliances products.

As a disclaimer, a clear distinguishment should be made between the manufacture of fluoropolymers as such, which is not in the remit of activities of APPLiA members, and the downstream use of fluoropolymers in the value chain as a raw material in the manufacture of products ready to be placed on the market, e.g., the manufacture of home appliances products that are using fluoropolymers as a raw material in their technological process.

SPECIFIC INFORMATION REQUEST 2:

As outlined above, fluoropolymers are widely used in electronics and semiconductors, food contact materials and in the home appliance sector. This means that they may be a part of electrical and electronic equipment, which at the end of its life becomes subject to Directive 2012/19/EU on waste electrical and electronic equipment (WEEE). The purpose of this Directive is to contribute to sustainable production and consumption by, as a first priority, the prevention of WEEE and, in addition, by the re-use, recycling and other forms of recovery of such wastes so as to reduce the disposal of waste and to contribute to the efficient use of resources and the retrieval of valuable secondary raw materials. It also seeks to improve the environmental performance of all operators involved in the life cycle of EEE, e.g. producers, distributors and consumers and, in particular, those operators directly involved in the collection and treatment of WEEE. In order to achieve these objectives, the Directive:

- requires the separate collection and proper treatment of WEEE and sets targets for their collection as well as for their recovery and recycling;
- helps European countries fight illegal waste exports more effectively by making it harder for exporters to disguise illegal shipments of WEEE;
- reduces the administrative burden by calling for the harmonisation of national EEE registers and of the reporting format.

By consequences, we truly believe that there are already existing requirements under the WEEE Directive and the Waste Framework Regulation that should be taken as basis for improvement when needed, rather than having full restrictions.

SPECIFIC INFORMATION REQUEST 3: no information to provide.

SPECIFIC INFORMATION REQUEST 4: no information to provide.

SPECIFIC INFORMATION REQUEST 5: no information to provide.

SPECIFIC INFORMATION REQUEST 6:

Use of fluoropolymers in the home appliance sector

Home appliance sector* deploys certain fluoropolymers – most of which PTFE, PVDF, FEP, FKM, PFA – in a wide range of products (refrigeration appliances; air conditioners; washing and/or drying appliances; cleaning appliances; cooking appliances) and components (electrical, lubricants, plastic and/or rubber materials, non-stick coatings).

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Additionally, applications with temperature resistant, chemical resistant, sealing - or non-stick - properties are used in various steps during the manufacturing process of home appliances products.

As a disclaimer, a clear distinguishment should be made between the manufacture of fluoropolymers as such, which is not in the remit of activities of APPLiA members, and the downstream use of fluoropolymers in the value chain as a raw material in the manufacture of products ready to be placed on the market, e.g., the manufacture of home appliances products that are using fluoropolymers as a raw material in their technological process.

Due to their chemical structure fluoropolymers demonstrate valuable properties including chemical, biological, and thermal stability, heat and chemical resistance, unique dielectric properties, and durability. Additional fluoropolymer properties include fire resistance, weather resistance, non-wetting, and non-stick.

Fluoropolymer chemical properties and behaviour and related risk

Fluoropolymers are distinctly different from other polymeric and non-polymeric PFAS due to their thermal, chemical, photochemical, hydrolytic, oxidative and biological stability. They have negligible residual monomer and oligomer content and low to negligible leachability; they are extremely pertinent, have different safety and environmental considerations, unique and intrinsic properties and are largely deployed as raw material in various industries. Contrary to other PFAS, fluoropolymers are considered to be non-mobile in the environment, not bio-accumulative and unable to bioconcentrate. Stability studies reported reveal fluoropolymer stability in terms of light, hydrolysis, heat, oxidation, and biodegradation. Little or no data has been found as regards adsorption/desorption of fluoropolymers, their presence in sewage and soil and volatilization.

Assessments of 18 FPs, representing approximately 96% of the global fluoropolymer market, among which PTFE, PVDF, FEP, FKM and PFA show that their polymer composition,

molecular weight, ionic character, structural similarities, ratio of residual monomers, solubility cumulation in organic matter (K_{ow}), particles size and stability meet the PLC criteria.

