



ARE YOU COMPLIANT?

IS YOUR SHOP FOLLOWING EPA'S RULES FOR MOBILE A/C SERVICE?

BY JACQUES GORDON, TECHNICAL EDITOR

If you or someone you know does air conditioning (A/C) work, pay close attention. The Clean Air Act of 1990 includes rules for servicing the refrigerant circuit of a mobile A/C system. If you know those rules, you're probably aware that many people don't. While it's difficult to tell how many, the fact that you need filters to protect your recycle/recovery machines and a third machine just for "taking out the garbage" clearly demonstrates the problems they can cause. Believe it or not, following the U.S. Environmental Protection Agency's (EPA) rules can make life easier for every pro in the business.

Information gathered by the Mobile Air Conditioning Society (MACS) Worldwide indicates that people from every segment of the industry, including techs and shop owners, believe that EPA should enforce the rules with on-site inspections and heavy fines for shops that don't comply. The goal would be to weed-out those shops that knowingly do incomplete or incompetent work, thereby making life less difficult for shops that do it right. When was the last time you heard of techs and shop owners actually asking the government to send inspectors out into the field?

Like most federal agencies with enforcement powers, EPA generally prefers to go after big game, believing that a big bust with a major fine and people going to jail makes a bigger impact. However, in recent years, they've begun sending inspectors to visit shops in selected areas, and citations and fines have been issued to independent shops and dealerships that did not comply with the regulations.

In cities where this has happened, MACS noted sharp increases in shops and techs seeking certification, proving the value of a few grassroots busts and word-of-mouth "advertising." EPA has noticed this, too, and

although they've issued no official statement, they are expected to continue using surprise shop inspections to enforce the rules.

WHAT ARE THE RULES?

Section 609 of the Clean Air Act is the part that deals with mobile air conditioning service. While it's a bit wordy, the language is clear:

"Effective Jan. 1, 1992, no person repairing or servicing motor vehicles for consideration may perform any service on a motor vehicle air conditioner involving the refrigerant

for such air conditioner without properly using approved refrigerant recycling equipment and no such person may perform such service unless such person has been properly trained and certified.”

In other words, if you are paid in currency or barter for servicing the refrigerant section of a mobile A/C system, you must be trained to operate the equipment properly and be certified by EPA as being qualified to do the work. Your equipment must also be certified as being appropriate for the job.

The training for this certification is not the same as training for A/C repair. Basic procedures for working with recovery and recycle equipment, refrigerants and storage containers are covered, but passing the Section 609 certification test also requires knowl-

THE SHORT-LIST

- Any shop that does A/C work must have the appropriate recovery and/or recycle equipment and a refrigerant identifier.
- Any technician operating that equipment must be trained on its use and be certified under Section 609.
- Equipment records must be sent to the EPA offices in Washington, DC. It is recommended that copies also be kept onsite.
- Records must be kept of any refrigerant sent off-site for recycling or disposal.
- DOT-approved containers must be used for shipping refrigerant.
- Venting refrigerant of any kind is never allowed.
- SNAP refrigerants are approved as substitutes for R12 only, not for R134a and not for “topping-off” a system with a different refrigerant.

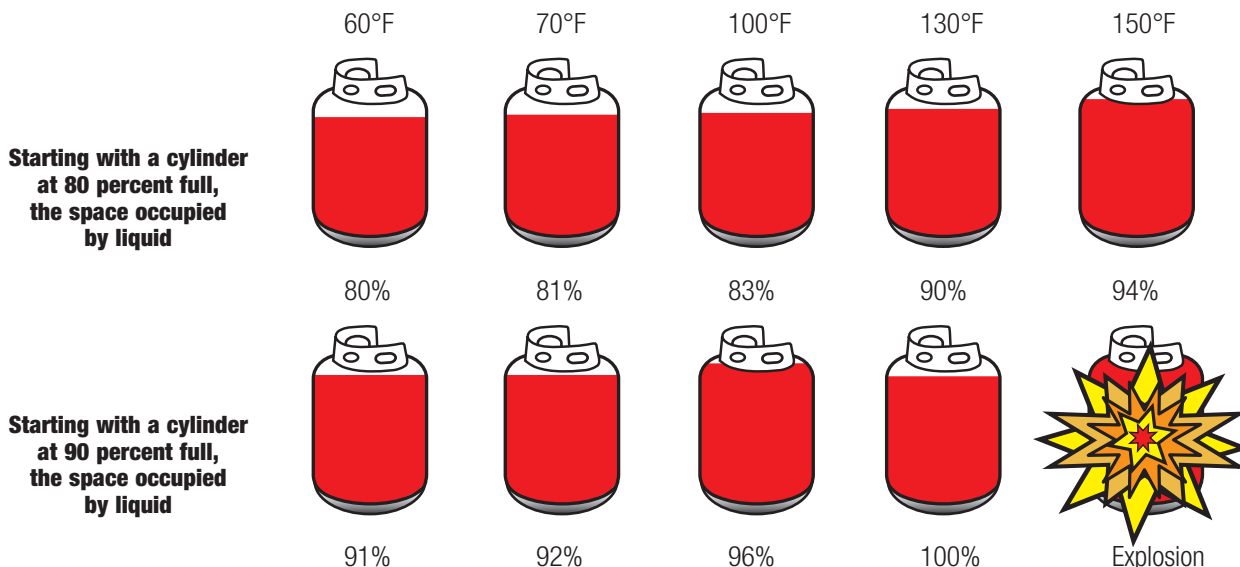
edge of the environmental damage caused by venting refrigerant to the atmosphere and the resulting effects on human health. In addition, the test covers various EPA regulations and recordkeeping requirements. This certification is not the same as ASE A7 certification. Although ASE offers the EPA test, ASE technician certification is not a substitute for Section 609 technician certification.

