

WHITE PAPERS

PHASING OUT OF REFRIGERANTS



WHAT YOU NEED TO KNOW

As of January 2015, The EU F-Gas Regulation will be applicable throughout the European Union. This regulation intends to reduce quantities of fluorinated hydrocarbons (F-Gases) to 21% of current quantities by the year 2030. Such regulation may be on its way to the US very soon, with California leading the way with its own regulation already in place.

COMMON SUBCATEGORIES OF F-GASES ARE AS FOLLOWS

- **CFC's:** Chlorofluorocarbons (some contain chlorine). Harmful to ozone layer and release chlorine when exposed to ultraviolet light. These refrigerants are already phased out (R-12).
- **HCFC's:** Hydrochlorofluorocarbons are also composed of chlorine and thus deplete some ozone from atmosphere and are greenhouse gases but do not deplete ozone as intensely as CFC's. There have been interim substitutes for CFC's since the 1990's. These gases also are characterized by large global warming potential (GWP) values (R-22, R-142b, etc.).
- **HFC's:** Hydrofluorocarbons contain no chlorine and therefore do not break down the ozone in the atmosphere. These gases also are characterized by large global warming potential (GWP) values (R-134a, R-404A, R-507A, R-410A, etc.).

The majority of fluorinated gas regulations stem from the Montreal Protocol signed in 1987. The Montreal Protocol focused on removing the CFC's and HCFC's from use so as to protect the Earth's ozone layer. This protocol did not address the use of HFC's since they did not impact the ozone layer. However, newer legislation has targeted HFC's for their high global warming potentials in an effort to supposedly curb global warming.

THE EUROPEAN UNION (EU)

As of April 2014, the EU passed legislation known as the F-Gas Regulation. This legislation focuses on reducing the consumption of fluorinated refrigerants over the next fifteen years.

This regulation requires that routine checks of the refrigerant system be made depending on the amount of charge in the system. Systems with charges between 5 and 50 tons of CO₂ equivalent shall be checked every 12 months (24 months if a leak detection system is installed). Systems with charges between 50 and 500 tons of CO₂ equivalent shall be checked every 6 months (12 months if a leak detection system is installed). Systems with charges above 500 tons of CO₂ equivalent shall be checked every 3 months (6 months if a leak detection system is installed). Leak checks shall be performed by the operators of the system and records of the checks and the results of the checks shall be kept and maintained.

The regulation will incorporate a quota system for manufacturers in order to limit the consumption of affected refrigerants. Quotas will eventually be enforced for imported pre-charged systems as well. By 2030, the F-Gas Regulation aims to reduce the consumption of F-gases to 21% of its value in 2015. This regulation will attempt to accomplish that goal through a number of constrictions to the man-made refrigerant market.

By 2016, mandatory regular checks will be required for refrigerant charges over 5 tons CO₂ equivalent, which is greater than 7.7 lb (3.5 kg) of R134a, or for R404A that would be greater than 2.9 lb (1.3 kg).

By 2020, new stationary systems will be prohibited from using refrigerants over 2500 GWP. Also, no new refrigerant over 2500 GWP can be used to service existing refrigeration systems if the system charge is over 40 tons of carbon dioxide equivalent, which is approximately 22 lb (10 kg) of R-507A or R-404A.

By 2022, multipack centralized refrigeration systems for commercial use (rated capacity 40kW or more) will be prohibited from using refrigerants over 150 GWP. However, the primary refrigeration circuit of a cascade system may have a refrigerant of 1500 GWP or less.

By 2030, Recycled refrigerants greater than 2500 GWP will be prohibited for use in the servicing and maintaining of existing systems.

THE UNITED STATES

But the European Union is not the only organization aiming to ban certain refrigerants. The United States Environmental Protection Agency (EPA) announced its plans to expand its ban on F-gases to now include globally popular HFC refrigerants including R-134a, R-404A, and R-507A.

Through the Clean Air Act, the EPA has already regulated CFC's out of the market and will soon finish regulating HCFC's out of the market. By 2016, production and importing of any HCFC's will be prohibited except for use as refrigerants in equipment manufactured prior to 2010. By 2020, production and importing of HCFC-142b and HCFC-22 will be prohibited. By 2030, production and importing of any HCFC's will be prohibited.

The EPA's Notice of Public Rule: RIN 2060-AS18, which is open for comment until October 20, 2014, proposes new restrictions and bans to the HFC's in the refrigeration industry. According to this Notice of Public Rule (NOPR) R-507A, R-404A, R-410A, and a number of other refrigerants will be banned for new and retrofit retail food refrigeration as of 2016. Also, in 2016, R-134a will be banned in stand-alone retail food refrigeration and vending machines. For auto models 2021 and newer, R-134a will be banned for use in motor vehicle air conditioning systems.

CALIFORNIA

California's current regulation AB-32 focuses specifically on large refrigeration facilities in order to reduce refrigerant releases. It began in 2011 and affects facilities with more than 50 pounds of refrigerant charge. With this regulation in place, leaks must be fixed within two weeks of discovery. Site records must be kept documenting leak repairs and refrigerant purchasing.

As of 2012, large systems (larger than 2000 pounds of refrigerant) must register, report, and pay yearly fee of \$370 and must install automatic leak detection. As of 2014, medium systems (between 200 and 2000 pounds of refrigerant) must register, report, and pay annual fee of \$170. As of 2016, small systems (between 50 and 200 pounds) must register but not report nor pay a fee.

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