

Re: Submission of the Clean Cooling Coalition to the PFAS Restriction Intention.

Dear policy officers working on the PFAS Restriction Intention,

We welcome the opportunity to submit further comments related to the availability of alternatives to PFAS that are fluorinated gasses used in cooling and heating systems.

The [Clean Cooling Coalition](#) is a coalition of Europe-based companies operating in the refrigeration, air-conditioning and heat pump industry (RACHP) that support the uptake of natural refrigerants that do not deplete the ozone layer, are not extreme global warmer, nor are considered or degrade into persistent chemicals such as poly- and perfluoroalkyl substances (PFAS).

In our Coalition we represent only what is technically achievable today: in fact, our members are not producers of natural refrigerants, hence our positions are not biased nor come with vested interests. We represent what is technically and commercially viable today.

All applications designed to deliver heating and cooling with vapor compression technologies can be delivered with alternatives to fluorinated gasses that are PFAS. As the table below reports, different natural alternatives can often compete among each other, in both stationary or mobile systems. In addition, technologies without the need of refrigerants themselves are landing on the market.



**Today we do NOT
need HFCs/ HFOs
for NEW
equipment**

	CO ₂ / R744	NH ₃ / R717	HC	H ₂ O / R718	Air / R729
Domestic applications	✓		✓	✓	
Commercial refrigeration	✓	✓	✓	✓	
Industrial refrigeration and heat pump systems	✓	✓	✓	✓	✓
Water and space heating heat pumps	✓	✓	✓		
Chillers	✓	✓	✓	✓	
Vehicle air conditioning	✓		✓		✓

In this submission, we would like to present to you the companies that are part of the Coalition and support the transition away from fluorinated greenhouse gases, as living proof that there is no more technical need for fluorinated gases that are PFAS as working fluids across a variety of applications.

- Dorin is an Italy-based compressor manufacturer leader in CO₂ and hydrocarbons compression technology. [Link](#)
- Efficient Energy GmbH is a Germany based chiller manufacturer using water (R718) as natural refrigerant. [Link](#)
- ECOOLTEC, based in Germany, offers electrically driven, sustainable and efficient transport refrigeration machines of a slim 250 mm height integrated into the refrigerated body. Using only natural refrigerants allows for 80% less emissions, 60% less fuel consumption and 90% less refrigerant charge. [Link](#)
- GEA Heating & Refrigeration Technologies is a global specialist in industrial heating and refrigeration. The company produces refrigeration and heat pump products & systems based on natural refrigerants such as ammonia, CO₂ and hydrocarbons. [Link](#)
- Konvekta is a German manufacturer of HVAC systems for earthbound commercial vehicles. Konvekta is the pioneer for CO₂ air/water heat pump systems in buses & rolling stock and has developed this market from scratch. Laureate of the highly respected German Environment Award. [Link](#)
- Mirai Intex s.r.o is a Czech-Republic-located refrigeration engineering and manufacturing company working with air as refrigerant for low and ultra-low temperature applications. [Link](#)
- Located in Dublin, Ireland, and using R290 natural refrigerant, Novum produce the most energy efficient plug-in freezers for the global supermarket and frozen food sectors. [Link](#)
- PBX is an Austrian start-up developing and manufacturing transport refrigeration systems based on natural refrigerants. PBX propane (R290) refrigeration solution is designed for electric vehicles delivering temperature-sensitive goods at zero emissions. [Link](#)
- Secon is a German-based system provider and manufacturer that works exclusively with natural refrigerants. The company specializes in chillers that run on hydrocarbons (R290, R1270, R600a). [Link](#)
- SWEP is a global supplier of brazed plate heat exchangers for HVAC, commercial refrigeration and industrial applications where natural refrigerants are becoming increasingly more relevant. [Link](#)
- Teko GmbH is an original equipment manufacturer (OEM) developing refrigeration solutions based on carbon dioxide (R744). [Link](#)
- ATMOsphere is a global, independent market accelerator with a mission to clean up cooling and heating. [Link](#)

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All these companies are European entities operating today with natural alternatives, and believe that the future of the RACHP sector is based on systems that do not have refrigerants that are fluorinated gasses and PFAS.

We remain available to provide further information where needed.

Regards,

The Clean Cooling Coalition