Section 609 of the Clean Air Act: Motor Vehicle Air Conditioning

Protecting the Ozone Layer

The stratospheric ozone layer shields the Earth from the sun's harmful ultraviolet radiation. Emissions of certain substances – including chlorofluorocarbons (CFCs), halons, and hydrochlorofluorocarbons (HCFCs) – that are commonly used as refrigerants, solvents, and insulating foams destroy the ozone layer.

In addition, many of these ozone-depleting substances (ODS), as well as their alternatives – including hydrofluorocarbons (HFCs) – are potent greenhouse gases that contribute to climate change. The purpose of this fact sheet is to help understand the regulatory requirements for servicing motor vehicle air conditioners (MVACs).

Environmental Impact of Motor Vehicle Air Conditioners

Older model MVACs used CFC-12 (also known by trade names, such as Freon®). When CFCs leak from MVACs into the atmosphere, strong radiation in the atmosphere will break the molecules apart and release chlorine atoms, each of which can destroy over 100,000 ozone molecules.

MVACs can have serious impacts on climate. For example, the global warming potential (GWP) of CFC-12 is approximately 10,000 times greater than that of carbon dioxide (CO_2), a greenhouse gas that contributes to climate change. Currently, most MVACs use HFC-134a (also known as R-134a), a refrigerant that does not deplete the ozone layer, but has a GWP that is approximately 1,400 times greater than CO_2. Alternative refrigerants such as CO_2 and hydrofluoroolefin (HFO)-1234yf do not deplete the ozone layer and have much lower GWPs than CFC- 12 or HFC-134a. CO_2 has a GWP of 1 and HFO-1234yf has a GWP of 4. MVACs alone represent about 15% of the global use of HFCs.

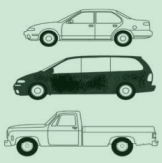
Environmental Impacts of MVAC Refrigerants		
	Global Warming Potential	Ozone Depletion Potential
CFC-12	10,900	1
HFC-134a	1,430	0
HFC-152a	124	0
HFO-1234yf	4	0
CO_2	1	0

Because of the potential damage that refrigerants can do to the environment, Section 609 of the Clean Air Act (CAA) directs EPA to establish requirements to prevent the release of refrigerants during the servicing of MVACs and MVAC-like appliances and to require recycling of used refrigerants. MVAC-like appliances are mechanical vapor compression, open-drive compressor appliances used to cool the driver's or passenger's compartment of a non-road vehicle, including agricultural and construction vehicles.

608 vs. 609

MVAC (609)

Passenger cars



Buses*

Trucks

MVAC-like (609 or 608)

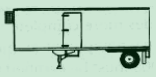
Off-road vehicles

Non-MVAC (608)

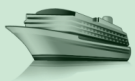
Trains

Aircraft – passenger & cargo

Refrigerated trailers



Ship/boat – passenger & cargo

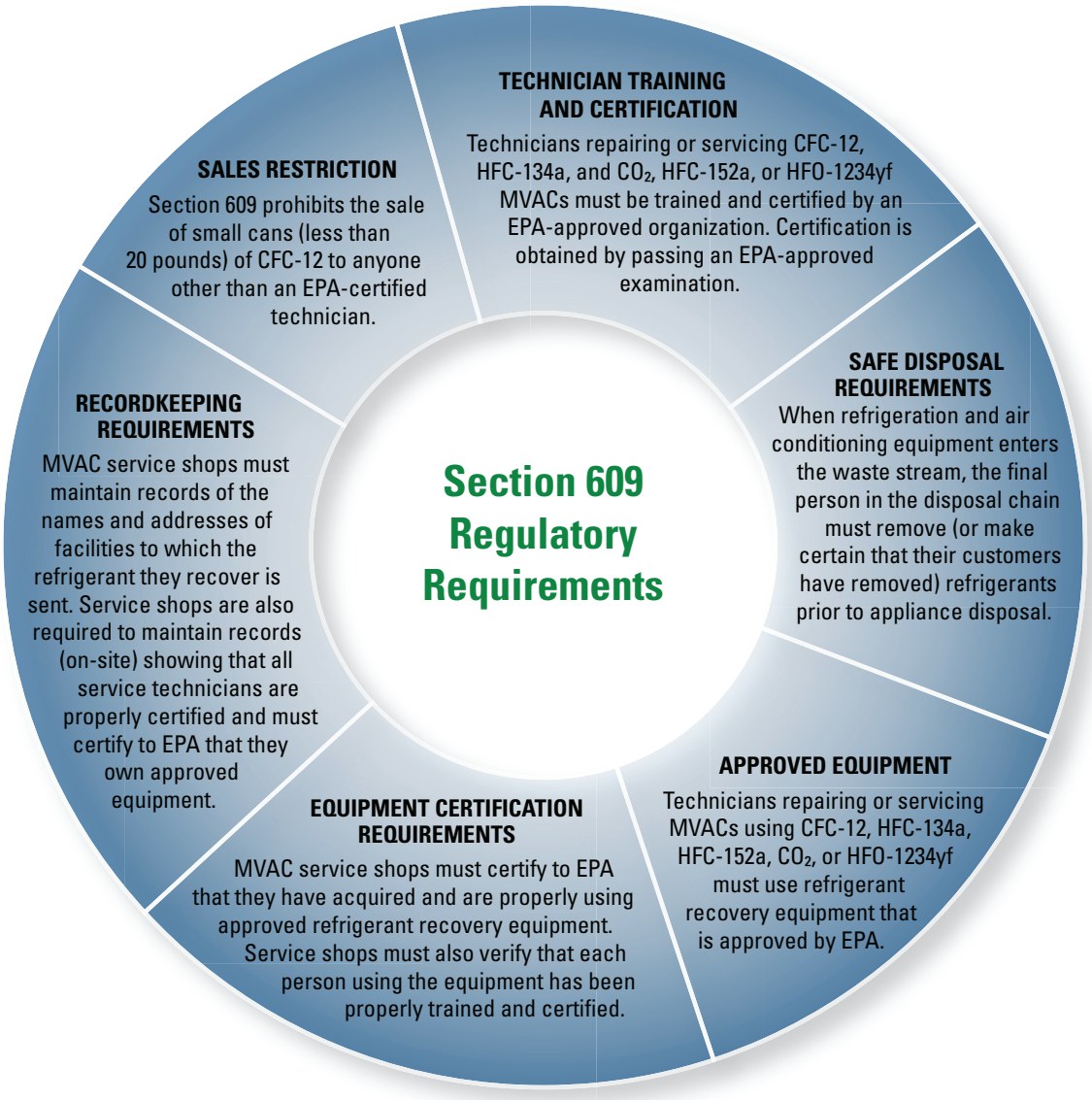


* *If R-22, then 608*

Venting Prohibition

Section 608 prohibits intentionally releasing (also called venting) ODS refrigerants and most alternatives (including all HFCs, HFOs, and their blends) while maintaining, servicing, repairing, or disposing of MVACs and MVAC-like equipment. CO_2 refrigerants are exempted from the venting prohibition.

Section 609 Regulatory Requirements: Motor Vehicle Air Conditioning



Additional Resources

EPA Ozone Layer Protection Website:
epa.gov/ozone/strathome.html

EPA Section 609 Website:
epa.gov/ozone/title6/609/

EPA Phaseout of Ozone-Depleting Substances Website:
epa.gov/ozone/title6/phaseout/

Approved equipment information website:
epa.gov/ozone/title6/609/technicians/appequip.html

EPA Stratospheric Ozone Information Hotline: 1-800-296-1996

EPA United States Environmental Protection Agency

EPA 430-F-13-004