General survey

Fields marked with * are mandatory.

1 Respondent background information

Before responding to the survey, please read the following documents (see links in the sidebar):

1. **Guidance Document**
2. **Use Mapping**
3. **Privacy Statement**

☑

- I have read and understood the information in the **Guidance Document** and **Use Mapping**.
- I agree to the privacy policy as set out in the **Privacy Statement**.

* 1.1 **[Q2.0]** Select the EU language in which you will respond to the questions (the questions themselves will be in English only).

English

* 1.2 **[Q2.1]** Which of the following best describes you or your affiliation?

Select Citizen/individual if you are responding in a personal capacity.

Select Organisation if you represent an organisation (e.g. company) or other official role.

- ○ Citizen/Individual
- ◉ Organisation

* 1.3 **[Q2.2]** What type of organisation are you responding for?

- ○ Government organisation
- ○ Non-governmental organisation
- ○ Academic institution
- ● Industry association
- ○ Company

* 1.4 **[Q2.3]** What is the name of the organisation you are reporting for?

Text of 1 to 300 characters will be accepted

Conference of Fluoro-Chemical Product Japan

* 1.5 **[Q2.4]** Please name a point of contact ECHA can contact if needed.

Text of 1 to 100 characters will be accepted

A point of contact is needed for seeking clarification or justification for the consultation responses if considered necessary by SEAC.

For individual respondents, the contact's name is always kept confidential.

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* 1.6 **[Q2.5]** What is the email address for that contact point?

1.7 **[Q2.6]** If you submitted comments in the previous consultation on the Annex XV restriction proposal (Mar-Sep 2023), please list the comment numbers (e.g. #1234, #5678).

300 character(s) maximum

#4149, #6567, #7483, #8456

* 1.8 **[Q2.7]** Is your organisation national or international?

Organisations having activities in several countries (in EEA or globally) should choose "international".

- ● National
- ○ International

* 1.9 **[Q2.8]** What country are you (or your organisation) based in?

Individuals should choose the country where they permanently reside.

Respondents representing organisations, such as companies, should select the country where the largest share of their PFAS related activities occur.

Respondents representing other organisations may choose the country where the organisation is based in.

Japan (JP)

1.10 **[Q2.9]** How many members does your association have?

Provide the number of member organisations (e.g. for industry associations), or individuals (e.g. for trade unions).

18

2 General survey questions

Instructions

Please do not include links to particular websites or source literature in the response fields. For security reasons, links to external sources will not be opened.
If you wish to cite a third-party source (e.g. research paper), you can reference it in the response field. This allows SEAC to note the source and request it from you if necessary.

For more information, please see the Guidance document.

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* 2.1 **[Q2.17]** Choose all sectors that are relevant or covered by your responses in this general survey.

Minimum 1 selection(s)

Select the sector(s) for which you will provide information. You can choose PFAS manufacturing and 22 sectors (14 sectors covered by SEAC sector-specific evaluation and additional eight sectors identified in the Background Document).

You can select as many sectors as you see fit. Information provided will apply to all selected sectors unless you specify otherwise in your answers. If you prefer to do it so, you can submit one survey for each specific sector of use your answers apply to.

If your use is not covered by any of the identified sectors, choose “other” and specify it in the next question.

- [ ] **[01] PFAS manufacturing**
- [ ] **[02] Textiles, upholstery, leather, apparel and carpets (TULAC)**
- [ ] **[03] Food contact materials (FCM) and packaging**
- [ ] **[04] Metal plating and manufacture of metal products**
- [ ] **[05] Consumer mixtures and miscellaneous consumer articles**
- [ ] **[06] Cosmetics**
- [ ] **[07] Ski wax**
- [x] **[08] Applications of fluorinated gases**

- [ ] **[09] Medical devices**
- [x] **[10] Transport**
- [x] **[11] Electronics and semiconductors**
- [ ] **[12] Energy**
- [ ] **[13] Construction products**
- [ ] **[14] Lubricants**
- [ ] **[15] Petroleum and mining**
- [ ] ***[16] Printing applications***
- [ ] ***[17] Sealing applications***
- [ ] ***[18] Machinery applications***
- [ ] ***[19] Other medical applications***
- [ ] ***[20] Military applications***
- [ ] ***[21] Explosives***
- [ ] ***[22] Technical Textiles***
- [ ] ***[23] Broader industrial uses***
- [ ] **[24] Other sector**

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* 2.2 **[Q2.18]** Please provide a general description of the use(s) of PFAS (or alternatives) you are providing comments on

Text of 1 to 2000 characters will be accepted

Briefly describe the use(s) of PFAS (or alternatives) in this sector(s).

Our comments cover three sectors (mainly fluorinated gases).

(1) Applications of fluorinated gases: fluorinated gases (e.g., HFC/HFO-type) are used as sealed-circuit working fluids (refrigerants) in commercial/industrial refrigeration, air-conditioning and heat pumps, including low-temperature systems; as blowing agents to create the cellular structure of rigid insulation foams (e.g., building/industrial insulation); as clean fire-suppression agents stored in cylinders for total-flooding systems protecting sensitive assets (data centers, medical and cultural facilities, control rooms); and as non-medical propellants in pressurized aerosols, mainly industrial/professional products for cleaning, lubrication, corrosion protection and maintenance where stable spray quality and non-flammability/low residue are required.

(2) Transport (MAC and marine HVAC): similar refrigerants are used in mobile air-conditioning systems for passenger cars and other vehicles (MAC), as well as in air-conditioning systems installed on ships, to provide cooling and thermal comfort under a wide range of operating conditions.

(3) Electronics & semiconductors: fluorinated-gas refrigerants are used in supporting thermal-control equipment such as chillers for semiconductor manufacturing tools to maintain tight temperature control and process reliability.

These are standard commercial/product/process uses and do not rely on SR&D exemptions.

2.3 **[Q2.19]** Please provide your comments on section 1.2. SEAC opinion

Text of 1 to 5000 characters will be accepted

Consult the SEAC draft opinion and provide your comments relevant to this specific section of the opinion.

For fluorinated gas (F-gas) applications, we support SEAC’s emphasis that any restriction should be complemented by effective emission-minimization measures. At the same time, duplication of obligations and “double regulation” with the existing EU F-gas framework should be avoided. Regulation (EU) 2024/573 already sets out requirements and systems for containment, recovery, recycling/reclamation, destruction, and reporting of fluorinated gases, providing a robust basis for both emission minimization and circular use.

If SEAC’s draft conclusions leave certain F-gas-related points to decision-makers (e.g., whether to impose additional PFAS-specific requirements or to rely on the existing management framework), we can support that approach, provided the rationale is to avoid double regulation and to ensure proportionality by building on the established framework designed for emission minimization, recovery, and reclamation.

