EFCTC work on the proposed REACH restriction

To FPP4EU Collaboration Platform

15 June 2022

Cefic sector group

The European Chemical Industry Council, AISBL – Rue Belliard, 40 - 1040 Brussels – Belgium
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EFCTC

1. About EFCTC

The **E**uropean **F**luoro**C**arbons **T**echnical **C**ommittee is a sector group of the European Chemical Industry Council (Cefic) and represents the companies Arkema, Chemours, Daikin Chemicals, Honeywell and Koura.

2. What are F-Gases and what are they used for

Airconditioning

Fire extinguishers

Heat pumps

Refrigeration

3. HFCs, HFOs, and non-fluorinated refrigerants: differences

Fluorinated gases

- Different generations developed
- Safe to use, as they are non-toxic and generally non-flammable

Currently most used F-gases are:

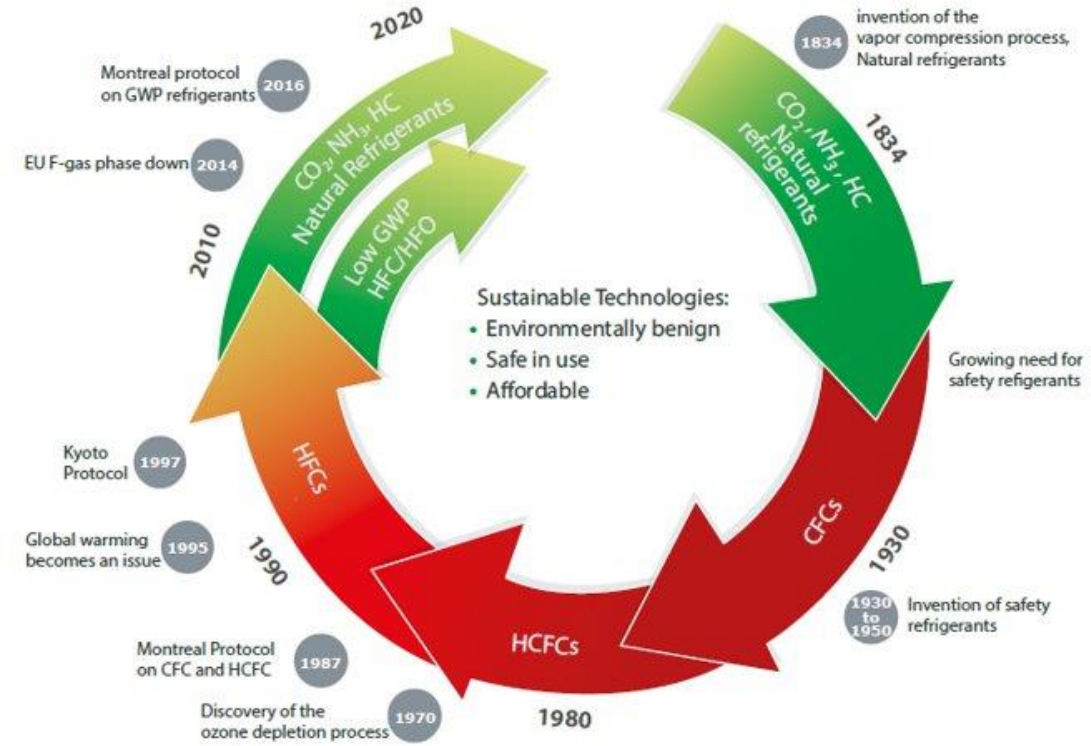
- HFCs and HCFCs → higher GWP; phased down under ODS and F-gas Regulations
- HFOs and HCFOs → very low GWP; Containment/reporting included in new F-gas; suitable substitutes for HFCs

Non-fluorinated refrigerants

- Substances with low GWP (0-1)
- Safety issues in terms of flammability, pressure and toxicity
- Production linked to fossil fuel production
- Examples: **CO_2** (R774), **NH_3** (R717), **Hydrocarbons**: Isobutane (R600a) and Propane (R290)

Note: no one size fits all: each application might require a different gas or blend based on their properties and safety in use