The equipment in your shop also must be certified. This requires that the recovery or recycle machine is built to standards set by the Society of Automotive Engineers (SAE). A sticker on the back of the machine listing the SAE J-spec is the only proof accepted, and that spec defines whether the machine is intended for R12 or R134a, and whether it is a recovery-only machine or a recycler.

CONTAINERS: HANDLE WITH CARE

A refrigerant tank needs some “head space” to allow for expansion, even if it’s not being shipped. This means a 30-pound tank must never be filled with more than 24 pounds of refrigerant.

CYLINDER TEMPERATURE



Safety codes recommend that closed tanks not be filled more than 80 percent of the volume with liquid. The remaining 20 percent is called head pressure room. Refrigerant expands when it gets warm. When refrigerant expands, some of it boils, thus increasing the pressure. The fuller the tank, the more liquid expansion takes place.



ARE YOU COMPLIANT?

If the shop services both R12 and R134a systems, machines approved for both systems must be on the premises. Information about the equipment and contact information for the shop that owns it must be sent to EPA offices in Washington DC. Registered mail is a good way to prove you've done so.

Technicians authorized to use the equipment must be trained and certified on that equipment, and copies of all this must be kept on file at the shop. If refrigerant is recovered and sent off-site for recycling or disposal, the shop must record the date and destination and keep those records on file for three years.

This is just a brief look at some of EPA's rules and the Section 609 Certification Test requirements – not a complete list.

Like any test, the point is to make sure the tech gets the training needed to pass it, and the wider awareness that comes with that training. The test itself is not difficult and can even be taken as an open-book test at home.

The shop recordkeeping requirements are intended to ensure that the proper equipment is onsite and that trained people are using it, and that any container full of recovered refrigerant that's sent offsite can be traced. While this recordkeeping is not complicated, it does require some dedication to make sure everything is ready for that surprise inspection.

And should that inspector appear and find something amiss, penalties range from a warning up to the maximum fine of \$32,500 per offense, per day.

THE REASONS

As mentioned earlier, Section 609 is part of the Clean Air Act of 1990. The Act itself addresses a variety of man-made pollutants. Among those is chlorofluorocarbon (CFC), which was used by the automotive industry as a degreaser and as R12 refrigerant. Along with 190 other countries, the United States signed the 1987 Montreal Protocol, agreeing to end production of all ozone depleting chemicals by 2000. However, the rate of ozone depletion accelerated, so R12 production was halted in 1995,

five years ahead of schedule, because the auto industry was already prepared with a good substitute.

That new refrigerant, R134a, does far less damage to the ozone layer. In fact, EPA has stated that when the auto industry switched to R134a and began recovering/recycling refrigerant instead of venting it, the condition of the ozone layer improved within two years and that the damage should eventually repair itself naturally.

But about the same time we became familiar with the ozone depletion problem, the words "global warming" started appearing in the newspapers. Though just a theory then, today it's an officially recognized fact that the average temperature of the earth's surface is increasing due to man's activities. The major culprit is CO₂, which acts like the glass roof of a greenhouse to hold the sun's heat close to the earth instead of letting it radiate into space. While

BELOW: These are the service fittings that are supposed to be used for each refrigerant. The R12 or R134a fittings are installed at the factory. The other fittings are supposed to be installed on an R12 system when it's converted to use a different refrigerant.