Recovery and reclamation are not concepts limited to the EU; comparable “use and reuse” frameworks already operate in Japan and the United States. In Japan, end-of-life recovery has increased in recent years (e.g., around 1.32 million units recovered in FY2024 and approximately 3,894 tonnes recovered in total for CFC /HCFC/HFC), demonstrating that stronger procedures and well-functioning downstream treatment routes can scale and deliver further emission reductions. In the United States, under the AIM Act, EPA has established emission-reduction and reclamation programs, including requirements for leak management, standards for reclaimed refrigerant, recovery, and recordkeeping/reporting.

Strengthening recovery and reclamation also helps address concerns regarding environmental formation of trifluoroacetic acid (TFA). Because TFA can form from atmospheric degradation of certain fluorocarbons (notably some HFOs, and potentially some HFC/HCFC pathways), reducing releases to air through recovery and reclamation can contribute to lowering the potential for TFA formation. Therefore, for F-gas uses, positioning recovery and reclamation as the core element of an RO3-type approach can deliver effective emission reductions during the transition while avoiding duplicative regulation.

2.4 **[Q2.20]** Please provide your comments on section 2.2. Summary of the opinion and 2.2.2. SEAC opinion summary

Text of 1 to 5000 characters will be accepted

Consult the SEAC draft opinion and provide your comments relevant to this specific section of the opinion.

From an emissions-reduction perspective, RO3-type conditions for F-gas uses should be assessed not as mere “administrative obligations” but as scalable operational controls that can materially reduce releases. The summary conclusion would be strengthened by explicitly linking demonstrated recovery and reclamation performance (e.g., recovery rates and reclaimed volumes) to expected emissions reductions, and by clearly distinguishing between: (a) uses where alternatives can be deployed in the near term; and (b) uses where substitution will be delayed due to the need to service existing installed equipment and due to safety and regulatory constraints—while noting that emissions minimization through recovery and reclamation can be implemented immediately for these uses.

Recovery and reclamation measures are particularly well suited to F-gas applications because key emission points are relatively identifiable (e.g., leakage, servicing, and end-of-life). Practical measures include certification and qualified-person schemes, leak inspections, mandatory recovery during servicing /decommissioning and at end-of-life, documentation of recovered quantities and downstream treatment (reclamation and/or destruction), and strengthened verification and traceability to prevent venting and improper handling. As the EU already has a framework for containment, recovery, reclamation/destruction, and reporting for fluorinated gases, RO3 requirements are implementable in practice and can be advanced by building on and reinforcing existing compliance systems rather than creating a new regime from scratch.

The SEAC draft opinion also notes that an “effective complementarity” between the F-gas regulation and the PFAS restriction may not be sufficiently ensured in practice. We consider this gap to be addressable at low cost. Specifically, by clarifying the interface between the two regimes through implementation guidance (e.g., guidance notes/Q&A, standard procedures and templates, and clear criteria for when existing F-gas obligations are deemed to meet RO3-equivalent requirements), legal certainty can be improved, duplication avoided, and consistent application of emissions-minimization measures promoted. In particular, where the F-gas framework already encompasses recovery and reclamation, it is more reasonable to clarify and leverage the existing framework rather than establishing a parallel reporting system.

2.5 **[Q2.21]** Please provide your comments on section 3.2. Justification that action is required on a Union-wide level

Text of 1 to 5000 characters will be accepted

Consult the SEAC draft opinion and provide your comments relevant to this specific section of the opinion.

Promoting effective emissions management within the EU is a key element common to both the proposed PFAS restriction and the existing F-gas regime. While their primary objectives differ—reducing hazardousness and environmental contamination in the case of PFAS, and reducing climate impact in the case of F-gases—both can align in practice through shared emissions-management tools, including containment, leak prevention, recovery, reclamation/destruction, and recordkeeping/reporting.

Although environmental lifetimes differ significantly across F-gas categories (e.g., HFCs ranging from years to centuries, whereas HFOs/HCFOs can be on the order of days), it is clear that emissions can occur across the full lifecycle (manufacture, servicing, and end-of-life). This makes a structured, enforceable emissions-management system feasible. RAC has also highlighted that fluorinated gases (e.g., HFCs and H(C)FOs) are used in large volumes and can contribute materially to emissions, and that while H(C)FOs generally have lower global warming potential, they may degrade in the environment to TFA—underscoring the importance of minimizing releases.

RAC further indicates that volatile PFAS, particularly fluorinated gases, are generally of low toxicity, but that concerns relate to very high persistence and mobility, as well as environmental risks linked to climate impacts and degradation products such as TFA. Accordingly, for HFC/HFO-type substances, the primary issue is not toxicity or bioaccumulation (as for some other PFAS), but rather emissions volume and environmental consequences including persistence and transformation products. Strengthening emissions controls is therefore a rational and proportionate risk-management response.

In this context, the EU F-gas Regulation (Regulation (EU) 2024/573) already provides an established framework for containment, recovery, reclamation/destruction, and reporting, creating a practical foundation to implement emissions minimization for fluorinated gases used as refrigerants and related applications. However, if the PFAS restriction and the F-gas regime were to impose parallel emissions-management obligations, this could create enforcement complexity and duplicative compliance burdens for both operators and authorities (e.g., double counting and dual reporting structures). Therefore, to achieve the PFAS objective of minimizing environmental releases while preserving effectiveness and efficiency, F-gas uses should be managed primarily under the existing F-gas framework, with the interface to PFAS requirements clarified through guidance where needed. This approach can ensure consistent emissions management (a level playing field) across the EU while enhancing overall regulatory effectiveness.

2.6 **[Q2.22]** Please provide your comments on section 3.3.1 Availability and technical and economic feasibility of alternatives

Text of 1 to 5000 characters will be accepted

Consult the SEAC draft opinion and provide your comments relevant to this specific section of the opinion.

Substitutability should be determined by quantitative comparisons of both safety and functional performance. For many key uses, current fluorinated substances provide a unique combination of (i) low toxicity that is manageable even in occupied environments, (ii) controllable flammability risk, (iii) practical design margins for equipment, and (iv) a proven supply chain. In contrast, proposed alternatives often involve higher hazard classes, tighter design constraints, and/or performance penalties, making “like for like” substitution under equivalent conditions unrealistic in the short term.

Foam blowing agents (spray-applied rigid polyurethane insulation): Industry benchmarks indicate fluorinated blowing-agent systems can achieve $\lambda \leq 0.026$ W/(m·K), while hydrocarbon-based systems achieve $\lambda \leq 0.034$ and water-based systems $\lambda \leq 0.036–0.040$. Relative to 0.026, thermal conductivity worsens by +31% (0.034) to +38–54% (0.036–0.040), significantly increasing heat loss at the same thickness. To maintain equivalent thermal resistance, insulation thickness would need to increase by ~+31% to +54%, which is often constrained by space, cost, and building codes, and may increase operational energy demand. TEAP (Technology and Economic Assessment Panel under the Montreal Protocol) also notes that additional safety requirements for flammable alternatives, higher blowing-agent costs, and high-performance insulation needs can delay transition.