4. How F-gases are regulated



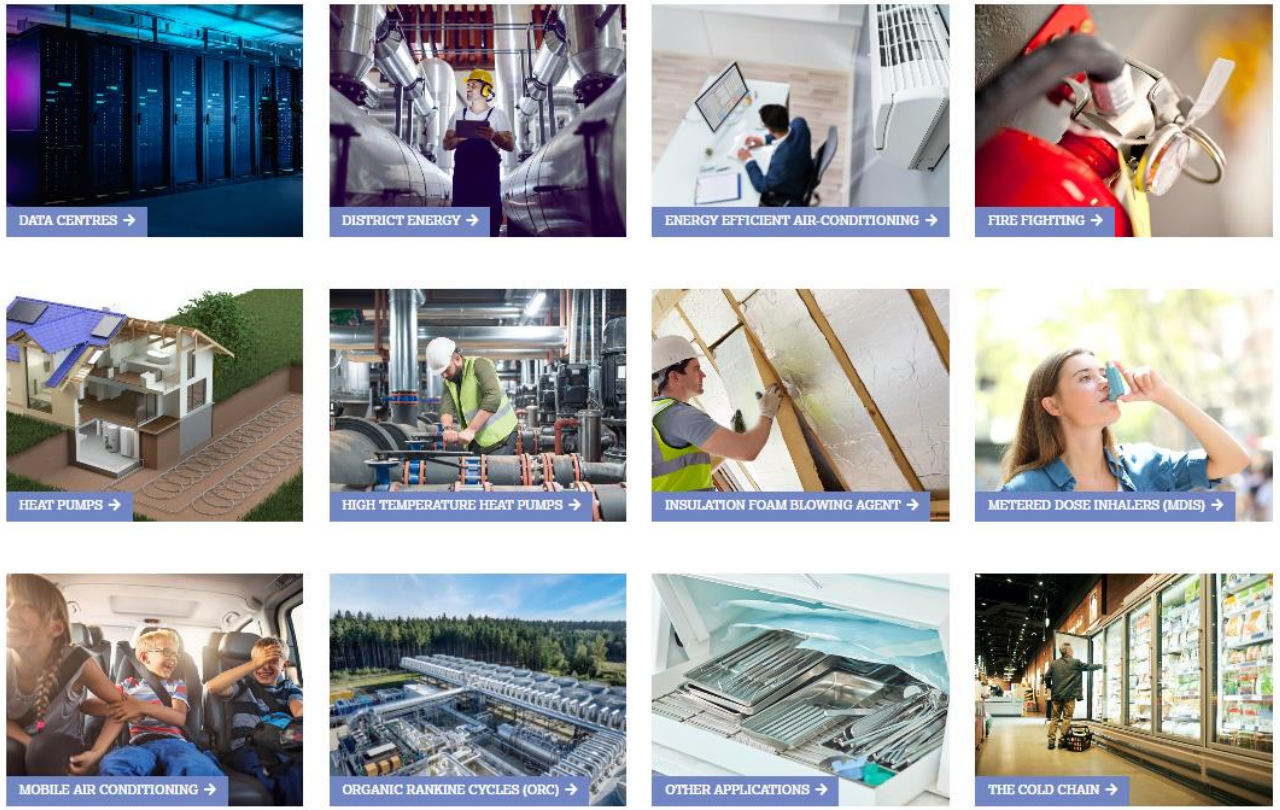
The use of F-gases has been already successfully regulated for several years

Source: Danfoss DKRCC.PB.000.W3.22

5. Why F-gases are used?

F-gases can confer energy efficiency and safety when used in properly designed and operated equipment.

They play a key role in decarbonising critical European industries relying on heating and cooling technology.



Ref. https://www.fluorocarbons.org/applications/

EFCTC

6. EU Action on PFAS

Target

- PFAS in the scope of the RMOA* prepared by the 5 initiating countries have the following structural formula (dated 23 February 2022) and definition:

  PFAS are defined as substances that contain at least one fully fluorinated methyl (CF3-) or methylene (-CF2-) carbon atom (without any H/Cl/Br/I atom attached to it).

- Meaning: fluorinated substances that contain at least one aliphatic carbon atom that is both, saturated and fully fluorinated, i.e. any chemical with at least one perfluorinated methyl group (-CF3) or at least one perfluorinated methylene group (-CF2-), including branched fluoroalkyl groups and substances containing ether linkages fluoropolymers and side chain fluorinated polymers.

