

## Hazmat Training

**SECTION**

**1**

  
CFR 49  
§172.702(a)

The Code of Federal Regulations (CFR) Title 49 section 172.702(a) requires that "A hazmat employer shall ensure that each of its hazmat employees is trained in accordance with the requirements prescribed in this subpart". A hazmat employee is defined by the CFR as "a person who is employed by a hazmat employer and who in the course of employment directly affects hazardous materials transportation safety". Some examples are anyone who loads, unloads, handles, tests, fills, prepares hazardous materials for transportation or operates a vehicle used to transport hazardous material. As you can see, this requirement affects almost everyone that works for Airgas.

  
CFR 49  
§172.704  
(c)(ii)(iv)

The 49 CFR §172.704(c)(ii)(iv) requires that this training be completed within 90 days after being employed as a hazardous material worker, or a change in job function. A hazardous material employee "may perform new hazardous materials job functions prior to the completion of training provided the employee performs those functions under the supervision of a properly trained and knowledgeable hazmat employee". Remember, the "properly trained and knowledgeable hazmat employee" must have all their training documented.

  
CFR 49  
§172.704  
(c)(2)

49 CFR §172.704(c)(2) talks about the recurrent training that is required. Originally, the requirement was that the hazmat employee needed to receive documented retraining every 2 years. On October 1, 1996 the law was changed to extend that requirement to provide recurrent hazmat training at least every 3 three years. Recurrent training is designed not to repeat the same material, but rather to update the existing training received with the new requirements. Because of the many government agencies that regulate the activities of Airgas, it is SAFECOR's opinion to provide recurrent training on an annual basis. This will help to satisfy the requirements that are set forth by DOT, FDA, OSHA, etc.

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CFR 49  
§172.704  
(c)(4)(d)

49 CFR §172.704(c)(4)(d) talks about the record keeping requirements. It states that the employer must maintain the records of all training, by employee, for as long as the employee is employed and 90 days thereafter. It is SAFECOR's opinion to retain all training information for the life of the company.

All your training records must include the following:

- The hazmat employee's name.
- The most recent training completion date of the hazmat employee's training.
- A description, copy, or the location of the training materials used.
- Name and address of the person performing the training.
- Certification documenting that the training has been completed.

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## Certification of Training

Hazmat Employee's Name: \_\_\_\_\_

Date of Hazmat Training: \_\_\_\_\_

A description, copy or the location of the training materials used to meet these requirements:

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Name and address of the person providing the training: \_\_\_\_\_

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This certification is in compliance with the requirements found in 49 CFR §172.704. This document certifies that the hazmat employee (insert hazmat employee's name):

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has been trained and tested, as required by this subpart.

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 **NOTE**

**ANY TRAINING THAT IS PERFORMED BY A PREVIOUS EMPLOYER OR OTHER SOURCE MAY BE USED TO HELP SATISFY THIS REQUIREMENT. COMPLETE DOCUMENTATION MUST BE PROVIDED TO SUBSTANTIATE THE TRAINING.**



CFR 49  
§172.704

The three mandatory, 49 CFR §172.704, areas of training are:

1. **General Awareness and Familiarization Training** - The intent of this section is to bring an awareness to the employee regarding the hazards that are found in their work area. To help them be able to recognize and identify what is a hazardous material.
2. **Function-Specific Training** - This is a more intense training that zeros in on the specific hazards that the employee could face in their day-to-day work. This section will have to be somewhat "customized" to fit your location.
3. **Safety Training** - Safety training is broken down into three main topics.
  - Emergency Response -
  - Measures to protect the employee from the hazards they are exposed to.
  - Methods and procedures for avoiding accidents. Proper procedures for handling hazardous materials.



CFR 49  
§177.816

A fourth mandatory, CFR 49 §177.816, area of training is "Driver Training".

Driver training shall include the following:

- Pre-trip safety inspection.
- Use of vehicle controls and equipment - including operation of emergency equipment.
- Operation of the vehicle, including all vehicle maneuvers.
- Procedures for maneuvering tunnels, bridges, and railroad crossings.
- Requirements pertaining to attendance of vehicles, parking, smoking, routing, and incident reporting.

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- Loading and unloading of material, including-
  1. Compatibility and segregation of cargo in mixed loads
  2. Package handling methods
  3. Load securement
- Special requirements for cargo/portable tanks
  1. Operation of emergency control features of the cargo/portable tank.
  2. Special vehicle handling - such as high center of gravity, vehicle stability during turns, deceleration, stopping.
  3. Loading and unloading procedures
  4. Properties and the hazards of the material transported

**NOTE** The training required for drivers may be satisfied by compliance with the current requirements for a Commercial Driver's License (CDL) with a tank vehicle or hazardous materials endorsement. Also, the drivers' road test that is part of the Driver Qualification File satisfies part of this requirement. The written test, that is no longer required for the Drivers Qualification File, can be administered to add to their training.

**NOTE** The training for drivers includes topics such as hours of service, post trip inspection reports, alcohol misuse, substance abuse, etc. Refer to the Airgas Driver Training manual, January 2002 edition for further instructions.

Recently, the DOT authorized a study of the transportation industry to determine the level of driver training provided. The study focused on entry-level driver training. The results of the study showed that only 8.1% of motor carriers that hire entry-level drivers provide adequate training. As a result of this study, we are seeing a movement to legislate additional training.

The Commercial Drivers License was designed to "increase" the knowledge of the driver through a series of tests. The results of the study did not support this goal. The current movement is to either require some new type of mandatory training or to increase the difficulty of testing required by the Commercial Drivers License act.

**NOTE** Individual states may impose more stringent training requirements - contact your state agency for any state issues.

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A system must be implemented that will track your training and notify you of upcoming training required. SAFECOR is supporting the use of the Intelex system. Intelex is a compliance software program that can track anything by time. The system already has an inventory of required training. You can choose the topics that apply to your location. The system allows you to track all your training history. Remember that you must still maintain the original, signed, training class agenda.

The purpose of this program is to provide a model that all Regions can use to comply with docket number HM 126(f). **Since every Region operates in a different manner, it may be necessary to change/modify this procedure to fit the specific and unique challenges your Region faces.**



The first step is to identify your work groups. This will make your training more relevant to your audience. Your work groups should consist of employees that perform like functions.

- **1st work group.** Plant, driver, warehouse, operations, counter sales, sales, etc. These are the work groups that will physically handle, ship, store, and invoice the hazardous materials. Everyone within this group will need to receive detailed function specific training.
- **2nd work group.** Customer service, clerical, human resource, etc. These work groups are associated with hazardous materials, but not with the physical duties associated. The training for this group can be of a more broad term.

You can develop as many work groups, as you deem necessary. The intention is to instruct all employees exposed to the same hazards with the same information. Your training should be consistent.

In OSHA fact sheet No. OSHA 93-07, it provides the most important reason for training. A recent study by the Bureau of Labor Statistics (BLS) reported that 40% of workers injured have been on the job less than one year. Why are new workers more likely to be hurt? BLS studies show that employees injured at work often lack one vital tool to protect themselves: training. The DOT is well aware of this fact. If you receive a DOT compliance review, documented proof of training is mandatory.

Remember that Airgas is self insured for the first \$500,000. - *per incident*. This means that any injury, accident or incident is paid for by our company. As stockholders this means that we all pay.

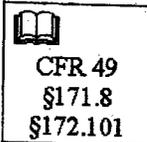
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**General Awareness and Familiarization Training**

**SECTION**

**2**

In this section we will briefly cover the major areas of exposure. The purpose of general awareness and familiarization training is to educate the employee in the basics. A more in-depth study is provided by the "Function Specific" section.



**?** **What is a hazardous material?** A hazardous material is defined in 49 CFR §171.8. "Hazardous material means a substance or material, which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and which has been so designated". Materials and substances that have been so determined are listed in the Hazardous Material table found in 49 CFR §172.101. They are listed alphabetically.



As a word of caution, just because a material is found in the Hazardous Material table, it does not automatically become hazardous. The material must appear in the Hazardous Material table and meet the definition of that hazard class. An example is paint. Paint is listed in the Hazardous Material table. It is listed as a hazard class 3, which is a flammable liquid. If the paint does not meet the definition of a flammable liquid, then it is not a hazardous material by definition. Such as water based paints.

**?** **How many hazard classes are there?** There are nine different hazard classes. The normal welding supply distributor usually handles only a few. The most common are:

**Class 2 - Compressed gases**

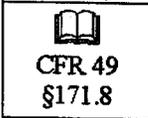
Divided into the following subgroups

- a. 2.1 flammable gas
- b. 2.2 non-flammable gas
- c. 2.3 poison gas – inhalation hazard

**Class 3 - Flammable liquid (gasoline, some paints)**

**Class 4 - Dangerous when wet (calcium carbide)**

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The definitions for the different hazard classes are found in 49 CFR §171.8. Look under the heading hazard class and it will refer you to the appropriate section of the regulations.

**?** *Why do we have hazardous material in the work place?* Many products that you do not consider hazardous are listed in the table, such as oxygen. Oxygen is what we breathe every day to survive, but once it is compressed into a cylinder or changed to its liquid form, it can now present a hazard. Batteries are another example. A battery provides electricity for your car and power for some wheelchairs, but when batteries are shipped in commerce they can be hazardous. Hazardous materials are required by most businesses on a daily basis. Their use has become routine.

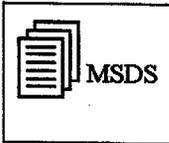
**?** *What special safety precautions should I take while working around hazardous material?* Each facility is required to assess their handling of hazardous materials and develop a list of PPE (personal protective equipment) that is required. For the products that Airgas normally handles the PPE consists of:

- Steel toed boots to protect your feet when handling cylinders.
- Gloves to protect your hands while handling cylinders. If you are involved with washing cylinders then special rubber gloves are to be used to protect your hands from the cleaning solution.
- Safety glasses are to be worn whenever you are exposed to a potential eye injury hazard. Basically, anyone who works or visits within the plant area must wear safety glasses at all times.
- Airgas provides back education training for all employees. The training consists of a one-hour video with discussion about the benefits/techniques of safe lifting practices. At this time, Airgas does not mandate the use of back support belts. They are not part of the PPE requirement.
- Cryogenic work requires the employee to wear a full-face shield and special cold weather work gloves. All exposed skin shall be covered to prevent a cryogenic burn from splashing liquid. The gloves should be loose fitting to prevent the transfer of cold temperature to the skin, and also allow the gloves to be quickly removed in the event of a spill or leak.
- Ask your supervisor about any special PPE that is required at your location due to the special products you ship, store, or handle.

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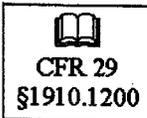
- If your location handles or ships a poison/toxic substance you will need to receive additional PPE. This will be determined by the "degree" of hazard that you will be working with.
- Always remember to keep your PPE in clean, good working order. If it becomes damaged or lost, contact your supervisor.



A MSDS is the document that describes in detail the hazards associated with hazardous material. A unique MSDS is available for every hazardous material that is handled, stored, or transported from your facility. MSDSs are often contained in a book or file that contains an index. Become familiar with the location of the MSDSs and how to read them. Not only do they contain information about the product, they also provide first aid information, emergency response, and safe handling techniques. More detailed information will be provided in the function specific section.



**I have heard about "Employee Right to Know", please explain.** OSHA has



issued regulations to help control chemical exposure in the workplace. This regulation is often referred to as "Hazcom" or "Employee Right to Know". Basically, it requires that all hazardous substances be marked, labeled, and communicated to all employees. Information about these substances is to be made available to all employees. The vehicle that is used to communicate this information is the Material Safety Data Sheet (MSDS). OSHA does not like to see MSDSs kept in the supervisor's or manager's office. They feel this might intimidate the employee and keep them from referring to this information. MSDSs are to be kept where the employee has access to them. They describe the product used, safety precautions, action to take in the event of a spill or leak, etc. The basic rule is that every container, bucket, or vessel that contains a hazardous substance must be properly marked/identified. Further training on MSDSs will be addressed in the "Function Specific" section.