Refrigerants: Major “natural refrigerant” options entail materially different design and safety regimes. CO_2 systems require high-pressure components (typically ~90 bar, and up to ~140 bar in transcritical operation), affecting system architecture, materials, installation, and cost. Ammonia is highly toxic and mildly flammable (B2L), requiring additional risk management and potentially limiting use in occupied environments. Hydrocarbon refrigerants are flammable (often A3), and charge limits and ignition-source controls make widespread one-to-one substitution difficult. These constraints force substantial redesign and can lead to efficiency and performance compromises in real applications.

MDI (pMDI) propellants: TEAP reports that asthma and COPD affect around 600 million people and that clinical practice continues to rely heavily on pMDIs (about 70%) alongside DPIs, requiring sufficient options and stable supply. Current pMDIs use pharmaceutical-grade HFC 134a or HFC 227ea as propellants, and TEAP notes the possibility that these may not remain available after 2030. Lower-GWP propellants (e.g., HFC 152a, HFO 1234ze(E)) exist in principle, but TEAP (2022) characterises many “in-kind” alternatives as still in early stages of development and commercialisation. Implementation is strongly influenced by flammability management, intellectual property constraints, and technology transfer. TEAP further notes that more than 70 pMDI manufacturers exist globally, that many SMEs in A5 countries rely on HFC 134a to supply affordable medicines, and that rapid transition in non A5 countries could create shortages of pharmaceutical-grade HFC 134a, with limited technology transfer. These factors can affect volumes and prices in A5 countries and widen health inequities. Abrupt regulation could therefore directly harm continuity of treatment.

Fire suppression agents: Performance and safety constraints are also quantifiable. Minimum design concentrations differ significantly among clean agents (e.g., Halon 1301 is about 5 vol%, while some alternatives require higher concentrations), which directly increases system size and agent quantity. Some “alternatives,” such as total-flooding CO_2, are not suitable for occupied spaces due to life-safety risks. TEAP reports that, for aircraft cargo compartment uses, there have been calls to extend deadlines beyond 2024 due to regulatory-acceptance uncertainties, indicating that universally acceptable alternatives for critical uses are not yet sufficiently established.

Finally, environmental policy should be evidence-based. UNEP environmental assessments conclude that risks to ecosystems and humans from TFA formed as a degradation product of ODS substitutes are currently de minimis. This does not justify forcing a shift to higher-toxicity, higher-flammability, or high-pressure alternatives that increase safety risks or energy penalties.

Conclusion: Across blowing agents, refrigerants, medical propellants, and fire suppression, quantitative comparisons indicate >30–50% insulation performance penalties, shifts to high-pressure and/or higher-hazard regimes, and substantial risks to continuity of pharmaceutical supply. A uniform, immediate substitution obligation is therefore not technically viable. Policy should priorities emissions minimization through containment, proper servicing, and recovery/reclamation, while supporting use-specific, phased transitions that include safety standards, technology transfer, and supply assurance.

2.7 **[Q2.23]** Please provide your comments on section 3.4.1. Regulatory risk management options other than restriction

Text of 1 to 5000 characters will be accepted

Consult the SEAC draft opinion and provide your comments relevant to this specific section of the opinion.

Given the extreme difficulty of developing substitutes that match the performance and safety profile of F gases, fluorinated gases (especially HFCs and HFOs) should be addressed under a RO3 type “lifecycle emissions management” approach (recovery, reclamation/recycling, and destruction), rather than through a blanket ban under the PFAS restriction. This is justified because (i) fluorinated gases are a major driver of PFAS-related emissions, and (ii) effective, enforceable systems requiring recovery, reclamation and, where not feasible, destruction are already being implemented and strengthened globally.

1) Fluorinated gases are a major PFAS emission source; the most effective risk management is to minimize releases.
RAC indicates that PFAS use in the EU/EEA in 2020 is estimated at ~266,000 tonnes, with fluorinated gases accounting for ~100,000 tonnes. RAC also estimates PFAS emissions at ~70,000 tonnes/year, with a large share attributed to fluorinated gas uses and the transport sector. RAC further notes that volatile PFAS—particularly fluorinated gases—are generally of low toxicity, but are very persistent and mobile, and may contribute to climate impacts and to environmental formation of TFA (trifluoroacetic acid). Accordingly, lifecycle release minimization is the appropriate control measure. RAC also clearly states that, where continued use (derogations) is allowed, effective emission minimization measures are necessary.

2) In Europe, an enforceable “recover → reclaim/recycle → destroy if not reclaimable” system is already in place.
Under Regulation (EU) 2024/573 (F gas Regulation), for fluorinated greenhouse gases contained in equipment (excluding foam uses), operators must ensure recovery, and after decommissioning the gases must be recycled /reclaimed or destroyed; recovery must be carried out by certified personnel. This institutionalizes an operational chain—recovery, then reclamation/recycling, and destruction where reclamation is not possible—across sectors including RACHP.

3) The United States is similarly strengthening obligations under the AIM Act, and reclamation volumes already demonstrate real world scale.
Under the AIM Act, EPA established an Emissions Reduction and Reclamation (ER&R) program in an October 2024 final rule, including requirements such as leak repair, automatic leak detection (ALD), a reclamation standard for reclaimed refrigerant, mandatory use of reclaimed HFCs for servicing/repair of certain RACHP equipment, and recovery from disposable cylinders before disposal. EPA’s HFC Data Hub (Reclamation) reports that the total amount of HFCs accepted for reclamation by reclaimers was 5,027 metric tonnes in 2024 (aggregated), showing that the RO3 premise - circularity via recovery --> reclamation - is already operating at meaningful scale.

4) Japan has a clear roadmap to raise recovery rates.
In Japan, end of life recovery rates for commercial refrigeration and air conditioning equipment have remained around ~30% for more than a decade and are still below 40% recently, while national targets have been set at 50% (2020) and 70% (2030). This indicates that a recovery and proper treatment framework already exists (including through the fluorocarbon emissions control law and recycling laws) and that policy pathways to further increase recovery rates are established.

5) RO3 achieves the objective while avoiding unintended consequences.
HFOs often have short atmospheric lifetimes (days to months), improving persistence in air compared with many HFCs. While certain fluorinated gases may contribute to TFA formation if released, UNEP/EEAP assessments conclude that current risks of TFA to humans and ecosystems as a degradation product of ODS substitutes are de minimis. The most certain response to any residual TFA concern is therefore to maximize recovery and reclamation, and to destroy non reclaimable streams—preventing releases to air in the first place.

Proposal (RO3 for fluorinated gases): Adopt RO3 for fluorinated gases by combining (a) mandatory recovery by certified personnel during servicing and at end of life, (b) prioritization of reclamation and reuse, (c) destruction where reclamation is not feasible, (d) strengthened reporting and traceability, and (e) capacity building and technology transfer to raise recovery rates (with quantitative targets where appropriate, e.g., a 70% recovery goal by 2030). This approach directly reduces the primary risk driver—emissions—while supporting supply stability and the circular economy.