The majority of F-gases fall into the current scope

**Regulatory Management Option Analysis* (RMOA) is an assessments of regulatory needs

6. EU Action on PFAS

Why F-gases are different and should not be restricted under REACH

1. Different chemical properties

- F-gases: Do not persist and degrade completely in the atmosphere
  - The degradation processes for F-gas are well known
  - Many only create non-persistent degradation products that occur naturally.
  - A small group breakdown to produce very small concentrations of a naturally occurring inert and nonbioaccumulative substance called trifluoroacetic acid (TFA), which is persistent

F-gas Reg is currently under revision

2. Already successfully managed by F-gas Reg (517/2014) & MAC Dir (70/156/EEC)

- Aims at reducing F-gas emissions by two thirds of 2010 levels by 2030
- Quota system
- Limiting and phasing down the total amount of the most important F-gases
- Banning the use of F-gases in some new types of applications
- Preventing/containing emissions of F-gases from existing equipment
- MAC Directive prohibits the use of F-gases with a GWP ≥ 150 in new types of cars and vans introduced from 2011, and in all new cars and vans produced from 2017

EFCTC Website, *TFA as an atmospheric breakdown product*

EFCTC Position Paper *"Published evidence supports very low yields of TFA from most HFOs and HCFOs"*, 9 August 2021

7. Reviewed F-gas Regulation proposal

Steps in the right direction

- Enhanced control of placing HFCs on the market, effective vetting of all companies
- Reinforced legal provisions facilitating improved border control and enforcement against illegal trade
- Improved containment measures, end-of-life treatment
- Alignment with international agreements (Kigali Amendment to the Montreal Protocol)

Room for improvement

- Further engagement with value chain to understand impact of phase down

- More frequent mandatory leakage controls
- Mandatory reclamations

Better containment provisions can address the persistency concerns for PFAS

8. What about TFA?

Global effects of TFA from HFCs and HFOs have been studied extensively[1]:

- The Environmental Effects Assessment Panel (EEAP) of the UN Environment Programme (UNEP) provides a comprehensive summary (2021) for Trifluoroacetic acid (TFA) and points out that most PFAS have different properties from TFA[2].
  - Trifluoroacetic acid continues to be found in the environment, including in remote regions, although not at concentrations likely to have adverse toxicological consequences [3,4].
  - Current concentrations of TFA salts and related compounds in soil and surface waters do not present risks of adverse effects in aquatic and terrestrial plants and animals.
  - Humans could be exposed to TFA via drinking water and food but **there is no evidence to date of adverse effects on health**
  - **TFA salts are of low acute toxicity to mammals under conditions relevant to environmental exposure.**
  - **There are multiple sources of TFA: Industrial processes and as a transformation product of pharmaceutical and agricultural products. TFA is also a transformation product of hydrofluorocarbon refrigerants in the atmosphere**

Revision of F-Gas Reg offers a good opportunity to minimise emissions of F-gases and hence reduce the quantities of TFA generated from their breakdown.

1: Neale, R. E., Barnes, P. W., Robson, T. M., Neale, P. J., Williamson, C. E., Zepp, R. G., et al. (2021). Environmental effects of stratospheric ozone depletion, UV radiation, and interactions with climate change: UNEP Environmental Effects Assessment Panel, Update 2020. Photochemical & Photobiological Sciences. https://doi.org/10.1007/s43630-020-00001-x. See sections 7.8 to 7.11 for Trifluoroacetic acid (TFA).

2. https://ozone.unep.org/science/assessment/eeap

3. David, L. M.; Barth, M.; Höglund-Isaksson, L.; Purohit, P.; Velders, G. J. M.; Glaser, S.; Ravishankara, A. R. Trifluoroacetic acid deposition from emissions of HFO-1234yf in India, China, and the Middle East Atmos. Chem. Phys., 2021.

4. Lindley, A.; McCulloch, A.; Vink, T. Contribution of Hydrofluorocarbons (HFCs) and Hydrofluoro-Olefins (HFOs) Atmospheric Breakdown Products to Acidification ("Acid Rain") in the EU at Present and in the Future. Open J. Air Pollut., 2019, 8, 81-95.

9. Practical examples of potential impacts of a ban on F-gases

- Without careful consideration and design of any restriction there are **potentially huge changes to everyday life** for people living inside, and even possibly outside, the EEA. For example:

  - **Obsolesce** of hundreds of millions of existing Refrigeration, Air conditioning and Heat Pump **systems** including car, van and truck Air Conditioning systems when maintenance or servicing is required due to unavailability of refrigerants.
  - Existing standards, regulations and codes impose constraints on location and charge size for all refrigerants, constraining systems and performance in the absence of F-gases. **Some current designs are impractical without F-gases.**
  - **Energy efficient solutions** for refrigeration, air conditioning and heat pump systems **could be limited**.
  - **Safe operation** could be **compromised** without F-Gas (mild or no flammability, non-toxic).