**The Hazardous Material table can be confusing to read.** One of the goals of this course is to provide training and knowledge that will help you understand the table. Remember that you are not required to become familiar with everything in the table, only the products that you store, ship, or handle. We will study the hazardous material table further in the "Function Specific" section.

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**?** *I did not realize that these materials are hazardous. Is my company providing the proper training for my safety?* This is another goal of this training course. Your Region will provide you with the training and education required. It is your responsibility to follow the rules and handle the material in a safe and professional manner. If you have a question, **do not handle or ship the material until you have notified your supervisor.**

**?** *What about labeling?* Labeling/marketing is the only accurate way to identify products. Every container is to be labeled/marked in such a way to identify the contents. One area that causes problems for many distributors is when they fill small containers from the original container with product and the small container is not properly labeled, such as leak detector. Examine all the containers used at your locations to ensure they are properly labeled. This would include paint buckets, spray bottles, etc.

⇒ Never rely on cylinder color to determine the contents. No federal regulation currently exists that mandates a specific color code for industrial cylinders. Airgas is working towards a standard color code, but this will not apply to customer owned cylinders. Again, the only way to determine the contents is to read the label/marketing. If a container does not have the proper label/marketing, contact you supervisor before handling.

**?** *What is the difference between a label and a marking?* A label is a 3.9 inch by 3.9 inch diamond. It only tells the hazard class. A marking is what is placed on the shoulder of the cylinder; this marking is produced according to the guidelines in CGA pamphlet C-7. The diamond on a marking is 1.25 inch by 1.25 inch. It contains the DOT proper shipping name, UN number, hazard class diamond, and precautionary wording.

**?** *When do we use a label?* A label can be used for any product listed in the table in 49 CFR §172.400. You will usually see labels used except for the example listed below. Remember, that if the Hazardous Material table shows that the material requires more than one label, the first label listed is the primary and the second label listed is the subsidiary label. The hazard class number is required to be displayed in the lower point of the diamond for the primary hazard. The subsidiary label(s) are now required to display the hazard class number. This changed on September 30, 2001. There is still a grace period that if your container was properly labeled before the rule change, it is still acceptable until October 1, 2005. After October 1, 2005, all subsidiary labels and placards must display the hazard class number. Airgas has updated their labels and placards to reflect this change.

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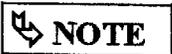
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**Remember that a label and a placard are different. A label is not a placard and a placard is not a label. Both perform different roles in the communication of hazardous material to the public.**

**?** **When do we use the marking?** A marking is authorized in 49 CFR §172.400(a). It states that if a cylinder contains a 2.1 (flammable gas) or 2.2 (nonflammable gas) and it is transported by a private or contract carrier, then it can be marked according to the guidelines in CGA pamphlet C-7. The guidelines provide for the proper shipping name, UN number to be on the left side of the marking, the diamond that represents the hazard class displayed next, and the precautionary wording is contained on the right side. This is the standard way that our industry identifies the contents of a division 2.1 and division 2.2 cylinder.



**Caution:** Cylinders transported by a common carrier must have the 3.9 inch by 3.9 inch label. C-7 markings are under review by the DOT, but are not currently approved for common carrier transportation.



**Note that any 2.3 product (poison – inhalation hazard) must have the required label regardless of the carrier of the product.**

**?** **What is the difference between a private, contract and common carrier?** 49 CFR §390.5 provides the definition for a private carrier. The definition for a common and contract carrier are found in the definitions established during the period that the Interstate Commerce Commission (ICC) existed.

A private carrier is a motor carrier who provides transportation of property by commercial motor vehicle and is not a for-hire motor carrier.

Before January 1, 1996, a **common carrier** was a motor carrier that provided for-hire truck transportation to the general public. The services offered and the prices charged were published in a public tariff and these were the only prices the common carrier could charge.

Before January 1, 1996, a **contract carrier** was a motor carrier that provided for-hire truck transportation to specific, individual shippers based upon private contracts between the carrier and each shipper, stipulating the services offered and the prices charged.

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**NOTE** A welding supply company that transports their own cylinders and/or customer owned cylinders is considered a private carrier. A customer that transports their own cylinders is considered a private carrier.

**?** *What do I do if a container/cylinder does not have a label or marking?* Do not ship or handle this material. Remember that this includes labels or markings that are faded, torn, worn, or illegible. Try to find out where it came from, how it arrived at your facility, etc. Set it in a quarantine area and contact your supervisor.

  
CFR 49  
§172.500

**?** *What is a placard?* A placard is "diamond shaped" and is at least 10.8 inches long on each side. It is usually made from tagboard, plastic, metal, etc. It is displayed on a vehicle, vessel, or container to communicate the hazard to the public. It is displayed on the vehicle or vessel in the point down position (diamond). The lower point of the diamond is required to display the hazard class number. The rules governing the use of placards are found in 49 CFR §172.500. This section tells the color, wording, placement and use of placards.

  
CFR 49  
§172.504

**Remember that not all hazardous material shipments will require placards.** An example is found in 49 CFR §172.504(c). It says that a shipment of a 2.2 product (nonflammable gas) or 2.1 product (flammable gas) does not require a placard as long as the aggregate weight is less than 1,001 pounds. Aggregate weight means the weight of the cylinder and the gas inside.

  
CFR 49  
§172.516

**?** *How many placards are required?* 49 CFR §172.516 requires that the placards must be visible from the direction the vehicle travels. Basically this means that all four sides of the vehicle must display a placard. You must be able to determine what is on the vehicle regardless of the direction it travels.

  
**CAUTION**

**Caution:** All four placards must be identical placards. Review your vehicles for compliance. Remember that the new "Inhalation Hazard Placard" is required as of October 1, 2001.

**?** *Do I need a new set of placards for each shipment?* If the placards are maintained and they still comply with the proper color, wording, etc., then they can be reused. Any placard that is faded, broken, or unreadable cannot be reused. Contact your supervisor for replacements.

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CFR 49  
§172.506

**?** **Who must supply the placards?** 49 CFR §172.506 states "Each person offering a motor carrier a hazardous material for transportation by highway shall provide to the motor carrier the required placards for the material being offered". It does not say that they must be provided free of charge. The shipper is required by law to provide the placards; it is a Region decision whether to charge for the placards. Once you have offered the placards, if the driver refuses them, make sure this is noted on the shipping paper. This will protect you in the event the driver is stopped during transportation without the proper placards.

  
CFR 49  
§172.600

**?** **What is the Emergency Response Guidebook?** The DOT in conjunction with the governments of Canada and Mexico worked to produce what is called the 2000 North American Emergency Response Guidebook. This is a guide to be used by the first responders during the initial phase of a hazardous material incident. We are required by 49 CFR §172.600 to maintain emergency response information for the hazardous materials that we store, ship, load, or otherwise handle during any phase of transportation. Further use of the Emergency Response Guidebook will be covered in the function specific portion.

**Shipping Paper/Manifest:** The CFR does not dictate the name that is given to the document that is used for recording hazardous materials for shipment. For this reason, you will hear this document referred to as shipping paper, hazardous shipping paper, manifest, pick ticket, load sheet, etc. The CFR does dictate the manner in which the hazardous material is entered onto this document, how it is to be completed, and where it is to be kept during shipment. Further information on how to properly complete a manifest will be covered in the function specific portion.

  
CFR 49  
§172.101

**?** **Is a shipping paper/manifest required for each shipment?** Yes, regardless of the amount shipped. If the substance is listed in the table found in 49 CFR §172.101, and it is classified as a hazardous material, a complete proper shipping paper must be completed.

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**?** Do we have to retain the shipping paper/manifest? Yes, 49 CFR §172.201(e) requires that we maintain the shipping paper/manifest for 375 days. Remember that there are many names for a hazardous shipping paper. Whatever document you use to record your hazardous material shipments must be kept for 375 days. The DOT will ask to look at these documents and then ask to see your training records for the employees completing these documents. If you have a salesman that makes occasional deliveries, clerical staff that makes corrections to paper work, etc., they must receive documented training.

  
CFR 49  
§177.848

**?** Can all hazardous materials be shipped together? NO. 49 CFR §177.848 provides a segregation table for hazardous material. This is a safety measure to separate the products in the event of an accident or spill. Everyone who ships a hazardous material should become familiar with the segregation table. Contact your supervisor regarding segregation for the products you ship/handle. Further information on segregation will be covered in the function specific portion.

  
CFR 49  
§172.604

**?** What is an Emergency Response telephone number? 49 CFR §172.604 says "A person who offers a hazardous material for transportation must provide a 24-hour emergency response telephone number (including the area code or international access code) for use in the event of an emergency involving the hazardous material". Most companies list one of the "for hire" emergency contact service providers, such as Chemtrec™ or others. The "for hire" company maintains a list of contact persons who can answer/handle after-hour emergencies. SAFECOR acts as this primary contact to the "for hire" service provider. In turn, SAFECOR tracks down individuals listed on the regional company Emergency Contact list. The most common "emergency" call received has to do with beverage accounts that are low on product or have leaking or frosting equipment. These types of calls are not emergencies under the meaning of §172.604, as they do not pertain to a hazardous materials incident. Work within your Region to educate the customer on the purpose of the emergency number, and provide them with an after-hours service contact number.

The emergency response phone number must be listed on your hazardous material shipping paper. It must be listed in a manner that will draw your attention when looking at the document. It must be listed on the front of the hazardous material shipping paper.

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**Facility Layout:** All employees should become familiar with the layout of their location. Employees in small locations will naturally be familiar with the entire store/location. But larger facilities with many employees will need to conduct tours showing where hazardous materials are stored, handled, and shipped from. OSHA publication OSHA 3088 details the basic steps for preparing for workplace emergencies such as a spill, leak, fire or explosion. Where required by OSHA, firms with more than 10 employees must have a written emergency action plan. Smaller firms may communicate their plans orally. At a minimum the plan must include:

- Escape procedures and escape route assignments.
- Special procedures for employees who perform or shut down critical plant operations.
- A system to account for all employees after evacuation.
- Rescue and medical duties for employees who perform them.
- Means for reporting fires and other emergencies.
- Contacts for information about the plan.

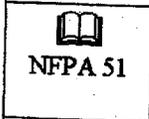
A detailed map of the facility with the evacuation routes marked should be posted. Remember to conduct practice drills to ensure compliance in the event of an emergency. Plans should be reviewed and updated as needed.

**Emergency Phone Numbers:** Emergency phone numbers should be posted by all phones and instruction given to the employees on what to do in the event of an emergency. A clear definition of what constitutes an emergency needs to be determined. The extent that the facility will be able to handle emergencies in house will be determined by location. A list of emergency after-hours phone numbers (6 contacts is preferred) will also be provided to the director of SAFECOR. This will allow Airgas to contact someone on the Region level in the event of an after-hour emergency. Chemtrec is the number one source of after-hour calls.

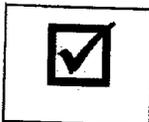
**?** **What is SAFECOR?** SAFECOR is the safety and environmental division of Airgas. SAFECOR is an acronym for SAFETY, Environmental, COMPLIANCE and Risk Management. SAFECOR has "Field Representatives" that travel within Airgas providing training, education, and assistance with any operational, safety, regulatory, environmental question/problem. SAFECOR provides guidance with updated SAFECOR Bulletins that are distributed to the field. SAFECOR is provided for your benefit, please use it. If you have any questions/problems, contact your SAFECOR Field Representative.