Fluoropolymers are chemically, thermally, and biologically stable and therefore are not expected to transform to dispersive nonpolymeric PFAS when disposed of in a landfill (Henry et al., 2018; Korzeniowski, et al. 2022). A recent study presented results from OECD guideline biodegradation studies demonstrating that PTFE is stable and does not degrade under environmentally relevant conditions (Ruwona and Henry, 2021). Furthermore, it should be noted that for waste from home appliances the strict conditions of the WEEE Directive[5] applies, namely proper treatment, recovery targets (for large household appliances - 85 % recovery and 80 % re-use and recycled; for small household appliances - 75 % recovery, and 55 % re-use and recycling) as well as the hierarchy of waste, the proper implementation of which will reduce to minimum disposal and landfill of waste from household appliances.

According to data available (Gehrmann et al.[6]). fluoropolymers at their end of life when incinerated under representative European municipal incinerators conditions do not generate any measurable levels of PFAS emissions and therefore pose no risk to human health and the environment[7].

While APPLiA and its members fully recognise the possible threats to human health and the environment and concerns occurring during the production, use and end-of-life of certain PFAS, based on the conclusions of a literature review of scientific evidence and studies, commissioned by APPLiA in the course of the consultation process, it could be noted that the sector-specific use of fluoropolymers in APPLiA activities, namely the use of fluoropolymers as raw material and components in the home appliance sector, seems to raise negligible concern for the human health and the environment in comparison to the process of manufacturing of polymeric PFAS/fluoropolymers itself. Considering their chemical properties and behavior, polymeric PFAS vary substantially from non-polymeric PFAS; fluoropolymers are to be considered as distinctly different from other classes of PFAS. Therefore, for the use of fluoropolymers a different approach from the proposed general ban on all PFAS is required.

Fluoropolymer technical performance/substitution

Fluoropolymers are used because of their unique properties, which means that drop-in alternatives might be difficult to find. Where identified, any alternatives would require development and testing, which would take time and resources.

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[5] *Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE) (recast) (Text with EEA relevance), OJ L 197, 24.7.2012, p. 38–71.*

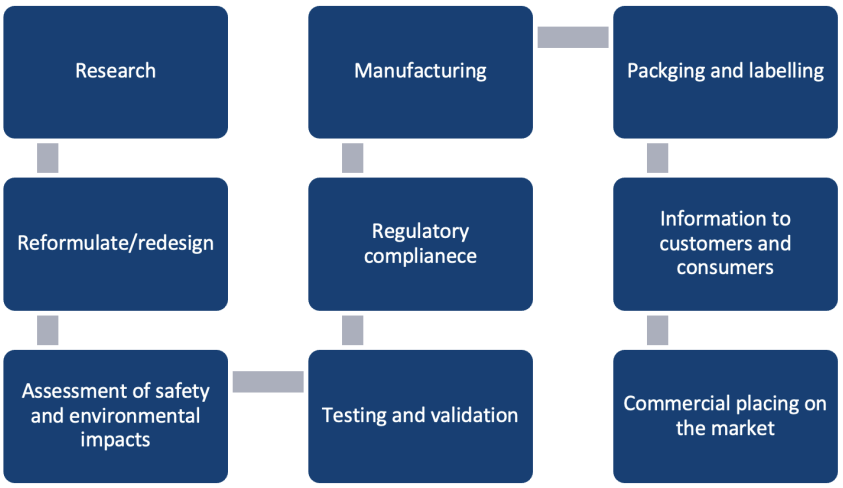
[6] Hans-Joachim Gehrmann, Andrei Bologa, Krasimir Aleksandrov, Philipp Bergdolt, Philip Taylor, Michael Schlipf, Bruno Ameduri, Priyanga Gunasekar, Deepak Kapoor, *Pilot-Scale Fluoropolymer Incineration Study: Thermal Treatment of a Mixture of Fluoropolymers under Representative European Municipal Waste Combustor Conditions*

[7] Similar findings available at: https://www.gfl.co.in/upload/pages/64ca54ee691b6f4a8b2649ec9c7b291f.pdf

Fluoropolymers are linked to product performance and durability. In this context, substitution of fluoropolymers must not lead to reduction of product usability and lifespan, and thus work against the sustainability of the industry and its broader contribution to the EU Green Deal.

