

Linde feedback and concerns on the proposed PFAS restriction

Linde as one of the refrigerant distributors in Northern Europe is fully committed to minimizing release of PFAS to the environment by continuously investing in circular economy for refrigerants including refrigerants that contain PFAS with the aim to keep refrigerants in a closed circle until they reach the end of their life cycle and move to our waste management partners where a well-controlled process is applied which destroys PFAS by destroying fluorocarbon structure and even enables recovery of hydrofluoric acid for reuse. Linde already purchases and sells regenerated refrigerants when available.

However, 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 Linde 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 car industry, for example, car manufacturers did and continue to do huge investments to replace R 134a by R 1234yf for mobile air conditioning. The current proposal of a general PFAS ban would erase all these investments and 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 small global warming potential” for the replacement of high-GWP HFCs. However, the proposed restriction of PFAS also includes the removal of HFOs and HFO blends which is a clear contradiction to the goals of 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) must be clarified.
3. 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.
4. 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. Linde votes for the same exemption in the EU.
5. 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 and commercial cooling in supermarkets.
6. 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 Linde, 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. Linde 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.

Linde would like to ask ECHA for differentiating PFAS substances in terms of essential use and enable to keep the essential ones available on EU market as long as there is no full-scale availability of suitable and technically developed substitutes for the respective applications.