Prepared by: <i>John Anderson</i>	Date: April 1, 2003	Revision Date: April 1, 2003	Revision Number: 3
Approved by: <i>Susan A. Young</i>	Date: April 10, 2003	Manual Number: 0015	Page 15 of 55

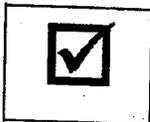
## HM 126f TRAINING MANUAL



**Storing Hazardous Material at your location:** OSHA, NFPA, and DOT all regulate the storage of hazardous material. The most common rule is to separate any oxidizer from any flammable product by either 20 feet or by a firewall that is at least five feet tall and provides one half hour fire protection. Refer to NFPA (National Fire Protection Association) Publication 51 for further information. Cylinder nesting is also important. Cylinder nesting is a way to organize your cylinders so that they maintain contact with each other, or a wall, on three points. Cylinder nesting is recognized by OSHA, NFPA and the CGA. Many facilities are being cited for improper cylinder storage. The alternative is to either secure the cylinders with chains and/or racks.



**Fire Extinguishers and Fire Protection:** There are different opinions and different requirements concerning who must be trained, what to do in the event of a fire. You are required by state and federal codes to maintain fire extinguishers within your facility. The facility is to maintain their fire extinguishers, having them inspected at least annually. General good safety rules also dictates employee training. Whether your company policy is to respond to the fire or evacuate the area, training on the proper use of a fire extinguisher is important. Remember the fire extinguishers in your vehicles. They are also required to be inspected and marked accordingly on at least an annual basis.



**Housekeeping is very Important.** Housekeeping is one of the major ways to check your locations attention to safety. No plant that has poor housekeeping can really be pro-active in their safety efforts. This point is obvious to OSHA inspectors, and their safety audit list specifically addresses this very important point. Housekeeping is also a major factor in fire prevention. Review your facility. Everyone is responsible for maintaining a safe, clean, work environment.

Prepared by: <i>John Anderson</i>	Date: April 1, 2003	Revision Date: April 1, 2003	Revision Number: 3
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# HM 126f TRAINING MANUAL

## HM 126 General Awareness Test

\_\_\_\_\_  
Haz-Mat Employee Name

\_\_\_\_\_  
Date

\_\_\_\_\_  
Trainer / Address of Trainer

\_\_\_\_\_  
Location

The training material for this test is provided in the HM 126 instruction material presented in today's class. A copy of the instructional material should be maintained for further reference.

This test certifies that the above named hazmat employee has been trained and tested as required by 49 CFR §172.700.

### Questions:

1. What does MSDS stand for?
2. Where are MSDSs kept at your location?
3. When must an employee have access to a MSDS?
4. What is the goal of the MSDS?
5. What does PPE stand for? Name three types of PPE.
6. What is a label as defined by 49 CFR?

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# HM 126f TRAINING MANUAL

## HM 126 General Awareness Test - (continued)

7. What is a marking as defined by CGA pamphlet C-7?
8. Name the hazard class and provide an example of a gas found in that hazard class.

Hazard Class	Example Gas
2.1	
2.2	
2.3	

9. What is a placard?
10. When are placards required, how many should the average transport vehicle display?
11. Where should the average transport vehicle display placards?
12. What is the Emergency Response Guidebook? What version do you use?
13. When do you need emergency response information?
14. When do you need a hazardous material shipping paper?

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**SECTION**  
**3**

**Function Specific Training**

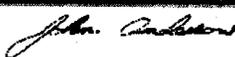
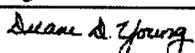
  
CFR 49  
§172.101  
§172.200

**Hazardous Material Shipping Papers:** 49 CFR §172.200 provides the guidelines for the completion of your hazardous material manifest. *An improperly prepared manifest is one of the most common violations noted by the DOT.* Most

manifests will be either computer generated, or they will already have the proper shipping name entered. Your function will be to fill in the quantity of product shipped. If you do have to add a hazardous material make sure it is the correct information. You will often hear the term "proper shipping name". The proper shipping name is the shipping name listed (IN ROMAN TYPE) in the hazardous material table, 49 CFR §172.101. It contains the information found in columns 2,3,4, and sometimes 5. Example, look up the entry for Argon. The proper shipping name is:

**Argon, compressed 2.2 UN 1006**

Refer to the page taken from 49 CFR §172.101. In the example for argon, compressed you will note the heading in column (2) Hazardous material descriptions and proper shipping names. This is the proper shipping name that is used by the DOT to describe this hazardous material. If any information in column (2) is printed in *italics*, this information is optional. Argon, refrigerated liquid (*cryogenic liquid*) is an example. *Cryogenic liquid* may be used to help define the entry if you prefer.

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# HM 126f TRAINING MANUAL

**§172.101 Hazardous Materials Table**

Symbols (1)	Hazardous materials descriptions and proper shipping names (2)	Hazard class or Division (3)	Identification Numbers (4)	PG (5)	Label Codes (6)	Special provisions (7)	Packaging (§173.***) (8)			Quantity limitations (9)		Vessel stowage (10)	
							Exceptions (8A)	Non-bulk (8B)	Bulk (8C)	Passenger aircraft (9A)	Cargo aircraft only (9B)	Location (10A)	Other (10B)
	Antimony pentafluoride	8	UN1732	II	8, 6.1	A3, A6, A7, A10, N3, T12, T26	None	202	243	Forbidden	30L	D	40
	Antimony potassium tetrates	6.1	UN1551	III	6.1		153	213	240	100 kg	200 kg	A	
	Antimony powder	6.1	UN2871	III	6.1		153	213	240	100 kg	200 kg	A	
	Antimony sulfide and a chloride, mixtures of	Forbidden											
	Antimony sulfide, solids, see Antimony compounds, inorganic, n.o.s.												
D	Antimony tribromide, solid	8	NA1549	II	8		154	212	240	25 kg	100 kg	A	13
D	Antimony tribromide, solution	8	NA1549	II	8	B2	154	202	242	1L	30L	C	13
	Antimony trichloride, liquid	8	NA1733	II	8	B2	154	202	242	1L	30L	C	40
	Antimony trichloride, solid	8	NA1733	II	8	B106	154	212	240	15 kg	50 kg	A	40
D	Antimony trifluoride, solid	8	NA1549	II	8		154	212	240	25 kg	25 kg	A	13
D	Antimony tribromide, solution	8	NA1549	II	8	B2	154	202	242	1L	30L	C	13
	Aqua ammonia, see Ammonia solution, etc.												
	Argon, compressed	2.2	UN1006		2.2		306	302	314, 315	75 kg	150 kg	A	
	Argon, refrigerated liquid (cryogenic liquid)	2.2	UN1951		2.2		320	316	318	50 kg	500 kg	B	
	Arsenic	6.1	UN1558	II	6.1		None	212	242	25 kg	100 kg	A	46
	Arsenic acid, liquid	6.1	UN1553	I	6.1	T18, T27	None	201	243	1L	30L	B	
	Arsenic acid, solid	6.1	UN1954	II	6.1		None	212	242	25 kg	100 kg	A	
	Arsenic bromide	6.1	UN1555	II	6.1		None	212	242	25 kg	100 kg	A	12, 40
	Arsenic chloride, see Arsenic trichloride												

Prepared by: <i>John Carlson</i>	Date: April 1, 2003	Revision Date: April 1, 2003	Revision Number: 3
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In column (3) the heading is Hazard class or Division. Argon, compressed is 2.2. For compressed gases you will find three classes or divisions:

2.1	Flammable gas
2.2	Nonflammable gas
2.3	Poison gas – inhalation hazard

**NOTE** Note: The word poison and toxic are interchangeable.

Column (4) is the Identification Numbers. For argon compressed the UN number is 1006. UN stands for United Nations. The United Nations works to establish international shipping laws for hazardous materials. The intent is to be able to ship hazardous material anywhere in the world and be able to identify the product by the proper shipping name and UN number. For some products you may see a NA number. This stands for North America. This is not an international shipping number.

**NOTE** Our government continues to try to bring the United States into compliance with international hazardous material shipping rules. This is the reason you have seen the implementation of docket number HM 181 and docket number HM 215B.

For a cylinder(s) of argon the proper shipping name is:

Argon, compressed 2.2 UN 1006

49 CFR §172.202 (5)(c) lists the requirement to enter either before or directly after the proper shipping name the quantity of hazardous material and container type (cyl) being shipped. For most locations this is accomplished by entering the total number of cylinders shipped by proper shipping name. For the above example:

13 cyl. Argon, compressed 2.2 UN 1006

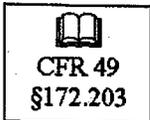
or

Argon, compressed 2.2 UN 1006 13 cyl.

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Remember that the proper shipping name must start at the far left hand side of the hazardous material shipping paper and proceed to the right. Remember that the proper shipping name must be in the same sequence that it appears in the Hazardous Material table.



The regulations are the same if you need to ship a material under a "generic" proper shipping name. 49 CFR §172.203(k) provides the guidelines for the use of generic proper shipping names. The basic rule is that if the substance is described by its technical name then you must use it, but if the substance is not or is a mixture, then you can use the generic proper shipping names. An example is compressed gas, n.o.s. N.O.S. stands for Not Otherwise Specified. So if you had a cylinder that contained argon and carbon dioxide, the proper shipping name would be:

Compressed gas, n.o.s. (argon, carbon dioxide) 2.2 UN 1956

You can either choose the singular or the plural version, gas or gases. You can either choose upper case or lower case lettering. SAFECOR suggests that you maintain the same style throughout your manifest. Also, with most generic proper shipping names you are required to list the two components that most predominately contribute to the hazard. You are not required to list the percentage, just the components.



A note of caution, not all generic proper shipping names require the listing of the two components that most predominately contribute to the hazard. 49 CFR §172.203(k)(3) states that if the proper shipping name, as listed in the Hazardous Material table, is identified by the letter G in column 1 then at least two components that most predominately contribute to the hazard must be listed.

Review your locations hazardous material manifest. Make sure you are familiar with all the products that are shipped and received. If your location handles a poison or toxic substance (inhalation hazard), follow the guidelines set forth by your location.

Column (5) lists the packaging group. There are no packing groups for compressed gases. The packing group number (I, II, III) indicates the degree of danger.

I	Great
II	Medium
III	Minor

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The packing group, if required, must follow the basic description (after the UN number) with the prefix PG. Example, PGI or PGII. Such as:

Anisole 3 UN 2222 PG III

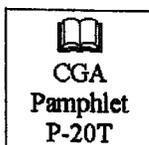
Column (6) list the label(s) required to properly ship this material. The first label listed is the primary label, any additional labels are subsidiary labels. The primary label is required to show the hazard class in the lower point of the diamond. The subsidiary label(s) are now required to display the hazard class number. This changed on September 30, 2001. There is still a grace period that if your container was properly labeled before the rule change, it is still acceptable until October 1, 2005. After October 1, 2005, all subsidiary labels and placards must display the hazard class number. Airgas has updated their labels and placards to reflect this change.

Column (7) lists any special provision that may apply to this material. If a number or code appears in this column, refer to the appendix at the end of the table (Code/special provisions) for further information. For division 2.3 gases, this column will assign the Hazard Zone. You will find four listed hazard zones. Column (7) will indicate the zone 1, 2, 3, 4. But you will need to enter Zone A, Zone B, etc.

1	Zone A
2	Zone B
3	Zone C
4	Zone D

Also, the wording "Inhalation Hazard" must be entered as part of the proper shipping name. Example - Chlorine:

Chlorine 2.3 UN 1017 poison-inhalation hazard Zone B



The Hazard Zone is based on the LC<sub>50</sub> rating. LC is the Lethal Concentration as determined by exposing a population of laboratory animals to the hazardous material. CGA P-20T defines LC<sub>50</sub> as "A concentration of a substance in air, exposed to which for a specific length of time is expected to cause the death of 50 percent of the entire experimental animal population." The LC<sub>50</sub> rating is listed in parts per million (PPM). For further information refer to CGA pamphlet P-20T.

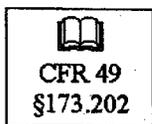
Prepared by: <i>John Anderson</i>	Date: April 1, 2003	Revision Date: April 1, 2003	Revision Number: 3
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If the number is preceded by a letter it refers to the following. These provisions apply only to that form of transportation.