2.8 **[Q2.24]** Please provide your comments on section 3.4.2.2.1. Socio-economic analysis: Approach

Text of 1 to 5000 characters will be accepted

Consult the SEAC draft opinion and provide your comments relevant to this specific section of the opinion.

In the EU, management of fluorinated gases used as refrigerants and related applications has already been institutionalized under the F-gas regulatory framework as a “recover → (recycle/reclaim) → destroy if not recyclable/reclaimable” chain. Specifically, under Regulation (EU) 2024/573, fluorinated greenhouse gases contained in equipment (excluding foam uses) must be recovered after decommissioning and then recycled /reclaimed or destroyed, and recovery must be carried out by certified personnel.

In addition, the EU continues to develop implementing rules and operational arrangements for that Regulation, including labelling, reporting and certification. This means the system is not at a “build-from-scratch” stage; rather, it is at a stage of strengthening enforcement and improving practical effectiveness.

For this reason, it is unlikely that “massive additional costs” would arise uniformly on the assumption that recovery and reclamation are newly imposed obligations. Given that the institutional foundations (recovery obligations, certification schemes, reporting, etc.) already exist, the main incremental costs are more plausibly the marginal costs of operational improvements, and therefore are likely to be relatively limited.

Moreover, the EU’s circular economy policies place mechanisms such as extended producer responsibility (EPR) at the core of ensuring product take-back, separation and recycling, with a clear direction toward product-specific collection and treatment schemes. In parallel, a framework is also in place to set product-specific eco-design requirements through delegated acts (Regulation (EU) 2024/1781), expanding policy tools to improve circularity at the product level via design and information measures that do not hinder collection and recycling (including tools such as a digital product passport).

By contrast, the SEAC draft opinion notes “information gaps” (a lack of robust socio-economic information) in assessing socio-economic impacts related to emissions minimization, implying that cost–benefit assessment may be insufficient. However, as described above, recovery and reclamation are already implemented and progressing under the F-gas framework, and circular-economy legislation continues to enhance collection and treatment schemes. Against that backdrop, assuming additional costs as if they were “new system introduction costs from zero” may overestimate impacts. Where enforcement is strengthened on top of an existing system, incremental costs are likely to be limited and should be appropriately reflected in socio-economic assessment.

Accordingly, other relevant legal and policy instruments to be considered include circular-economy frameworks—especially product-specific schemes such as EPR—and the eco-design framework that can tailor requirements by product category. Maximizing the use of these tools and positioning recovery and reclamation (and destruction where necessary) as a core measure for PFAS emissions management is a rational approach to maximize effectiveness.

Concretely, combining: (1) mandatory recovery by certified personnel, (2) prioritization of recycling/reclamation, (3) destruction of non-reclaimable streams, (4) strengthened reporting and traceability, and (5) improved recovery rates linked to product-specific schemes (e.g., EPR) enables a realistic and cost-effective implementation that builds on existing systems to achieve the objective of minimizing environmental releases.

In conclusion, the socio-economic assessment for Q2.24 should recognize that recovery and reclamation are already institutionalized in the EU and that the system is in an enforcement-strengthening phase, and that circular-economy product-based instruments can further limit incremental costs. On that basis, an RO3-type approach that positively evaluates and adopts recovery and reclamation as an effective PFAS emissions management measure should be actively supported.

2.9 **[Q2.25]** Please provide your comments on section 3.4.2.2.2. Socio-economic analysis: Costs

Text of 1 to 5000 characters will be accepted

Consult the SEAC draft opinion and provide your comments relevant to this specific section of the opinion.

We strongly note that, for air-conditioning and heat-pump applications including refrigerants (F-gases), the assumption “substitution = simple refrigerant replacement” often does not hold. Substitution may require full system redesign and re-implementation, including changes in system architecture (Direct vs. Indirect), installation conditions, safety requirements, and installability. As a result, cost estimates can vary widely depending on the assumptions used in the socio-economic assessment.

1) In the 6–12 kW range, flammability-related constraints can narrow feasible substitution pathways and create “unnecessary” cost increases
Substances frequently cited as alternatives for 6–12 kW units are flammable. Under real-world installation constraints and safety requirements, there are cases where such alternatives cannot be stably applied in this capacity band and use context. We consider this a critical precondition. A key concern is that this can induce two inefficient installation responses:
(i) installing a larger number of <6 kW units to meet the required capacity, which cumulatively increases equipment, installation, and maintenance costs; or
(ii) avoiding the 6–12 kW band and installing ≥12 kW units that are unnecessarily oversized, leading to overinvestment, stricter siting/installation constraints, and operational inefficiency.
This structure can amplify the additional burden that substitution is supposed to reduce, and should not be overlooked in socio-economic assessment.

2) If substitution entails a system shift (Direct → Indirect), both CAPEX and OPEX can increase
Where flammable refrigerant constraints become binding, Direct systems may lose their market advantages (high efficiency and ease of installation, i.e., lower installation cost), and stakeholders may be forced toward Indirect systems. In such cases, (a) higher installation costs (on the order of several thousand to around ten thousand USD per unit) and (b) increased electricity consumption due to efficiency losses can occur simultaneously. Therefore, Q2.25 should not assess substitution costs only as “refrigerant price differences,” but should treat them as system costs that include architecture shifts, installation requirements, and safety measures, and should separate CAPEX and OPEX in the evaluation.

3) For Europe, scaling by market size suggests non-negligible additional burdens
Using publicly available market-size (demand) information and mechanically scaling the per-unit installation cost range above, we obtain an indicative range in which additional installation costs in Europe could be on the order of approximately USD 3.1–10.4 billion per year (depending on assumptions such as affected share and transition speed). In addition, where system shifts occur, estimates suggest that additional electricity demand on the order of ~6.5 TWh per year may arise in Europe, implying that the OPEX impact is also material. Accordingly, substitution costs should be presented as a range (lower–upper bound), with transparent assumptions (affected share, deployment speed, per-unit cost differential, and the incidence of system shifts), and proportionality should be assessed on that basis.

Proposal
At minimum, the Q2.25 assessment should reflect:
- that substitution in the 6–12 kW range may be constrained by flammability and can drive either multi-unit downsizing (<6 kW) or unnecessary upsizing (≥12 kW), resulting in avoidable cost increases;
- that substitution costs should be structured as system costs (including architecture shifts, installation, and safety measures), with CAPEX and OPEX assessed separately; and
- that, in Europe, market-size scaling suggests additional installation costs of several billion USD per year may arise, alongside potential increases in electricity demand (OPEX).

We consider that cost estimates that omit these preconditions risk underestimating practical implementation constraints and the mechanisms by which costs arise, thereby undermining the robustness of the socio-economic assessment.