The replacement of a substance or material will involve product adjustments, reformulation, and/or the use of multiple alternative substances and lead to changes in performance. It is expected for research, development and, especially for the home appliance industry, safety and durability testing, to be required before alternatives can be implemented in products. Additionally changes in the performance of the substituted appliance will be difficult to avoid with multiple components in home appliances relying on fluoropolymer materials for key performance aspects such as durability, safety and ease of use.

The specificities of FPs require development of non-PFAS alternatives that provide the same level of performance after substitution including multiple properties. Furthermore, if the deployment of the alternative requires product redesign/reformulation the process of development and full deployment of the particular alternative would require multiple regulatory, R&D, social and informational steps (e.g., the diagram shown below) the completion of which normally amounts to years.



Timelines for substitution

Concerning the substitution of PFAS, home appliances manufacturers are heavily reliant on their suppliers to identify suitable alternatives (or combination thereof) and transition to PFAS-free alternatives (if feasible). As to date manufacturers can only comment on the time needed for remanufacturing/redesign, the final successful substitution will also depend on the developments of the entire supply chain upstreams.

Substitution activities cannot be done all at once but need to be staged. Given the breadth of the portfolios (i.e. approximately 65% of home appliance portfolios in the EU), and based on previous experiences under RoHS, and the magnitude of the substitution, the process of

finding a suitable alternative is expected to take years for some applications, while it can take decades for some other applications.

This evidence is in line with past experiences of home appliance manufacturers with previous RoHS restrictions. Due to the sector's specificities, substitution is very challenging as home appliances must guarantee very high long-term reliability criteria during an extended lifetime. This is evidenced by the transition work that has been done, and is still happening, in the context of RoHS exemptions.

RoHS was issued in 2003 and the restriction started to apply in 2006. Since 2006, the home appliance sector has been actively engaged with the European Commission and its consultants, providing data on the time required to substitute the substances restricted under RoHS as well as the exemptions needed. A full list of exemptions was granted to allow smooth phase out of substance. Where possible, home appliance manufacturers have phased out hazardous substances. Despite the fact that 17 years have passed, the home appliance sector relies on some of these exemptions for which alternatives are not available even after many years.

The example of RoHS shows that where alternatives have emerged over the years, the continuation of the exemption has become unnecessary, and companies have been able to phase out. However, where this has not been the case, companies need to continue to rely on the exemptions.

Overall, any potential replacement must take into account the specificity of the sector, i.e., the typical design cycles. Based on many years of experience with RoHS, there are several activities that companies need to undertake in order to redesign their products:

Key Re-Design Process Steps	**Key activities**
R&D	- Identification and Testing of the raw material - Laboratory Bench Testing - Pilot Plant Testing - Raw material Documentation Request/ Sample Coordination - Safety data (performance) review - Coordinate safety testing - Safety Testing - Regulatory Assessment - Product Review
Redesign	- Design/ IP - Validation by marketing
Assessment of safety and performance	- Safety studies - Compliance with other legislations (e.g., FCM, LVD, EMCD, MD compliance, PED)

Testing & validation	- Life-time testing - Updating the Safety Report - Updating of the labelling
Packaging & labelling	- CE marking - Energy efficiency - Product safety standards
Manufacturing	- Plant Testing - Plant Trials - Modification of production process
Information to customers	- Post-market consumer studies - Update of IT tools

In the case of PFAS, we are talking about well over ten thousand substances (according to the OECD definition of PFAS published in 2021, there are over 10,000 PFAS, including some fully degradable subgroups) and eventual phase out will be a long process. Even more so that – depending on specific applications – 30 to 95% of home appliance portfolios in the EU are affected. All these substitution efforts cannot be done all at once but need to be phased in. Bottlenecks in testing capacity during ongoing appliance production cannot be disregarded. It is therefore very likely that the timelines will be extended accordingly.

Socio-economic assessment

A survey has been conducted by providing a detailed questionnaire to gather information and data from 23 major home appliance manufacturers, representing a large majority of the home appliance industry in the EU, in order to assess the economic impacts of a REACH Restriction of PFAS on the home appliance industry in the EU-27. The analysis compares a baseline scenario projection of the home appliance industry and a universal restriction on all PFAS, including the fluoropolymers in scope.