A	Aircraft
B	Bulk
H	Highway
N	Non-bulk
R	Railroad
T	IM Portable Tanks
W	Water

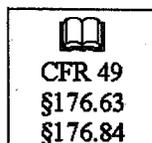
An IM portable tank is an Intermodal portable tank designed primarily for international intermodal use.



CFR 49  
§173.202

Column (8) lists any special packaging authorizations. You will see at the top of the table it indicates 173 \*\*\*. This means that if a number is listed in column (8), then you need to refer to the appropriate section of 49 CFR §173. Example, if you refer to gasoline, it lists 202 in column 8b. If you refer to §173.202, it will tell what the requirement is.

Column (9) lists the quantity limitations if you will be shipping this material by passenger aircraft or railcar (9A) or cargo aircraft (9B). With all the media attention that the airline industry has received since the Value Jet incident, be prepared to see an increase in regulations in this area.



CFR 49  
§176.63  
§176.84

Column (10) lists any special provisions for vessel stowage. Both columns A and B pertain to vessel stowage. The meaning of the letters, A, B, C, can be found in 49 CFR §§176.63 and 176.84.

Refer to the beginning of the table to Column (1). In column (1) you will find the following letters and signs (+, A, D, G, I, W). Note that not all entries have this notation.

- The "+" fixes the proper shipping name, hazard class and the packaging group for that entry without regard to whether the material meets the definition of that class. An appropriate alternate proper shipping name and hazardous class may be authorized by the Associate Administrator for Hazardous Material Safety.

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- The letter "A" restricts the application of requirements of this subpart to materials offered or intended for transportation by aircraft, unless the material is a hazardous substance or a hazardous waste.
- The letter "D" provides the proper shipping name for domestic transportation, but they may not be correct for international transportation. An example is Ammonia, Anhydrous. For domestic transportation, it is shipped as a division 2.2 nonflammable gas with the addition of the "inhalation hazard" warning. For international transportation, it is shipped as a division 2.3 poison inhalation hazard, with a subsidiary hazard of corrosive.
- The letter "G" identifies proper shipping names for which one or more technical names of the hazardous material must be entered in parentheses, in association with the basic description.
- The letter "I" provides the proper shipping name for international shipments. International Transportation is defined in 49 CFR §171.8.
  1. Between any place in the United States and any place in a foreign country.
  2. Between places in the United States through a foreign county.
  3. Between places in one or more foreign countries through the United States.
- The letter "W" pertains to the transportation by vessel unless the material is a hazardous substance or hazardous waste.

**NOTE**

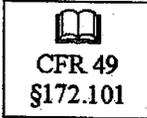
If you ship a cylinder in conjunction with a DOT Exemption, it must be noted on the manifest. 49 CFR §172.203 states "Each shipping paper issued in connection with a shipment made under an exemption must bear the notation "DOT-E" followed by the exemption number assigned and so located that the notation is clearly associated with the description to which the exemption applies". Most locations will list the DOT-Exemption number on the same line as the material, but make sure it is after the proper shipping description. Also, the container must be marked with the DOT Exemption number. Refer to the actual DOT exemption for instructions.



CFR 49  
§172.203

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Following the hazardous material table in 49 CFR §172.101 you will find a table (table 1) that lists all the hazardous substances that have a RQ (reportable quantity). What this means is that if we ship a cylinder/container that contains *greater than or equal to* the reportable quantity listed in the table, we must enter the letters RQ either directly before or after the proper shipping name.

If we are handling a cylinder/container that has a RQ value that develops a leak or spill we must report this to the United States Coast Guard National Response Center @ 1-800-424-8802 or 1-202-267-2675. The quantity that is released must exceed the RQ limit. If you have any doubt if the leak was great enough to prompt a report, notify your supervisor immediately.

All hazardous material shipping papers must list an emergency response telephone number. This number must be displayed on the front of the hazardous material shipping paper and in a manner that distinguishes it from the text. This number must be monitored at all times the hazardous material is in transportation, including storage incidental to transportation. Basically, this means that the number must be answered 24 hours a day, 7 days a week by a competent individual that can provide answers and or contact someone who can. Most locations will contract with a "1-800" company like CHEMTREC. CHEMTREC acts as the "filter" for all calls pertaining to an incident. They maintain a listing of contacts within your Region for after-hours emergencies.



**What is a shipper certificate and when do I need to issue one?** The definition for a shipper's certificate is found in 49 CFR §172.204. An example is:

"This is to certify that the above-named material are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation."

This is only one example given. Other examples are provided if you are going to ship the product by air, or international.

The text is designed to assure the carrier that the shipper is operating according to the law. The shipper is required to provide this text on the hazardous material shipping paper and sign it. It must be legibly signed by a principal, officer, partner, or employee of the shipper. It may be legibly signed mechanically, by typewriter or other mechanical means.

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 **NOTE**

Note that a shipper's certificate is not required of a private carrier transporting his own shipments. This means that a welding supply company transporting their own cylinders or customer owned cylinders would not need a shipper's certificate. Our industry recommends that ALL shipments of hazardous material contain a properly prepared and signed shipper's certificate. This will eliminate the possibility of not completing it for a contract or common carrier.

If your hazardous material shipping paper is more than one page, then all the pages must be numbered. Example page 1 of 2, page 2.



CFR 49  
§172.201

All hazardous material shipping papers must be legible and printed in English.

The name of the shipper is not required unless the hazardous material is to be transported by water. Note that there is a pending legislation that may require a shipping paper to contain the name and address of the person offering the shipment and the name and address of the person receiving the shipment.



CFR 49  
§172.201



**?** What are the rules for having hazardous and non-hazardous material on the same shipping paper? 49 CFR §172.201 states that you have three options:

1. You can enter an "X" in the HM (Hazardous Material) column for each shipment of hazardous material.
2. You can enter all the hazardous material first.
3. You can enter the hazardous material in a different color or some other means to draw attention to it.

Remember that the hazardous material shipping paper must be on top of any other paperwork your driver may be carrying. This is the first thing the DOT inspector will want to see.

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**Where are hazardous material shipping papers to be kept during shipment?** 49 CFR §177.817 states that the hazardous material manifest must be kept within the drivers reach when restrained by the lap belt. It must be easily seen by anyone entering the cab of the vehicle. If the hazardous material shipping paper is carried with other documents it must be clearly distinguished from the rest. Basically, the driver needs to have the hazardous material manifest within arms reach at all times. When the driver leaves the vehicle, the hazardous material manifest must be either placed on the drivers seat or placed in the inside pocket on the driver's door. This requirement will allow an emergency responder to find and read the hazardous material manifest in the event of an emergency and the driver is not available.

  
CFR 49  
§177.817

  
CFR 49  
§172.600

**2000 North America Emergency Response Guidebook:** 49 CFR §172.600 requires us to maintain emergency response information for the hazardous materials that we store, ship, load, or otherwise handle during any phase of transportation. This means that we must maintain this information in all our vehicles and facilities. Airgas complies with this requirement by having a legible copy of the 2000 North America Emergency Response Guidebook in the vehicles and also a copy at each location. All employees must receive training on how to read and understand this information.

The guidebook is divided into 4 different color coded sections. The first section (yellow color coded) lists all the substances numerically by UN/NA number. The second section (blue color coded) lists all the substance alphabetically by substance. The third section (orange color coded) contains the Emergency Response guides. The fourth section (green color coded) contains information on initial isolation and protective action distances. Once you have determined which guide to refer to, the guide is divided into the following sections:

**Potential Hazards**

Describes potential hazards that the material may display in terms of a fire and/or explosion. Also, the health effects upon exposure.

**Public Safety**

Provides suggestions for public safety measures based on the situation at hand.

Provides suggestions for protective clothing, respiratory protection and initial isolation of the incident area. Distances for suggested evacuations are also provided.

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### Emergency Response

Provides suggestions for emergency response actions and first aid. The first aid suggestions are only the basics, trained medical personnel should make the final decision.

### Table of Initial Isolation and Protective Action Distances

This table lists the substances numerically by UN number. The table provides suggested distances useful to protect people from vapors resulting from spills involving dangerous goods which are considered poison/toxic by inhalation. The distance is the area that is likely to be affected within the first 30 minutes of a spill. As the time span increases, so can the physical area.

The table also has an appendix that lists "Dangerous Water-Reactive Material". The table lists the substance numerically by UN number and also the toxic vapor that is formed with the addition of water.



#### Exercise

Look up the substance that is classified as UN 1072. Since we know the UN number we would refer to the yellow coded pages that list the products numerically by UN number. We find that UN 1072 refers to Oxygen, compressed. What guide pertains to this substance? Guide number 122. If we refer to guide 122 (orange coded pages) it provides the basic information that an emergency responder would need.



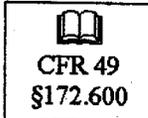
#### Exercise

Look up the substance chlorine. Since we know the name of the substance we refer to the blue coded pages that list the products alphabetically. We find that chlorine is highlighted. If the index entry is highlighted, LOOK FOR THE ID NUMBER AND THE NAME OF THE SUBSTANCE IN THE TABLE OF ISOLATION AND PROTECTIVE ACTION DISTANCES. If necessary, BEGIN PROTECTIVE ACTION IMMEDIATELY.

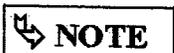
Review all the substances that your location ships, handles, or stores. You need to be prepared to handle an emergency if it should arise. Never try to respond or correct an incident without the proper training and proper equipment. Always work within the "buddy system". Never attempt to make repairs or rescue attempts alone.

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The rules covering Emergency Response information are found in 49 CFR §172.600. It states that anyone who offers for transportation, accepts for transportation, transfers, stores or otherwise handles must comply with this subsection. This means that we must also provide Emergency Response Information to our customers that pick up hazardous material. Most locations comply with this rule by either printing the Emergency Response Information on the back of the invoice or attaching the information to the invoice. Is your Emergency Response Information based on the 2000 edition, 1996 edition or the 1993 edition?



**NOTE** Remember that your Emergency Response information is to be carried with your Hazardous Material Shipping Paper. You will have a hard time explaining compliance to the officer, if the DOT Inspectors find the Emergency Response Guidebook shoved in the glove compartment, shoved under the seat, etc.

**DOT Exemptions:** If a cylinder manufacturer wants to produce a cylinder to 3AA 2015 specification, 49 CFR §178.37 provides the guidelines for which it is to be produced, tested, marked, etc. But if a manufacturer would like an "exemption" from certain portions of the regulations, they can apply for an "exemption". RSPA (Research and Special Programs Administration) is the division of the DOT that issues/approves exemptions.

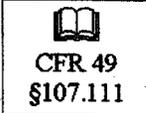
A cylinder that is produced under a DOT exemption will have that exemption number stamped on the cylinder. Instead of "3AA 2400" it may be stamped "DOT-E 9370", for example. In order to be able to fill, test or transport this cylinder you will need to have a current copy of the exemption. Some exemptions will state that a copy must be carried in the vehicle that transports the cylinder; others might state that the cylinder may only be used for a specific period of time before it must be taken out of service. Refer to the specific exemption for clarification.

Another example of an exemption is one that allows the "users" to perform an act that is exempt from certain regulations, such as DOT-E 6530. This exemption allows certain flammable gases to be filled to 110% of their marked service pressure. The exemption number that allows this (DOT-E 6530) must be marked on the cylinder/container. This can be accomplished by decals, painting, etc.

A DOT exemption has an expiration date. Most exemptions are only valid for 1 or 2 years. You are required to maintain a current copy.