2.10 **[Q2.26]** Please provide your comments on section 3.4.2.2.3. Socio-economic analysis: Benefits

Text of 1 to 5000 characters will be accepted

Consult the SEAC draft opinion and provide your comments relevant to this specific section of the opinion.

We consider it effective to place “recovery and reclamation (and destruction where necessary)” at the core of emissions management.

First, rigorous recovery and reclamation directly reduce releases to air during the use, servicing, and end-of-life stages, thereby minimizing emissions from leakage and venting. Ensuring reliable recovery in maintenance /repair and during replacement and disposal—through both regulatory and operational controls—can substantially reduce unintended releases and emissions caused by improper handling. In addition, reclaiming recovered substances for reuse reduces dependence on new production and supply while maintaining equivalent performance, thereby lowering release opportunities across the lifecycle (e.g., manufacturing, charging, transport, storage, and top-up activities).

Second, “keeping substances out of the atmosphere” also helps suppress the formation of degradation products. Volatile substances can form degradation products through atmospheric reactions and breakdown processes; therefore, reducing releases at source is the most reliable way to reduce the potential for degradation-product formation. In other words, if recovery and reclamation reduce the amount emitted, they also reduce the amount available in air for transformation, and thus contribute to lowering degradation-product formation.

Third, for recovery and reclamation (and destruction of non-reclaimable streams) to function effectively, it is important to combine: (a) recovery by certified/qualified personnel; (b) assurance of reclamation quality and proper re-circulation to the market; (c) recordkeeping and reporting of recovered, reclaimed and destroyed amounts; (d) strengthened traceability; and (e) operational improvements to raise recovery rates (e.g., inspections and leak prevention, collection infrastructure, and robust collection routes). These elements together increase the feasibility of simultaneously achieving emissions reduction and suppression of degradation-product formation.

For these reasons, positioning recovery and reclamation (and destruction where needed) as the core of emissions management, supported by strengthened operations and traceability, is a rational and effective approach to both reducing emissions and minimizing concerns related to degradation products. This also supports both emissions reductions and the circular economy objectives pursued in Europe.

2.11 **[Q2.27]** Please provide your comments on section 3.4.2.2.4. Socio-economic analysis: Other relevant impacts

Text of 1 to 5000 characters will be accepted

Consult the SEAC draft opinion and provide your comments relevant to this specific section of the opinion.

We consider that the overall impact of the proposed restriction on trade and competitiveness would be significantly negative, particularly if F-gases (refrigerants) are effectively lost as options. This would create serious adverse spillovers both within and outside the EU.

First, removing F-gases—widely used because they offer a balanced combination of efficiency and safety—would disadvantage EU-manufactured products (refrigeration, air-conditioning and heat pumps) in terms of performance/efficiency, applicability (driven by safety and installation constraints), and lifecycle cost. Where proposed alternatives involve flammability or other constraints, manufacturers face additional design and installation requirements and a narrower set of feasible market segments, which would weaken EU products' international competitiveness.

Second, products manufactured outside the EU would also face increased burdens to access the EU market, including redesign, additional testing and conformity assessment, and supply-chain-wide substantiation of PFAS content and uses. In practice, this would materially constrain sales in the EU and raise non-tariff barriers by making market placement more difficult irrespective of tariffs.

Third, if such market-access restrictions are viewed as broader than necessary to achieve legitimate environmental and safety objectives, or as insufficiently justified relative to less trade-restrictive alternatives, the measure could become a trade-policy contention point under international rules governing technical regulations, conformity assessment and labelling. The stronger the de facto exclusionary effect on non-EU products, the higher the likelihood of dispute escalation under the WTO TBT framework.

Accordingly, Q2.27 should assess in an integrated manner: (1) the loss of EU products' international competitiveness, (2) constraints on non-EU producers' access to the EU market, (3) the increase in non-tariff barriers, and (4) the risk of WTO/TBT disputes. The regulatory design and implementation should avoid creating excessive trade restrictions by ensuring an appropriately tailored scope, realistic transition arrangements, minimized administrative burden, and a credible assessment of less burdensome options. In this context, we consider RO3-type lifecycle emissions management to be the most appropriate approach.

2.12 **[Q2.28]** Please provide your comments on section 3.4.2.2.5 Socio-economic analysis: Proportionality

Text of 1 to 5000 characters will be accepted

Consult the SEAC draft opinion and provide your comments relevant to this specific section of the opinion.

We believe that, in developing PFAS restrictions, the priority for volatile PFAS (including fluorinated gases used as refrigerants) should be emissions management centered on “recovery and reclamation (and destruction where necessary).” This approach can directly deliver emissions reductions while enabling sustained management through circular use, and it helps avoid excessive socio-economic impacts and trade distortions.

1) Revisit the “simple substitution” assumption: system shifts can unnecessarily amplify costs
We reiterate that substitution rarely works as a simple “like-for-like refrigerant swap.” Where proposed alternatives are constrained by flammability or other safety and installation requirements, substitution pathways narrow and can trigger inefficient outcomes: (i) deploying multiple <6 kW units to meet capacity needs, which accumulates equipment, installation and maintenance costs; or (ii) installing unnecessarily oversized ≥12 kW equipment, leading to overinvestment, stricter siting constraints and operational inefficiencies. If substitution forces a shift from Direct to Indirect systems, higher installation costs and increased operating costs (due to efficiency losses and higher electricity consumption) can occur simultaneously. Therefore, cost assessment must treat substitution as a “system cost” (architecture, installation, safety measures, and feasibility), presented transparently as a range with explicit assumptions—not as a simple per unit refrigerant cost delta.

2) Emissions reduction and degradation-product suppression: recovery/reclamation is a rational “source control”
For volatile PFAS, the most reliable way to minimize environmental burden is to prevent releases to air. Rigorous recovery and reclamation (and destruction of non reclaimable streams) directly reduces leakage and venting across use, servicing, replacement and end-of-life stages. Reducing releases also reduces the amount available for atmospheric transformation, thereby helping to suppress formation of degradation products. In this sense, recovery/reclamation is a practical source-control measure that can simultaneously address emissions and degradation product concerns.

3) Ensuring effectiveness: workable governance and traceability are essential
To make recovery/reclamation effective in practice, at minimum the following elements should be combined: reliable recovery during servicing and end-of-life (performed by qualified personnel with clear collection routes); quality assurance and proper circulation of reclaimed material; destruction pathways for non reclaimable streams; recordkeeping/reporting and traceability for recovered/reclaimed/destroyed quantities; and implementation support to raise recovery rates (infrastructure, capacity building, and operational improvements such as inspections and leak prevention).