MOBILE A/C SERVICE FITTINGS

REFRIGERANT	HIGH SIDE SERVICE PORT			LOW SIDE SERVICE PORT		
	DIAMETER INCHES	THREAD PITCH/INCH	THREAD DIRECTION	DIAMETER INCHES	THREAD PITCH/INCH	THREAD DIRECTION
R12	3/8	24	Right	7/16	20	Right
R134a	Quick	Couple	16mm	Quick	Couple	13mm
Freeze 12	7/16	14	Left	8/16	18	Right
Free Zone/RB-276	8/16	13	Right	9/16	18	Right
GHG-X4/Autofrost/Chill-it	0.305	32	Right	0.368	26	Right
R-406A/GHG/McCool	0.305	32	Left	0.368	26	Left
FRIGC/FR-12	Quick couple	Different than R134a		Quick couple	Different than R134a	



ARE YOU COMPLIANT?

most man-made CO₂ is generated by burning fuel, there are other man-made chemicals that have the same or even greater greenhouse effect when released into the atmosphere. R134a is one of them.

In 1997, most of the world's industrialized nations met in Kyoto, Japan to discuss the problem of global warming. The resulting Kyoto Protocol, which was signed by 141 nations and took effect February 2005, set a schedule for reducing greenhouse gas emissions around the world over the next several decades. While the United States did not sign the Kyoto treaty, the world market conditions created by that agreement still influence our economy, the automotive industry and even our government. The language in our Clean Air Act requires EPA to evaluate a refrigerant's global warming potential as well as its impact on the ozone layer. This is why Section 609 makes it illegal to vent refrigerant of any kind, even the alternative refrigerants that it has approved as legal substitutes for R12.

THE SUBSTITUTES

The Significant New Alternative Policy (SNAP) is a program operated by EPA to identify materials that can be used as replacements for ozone-depleting chemicals. The performance of these alternatives is not measured, only their impact on the environment. In mobile A/C applications, the so-called SNAP refrigerants are approved only because they are less damaging to the ozone layer than R12. Their other risks, such as flammability or global warming potential, are not important for approval.

CONTACTS

EPA's Web site (www.epa.gov/Ozone/title6/609/technicians/609certs.html) includes a list of companies and organizations that offer the Section 609 Certification Test. Many also offer training resources for the test, including MACS (www.macsw.org) and ASE (www.asecert.org). Most of those on the list also offer training and certification on the use of recycle/recovery equipment.

While these are hands-on classes, the certification training manual is available for purchase. Those manuals approved by EPA clearly spell out all the rules and go into greater depth than the summary given here.

The Section 609 Certification Test also can be taken at home, either online or on paper, depending on the organization offering the test. The cost is \$15, and for those who don't pass the first time, a single retest is available at no charge.

There are about 16 refrigerants approved under this program as alternatives to R12, including R134a. The SNAP refrigerants are approved only as replacements for R12, not for R134a. This means that the alternative refrigerants are not approved for use in a system that was originally designed to use R134a. It also means they cannot legally be used to top-off a system filled with R12 or R134a. The SNAP refrigerants can only be legally used as a complete replacement, after R12 has been extracted from the system.

EPA approves recycling equipment based on its SAE specification. All of those machines are designed for use with either R12 or R134a. That means they can't be used to recycle refrigerant blends, only to recover them for proper disposal. That refrigerant must be shipped to a reclamation facility in a DOT-approved container. To reduce the danger of bursting due to heat expansion, the container must only be filled to 80 percent of its original weight rating.

SUMMARY

As you can see, the primary goal of Section 609, and in fact all the rules that EPA has set for the service industry, is refrigerant containment. No

matter what that refrigerant might be, the most important thing is to keep it under control so it doesn't escape into the atmosphere.

However, there are limits. It is legal to add refrigerant to a system that's known to be leaking, but only enough for diagnostic purposes. Also, it is not legal to remove refrigerant from a system just because you know it's leaking, except the small charge you install for diagnostic purposes. That refrigerant still belongs to the customer, and ultimately the decision is his. Also, none of these rules apply to the DIYer or to someone working for free.

While Section 609 regulations were generated by lawmakers, it's obvious they had solid technical advice. Those advisors have also clearly demonstrated the damage that can be caused by the use of non-professional equipment and repair methods, both to the industry and to the environment. They hope to convince EPA to outlaw DIY products from the market. The chances of that happening are difficult to foresee. Meanwhile, the rest of us have to follow the rules.

READER INTEREST SURVEY

Circle the appropriate number on the Reader Service Card to indicate your level of interest in this article.

High 151

Average 152

Low 153