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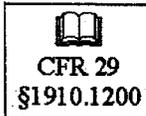
# HM 126f TRAINING MANUAL



If the exemption is issued to a manufacturer to allow them to produce a special cylinder, then you need to obtain a copy of the exemption in order to operate under its terms. But if the exemption allows the operator to perform an act or function that is contrary to CFR regulations, you must be listed on the exemption as a "party to the exemption". **You are not allowed to participate in this type of exemption unless you are listed on the exemption by RSPA.** Only the DOT can grant "party to the exemption" status. 49 CFR §101.107 provides the guidelines to apply for "party to the exemption status".



**Review your operation to see what exemptions you are currently operating under. Check your last hydrostatic renewal application, as it will list the exempt cylinders your facility indicated it would be hydrotesting. Failure to produce current copies of any exemption you are operating under is a DOT violation.**



**Reading and Understanding a MSDS:** A MSDS (Material Safety Data Sheet) is a printed document, concerning a hazardous chemical, that is prepared according to OSHA regulations found in 29 CFR §1910.1200.

Two of the main uses are:

- A training and reference tool for workers.
- A resource for emergency responders.

A MSDS should contain the following information:

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>• Chemical product and company identification</li> <li>• Composition, information on ingredients</li> <li>• Hazard identification</li> <li>• First aid measures</li> <li>• Fire fighting measures</li> <li>• Accidental release measures</li> <li>• Handling and storage</li> </ul> | <ul style="list-style-type: none"> <li>• Exposure control, personal protection</li> <li>• Physical and chemical properties</li> <li>• Stability and reactivity</li> <li>• Toxicological information</li> <li>• Ecological information</li> <li>• Disposal considerations</li> <li>• Transport information</li> <li>• Regulatory information</li> </ul> |
|--|--|

Refer to the oxygen MSDS provided by your instructor. Most MSDSs will be organized in a similar manner. The facility is required to maintain a current MSDS for all the hazardous material that is stored, used, or handled at their facility. They must be available to the employee at all times. An inventory of MSDSs shall be maintained as well.

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**Segregation Tables:** The question is often asked about segregation of cylinders during shipment. 49 CFR §174.81 provides the guidelines for segregation, it states "Hazardous material may not be loaded, transported, or stored together, except as provided in this section, and in accordance with the following Table." Refer to the attached table.

### Segregation Table for Hazardous Materials

Class or Division	Miles	L1 L2	L3	L4	L5	L6	2.1	2.2	2.3 Gas Zone A	2.3 Gas Zone B	3	4.1	4.2	4.3	5.1	5.2	6.1 Liquids PG1 Zone A	7	8 Liquids Only
Explosives 1.1 and 1.2	A	*	*	*	*	*	X	X	X	X	X	X	X	X	X	X	X	X	X
Explosives 1.3		*	*	*	*	*	X		X	X	X		X	X	X	X	X		X
Explosives 1.4		*	*	*	*	*	O		O	O	O		O				O		O
Very insensitive explosives 1.5	A	*	*	*	*	*	X	X	X	X	X	X	X	X	X	X	X	X	X
Extremely insensitive explosives 1.6		*	*	*	*	*													
Flammable Gases 2.1		X	X	O	X				X	O							O	O	
Non-toxic, non-flammable gases 2.2		X			X														
Poisonous gases Zone A, 2.3		X	X	O	X		X				X	X	X	X	X	X			X
Poisonous gases Zone B 2.3		X	X	O	X		O				O	O	O	O	O	O			O
Flammable Liquids 3		X	X	O	X			X	O						O		X		
Flammable solids 4.1		X			X			X	O								X		O
Spontaneously combustible materials 4.2		X	X	O	X			X	O								X		X
Dangerous when wet materials 4.3		X	X		X			X	O								X		O
Oxidizers 5.1	A	X	X		X			X	O	O							X		O
Organic peroxides 5.2		X	X		X			X	O								X		O
Poisonous Liquids PG1 Zone A, 6.1		X	X	O	X		O				X	X	X	X	X	X			X
Radioactive materials 7		X			X		O												
Corrosive liquids 8		X	X	O	X			X	O		O	X	O	O	O		X		

- The absence of any hazard class, division, or a blank space in the Table indicates no restrictions apply.
- An "X" in the table indicates that the materials may **not** be loaded, transported, or stored together during transportation.
- An "O" in the table indicates that the material may **not** be loaded, transported, or stored together during transportation **unless** separated in a manner that, in the event of leakage from packages under conditions normally incident to transportation, commingling of hazardous material would not occur.

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- A "\*" in the table pertains to segregation of Class 1 explosives.
- An "A" in the second column of the table pertains to Division 1.1 (Class A explosive) and Division 1.5 (blasting agents).

For the average welding supply company the only restrictions may come from the transportation of a class 2.3 Zone A or Zone B poison – inhalation hazard. **If you have any questions, contact your supervisor before making any shipment.**


CFR 49
§ 72.101
§172.504
§172.519
§172.560

**Placarding Rules:** Placards are a means to communicate the hazards of the products we transport to the public. Just as a cylinder needs a marking/label, a commercial vehicle transporting hazardous material needs placards. **Note that not all shipments of hazardous material require placarding.** The aggregate gross weight (this is the weight of the cylinder and the gas) must meet or exceed the placarding limit. Example, for a division 2.2 product the placarding limit is 1,001 pounds aggregate. If you were only shipping one (1) oxygen cylinder that

had an aggregate weight of 160 pounds, the shipment would not require placards. If you were shipping seven (7) oxygen cylinders that had an aggregate weight of 1,120 pounds, the shipment would require placards. Refer to the hazardous material table in 49 CFR §172.101. In column (3) it will list the division or class for the product you wish to ship. Once you know the division or class, refer to 49 CFR §172.504 table 1 and/or table 2. The table will instruct you on which placard is required. 49 CFR §172.519 through §172.560 provides the size, color, symbols, etc. that must be included on the placards.

Placards must always represent the hazards that are present. In the example given above, you were not required to display placards when only hauling the one oxygen cylinder, but you may. Once you delivered the oxygen cylinder, and you no longer had a cylinder on board, you must remove the placards.

Some exemptions to the normal placarding rules are found in 49 CFR §172.504. The common ones that pertain to the welding supply distributors are:

1. A Non-flammable gas placard is not required on a vehicle which contains non-flammable gas if the vehicle also contains flammable gas or oxygen and it is placarded with Flammable Gas or Oxygen placards.

**Example:** If your load of cylinders consists of nitrogen, argon and acetylene, you would only need to placard for the Flammable gas. You could display placards for both the Non-flammable gas and the Flammable gas if you would like.

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**Example:** If you have a pickup that is hauling both oxygen and acetylene and the weight requires you to display placards, you could legally only display the Flammable gas placard (4 – one on each side of the vehicle).



Remember that the 1,001 limit is not for just one class, it is the combined weight of all hazardous material. Example, if you had 600 pounds of oxygen cylinders and 500 pounds of acetylene cylinders, you would exceed the 1,001 pound limit and this load would require placards. You would have two choices:

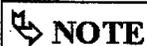
- Flammable gas placard
- Flammable gas and Non-flammable gas placard

You can placard for loads less than the 1,001 pound limit. It is suggested that you placard when the weight approaches the limit. It is better to be safe than sorry.

“You seldom win an argument on the side of the road.”

**Any shipment of a division 2.3 poison – Inhalation hazard must be placarded.**

1. For domestic shipments of oxygen, compressed or oxygen refrigerated liquid, the Oxygen placard can be used in place of the Non-flammable gas placard.



**NOTE** Remember that a label and a placard are different. A label is not a placard and a placard is not a label. Both perform different roles in the communication of hazardous material to the public. If you have any questions about their roles, contact your supervisor.



CFR 49  
§171.8

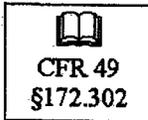
**Placarding for Bulk Shipments:** Bulk packaging is described in 49 CFR §171.8. It is defined as “a packaging, other than a vessel or barge, including a transport vehicle or freight container, in which hazardous materials are loaded with no intermediate form of containment and which has:

1. A maximum capacity greater than 450 L (119 gallons) as a receptacle for a liquid.
2. A maximum net mass greater than 400 kg (882 pounds) and a maximum capacity greater than 450 L (119 gallons) as a receptacle for a solid; or
3. A water capacity greater than 454 kg (1000 pounds) as a receptacle for a gas”

The normal bulk packaging that is used by a typical welding supply company is a cargo tank (for cryogenic liquid). Other examples are a tube trailer for compressed gas or a hopper for calcium carbide.

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The marking requirements for bulk packaging are found in 49 CFR §172.302. There are three choices, but the average welding supply company will choose one of the following:

1. You can either use the proper placard with the UN number listed on it as prescribed in 49 CFR §172.302. In addition, you will need to have the proper shipping name listed next to the placard.
2. You can use the placard that represents the hazard class and then display the UN number on an orange panel next to it. In addition, you will need to have the proper shipping name listed next to the placard.

This information must be displayed on each side and each end.

If the bulk package is being operated under the terms of an exemption, then that exemption number must be plainly and durable marked "DOT - E", followed by the exemption number assigned.

The required size of the marking is found in 49 CFR §172.302.

Note that all of this information must be kept separate from any advertisement that is displayed on the cargo tank that would distract from the marking's intent.

**HM 215:** December 29, 1994 U.S. government passed legislation to bring the domestic shipment of hazardous material more in compliance with International standards. The docket is referred to as HM 215. The mandatory compliance date was October 1, 1996. It basically redefined some of the proper shipping names. It changed a total of approximately 30% of all entries in the Hazardous Material table. The changes have been minimal for most welding supply distributors. Review your hazardous material shipments for compliance.

HM 215 established Rare Gases. They are defined as Argon, Helium, Krypton, Xenon, Neon, and Radon. These gases are important to remember because along with these rare gases are some new proper shipping names.

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Some of the most common are:

Rare gas mixtures, compressed
Rare gas and oxygen mixtures, compressed
Rare gas and nitrogen mixtures, compressed
Compressed gas, oxidizing, n.o.s.
Carbon dioxide and oxygen mixtures, compressed
Carbon dioxide and nitrous oxide mixture

Examples of their use:

If you ship an argon and oxygen mixture it is shipped as a:

Rare gas and oxygen mixtures, compressed 2.2 UN 1980

If you ship an argon and helium mixture it is shipped as a:

Rare gas mixtures, compressed 2.2 UN 1979

If you ship an argon and carbon dioxide mixture it is shipped as a:

Compressed gas, n.o.s. (argon, carbon dioxide) 2.2 UN 1956



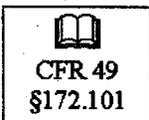
**Why aren't the two components in the Rare gas and oxygen mixture listed like they are for the compressed gas, n.o.s.?** In the Hazardous Material table, the proper shipping name rare gas and oxygen mixture is not preceded by a G in column 1. Since there is no G listed, the DOT does not require the two components to be listed.



**If argon is a rare gas why is the argon, carbon dioxide mixture listed as a compressed gas n.o.s.?** Argon is a rare gas, but no proper shipping name is listed for a rare gas and carbon dioxide mixture so you must use the "generic" compressed gas n.o.s. proper shipping name.

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The rule is that if the substance is listed in 49 CFR §172.101 (Hazardous Material Table) by name, then you must use this proper shipping name. If the substance is not defined in the Hazardous Material Table, then you must use a "generic" proper shipping name such as Compressed gas, n.o.s.

HM 215 also introduced the definition of an oxidizing gas. An oxidizing gas is one that contributes to the atmosphere more oxygen than air does. The DOT has determined that an oxidizing gas is one that contains more than 23.5% oxygen. **Example:** If you ship an argon and oxygen cylinder it would be shipped as a:

Rare gas and oxygen mixtures, compressed 2.2 UN 1980

But if you ship the same argon and oxygen mixture and the oxygen content was over 23.5%, it would have to be shipped as a:

Compressed gas, oxidizing n.o.s. (argon, oxygen) 2.2 UN 3156

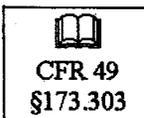
HM 215 also changed some of our cylinder markings. An example is nitrous oxide. Nitrous oxide is now classified as a nonflammable and an oxidizer. It will require the use of both the green nonflammable diamond and the yellow oxidizer diamond.