Conclusion
From the perspective of Q2.28, a uniform, substitution-led regulatory design risks driving multi unit downsizing, unnecessary upsizing, and system shifts that can amplify costs. By contrast, lifecycle emissions management centered on recovery and reclamation (and destruction where needed) directly supports emissions reduction and degradation product suppression, and is rational in terms of both feasibility and cost effectiveness. It also supports emissions reduction while aligning with Europe’s circular economy objectives. For these reasons, we consider RO3-type management to be the most appropriate approach.

2.13 **[Q2.29]** Please provide your comments on section 3.4.2.3. Practicality, including enforceability

Text of 1 to 5000 characters will be accepted

Consult the SEAC draft opinion and provide your comments relevant to this specific section of the opinion.

From an effectiveness (enforceability and compliance) perspective, we consider that relying on REACH alone as the primary enforcement tool has clear limitations. For broad scopes and complex supply chains—especially in sectors involving equipment, components, servicing and recovery—it is difficult for the REACH framework by itself to ensure consistent market surveillance, on-site controls, and end of life management. This would likely reduce the practical effectiveness of the measure.

First, achieving real emissions reductions requires controls across the full product lifecycle: use, servicing, replacement and end-of-life. However, as a chemicals framework, REACH is not well suited to independently securing the operational elements that are critical for emissions reduction, such as recovery/reclamation /destruction in the field, qualified-person requirements, inspections and leak prevention, and proper end of life treatment. Therefore, effectiveness can only be ensured by combining REACH with sector-specific regimes that directly govern lifecycle management—such as the F-gas framework (recovery obligations, leak management, reclamation/destruction, reporting and certification).

Second, it is not realistic to position “transition to alternatives” as the main pillar of effectiveness. As discussed, alternatives can involve flammability and other safety or installation constraints, and in key practical segments such as the 6–12 kW range, simple substitution is often not feasible. This can drive inefficient responses—multi unit downsizing, unnecessary upsizing, or Direct to Indirect system shifts—thereby amplifying CAPEX and OPEX and limiting the speed and breadth of transition. In such conditions, expected emissions reductions may not materialize as planned. In other words, “substitution-driven” effectiveness is inherently weak from a realistic compliance and implementation standpoint.

Accordingly, for Q2.29 we emphasize: (1) REACH-only enforcement has limitations; (2) to secure emissions reductions, it is essential to combine REACH with other laws that ensure lifecycle controls (e.g., the F-gas framework); and (3) substitution-based effectiveness may be limited by safety, installation and cost constraints. If effectiveness is the priority, the approach should not depend on the uncertain feasibility of rapid substitution, but should instead embed emissions-management measures—recovery and reclamation (and destruction where necessary)—in a manner that is aligned with other relevant legislation, supported by workable operational controls, oversight and traceability.

2.14 **[Q2.30]** Please provide your comments on section 3.4.2.4. Monitorability

Text of 1 to 5000 characters will be accepted

Consult the SEAC draft opinion and provide your comments relevant to this specific section of the opinion.

We believe that, to improve the effectiveness of this restriction and to correct excessive burdens or unintended impacts at an early stage, the framework should institutionalize both (i) periodic progress reporting and (ii) scheduled review opportunities under the relevant legal instruments.

First, the scope of uses, products and supply chains is broad, and factors such as the feasibility of alternatives, actual emission patterns, and the performance of recovery/reclamation systems will evolve over time. Therefore, after entry into force, a mechanism is needed to require periodic reporting of quantitative progress indicators (e.g., recovered volumes and recovery rates, reclaimed volumes, properly treated volumes of non-reclaimable streams, trends in leak reduction, compliance status, and the real-world status and challenges of substitution). This will enable an objective assessment of whether emissions reductions are being achieved and whether the measure is delivering against its policy objectives.

Second, progress reporting should not be a standalone “paper exercise,” but should be designed together with a structured review process. In practical terms, the framework should allow reassessment at defined points in time (e.g., an early post implementation review followed by regular reviews) of the appropriateness of scope, transition arrangements, operational requirements, and reporting items, taking into account: (a) technological development and market changes; (b) practical issues related to safety, installation and cost in substitution; (c) the maturity of recovery/reclamation infrastructure; (d) impacts on trade and competitiveness; and (e) compliance feasibility and supervisory challenges.

Third, it is desirable to define review triggers in advance. For example, if expected emissions reductions are not achieved, if recovery/reclamation does not function as intended, if substitution stalls due to safety or installation constraints, or if socio-economic impacts materially exceed expectations, the framework should enable timely adjustments (e.g., operational improvements, strengthened alternative measures, or redesign of scope and transition provisions).

Accordingly, for Q2.30 we propose establishing a system that requires periodic progress reporting and sets review opportunities as needed, thereby continuously safeguarding both effectiveness and proportionality over time.

2.15 **[Q2.31]** Please provide your comments on section 3.4.3.2.1. Conclusion whether the suggested restriction is the most appropriate EU-wide measure: (i) PFAS definition

Text of 1 to 1000 characters will be accepted

Consult the SEAC draft opinion and provide your comments relevant to this specific section of the opinion.

We have serious concerns about adopting the OECD structure-based PFAS definition unchanged and inferring Stockholm Convention-level concern solely from structural similarity. The OECD definition is useful for identification, but it does not show comparable hazard, exposure, risk or proportionality. Structure alone cannot predict mobility, bioaccumulation, toxicity, long-range transport, or exposure levels, so uniform REACH restrictions are not justified. Stockholm listings are substance-specific, evidence-based decisions; extrapolating them to thousands of PFAS departs from that premise. REACH should define scope and measures based on demonstrated hazards and use-specific emissions/exposure, the effectiveness of risk management, and socio-economic impacts and alternatives.

2.16 **[Q2.32]** Please provide your comments on section 3.4.3.2.1 Conclusion whether the suggested restriction is the most appropriate EU-wide measure: (ii) Exclusion of PFAS from the scope

Text of 1 to 1000 characters will be accepted

Consult the SEAC draft opinion and provide your comments relevant to this specific section of the opinion.

We consider it inappropriate to include F-gases (e.g., refrigerants) in the PFAS restriction scope and recommend excluding them. RAC indicates F-gases are generally of very low toxicity and do not bioaccumulate, so typical PFAS concerns should not be automatically applied. Any remaining concerns (mobility, persistence and potential degradation products) can be minimized in practice by strengthening emissions management: leak prevention, mandatory recovery at servicing and end-of-life, reclamation (and destruction where needed), qualified-person requirements, and robust recordkeeping/traceability for recovered, reclaimed and destroyed quantities. Emissions reduction and reporting can be implemented more effectively under existing sectoral regimes (notably the EU F-gas framework and related circular-economy/waste rules). Layering REACH requirements on top risks duplication, inconsistency, higher burdens and diluted enforcement.

2.17 **[Q2.33]** Please provide your comments on section 3.4.3.2.2 Conclusion whether the suggested restriction is the most appropriate EU-wide measure: Scope of the proposed restriction

Text of 1 to 1000 characters will be accepted

Consult the SEAC draft opinion and provide your comments relevant to this specific section of the opinion.