10. What EFCTC is doing

Cooperation and reach out

- Liaising with downstream users and associations to provide support in understanding the possible restriction.
  - EPEE, EHPA, APPLiA, EHI and others
- Cooperation with authorities
  - European Commission, Member States, European Chemicals Agency

10. What EFCTC is doing

Independent Socio-Economic Analysis (SEA)

Socioeconomic assessment on the impact of a possible ban on F-gases and **of the contribution certain fluorinated gases (F-gases) to the economy and wider society**

- Several downstream users and associations have joined the effort
- We aim at providing the authorities with **complete set of information** on F-gases
- Our SEA will be used to **support a response to the European Chemicals Agency's** (ECHA) consultation on a new proposal to restrict PFAS that includes F-gases
- The extent of this restriction is yet to be entirely defined and can still change along the consultation process

10. What EFCTC is doing

Independent Socio-Economic Analysis (SEA)

Objectives of the SEA:

- Provide an overview of the direct and attributable economic contribution of the F-gas industry, with support from members of EFCTC
- Outline economic and societal benefits generated along the downstream value chain from the use of F-gases in various critical applications or sectors; your production is one of such critical applications of F-gases
- Identify alternatives to F-gas in various critical applications and their costs compared to the current situation with the use of F-gases, thanks to your contribution to this consultation

11. EFCTC position and messages

- 'PFAS' is a big universe of thousands of chemicals. Certain F-gases (HFC, HFO and HCFO) are a category in 'PFAS', but do not share the same chemical properties or uses with other categories of PFAS.
- Sub-grouping in PFAS must be made for better hazard and risk assessment as well as assessment of the needs for a REACH restriction.
- EFCTC believes that concerns with F-gas could be, and are being, addressed in a different manner, and that F-gas should not be covered by a global REACH Restriction to avoid any conflict with other legislation, i.e. F-Gas Regulation.

F-gases contribute to EU Green Deal achievements and decarbonisation goals.

EFCTC

11. EFCTC position and messages

F-Gases are already successfully managed by the **F-gas Regulation** → currently undergoing a review process to strengthen the **containment provisions**

Double regulation of F-gases would put an **excessive burden on downstream users** and the uncertainty would put innovation at risk → **Green Deal and decarbonisation goals** difficult to achieve

EFCTC calls for a **sensible and sustainable regulatory approach**

EFCTC encourages authorities to **engage in dialogues with downstream users** to better understand the possible repercussions on the sector

Questions?

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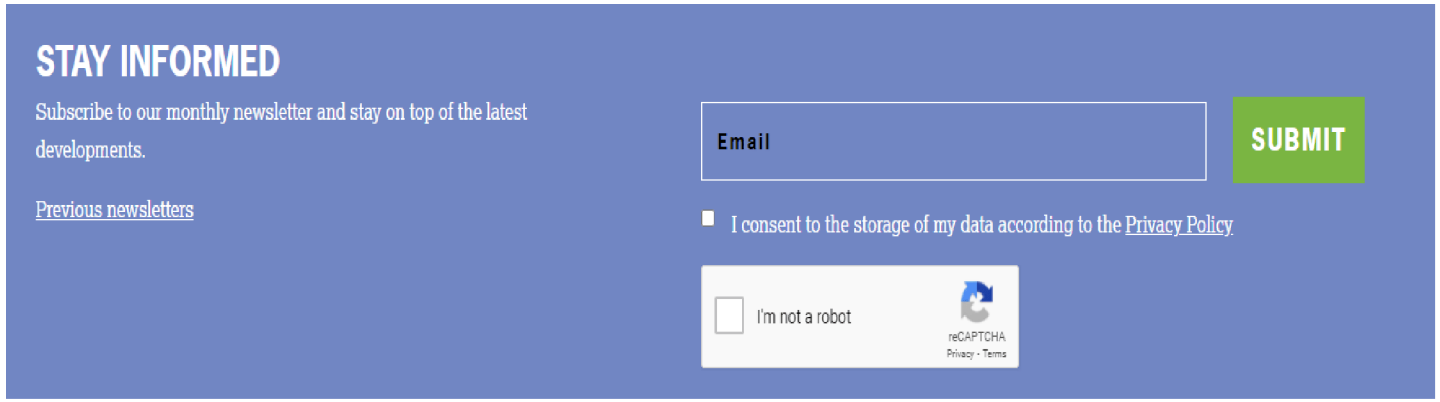
EFCTC newsletter:

Home - Fluorocarbons



Thank you.