N.O.S. classifications for liquefied gases were added to separate them from the compressed gas, n.o.s. entries.

If your location handles poison/toxic, contact your supervisor for any updates.



**Remember that your hazardous material shipping paper and the cylinder marking/labeling must match.**



**Cylinder Settled Pressure:** Before October 1, 2002 (HM-220D), 49 CFR §173.302(e) described the requirement for verification of cylinder pressure. "Each day, the pressure in a container representative of that day's compression must be checked by the charging plant after the container has cooled to a settled temperature and a record of this test kept for at least 30 days". There is some concern that this section was omitted from 49 CFR with the implementation of HM-220D and that the DOT will reinstate this requirement. As such, SAFECOR suggests the settle pressure checks be continued. The DOT wants to ensure that cylinders are filled to the correct temperature/pressure to ensure safe transportation. SAFECOR has developed the settled pressure form for compliance. Refer to the attached form.

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**?** *How do I make my Function Specific Training efforts meet the federal requirements?* The DOT does not expect you to duplicate training that other government agencies may require - they only require that such training be *documented*. You are not expected to "re-invent the wheel"; you may only need to use the training material already provided.

Function specific training will vary from location to location. Review the job functions that your associates perform in order to compile a complete list of their required training. Remember that the training required by the FDA, OSHA, EPA, etc. will satisfy the function specific training required by the DOT. Some examples of training that might be used to satisfy "dual requirements" are:

- ◆ DOT training of hydrostatic testers. The Airgas Hydrotesting manual contains test and documentation of training. Also some regions attend outside training, such as Galiso. These records can be used to demonstrate compliance.
- ◆ FDA requirements for documented training of operator competency in the production of medical gas operations. This training might include documentation on the safe handling of cylinders, very specific filling operations, analysis of the finished product, and so forth.
- ◆ EPA certified Emergency Responder training.
- ◆ OSHA training covering such items as:
  - ◇ HAZWOPER (Hazardous Waste Operations and Emergency Response). This alone can easily cover 40 hours of documented training.
  - ◇ Forklift operation.
  - ◇ Etc.

As you can tell, the list of function specific training is almost endless. The goal that we must strive for is the continual training of our associates to improve both their safety and performance in the workplace. As our government continues to update and change the regulations that govern our industry, so must we continue to train and educate our associates and ourselves in order to remain in compliance.

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## HM 126 Function Specific Test

Haz-Mat Employee Name \_\_\_\_\_

Date \_\_\_\_\_ Trainer / Address of Trainer \_\_\_\_\_

Location \_\_\_\_\_

The training material for this test is provided in the HM 126 instruction material presented in today's class. A copy of the instructional material should be maintained for further reference.

This test certifies that the above named hazmat employee has been trained and tested as required by 49 CFR §172.700.

### Questions:

1. Where is the hazardous material table found in the code of federal regulations?
2. If an entry in the hazardous material table is in Roman type, what does that mean?
3. Explain the following hazard or division class.

2.1	
2.3	
2.3	

4. True or False. The proper shipping name must be in the same order as shown in the hazardous material table. Proper shipping name, hazard class number, UN number.

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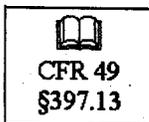
5. True or False. If you ship a cylinder in conjunction with an exemption, the DOT E number must be listed on the hazardous material manifest in association with that entry.
6. What is a shipper's certificate?
7. Can you ship both a hazardous and non-hazardous material on the same manifest? If so, what special precautions must you take?
8. What is the function of the Emergency Response Guidebook?
9. Provide an example of a DOT exemption.
10. If you are transporting 600 pounds of oxygen compressed and 500 pounds of acetylene dissolved, what placard(s) are required?
11. If you have 1,200 pounds of oxygen compressed, what placard(s) are required?
12. True or False. Any shipment (quantity) of poison gas requires placarding.
13. In order for a liquid shipment to fall under the bulk shipment requirements it must be greater than \_\_\_\_\_ gallons.
14. True or False. A vehicle transporting hazardous material must have the engine running while fueling.
15. True or False. Smoking is not allowed within 25 feet of a motor vehicle transporting a hazard class 2.1 gas.

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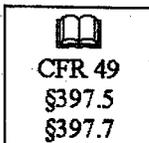
## Driver Training

As mentioned earlier in the program, a CDL with the tanker and hazardous material endorsement will satisfy the requirement for the driver training. You may want to provide some additional training to ensure compliance. The following are some areas that should be considered.

The training requirements states that Motor Carriers and other persons shall comply with 49 CFR §§390 through 397. These sections are commonly referred to as the Federal Motor Carrier Safety Regulations. You may already be providing your drivers with a copy of these rules.



**Smoking Around a Hazardous Material.** No person may smoke or carry a lighted cigarette, cigar, or pipe on or within 25 feet of a motor vehicle that contains a flammable material classified as division 2.1 (flammable gas). It lists some additional classifications, but the common one for most welding supply distributors is the flammable gas rule. Remember that this includes the cab of the vehicle.



**Parking and Attendance of a Vehicle Carrying a 2.1, 2.2, or 2.3 Hazardous Material.** The parking and attendance rules are found in 49 CFR §§397.5 and 397.7. A motor vehicle that contains a hazardous material may not be parked on a public street, public highway, or shoulder of a public highway unless it is attended by the driver. It does allow the vehicle to be parked in the above manner if the driver is performing duties that require it to be parked there. The general rule for the welding supply distributor is not to park on or near a public road. When parked at a motel for the evening, make sure it is parked in the motel parking lot and the manager of the facility is aware of the vehicle and its contents. When the driver stops for lunch, make sure the vehicle is well off the roadway. It is always recommended that the driver is able to keep the vehicle within his vision.

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Some states also restrict your travel and/or parking ability based on local and state laws. Ensure compliance in your area.



CFR 49  
§397.15

**Fueling a Vehicle Transporting a Hazardous Material.** 49 CFR §397.15 states:

"When a motor vehicle which contains hazardous material is being fueled-

- a. Its engine must not be operating; and
- b. A person must be in control of the fueling process at the point where the fuel tank is filled."



CFR 49  
§397.17

**Tire Checks.** The DOT recently eliminated the requirement for tire checks while enroute. The new requirement is that the drivers check their vehicle's tires at the beginning of each trip and each time they are stopped. The tire checks should be recorded on the driver's hours of service record (log book).

**Hazardous Material Routing.** For the normal transportation of a class 2 hazardous material, no federal routing is required. Note that many states, especially cities, do require special routing and/or restrictions. Many times the average welding supply distributor transporting class 2 hazardous material is "grouped" with the rest of the hazardous material carriers.



CFR 49  
§107.601

**Federal Hazardous Material Registration Program.** This is the federal requirement to register a shipper, carrier, or handler of a hazardous material. The program is found in 49 CFR §107.601. It provides the details on who must register, when, how, and why.

Please refer to the Airgas Driver's Training manual for complete training, January 2002 edition.

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## Unsafe Delivery Site

SECTION

**5**

Airgas drivers are not expected to deliver to a customer site which contains an environment or expectation that places them in an unsafe situation, or puts their vehicle at high risk of damage. Note that some customer delivery sites represent additional work or difficulty in making a delivery, but are entirely safe. Drivers are cautioned to use this system only in the context for which it was intended, which is to address Unsafe Delivery Sites. Where a customer delivery site is deemed by the driver to be unsafe, the driver shall do the following:

1. Attempt to safely correct the situation by contacting the customer representative and informing them of the problem. Often, the customer's employees may be exposed to the same hazard as our delivery personnel, and the customer is generally appreciative in having potential problems pointed out.
2. If the hazard remains because the customer was not able to correct the problem, complete Parts 1 and 2 on a Notice of Unsafe Delivery Site Form. A copy of this form is attached to this bulletin.
3. Upon return to the terminal provide the Notice of Unsafe Customer Delivery Site Form to the driver supervisor or dispatcher.

### Driver Supervisor/Manager

Upon receipt of a Notice of Unsafe Delivery Site Form from the driver, the driver supervisor shall review the form and either files the report if it is believed that the situation has been properly addressed, or arranges a meeting with the customer and performs an assessment of the site. Document site assessments by completing Parts 3 and 4 on the Notice of Unsafe Customer Delivery Site Form. If the hazard cannot be abated or an alternative delivery site provided, delivery operations shall be terminated at the customer site and formal correspondence to the effect addressed to the customer.

Airgas is required under the provisions of the "General Duty Clause" of the OSHA Reform Act, and under the "Workplace Hazard Assessment" requirements to provide our employees with a safe working environment. This has been determined to include work areas that extend beyond the confines of company property, such as situations where employees in route driver positions are concerned. Where unsafe situations cannot be abated at our customer sites, we have no choice but to terminate delivery operations until such time they are adequately remediated to assure the safety of our employees.

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## NOTICE OF UNSAFE CUSTOMER DELIVERY SITE FORM

1. Customer name: \_\_\_\_\_  
 Physical address: \_\_\_\_\_  
 \_\_\_\_\_  
 Contact person: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Date report initiated: \_\_\_\_\_

✓ Check all hazards that apply and explain in detail.

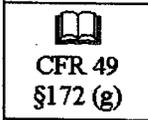
Obstructions	Isle/path/driveway too narrow	
Unstable structure	Improper surfaces for movement of cylinders.	
Exposed electrical	Grease/oil	
Inadequate security	Leaking piping/regulators/equipment	
Guard dog	Requires lifting beyond 1 person's capability.	
Stairway or other inappropriate means of ingress/egress.		
Improper pressure reduction or other user-supplied equipment.		
Other (describe):		
Explain:		

2. Have you requested assistance from the customer in correcting the hazards observed?  No  Yes (If yes, what actions took place?) Explain in detail.  
 \_\_\_\_\_  
 \_\_\_\_\_
3. An assessment performed by management personnel resulted in the following actions:  
 \_\_\_\_\_  
 \_\_\_\_\_
4. Did the above result in the elimination of the hazard(s)?  
 Yes  No (If no, explain in detail.)  
 \_\_\_\_\_  
 \_\_\_\_\_

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**Safety Training**

**SECTION**  
**6**



**Emergency Response Information:** This requirement is found in 49 CFR §172 subpart G. This is the information that is covered by the use of the North American Emergency Response Guidebook. Refer to the training in the function specific section.

It also includes the Emergency Response telephone number. This information was also covered in the function specific section.

**Methods to Protect the Employee from Hazards They are Exposed to:** The second requirement for the safety training is defined as "Methods to protect the employee from the hazards associated with hazardous material to which they may be exposed in the work place, including specific measures the hazmat employer implemented to protect employees from exposure".

Each facility will need to review their location for specific hazards that are unique to them. The following are some general ideas:

1. High pressure is a common hazard associated with all compressed gases. A written policy on the proper use of safety glasses will offer protection to employees handling compressed gas cylinders.
2. Compressed gas cylinders are often heavy and cumbersome. Steel toe boots offer protection in the event a cylinder would fall. They also offer protection from other heavy objects that are also involved with compressed gas cylinders. Such as cylinder carts, falling cylinder caps.
3. If you fill cryogenic vessels the possibility of cryogenic liquid coming in contact with the skin is reduced with the use of special protection. A full-face shield should be used when handling cryogenic liquid. Loose fitting cold weather gloves offer protection from the transfer of cold temperature to the skin. The gloves should be loose fitting so that they may be removed quickly in the event of cryogenic product being spilled onto the gloves. Long sleeve shirts or an arm protection should be worn. This will reduce the chance of cryogenic liquid coming in contact with the skin. Pants should be cuff-less to prevent any accumulation of liquid or vapor in the cuff.

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4. A written policy describing what employees should do in the event of a spill or leak of product. This could be a large spill of bulk product during transfer, a blown safety on a bulk tank/cylinder, or anything at your facility that the employee would not normally be associated with.