We advocate RO3 for all F-gas uses as the most rational and effective option, and therefore request that F-gases be explicitly exempted from Paragraphs 1 and 2. F-gas emissions are best controlled through lifecycle operational measures—leak prevention, qualified-person servicing, mandatory recovery at servicing and end-of-life, reclamation/reuse, destruction where needed, and robust recordkeeping/traceability—rather than blanket bans or forced substitution. Applying Paragraphs 1–2 to F-gases would likely drive formalistic compliance and inefficient substitution actions, risking supply and service continuity and imposing unnecessary socio-economic burdens without improving emissions outcomes. Because effective management can be delivered by strengthening existing recovery/reclamation and reporting systems, concentrating oversight on RO3-type controls is proportionate and avoids double regulation.

2.18 **[Q2.34]** Please provide your comments on section 3.4.3.2.3. Conclusion whether the suggested restriction is the most appropriate EU-wide measure: Concentration limits

Text of 1 to 1000 characters will be accepted

Consult the SEAC draft opinion and provide your comments relevant to this specific section of the opinion.

We consider proposed ppb/ppm concentration limits unsuitable and unworkable for F gas uses. F gases are often used as the functional medium itself (e.g., refrigerants sealed in equipment or process agents), meaning the PFAS content is effectively 100%. Even where blended with non PFAS (e.g., refrigerants or blowing agents), the PFAS fraction remains at percent levels to meet performance, safety and compatibility requirements; it cannot be reduced to ppb/ppm while preserving function. The Background Document and the SEAC draft assume health risk and propose controls to prevent environmental releases, but most F gas uses operate in closed systems with limited in use leakage and are already subject to a separate regulatory framework requiring leak prevention, recovery, reclamation/destruction, and reporting. Therefore, F gas uses should be excluded from concentration limits.

2.19 **[Q2.35]** Please provide your comments on section 3.4.3.2.4. Conclusion whether the suggested restriction is the most appropriate EU-wide measure: General 18-month transition period

Text of 1 to 1000 characters will be accepted

Consult the SEAC draft opinion and provide your comments relevant to this specific section of the opinion.

We support RO3 for all F-gas uses; on that basis, an 18 month entry-into-force period is too short and not realistic. Effective emissions reduction relies on lifecycle operational controls—not simple substitution—covering safety/installation requirements, servicing practices, and recovery/reclamation infrastructure. RO3 requires phased implementation to: embed recovery/reclamation (and destruction where needed) for existing equipment; harmonies procedures, traceability and recordkeeping across the supply chain; build capacity via training, certification and verification; expand treatment/logistics capacity and quality assurance; and align with other regimes to avoid duplication. A uniform 18 month deadline risks operational gaps, market disruption and service/supply discontinuities, undermining emissions outcomes. Therefore, RO3 for F-gases should include a realistic transition period with staged milestones and review points tied to implementation progress.

2.20 **[Q2.36]** Please provide your comments on section 3.4.3.2.5. Conclusion whether the suggested restriction is the most appropriate EU-wide measure: Derogations

Text of 1 to 5000 characters will be accepted

Consult the SEAC draft opinion and provide your comments relevant to this specific section of the opinion.

We consider it inappropriate to include F-gases (e.g., refrigerant uses) within the scope of the PFAS restriction. F-gases are already subject to a separate regulatory framework that institutionalizes emissions management through leak prevention, recovery and reclamation, proper treatment, and reporting. The objective of emissions reduction can therefore be achieved more directly and effectively by strengthening that existing framework. Accordingly, excluding F-gases from the PFAS restriction scope and enhancing management and oversight under the existing emissions-control regime is the most rational approach.

Even if, as a policy choice, F-gases remain in scope, the current proposal places them under Paragraph 5 (time-limited derogations). We consider this classification misaligned with practical reality. For F-gases, substantial uncertainty remains regarding the feasibility of implementing substitutes (safety, installation constraints, applicability, and cost impacts). A uniform, time-bound transition assumption can drive inefficient equipment choices (multi-unit downsizing, unnecessary oversizing, system shifts, etc.) and create socio-economic costs beyond what is necessary. Moreover, if alternatives are not sufficiently established when a fixed deadline is reached, continuity of servicing, replacement, and supply may be disrupted, with market disruption and access constraints preceding any emissions benefits.

Therefore, if F-gases are kept within the restriction, they should be treated under Paragraph 4 (the framework allowing an indefinite approach), with an indefinite derogation (at minimum, a continuing exemption without a fixed end-date). In that case, effectiveness should be ensured not through “ban-and-substitute” but through strengthened operational emissions management—recovery and reclamation (and destruction where necessary), enhanced traceability, and proportionate reporting requirements. We also consider that F-gases used for air-conditioning and refrigeration on ships, and those used for air-conditioning and refrigeration in vehicles, should likewise be addressed under Paragraph 4.

In conclusion, our first preference is to exclude F-gases from the PFAS restriction scope. If exclusion is not accepted, the legal structure should be revised so that F-gases are addressed under Paragraph 4 with an indefinite derogation.

2.21 **[Q2.37]** Please provide your comments on section 3.4.3.2.6.1. Conclusion whether the suggested restriction is the most appropriate EU-wide measure: Reporting requirements

Text of 1 to 1000 characters will be accepted

Consult the SEAC draft opinion and provide your comments relevant to this specific section of the opinion.

We support emissions management combining recovery/reclamation (and destruction where needed), monitoring and reporting to reduce releases and minimize degradation product concerns. But overly granular or duplicative reporting can divert resources from practical actions and undermine effectiveness. Reporting must be proportionate and low-burden. For F-gases already covered by other regimes, REACH should avoid parallel reporting and rely on primary reporting under existing systems, with REACH limited to reference and gap filling. Concretely: (1) a declaration of submission plus audit-time availability; (2) any additions limited to core annual aggregates (recovered, reclaimed, destroyed); and (3) simplified, tiered rules with de minimis thresholds for low-volume operators. This approach minimizes reporting cost; the SEAC draft approach would, in our view, be very costly.

2.22 **[Q2.38]** Please give an indication of the costs related to the reporting requirements.

Consult the SEAC draft opinion section 3.4.3.2.6.1. Conclusion whether the suggested restriction is the most appropriate EU-wide measure: Reporting requirements.

Provide an estimate of the magnitude of the costs for the implementation of the reporting requirements, from very low when the impacts are estimated to be insignificant to very high when they may result in a decision to discontinue your business activities.

- ○ Very low or none
- ○ Low
- ○ Moderate
- ○ High
- ◉ Very high
- ○ I do not know

2.23 **[Q2.39]** Please provide your comments on section 3.4.3.2.6.2. Conclusion whether the suggested restriction is the most appropriate EU-wide measure: Site-specific PFAS management plan

Text of 1 to 1000 characters will be accepted

Consult the SEAC draft opinion and provide your comments relevant to this specific section of the opinion.