In the business-as-usual scenario (i.e., assuming no PFAS restriction), the annual sales of home appliance products are projected to grow at a rate of 0.4-1.7% by 2040. Hence, the turnover from sales by the home appliances industry in the EU-27 is estimated to reach 60 billion EUR to 80 billion EUR in 2040, for a total EU-27 production value in the range of 34 billion EUR to 45 billion EUR. The sector employed over 200,000 people in the EU-27 in 2019 (>0.1% of total employment in the EU), while it is projected to reach between 164,000 and 218,000 employees by 2040.

According to the data gathered from major home appliance manufacturers, a large share of home appliances might contain fluoropolymers and thus would likely be affected by a potential restriction. Notably, depending on specific applications, 30 to 95% of home appliance portfolios in the EU (in terms of turnover) would likely be affected by a REACH restriction of PFAS.

Therefore, unless technically feasible and economically available alternatives exist, given the large share of home appliances containing fluoropolymers, a universal restriction of all PFAS could lead to a large number of home appliance products no longer being placed on

the market, including the export, and thus to potential losses of economic activity in the EU-27, when compared to the business-as-usual scenario.

Thus, a potential universal restriction of PFAS could have disproportionate socio-economic implications on the EU home appliances sector. According to the survey as mentioned above, an estimated impact on the home appliance manufacturers could be in the range of 33 billion EUR to 40 billion EUR, which is approximately 50% of the current sales.

The direct cost of a PFAS restriction is represented by the loss of the contribution to the EU economy of the sectoral Gross Value Added (GVA) generated by the EU-27 home appliances industry. The analysis suggests that, as a result of the proposed restriction, the sector's total contribution to GVA in the EU-27, including the indirect and induced effects of the proposed restriction, could lose approximately 11 - 13 billion EUR/year (on average) over the period 2026 and 2040, when compared to the baseline scenario (i.e., assuming no PFAS restriction).

Moreover, the decrease in the GVA of the EU home appliances sector is likely to have knock-on effects on the sector's supply chain. The direct and indirect effects are also expected to translate into a reduction in employment, which could in turn further reduce consumption and have broader implications across the economy. It is estimated that, assuming a PFAS restriction is implemented as currently worded, around 72,000 to 88,000 EU-27 based workers, directly engaged in the manufacturing and supply chain of home appliances, could, in the worst case, face layoff by 2040.

Ultimately, a universal restriction of PFAS would disadvantage the EU-based manufacturing home appliances and/or increase their costs of production in the EU-27. In turn, prices, total user costs as well as product performance may worsen, most likely affecting product affordability. This would affect the evolution of the home appliances market in the EU-27 and potentially further deter its global competitiveness.

APPLiA, representing the home appliances industry in the EU, and all its members are committed to contribute to the achievement of the ambitious goals of the EU Green Deal while implementing policies and measures towards delivering home appliances products of high quality and performance for the manufacturing of which sustainable and safe chemicals are used.

Home appliance sector deploys certain fluoropolymers – most of which PTFE, PVDF, FEP, FKM, PFA – in a wide range of products. The restriction proposal of all Per- and polyfluoroalkyl substances (PFASs), including fluoropolymers, submitted to ECHA, therefore appears to be of specific interest to APPLiA and its members since it would have direct impacts on the manufacturing processes and the final home appliance products in the value chain.

Two restriction options (ROs) have been assessed by the dossier submitters:
RO1. A full ban with no derogations and a transition period of 18 months, and

RO2. A full ban with use-specific time unlimited and time-limited derogations (18 month transition period plus either a five or 12 year derogation period).

APPLiA and its members would like to recall that a restriction of certain chemical substances, in this specific case all fluoropolymers used in the home appliance products, should be justified on the grounds of unacceptable risk to human health or the environment, arising from the manufacture, use or placing on the market, as well as on the end-of-life of these substances.

From a scientific point of view, based on the available (public) data and information fluoropolymers have been qualified as PLC by the OECD, thus, their use should not be considered as to pose an unacceptable level of risk to human health and the environment, as per Article 68.1 of REACH, and are observed to have negligible or no release of emissions in the environment when used as raw material in the downstream chain of the home appliances production and at their end-of-life stage.

Based on the evidence that the use of fluoropolymers does not have an equal level of risk, behaviour and properties as other non-polymeric PFAS, a different regulatory approach than a general ban of all PFAS should be required.