**Methods and Procedures for Avoiding Accidents, such as the Proper Procedures for Handling Packages Containing Hazardous Material.** This is the third requirement for safety training. Each facility may be unique due to the different types of hazardous materials handled. The following are some general guidelines to follow for cylinder handling and cryogenic liquid cylinder handling.

**Cylinder Handling Rules:** A cylinder is a container that is used to transport a hazardous material. The one hazard that is found in all compressed gas cylinder is pressure. In addition to pressure, the hazard of poisonous gas, flammable gas, oxidizer, asphyxiation, etc. are found. The routine handling of these cylinders has the tendency to erode the importance of safety and the different hazards that we are exposed to daily.

Some fundamental cylinder handling rules are:

- Use an approved cylinder cart when moving cylinders.
- Never use a cylinder for a purpose it was not designed for.
- Never transport a cylinder that does not have the proper marking/labeling.
- If the cylinder is so designed for a cylinder cap, use one.
- Open all cylinder valves slowly.
- Never lubricate valves, regulators, gauges, or fittings with oil or any other combustible substance.
- Connections that do not fit should not be forced. Threads on regulator connections should match those on the valve outlet.
- When in use, cylinders should be secured to a cart, wall, stand, or some other means to prevent the cylinder from falling.
- Ensure that the cylinder has the proper marking/labels.

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## Cryogenic Cylinder Handling Rules:

- Only move a liquid cylinder with an approved liquid cart.
- Make sure that the "spring" is in place in the loading mechanism and that it is operating properly.
- Keep aisle ways clear in order to maneuver the cart safely.
- If you need assistance handling or moving the liquid cylinder, obtain the required assistance before you start to move the cylinder.
- Never transport a liquid cylinder in the horizontal position.
- Make sure that the liquid cylinder is secured in the upright position.
- The markings/labels on the liquid cylinder must match the CGA connections. Example, if the liquid cylinder is marked/labeled oxygen, then the CGA connections must be 540.

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## Security Awareness Training

SECTION

**7**

On March 25, 2003, the DOT issued a Final Rule that requires shippers/carriers of hazardous material to provide their associates with Security Awareness Training as part of their HM-126f training. The following information is an overview of the security precautions that Airgas has implemented. If you have any comments or suggestions regarding the Airgas program for security, please notify your immediate supervisor and/or your Regional Safety Director.

It is very difficult to anticipate every possible scenario regarding security and the possibility that someone would use a product we sell for destructive purposes. The DOT states, "A security plan should represent a company's best, good-faith efforts to address identified security risks." Based upon this guidance, our first step is to identify possible security risks.

**NOTE**

It is very important to remember that the transactions that Airgas makes regarding the sale of hazardous material are to known customers with a known purpose. The intent of this Security Awareness Training is to provide training on how to identify the unknown customer with an unknown purpose that may result in criminal activity. It is not intended to discourage the sale of our product to legitimate future/new customers; instead it is intended to provide steps to ensure future/new customers are legitimate.

**?** What products does my location handle, store or sell that could be considered a security risk? The way our country looks at hazardous materials and the possibility that they could be used for a destructive purpose has changed in the past few years. Products that we once considered safe are now being used for destructive purposes. The best way to ensure our products are being used as designed is to ensure the customer is a legitimate customer.

**?** How can we be sure if a customer is legitimate? Consider the following examples. Ammonia is a product that we sell for legitimate purposes. It is delivered to our customers in an Airgas vehicle to a known site. If a walk-in customer that you had never seen before, who does not have an established account with Airgas walked into the store and wanted to buy an ammonia cylinder and pay cash – we would refuse to sell this product to the customer. Ammonia is often used in the manufacture of illegal drugs. Please refer to SAFECOR Bulletin number 37 for additional information on gases used in the manufacture of illegal drugs.

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Hydrogen is a product that we sell for legitimate purposes. It is delivered to our customers in an Airgas vehicle to a known site. If a walk-in customer that you had never seen before, who does not have an established account with Airgas walked into the store and wanted to buy a hydrogen cylinder and pay cash – we would refuse to sell this product to the customer. In the first World Trade Center bombing in the early 1990's the bombs used were strapped to hydrogen cylinders.

The key is to know your customers and understand the products they use. If you have any concerns about a customer and/or a product to be sold, contact your immediate supervisor and/or Regional Safety Director.

**SAFECOR Bulletin Number 7.** This bulletin provides guidance on additional compressed gas sales restrictions.

**?** What do I do if an unknown customer requests a product and then leaves the store once they are questioned about its use? Write down the make, model and color of the vehicle they are driving and if possible the vehicle's license plate number. Contact your immediate supervisor and/or your Regional Safety Director immediately. They will help you determine the level of threat encountered. If it is determined that this was a questionable situation with possible criminal intent, your supervisor and/or the Regional Safety Director will contact the proper authorities.

**?** What precautions should be taken regarding the products stored at my location? Your location will develop a *Site Security Plan* regarding the storage of hazardous material. A few simple rules to remember:

- Any hazard class 2.3 products should be stored/secured in a manner that the general public does not have access to it.
- Only Airgas employees and/or authorized personnel are allowed in the plant/cylinder storage area. For this publication – your local store manager and/or Regional Safety Director will determine authorized personnel. Some larger locations are also issuing employee picture identification cards.
- Exterior lighting should be adequate to ensure proper lighting. Proper lighting will assist law enforcement as they patrol the area and discourage anyone from entering the property.
- Products such as nitrous oxide must be secured. Please refer to SAFECOR Bulletin number 15.

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- Hazardous material should not be stored on open bed vehicles after-hours unless the vehicles are within a secure area.
- Products that have been identified, as possible targets for theft should be controlled. Such as limiting inventory, tracking inventory on hand, limiting access to the product.

These are just a few of the ideas that your Regional team can use. Each location will be different based upon the size/location of the facility and the products you store/ship.

**?** **How should I handle phone calls and questions regarding the products sold or stored at my location?** You will receive phone calls from customers asking about the products we sell on a daily basis. These calls will inquire about pricing and availability. If you receive a phone call from an unknown customer asking very specific questions about a product and how we handle/store the product, how much we store on site, etc, you may want to obtain the customers name and phone number so that you can return the call. If the customer is legitimate, this will not be a problem. If the caller hangs up or becomes evasive, this could be an indication of a potential problem.

**?** **How should I handle a phone call from someone who has identified himself or herself as a State, Local or Federal employee gathering information about hazardous material stored at this site?** Every location that stores/ships hazardous material is required to submit, annually, to the State and Local Emergency Planning Commission a detailed inventory of the hazardous material on site. If the person is actually a State, Local or Federal employee they have access to this information already.

Ask the person for their name and phone number and inform them that you will have your supervisor or Regional Safety Director return their call immediately. If the caller is legitimate, they will understand that this is only common sense. If the caller hangs up or refuses to provide their name and phone number, report this information to your supervisor and/or Regional Safety Director immediately.

**?** **How should I handle a situation when someone arrives at my location and identifies himself or herself as a State, Local or Federal employee and they request a tour of the facility and/or information about the hazardous material stored on site?** If the person is an enforcement officer, they will have some type of badge and/or government issued identification. Ask to see this identification and also ask for a phone number you can call to verify they are legitimate. Ask them to wait one moment while you call the phone number and verify their information. If the person refuses to provide identification and or verification information, contact your supervisor and/or Regional Safety Director immediately.

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**?** How should I handle a suspicious person watching my location and/or taking pictures of my location? Contact your supervisor and/or Regional Safety Director immediately. Do not attempt to approach the person or confront them in any way. If possible, please note the vehicle information or any other identifying information that you could provide the authorities.

**?** How should I handle a phone call from the media asking about our security plan and how we are complying with the Homeland Security requirements? Do not provide any information to the media regarding these topics. Refer the caller to your Regional Safety Director.

**?** What precautions should be taken regarding security during transportation? The DOT refers to this as *En route Security*. This topic will be covered in-depth in the Airgas Driver Training Manual.

**?** How should I handle questions about my job? It is common for people to engage in conversation about their job when in social settings. As long as the conversation deals with questions of a general nature, such as who do you work for, what do you do for a living, etc. there should not be a problem. But, if the questions become more specific, such as what type of hazardous materials do you store at your location, what is the "nastiest" product you sell, how much flammable gas you have on site, you should stop and consider not answering these questions.

To re-state again that as a shipper, carrier and seller of hazardous material, you must be very cautious about your conversations when in social settings. The overwhelming majority of your conversations may be innocent, but in the world we live in and work in today caution is a safe practice.

**?** How should I handle making shipments of hazardous material by common carrier? If a legitimate customer requests we ship a hazardous material by common carrier, please follow these guidelines:

- Ensure the hazardous material is allowed by law to be shipped by the mode of transportation the carrier will use, such as rail, air, water, etc.
- Ensure the hazardous material is properly packaged, marked/labeled.

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- Ensure the hazardous material is properly described on a hazardous material shipping paper and that the shipper's certificate is signed.
- Once the common carrier arrives to pickup the hazardous material, ensure it is the correct carrier and ensure the driver belongs to the company. If you are using a carrier such as Roadway Freight, Central Freight, etc., the driver might be known by our shipping clerk and the driver will probably have a company uniform. If the driver and/or carrier are not familiar to you, or if there is any doubt, contact the carrier to obtain information about the driver. The carrier can provide you with the driver's name, unit number of the tractor/trailer and the driver's driver license number. This will allow you to verify the vehicle and the driver.

While this may seem a little extreme to some, remember that as a shipper of hazardous material the DOT now holds you responsible to ensure the shipment is offered to the correct carrier/correct driver. The DOT states that our security plan must be based on "a company's best, good-faith efforts".

**?** How should I handle storing hazardous material on my route truck while parked at our dock? Extra care should be taken when hazardous materials are placed on our route trucks if the driver or other Airgas employee is not able to attend the vehicle. Hazardous material should not be stored on open bed vehicles after-hours unless the vehicles are within a secure area. Hazardous material stored on enclosed bed vehicles should also be parked inside secure areas after-hours. If a secure area is not available, ensure the cargo area and the vehicle entry doors are locked. All vehicles should be locked and the ignition key removed when parked.

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**Airgas®**

**SAFECOR**

**Model program for**

**HM 126f Training**

***49 CFR §172.700***

July 1, 2005

# HM 126f TRAINING MANUAL

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**Hazmat Training**

**SECTION**  
**1**

  
CFR 49  
§172.702(a)

The Code of Federal Regulations (CFR) Title 49 section 172.702(a) requires that "A hazmat employer shall ensure that each of its hazmat employees is trained in accordance with the requirements prescribed in this subpart". A hazmat employee is defined by the CFR as "a person who is employed by a hazmat employer and who in the course of employment directly affects hazardous materials transportation safety". Some examples are anyone who loads, unloads, handles, tests, fills, prepares hazardous materials for transportation or operates a vehicle used to transport hazardous material. As you can see, this requirement affects almost everyone that works for Airgas.

  
CFR 49  
§172.704  
(c)(ii)(iv)

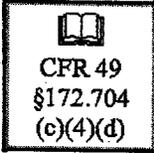
The 49 CFR §172.704(c)(ii)(iv) requires that this training be completed within 90 days after being employed as a hazardous material worker, or a change in job function. A hazardous material employee "may perform new hazardous materials job functions prior to the completion of training provided the employee performs those functions under the supervision of a properly trained and knowledgeable hazmat employee". Remember, the "properly trained and knowledgeable hazmat employee" must have all their training documented.

  
CFR 49  
§172.704  
(c)(2)

49 CFR §172.704(c)(2) talks about the recurrent training that is required. Originally, the requirement was that the hazmat employee needed to receive documented retraining every 2 years. On October 1, 1996 the law was changed to extend that requirement to provide recurrent hazmat training at least every 3 years. Recurrent training is designed not to repeat the same material, but rather to update the existing training received with the new requirements. Because of the many government agencies that regulate the activities of Airgas, it is SAFECOR's opinion to provide recurrent training on an annual basis. This will help to satisfy the requirements that are set forth by DOT, FDA, OSHA, etc.

