

Motor Vehicle Air Conditioning

What is CFC-12 and why does it pose an environmental and human health concern?

CFC-12 (also known by the trade name Freon) is a refrigerant used in automobile air conditioners. Scientists worldwide believe that certain man-made chemicals such as CFC-12 are destroying the ozone layer 10-30 miles above the earth's surface. The ozone layer acts as a blanket in the atmosphere, protecting us from the sun's harmful ultraviolet (UV) radiation. Overexposure to UV radiation has been determined to cause skin cancer, cataracts and suppression of the human immune system.

How is CFC-12 regulated?

The 1990 Clean Air Act Amendments banned the production of most ozone-depleting substances, including CFC-12, by the end of 1995. However, the *use* of CFC-12 is still permitted as long as supplies are available. There is no requirement for car owners to convert their vehicle's air conditioning system to an alternative refrigerant.

State and federal regulations do not prescribe any particular service as long as technicians are certified to work with refrigerant and any recycling equipment he or she uses meets EPA standards.

What is HFC-134a?

HFC-134a has been selected by engineers for automotive manufacturers as the replacement refrigerant for CFC-12. Although HFC134-a is not an ozone-depleting chemical, it is a "greenhouse gas" (i.e. a contributor to climate change) and therefore cannot be vented to the air.

Are there other substitutes that are considered safe to use?

EPA evaluates all substitutes for CFC-12 under its Significant New Alternatives Policy in order to determine if they pose any risk to human health or the environment. Currently, HFC-134a is the only alternative which has been fully tested and specified by automakers in their guidelines.

How do technicians become certified?

Technicians who repair or service air conditioners must be certified by an EPA-approved organization. To be certified, technicians must pass a test demonstrating their knowledge in the importance of refrigerant containment, the use of equipment and the effects of ozone depletion. You can find a listing of approved certification programs by going to the following web site:

<https://www.epa.gov/mvac/section-609-technician-training-and-certification-programs> or by calling the Environmental Assistance Office Hotline.

How is equipment certified?

Service shops must also certify to EPA that they have acquired and are properly using approved refrigerant recovery equipment. The certification statement must include the name and address of the business, the name of the equipment manufacturer, equipment model and serial number, and equipment date of manufacture.

A sample certification form may be found at: <https://www.epa.gov/mvac/mvac-servicing-certification-form>. A list of approved equipment for CFC-12 recovery and/or recycling can also be found at this web site. Recover/recycle equipment cleans the refrigerant so that oil, air and moisture contaminants reach acceptably low levels. Certain equipment models can recycle either CFC-12 or HFC-134a refrigerants.

What can be done with recovered CFC-12?

Recovered CFC-12 is almost always recycled by either returning it to the vehicle for reuse or storing it in a holding tank until such time as it is sent to an off-site reclamation facility. Recovered CFC-12 that is not reused directly or reclaimed for further use must be managed as a hazardous waste under Vermont's Hazardous Waste Management Regulations.

What are some Best Management Practices?

- Evacuate and recover refrigerant before servicing to avoid releases.
- Inspect hoses, connections and condenser for leaks. Consider purchase of an electronic leak detector. Avoid using leak detecting products containing CFC-12.
- Don't mix CFC-12 and HFC-134a since contaminated refrigerant must be sent off-site for reclamation.
- Purchase refrigerant in 15lb. containers or greater.
- Retrofit air conditioner to use HFC-134a instead of CFC-12. Lubricants, seals, fittings, etc. used with CFC-12 are generally not compatible with systems retrofitted for HFC-134a. When in doubt as to proper retrofitting procedures, always consult with the air conditioner manufacturer. Motor vehicles, model year 1995 or newer, use HFC-134a.

For more information contact:

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