Further, it should be noted that the socio-economic implications of the general restriction of PFAS and polymeric PFAS, including fluoropolymers in particular, would be profound; they would have negative effects on the global competitiveness of the EU industry and cause shortages of home appliance products in the EU markets.

As regards the proposed regulatory options, RO1 appears disproportionate due to the very broad scope, number of products impacted and limited time-line which would be insufficient for a major shift of the industrial manufacturing processes and readjustment of production. APPLiA members are heavily dependent on the innovation of the readiness of the supply chain which today is in process of assessment, and most likely differs from application-to-application.

APPLiA and its members support a derogation for fluoropolymers of 12 years with a revision in 6 years after the publication. The review clause should define a clear methodology on how to assess alternatives, for cases where alternatives have been developed; the methodology should include the specification of data needed that allow the validation by home appliances manufacturers. Depending on the assessment outcome, phase-out timelines could be short-ened (i.e. before the 12 years), or even increased if more time to find suitable alternatives would be needed. The review clause should clearly specify the elements that will be subject to review, the information that will be required for the performance evaluation within the review and the appropriate time-frame covered by that review. Where the review fails to be executed in time, the derogation time shall be extended equivalent to the delay of the review.

Currently, APPLiA and its members are in the process of assessing the sector specific uses of fluoropolymers, the availability of technically and economically viable alternatives and

the potential need for specific derogations for the sector and will present their findings and position in the next round of consultations.

SPECIFIC INFORMATION REQUEST 7:

Socio-economic assessment

As mentioned above, fluoropolymers are chemically, thermally, and biologically stable and therefore are not expected to transform to dispersive nonpolymeric PFAS when disposed of in a landfill; according to data available fluoropolymers at their end of life when incinerated under representative European municipal incinerators conditions do not generate any measurable levels of PFAS emissions and therefore pose no risk to human health and the environment.

Moreover, home appliances' lifetime is typically of higher than 10 years (on average) and can be extended with regular maintenance, repair and refurbishment.

Therefore, unless technically feasible and economically available alternatives exist, given the large share of home appliances containing fluoropolymers, a universal restriction of all PFAS could lead to a large number of home appliance products no longer being placed on the EU market and thus to potential losses of economic activity in the EU-27, when compared to the business-as-usual scenario.

Thus, a potential universal restriction of PFAS could have disproportionate socio-economic implications on the EU home appliances sector. According to the survey as mentioned above, an estimated impact on the home appliance manufacturers could be in the range of 33 billion EUR to 40 billion EUR, which is approximately 50% of the current sales.

The direct cost of a PFAS restriction is represented by the loss of the contribution to the EU economy of the sectoral Gross Value Added (GVA) generated by the EU-27 home appliances industry. The analysis suggests that, as a result of the proposed restriction, the sector's total contribution to GVA in the EU-27, including the indirect and induced effects of the proposed restriction, could lose approximately 11 - 13 billion EUR/year (on average) over the period 2026 and 2040, when compared to the baseline scenario (i.e., assuming no PFAS restriction).

SPECIFIC INFORMATION REQUEST 8:
Please refer to answers to Specific Information Requests No. 6 and No. 7.

SPECIFIC INFORMATION REQUEST 9:

As APPLiA is also representing HVAC products relevant for the restriction dossier, we would like to reference to EFCTC's submission, highlighting the evidence gathered:

A detailed analysis explains why the most likely future emissions for the EU of HFCs, HFOs and HCFOs are forecast to be on a down trend to 2035. Importantly, atmospheric monitoring evidence shows that HFC-134a emissions have been overstated in recent years for the European region. The forecast is then used to estimate TFA generation from these substances, for the EU.

The formation and deposition of TFA from HFCs, HFOs and HCFOs has been widely studied, and results conclude that the current low concentration of TFA produced by the degradation of several HFCs and HFOs is currently judged not to pose a risk to human health or to the environment.

Extensive studies for the ecotoxicological effects have demonstrated that TFA from HFCs, HFOs and HCFOs is of no health concern at the measured concentrations and at these concentrations is not harmful to ecosystems. TFA occurs naturally in the oceans at concentrations similar to those found in rainwater.

SPECIFIC INFORMATION REQUEST 10:
No information to provide.

Reference contact
Naomi Marc, *Policy Manager Environment*
[redacted]@applia-europe.eu