

TEGA feedback and concerns on the proposed PFAS restriction

TEGA as one of the leading refrigerant distributors in Europe is fully committed to minimizing release of fluorinated gases to the environment by continuously investing in circular economy for refrigerants, including those refrigerants that are themselves or contain PFAS. We aim to keeping refrigerants in a closed circuit during their entire life cycle until they reach their end of life. TEGA is working with waste management partners where refrigerants are destructed in a well-controlled process. Such process destroys the PFAS by disintegrating the fluorocarbon structure and even enables recovery of hydrofluoric acid for reuse. TEGA already successfully regenerates a number of HFCs and currently works on also establishing such circular economy for HFOs and HFO blends which – to our opinion – belong to a group of PFAS substances that have an extremely high socio-economic relevance and, thus, should be exempted from restriction or granted a time-unlimited derogation.

The general ban proposed by 5 European countries on the production, use, and market availability of per- and polyfluorinated alkyl substances (PFAS) would significantly impact the ability to produce and supply certain refrigerants as well as many other specialty chemicals and related downstream products that are critical success factors for the future of our planet and societies. As key messages TEGA would like to highlight the following:

1. Implementing a blanket PFAS ban will jeopardize the fulfillment of the Green Deal (climate goals and circular economy). When looking at refrigerants, a wide array of solutions has been established in the past decade by development and market launch of HFOs and HFO blends with low GWP which replaced already high-GWP HFCs in a big diversity of applications. In automotive industry, for example, car manufacturers did and continue to do huge investments to comply with the mandatory replacement of R 134a by R 1234yf for mobile air conditioning. The current proposal of a general PFAS ban would erase all these investments and the progress made in lowering the global warming potential of refrigerants in use.
2. Refrigerants should not be double-regulated. In current F-gas regulation EU 517/2014, HFOs have already been identified as “environmentally-friendly option with a low global warming potential (GWP)” for the replacement of high-GWP HFCs. However, the HFOs and HFO blends fall under the scope of the proposed restriction of PFAS, and their restriction would counter the climate goals and provisions of the F-gas regulation. Therefore, the interface with other regulations related to substances that meet the proposed PFAS definition (e.g. upcoming revised F-gas regulation, Ecodesign and Sustainable Products Regulation, MAC Directive) must be clarified.
3. Replacement of HFOs or HFO blends by natural refrigerants is not always a suitable option, in particular when considering their efficiency in various refrigerant applications which must comply with the energy norms imposed by the Ecodesign Regulation. TEGA strongly recommends to also check for TEWI (total equivalent warming impact) when comparing natural refrigerants, such as R 744 (carbon dioxide), against HFOs and HFO blends.

4. A risk-based and substance-based approach should be used for PFAS. The currently proposed blanket restriction of all PFAS regardless of their toxicity and risk profile is disproportionate. UNEP 2022 Assessment Report from the Environmental Effects Assessment Panel (EEAP) refers for this conclusion to an expert panel of which the majority agreed that persistence alone is not sufficient for grouping PFAS for the purpose of assessing human health risk, and that the definition of appropriate subgroups can only be defined on a case-by case manner [1]. In addition, the majority opinion with respect to toxicology was that “it is inappropriate to assume equal toxicity/potency across the diverse class of PFAS” [1].
5. UNEP 2022 report from EEAP also includes highly valuable studies and data on trifluoroacetic acid (TFA) showing that TFA persistence is not an issue because it doesn’t react with biomolecules. TFA and its salts are easily excreted by humans and animals and do not accumulate in food chains. Salts of TFA have low toxicity to animals and plants and there are very wide margins between current/projected exposures and toxicity values. TFA is an excellent example why persistence alone should not automatically trigger the restriction of a substance. What’s needed is a much more differentiated evaluation of the big diversity of PFAS substances before any specific bans are put in place.
6. TEGA also supports the UNEP 2020 Assessment Report on Issues of Concern (Chemicals and Waste Issues Posing Risks to Human Health and the Environment) where in case of PFAS the concept of “essential use” is raised [2]. It suggests a stepwise approach in PFAS restriction, namely immediately phasing out all PFAS uses that are not critical for health, safety and the functioning of society, substituting the uses where technically adequate and safe (or safer) alternatives are available, and fostering and scaling up the development and transition of safe alternatives to PFASs for the uses where PFASs are currently essential for health, safety and the functioning of society and where no suitable alternatives are currently available.
7. American EPA already exempted R 134a and R 1234yf from their PFAS restriction proposal for US market due to essential uses involved, e.g. in mobile air conditioning. TEGA votes for the same exemption in the EU.
8. Besides car industry and mobile air conditioning, there are of course further HFO applications that belong to essential uses and should be exempted as well from PFAS restriction, such as R 454C or R 1234ze for heat pumps. R 454C and other HFO blends can also be of great value to other essential uses, such as transport cooling or commercial cooling in supermarkets.
9. In case of PFAS in use as refrigerants, it should be highlighted that this application area can enable a circular economy which keeps PFAS in a closed cycle, i.e. zero PFAS release to the environment in the best-case scenario of a fully established circular economy. While circular economy on HFCs already being established at TEGA, we are also making progress in the case of circular economy for HFOs with recent announcements from producers which are enabling the regeneration of HFO blends. TEGA is continuing to work in this area with the refrigerant manufacturers and the downstream users to expand possibilities and encourage HFOs to be returned at end of life and handled such that environmental impacts are reduced to the minimum.