About Cefic

Cefic, the European Chemical Industry Council, founded in 1972, is the voice of large, medium and small chemical companies across Europe, which provide 1.1 million jobs and account for 15% of world chemicals production. Cefic members form one of the most active networks of the business community, complemented by partnerships with industry associations representing various sectors in the value chain. A full list of our members is available on the Cefic website.
Cefic is an active member of the International Council of Chemical Associations (ICCA), which represents
chemical manufacturers and producers all over the world and seeks to strengthen existing cooperation with global organisations such as UNEP and the OECD to improve chemicals management worldwide

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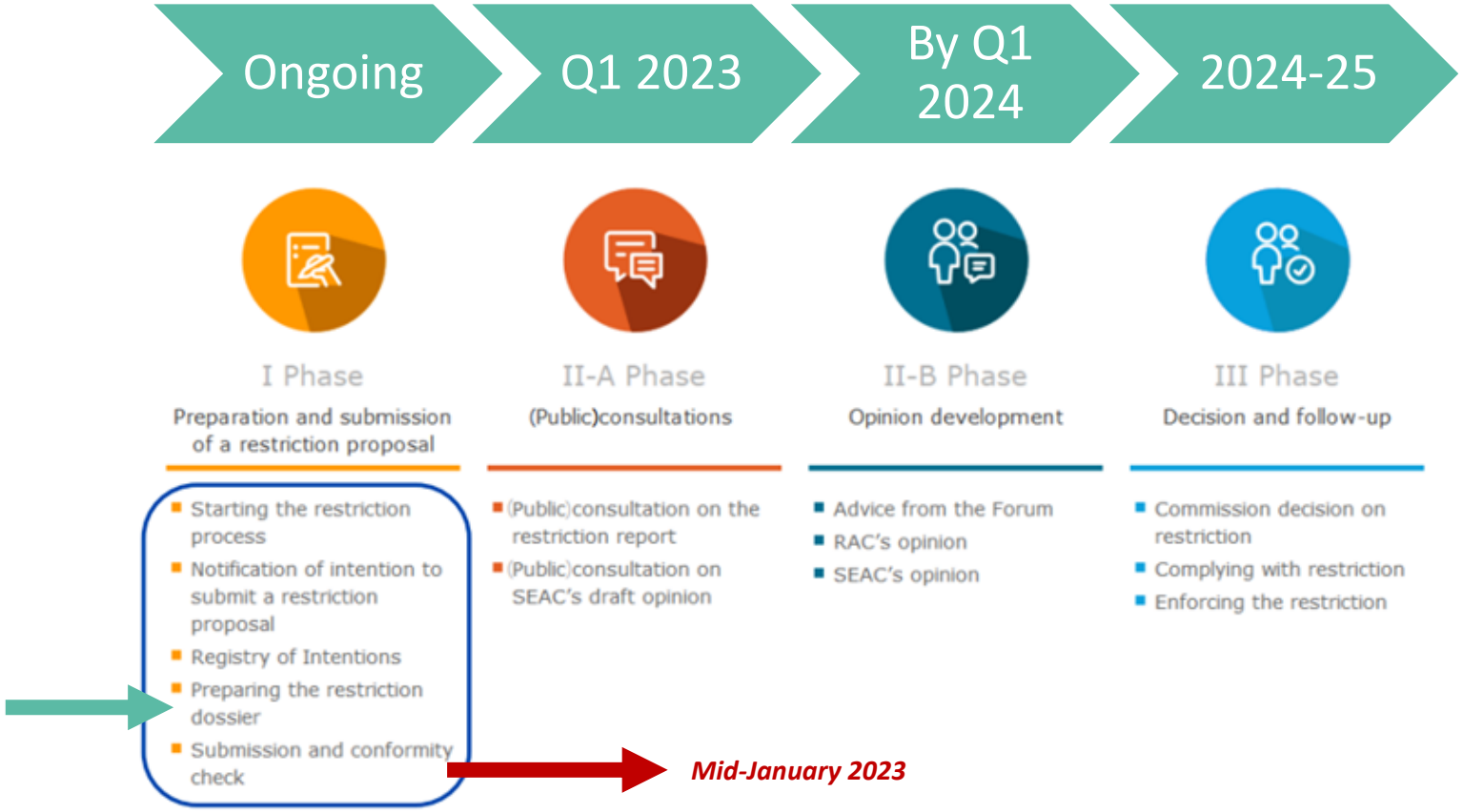
REACH Restriction process



echa.europa.eu/restriction-process

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