Manufacturing sites are already implementing emissions-reduction measures. In the use phase, leak prevention and emissions control are being advanced under other legislation, and at end-of-life recovery is also progressing. Therefore, for F-gases, site-specific management is already carried out under existing legal frameworks across the lifecycle. In this context, the additional site-based management proposed in the SEAC draft would be both unnecessary and very costly, creating duplicative obligations without commensurate emissions benefits.

2.24 **[Q2.40]** Please give an indication of the costs related to the implementation of a site-specific PFAS management plan

Consult the SEAC draft opinion, section 3.4.3.2.6.2. Conclusion whether the suggested restriction is the most appropriate EU-wide measure: Site-specific PFAS management plan.

Provide an estimate of the costs for monitoring of emissions at industrial sites. Use the scale from very low (minimal impact) to very high (may result in a decision to discontinue business activities).

- ○ Very low or none

- Low
- Moderate
- High
- (x) Very high
- I do not know

2.25 **[Q2.41]** Please give an indication of the costs related to monitoring of PFAS emissions at industrial sites

Consult the SEAC draft opinion, section 3.4.3.2.6.2. Conclusion whether the suggested restriction is the most appropriate EU-wide measure: Site-specific PFAS management plan.

Provide an estimate of the costs for monitoring of emissions at industrial sites. Use the scale from very low (minimal impact) to very high (may result in a decision to discontinue business activities).

- Very low or none
- (x) Low
- Moderate
- High
- Very high
- I do not know

2.26 **[Q2.42]** Please provide your comments on section 3.4.3.2.6.3. Conclusion whether the suggested restriction is the most appropriate EU-wide measure: Additional conditions considered by RAC

Text of 1 to 1000 characters will be accepted

Consult the SEAC draft opinion and provide your comments relevant to this specific section of the opinion.

> The importance of additional RMMs to ensure emissions minimization under derogations is very high (labelling with safe-use/disposal instructions, site planning, monitoring/annual reporting, and supply-chain information sharing). Where recovery/reclamation/destruction, leak management, recordkeeping/reporting and oversight already exist under other legislation, REACH RMMs should be strictly minimal and non-duplicative. We propose: (1) recognize existing documentation/practices as the site-specific PFAS management plan where equivalent; (2) tier monitoring by risk, prioritizing existing measurements and limiting new monitoring to high-emission-potential steps; (3) limit reporting to annual aggregates (use by category, recovered/reclaimed /destroyed amounts, exceptional releases) and allow reference to data already reported; and (4) limit labelling /communication to the minimum information needed for proper recovery and disposal, allowing technical documentation and digital tools.

2.27 **[Q2.43]** Please give an indication of the costs related to the additional conditions considered by RAC

Consult the SEAC draft opinion, section 3.4.3.2.6.3. Conclusion whether the suggested restriction is the most appropriate EU-wide measure: Additional conditions considered by RAC.

Provide an estimate of the costs for implementing these conditions. Use the scale from very low (minimal impact) to very high (may result in a decision to discontinue business activities).

- Very low or none
- Low
- Moderate
- High

- [x] Very high
- [ ] I do not know

2.28 **[Q2.44]** Please provide your comments on section 3.4.3.2.7. Conclusion whether the suggested restriction is the most appropriate EU-wide measure: Interaction with other relevant legislation

Text of 1 to 1000 characters will be accepted

Consult the SEAC draft opinion and provide your comments relevant to this specific section of the opinion.

We are concerned that overlapping PFAS obligations under REACH with existing emissions and recovery regimes would create significant double regulation, raising compliance and enforcement costs and diverting resources from real emissions reduction (leak prevention, recovery, reclamation and destruction). Regulatory design should therefore be based on clear role sharing with related legislation to maximize effectiveness and efficiency. In particular, F-gases should be excluded from the PFAS restriction scope and managed solely under the EU F-gas framework, which already provides lifecycle controls. Where reporting is needed, use existing systems as the primary channel and limit REACH to reference plus gap filling: annual core aggregates only, avoid duplicate submissions, and focus oversight on high-emission areas with proportionate requirements.

2.29 **[Q2.45]** Please provide your comments on section 3.5.2. Uncertainties evaluated by SEAC

Text of 1 to 5000 characters will be accepted

Consult the SEAC draft opinion and provide your comments relevant to this specific section of the opinion.

We recognize that the many submissions received to date already demonstrate that this restriction could have very substantial socio-economic impacts in the EU. The potential impacts are multi-dimensional, including constraints on product availability and replacement cycles, increased complexity in design, installation and servicing, higher costs, spillovers to employment and investment, and limitations on market access. Even where company-specific quantitative data are not fully available, the practical constraints and burden mechanisms have been presented in a consistent and credible manner.

We are concerned that socio-economic impacts could be undervalued simply because some submitted information is not expressed as fully quantified estimates. In sectors with broad, multi-tier supply chains, it is often difficult to produce precise quantification at company level within short timeframes. At the same time, qualitative evidence—such as applicability constraints, limits of substitution, implementation bottlenecks, and the mechanisms by which additional burdens arise during transition—is essential for assessing effectiveness and proportionality. Therefore, qualitative information contained in the submissions should be treated as an important input that meaningfully reflects socio-economic impacts.

To ensure that the final opinion is both sound and implementable, we request that:
(1) submitted evidence be assessed in an integrated manner, irrespective of whether it is quantitative or qualitative, focusing on direction of impact, causal mechanisms, scope of impact, and uncertainties;
(2) where uncertainties remain, impacts be characterized using ranges and scenarios (e.g., conservative/central /strict) rather than single-point values, and these be reflected in proportionality judgments; and
(3) the assessment consider the effectiveness of existing emission-management and recovery frameworks and alternative risk-management measures, and identify the most effective and efficient approach to achieve the objective, including regulatory designs that avoid unnecessary duplication.

We strongly hope that, based on these considerations, the submitted information will be appropriately evaluated and the final opinion will fully reflect socio-economic impacts in a balanced and proportionate manner.

3 Confidentiality and submission

3.1 **[Q2.46]** Indicate each section for which your response contains confidential information.

Select all the questions for which you consider your responses confidential. The options below include all questions in the survey.

- [ ] Respondent background information
- [ ] General survey questions

Useful links

Guidance Document (https://echa.europa.eu/documents/10162/17091/upfas-seac-do_consultation_guidance-for-respondents_en.pdf/68d5b13b-d7d6-f14b-2c3e-9b3c07c98113?t=1765956675386)

Use Mapping (https://echa.europa.eu/documents/10162/17091/pfas_use-mapping_annex_to_guidance_for_respondents_en.pdf/e242dcf0-0aab-2619-234e-09445bb181c5?t=1765893415372)

Background Documents

Privacy Statement

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https://comments.echa.europa.eu/comments_cms/Contact_REACH.aspx