10. Having focused TEGA concerns about PFAS restriction proposal so far only on refrigerants TEGA would like to also give an example of a PFAS which is critical to a wider field of application areas. It's about Polytetrafluoroethylene (PTFE) which is in use in countless applications involving a big diversity of tools, equipments and technologies. At TEGA, PTFE is used in valve membranes as well as a sealant when fixing the valves on the steel containers in which refrigerants or LPG are filled. If PTFE would become subject to PFAS ban, both distribution businesses TEGA is running (refrigerants and LPG) would lose their basis because of hundreds of thousands of TEGA containers and valves containing PTFE no longer allowed and PTFE alternatives not yet properly tested in high pressure environment of compressed gases which are supposed to stay in their well-sealed steel containers without any leakage for a certification period of 10 years. As long as no suitable replacement for PTFE has been identified, tested and approved for the various applications also PTFE should be exempted from restriction or granted a time-unlimited derogation.

References

- [1] Anderson, J.K., Brecher, R.W., Cousins, I.T., DeWitt, J, Fiedler, H., Kannan, K., Kirman, C.R., Lipscomb, J., Priestly, B., Schoeny, R., Seed, J., Verner, M. & Hays, S.M. (2022). Grouping of PFAS for human health risk assessment: Findings from an independent panel of experts. *Regulatory Toxicology and Pharmacology*, 105226. <https://doi.org/10.1016/j.yrtph.2022.105226>
- [2] Cousins, I.T., Goldenman, G., Herzke, D., Lohmann, R., Miller, M., Ng, C.A. et al. (2019). The concept of essential use for determining when uses of PFASs can be phased out. *Environmental Science: Processes and Impacts* 21 (11), 1803-1815. <https://doi.org/10.1039/c9em00163h>

TEGA would like to ask ECHA for taking a more differentiated approach in PFAS evaluation, i.e. not considering persistence as the only criterion for restriction, in particular when substances are involved that are linked to essential uses of high socio-economic relevance.

Sincerely yours

TEGA

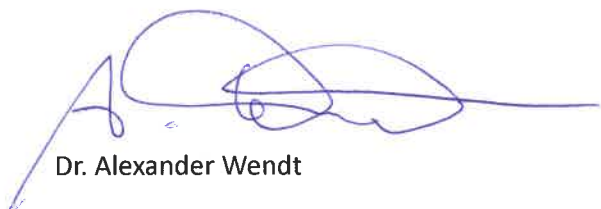
TEGA-Technische Gase und Gasetechnik GmbH
Werner-von-Siemens-Str. 18 - 97076 Würzburg



Dr. Jürgen Zoller

Managing Director

TEGA – Technische Gase und Gasetechnik GmbH
Werner-von-Siemens-Str. 18
97076 Würzburg, Germany



Dr. Alexander Wendt

Head of Sales Refrigerants