

September 2023

Annex 3 - EFCTC paper on emissions minimisation

Summary

As mentioned already in other annexes and acknowledged by the Dossier Submitters, F-gases are currently regulated in the EU by the F-gas Regulation (517/2014). As the main goal of this piece of legislation is to **prevent additional emissions of F-gases**, the Regulation establishes **rules on containment, use, recovery and destruction** of fluorinated greenhouse gases, and on related ancillary measures. Prevention of emissions is sought through containment throughout the life cycle of F-gases; the Regulation includes provisions relating to the use phase as well as the end of life phase, such as mandatory leak checks every 3/12/24 months, detailed record keeping, mandatory leak detection systems and mandatory recovery for a large number of equipment.

The 2014 F-gas Regulation included provisions on containment and recovery mainly for HFCs, while the 2022 Commission proposal looks at **extending them to HFOs and HCFOs**, and this will contribute to the further minimisation of F-gases emissions.

Prevention of emissions during the use phase

The containment measures to prevent emissions of fluorinated gases constitute the corner stone of the 2014 EU F-gas Regulation. As the Commission's impact assessment attests¹, the leakage rates of F-gases have been reduced following the introduction of improved containment measures with the current F-gas Regulation in force since 2015.

The EU F-gas Regulation 517/2014 is currently under revision, and it is expected to enter into force on 1 January 2024 at the earliest. The Commission's proposal COM(2022)150 to revise the current F-gas Regulation **would expand several measures to HFOs/HCFOs**. This is a fundamental evolution of the F-gas Regulation, which has direct relevance for minimizing emissions targeted by the U-PFAS restriction.

- Operators and manufacturers would be obliged to take all necessary precautions to **prevent emissions/leakage (Art. 4)** during the production, storage, transport, and transfer of fluorinated greenhouse gases. The inclusion of the F-gas supply chain in the leakage prevention obligation would lead to a further reduction in emissions of F-gases during the application life, as leaks are likely to occur during the transport or transfer.
- Furthermore, operators of equipment would be obliged to **check their applications for leaks (Art. 5) and keep detailed records on relevant information (Art. 7)** such as the results of those checks, the quantity of gas added or recycled and the measures taken to recover or dispose of the gas.

¹ European Commission (05 April 2022), Commission Staff working Document – Impact Assessment Report accompanying the Proposal for a regulation of the European Parliament and of the Council on fluorinated gases, (p. 68)

- Member States would also be required to adapt the **certification programmes (Art. 10)** for persons installing, servicing and recovering equipment containing F-gases to cover HFOs/HCFOS. These amendments would close an essential, remaining gap when it comes to the monitoring F-gas emissions during the use life of applications.

While the Commission revision proposal already strengthens the measures to prevent and contain F-gas emissions, the co-legislators are taking further steps in the ongoing review negotiations. In its position from 30 March 2023², the European Parliament proposed to **extends the leak checks** to refrigeration units of vans and ships (Art. 5.1.e), while Council suggests to extend³ it to a variety of operators with mobile equipment (e.g. air-conditioning equipment and heat pumps in trucks, vans, buses, non-road mobile machinery). A compromise on extending the leak checks to such additional equipment would lead to additional data on the prevention of F-gas emissions.

Following these changes, the revised F-gas Regulation would offer concrete improvements when it comes to the containment of F-gases during the use life of applications. The expansion of the scope of containment measures to HFOs/HCFOS is expected to continue ensuring effective and improved emissions control and progressive reductions of emissions to the environment. Moreover, the progressive substitution of old equipment with newer more leak-proof equipment, is already leading to declining equipment lifetime emission rates.⁴

Prevention of emissions at the end of life

Besides the emissions occurring during the use life of an application containing F-gases, the end-of-life treatment of such an application presents another potential source of F-gas emissions. Therefore, the current F-gas Regulation 517/2014 already sets out **proper instructions for the recovery, recycling, reclamation and destruction** of these gases for operators of equipment containing F-gases. **A key benefit of F-gases is the fact that they can be recycled or reclaimed for reuse, either in new applications or for servicing or maintenance of existing equipment.** The evaluation of the 2014 F-gas Regulation highlights that the Regulation has **increased the recovery and reclamation rates** of refrigerants.⁵ The latest EEA Report shows that the quantities of HFCs reported as being reclaimed in 2014 (377 tonnes) have more than quadrupled in 2020 (1590 tonnes).⁶ Since the EU F-gas Regulation only set a reporting requirement (incl. the technical reporting possibility) for undertakings who were at the same time reclaimers and producers or importers or exporters of F-gases, undertakings being only reclaimers did/ could not report their figures. That is why we believe that the real reclamation quantities are even higher. Additionally, the quantities of recycled refrigerants, which unfortunately are not traceable, would have to be added to these figures.

² Amendments adopted by the European Parliament on 30 March 2023 on the proposal for a regulation of the European Parliament and of the Council on fluorinated greenhouse gases ([2022/0099\(COD\)](#))

³ Council of the European Union Mandate for negotiation on F-gas Regulation revision ([8162/23](#)), 5 April 2023.

⁴ European Commission (05 April 2022), Commission Staff working Document – Impact Assessment Report accompanying the Proposal for a regulation of the European Parliament and of the Council on fluorinated gases, (p. 122)

⁵ Öko-Institut e.V, Ricardo & Öko-Recherche (14 March 2022), Impact Assessment Final Report - Support contract for an Evaluation and Impact Assessment for amending Regulation (EU) No 517/2014 on fluorinated greenhouse gases (p.97)

⁶ ETC CM Report 2022/3, Table 3, page 44; *The figure for 2021 shows a decrease, but this is due to the exclusion of the UK.

The Commission's 2022 proposal for the review of the F-gas Regulation would set additional requirements for the end-of-life of products and equipment:

- Similar to the containment measures, the **end-of-life obligations would be extended to cover HFOs/HCFOs**, closing an essential, remaining gap in emission prevention (Art. 8).
- To further enable the refrigerant reclamation and contribute to the circular economy, the 2022 proposal for revision of the F-gas regulation empowers the Commission to adopt **delegated acts** to establish a **list of products and equipment where the recovery or destruction should be considered feasible** and for which technology should be applied (Art. 8).

When it comes to the emissions of F-gases during the end-of-life treatment of an application, clear instructions by the Commission on their recovery as well as constructive minimum requirements for the responsibility of producers will **further reduce emissions** occurring during the recovery or destruction of F-gases, including HFOs/HCFOs.

Destruction technologies for HFCs are approved under the Montreal Protocol following independent evaluation of performance criteria, including the efficiency of destruction. The performance of approved destruction technologies is well characterised and achieve a high efficiency of destruction (minimum 99.99% for concentrated HFCs). Detailed reports on destruction technologies and applicable criteria have been published since 1992. It has been reported that 17 destruction facilities are registered in 2021 for destruction of F-gas Annex I & II substances (HFCs, HCFCs, HFOs, and HCFOs) in Europe. Municipal solid waste and rotary kiln incineration are approved for destruction of foams containing HFCs. HFOs and HCFOs, having double bonds, have reduced stability compared to HFCs and technologies approved for HFC destruction are expected to achieve the same efficiency of destruction, if operated under conditions that destroy HFCs.