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49 CFR §172.704(c)(4)(d) talks about the record keeping requirements. It states that the employer must maintain the records of all training, by employee, for as long as the employee is employed and 90 days thereafter. It is SAFECOR's opinion to retain all training information for the life of the company.

All your training records must include the following:

- The hazmat employee's name.
- The most recent training completion date of the hazmat employee's training.
- A description, copy, or the location of the training materials used.
- Name and address of the person performing the training.
- Certification documenting that the training has been completed.

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## Certification of Training

Hazmat Employee's Name: \_\_\_\_\_

Date of Hazmat Training: \_\_\_\_\_

A description, copy or the location of the training materials used to meet these requirements:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Name and address of the person providing the training: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

This certification is in compliance with the requirements found in 49 CFR §172.704. This document certifies that the hazmat employee (insert hazmat employee's name):

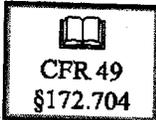
\_\_\_\_\_

has been trained and tested, as required by this subpart.

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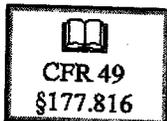
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**NOTE** ANY TRAINING THAT IS PERFORMED BY A PREVIOUS EMPLOYER OR OTHER SOURCE MAY BE USED TO HELP SATISFY THIS REQUIREMENT. COMPLETE DOCUMENTATION MUST BE PROVIDED TO SUBSTANTIATE THE TRAINING.



The five mandatory, 49 CFR §172.704, areas of training are:

1. **General Awareness and Familiarization Training** - The intent of this section is to bring an awareness to the employee regarding the hazards that are found in their work area. To help them be able to recognize and identify what is a hazardous material.
2. **Function-Specific Training** - This is a more intense training that zeros in on the specific hazards that the employee could face in their day-to-day work. This section will have to be somewhat "customized" to fit your location.
3. **Safety Training** - Safety training is broken down into three main topics.
  - Emergency Response -
  - Measures to protect the employee from the hazards they are exposed to.
  - Methods and procedures for avoiding accidents. Proper procedures for handling hazardous materials.
4. **Security Awareness Training** - This is the training on security that you will find under Section 7 of this manual.
5. **In-depth Security Training** - This is the training you will perform based upon your site specific security plan. You will find the template for completing your site specific security plan under Tab 19 of the Airgas Safety Manual. Remember to document all training.



A sixth mandatory, CFR 49 §177.816, area of training is "Driver Training".

Driver training shall include the following:

- Pre-trip safety inspection.
- Use of vehicle controls and equipment - including operation of emergency equipment.
- Operation of the vehicle, including all vehicle maneuvers.
- Procedures for maneuvering tunnels, bridges, and railroad crossings.

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- Requirements pertaining to attendance of vehicles, parking, smoking, routing, and incident reporting.
- Loading and unloading of material, including-
  1. Compatibility and segregation of cargo in mixed loads.
  2. Package handling methods.
  3. Load securement.
- Special requirements for cargo/portable tanks
  1. Operation of emergency control features of the cargo/portable tank.
  2. Special vehicle handling - such as high center of gravity, vehicle stability during turns, deceleration, stopping.
  3. Loading and unloading procedures.
  4. Properties and the hazards of the material transported.

**NOTE** If the driver has a CDL with a tank vehicle or double/triple trailer endorsement they must complete a road test with a passing score.

**NOTE** The training for drivers includes topics such as hours of service, post trip inspection reports, alcohol misuse, substance abuse, etc. Refer to the Airgas Driver Training manual, January 2004 edition for further instructions.

Recently, the DOT authorized a study of the transportation industry to determine the level of driver training provided. The study focused on entry-level driver training. The results of the study showed that only 8.1% of motor carriers that hire entry-level drivers provide adequate training. As a result of this study, we are seeing a movement to legislate additional training. Note that the DOT now requires New Entrant training for all new CDL drivers, as defined as a CDL driver with less than one year of experience. Refer to the Airgas New Entrant training program.

The Commercial Drivers License was designed to "increase" the knowledge of the driver through a series of tests. The results of the study did not support this goal. The current movement is to either require some new type of mandatory training or to increase the difficulty of testing required by the Commercial Drivers License act.

**NOTE** Individual states may impose more stringent training requirements - contact your state agency for any state issues.

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A system must be implemented that will track your training and notify you of upcoming training required. SAFECOR is supporting the use of the Intelex system. Intelex is a compliance software program that can track anything by time. The system already has an inventory of required training. You can choose the topics that apply to your location. The system allows you to track all your training history. Remember that you must still maintain the original, signed, training class agenda.

The purpose of this program is to provide a model that all regions can use to comply with docket number HM 126(f). **Since every region operates in a different manner, it may be necessary to change/modify this procedure to fit the specific and unique challenges your region faces.**



The first step is to identify your work groups. This will make your training more relevant to your audience. Your work groups should consist of employees that perform like functions.

- **1st work group.** Plant, driver, warehouse, operations, counter sales, sales, etc. These are the work groups that will physically handle, ship, store, and invoice the hazardous materials. Everyone within this group will need to receive detailed function specific training.
- **2nd work group.** Customer service, clerical, human resource, etc. These work groups are associated with hazardous materials, but not with the physical duties associated. The training for this group can be of a more broad term.

You can develop as many work groups, as you deem necessary. The intention is to instruct all employees exposed to the same hazards with the same information. Your training should be consistent.

In OSHA fact sheet No. OSHA 93-07, it provides the most important reason for training. A study by the Bureau of Labor Statistics (BLS) reported that 40% of workers injured have been on the job less than one year. Why are new workers more likely to be hurt? BLS studies show that employees injured at work often lack one vital tool to protect themselves: training. The DOT is well aware of this fact. If you receive a DOT compliance review, documented proof of training is mandatory.

Remember that Airgas is self insured for the first \$500,000. - *per incident*. This means that any injury, accident or incident is paid for by our company. As stockholders this means that we all pay.

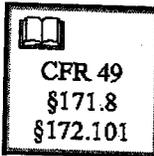
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**General Awareness and Familiarization Training**

**SECTION**

**2**

In this section we will briefly cover the major areas of exposure. The purpose of general awareness and familiarization training is to educate the employee in the basics. A more in-depth study is provided by the "Function Specific" section.



**?** **What is a hazardous material?** A hazardous material is defined in 49 CFR §171.8. "Hazardous material means a substance or material, which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and which has been so designated". Materials and substances that have been so determined are listed in the Hazardous Material table found in 49 CFR §172.101. They are listed alphabetically.



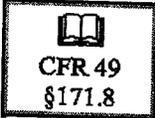
As a word of caution, just because a material is found in the Hazardous Material table, it does not automatically become hazardous. The material must appear in the Hazardous Material table **and** meet the definition of that hazard class. An example is paint. Paint is listed in the Hazardous Material table. It is listed as a hazard class 3, which is a flammable liquid. If the paint does not meet the definition of a flammable liquid, then it is not a hazardous material by definition. Such as water based paints.

**?** **How many hazard classes are there?** There are nine different hazard classes. The normal welding supply distributor usually handles only a few. The most common are:

- Class 2 - Compressed gases**  
Divided into the following subgroups
  - a. 2.1 - flammable gas
  - b. 2.2 - non-flammable gas
  - c. 2.3 - inhalation hazard
- Class 3 - Flammable liquid (gasoline, some paints)**
- Class 4 - Dangerous when wet (calcium carbide)**

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The definitions for the different hazard classes are found in 49 CFR §171.8. Look under the heading hazard class and it will refer you to the appropriate section of the regulations.

**?** *Why do we have hazardous material in the work place?* Many products that you do not consider hazardous are listed in the table, such as oxygen. Oxygen is what we breathe every day to survive, but once it is compressed into a cylinder or changed to its liquid form, it can now present a hazard. Batteries are another example. A battery provides electricity for your car and power for some wheelchairs, but when batteries are shipped in commerce they can be hazardous. Hazardous materials are required by most businesses on a daily basis. Their use has become routine.

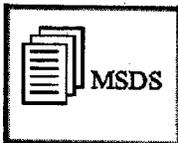
**?** *What special safety precautions should I take while working around hazardous material?* Each facility is required to assess their handling of hazardous materials and develop a list of PPE (personal protective equipment) that is required. For the products that Airgas normally handles the PPE consists of:

- Steel toed boots to protect your feet when handling cylinders.
- Gloves to protect your hands while handling cylinders. If you are involved with washing cylinders then special rubber gloves are to be used to protect your hands from the cleaning solution.
- Safety glasses are to be worn whenever you are exposed to a potential eye injury hazard. Basically, anyone who works or visits within the plant area must wear safety glasses at all times.
- Airgas provides back education training for all employees. The training consists of a one-hour video with discussion about the benefits/techniques of safe lifting practices. At this time, Airgas does not mandate the use of back support belts. They are not part of the PPE requirement.
- Cryogenic work requires the employee to wear a full-face shield and special cold weather work gloves. All exposed skin shall be covered to prevent a cryogenic burn from splashing liquid. The gloves should be loose fitting to prevent the transfer of cold temperature to the skin, and also allow the gloves to be quickly removed in the event of a spill or leak.
- Ask your supervisor about any special PPE that is required at your location due to the special products you ship, store, or handle.

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- If your location handles or ships a poison/toxic substance you will need to receive additional PPE. This will be determined by the "degree" of hazard that you will be working with.
- Always remember to keep your PPE in clean, good working order. If it becomes damaged or lost, contact your supervisor.

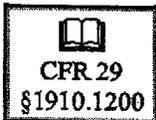


A Material Safety Data Sheet (MSDS) is the document that describes in detail the hazards associated with hazardous material. A unique MSDS is available for every hazardous material that is handled, stored, or transported from your facility. MSDSs are often contained in a book or file that contains an index. Become familiar with the location of the MSDSs and how to read them. Not

only do they contain information about the product, they also provide first aid information, emergency response, and safe handling techniques. More detailed information will be provided in the function specific section.



**I have heard about "Employee Right to Know", please explain.** OSHA has



issued regulations to help control chemical exposure in the workplace. This regulation is often referred to as "Hazcom" or "Employee Right to Know". Basically, it requires that all hazardous substances be marked, labeled, and communicated to all employees. Information about these substances is to be made available to all employees. The vehicle that is used to communicate this

information is the Material Safety Data Sheet (MSDS). OSHA does not like to see MSDSs kept in the supervisor's or manager's office. They feel this might intimidate the employee and keep them from referring to this information. MSDSs are to be kept where the employee has access to them. They describe the product used, safety precautions, action to take in the event of a spill or leak, etc. The basic rule is that every container, bucket, or vessel that contains a hazardous substance must be properly marked/identified. Further training on MSDSs will be addressed in the "Function Specific" section.



**The Hazardous Material table can be confusing to read.** One of the goals of this course is to provide training and knowledge that will help you understand the table. Remember that you are not required to become familiar with everything in the table, only the products that you store, ship, or handle. We will study the hazardous material table further in the "Function Specific" section.

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**?** *I did not realize that these materials are hazardous. Is my company providing the proper training for my safety?* This is another goal of this training course. Your region will provide you with the training and education required. It is your responsibility to follow the rules and handle the material in a safe and professional manner. If you have a question, **do not handle or ship the material until you have notified your supervisor.**

**?** *What about labeling?* Labeling/marketing is the only accurate way to identify products. Every container is to be labeled/marked in such a way to identify the contents. One area that causes problems for many distributors is when they fill small containers from the original container with product and the small container is not properly labeled, such as leak detector. Examine all the containers used at your locations to ensure they are properly labeled. This would include paint buckets, spray bottles, etc.

⇒ Never rely on cylinder color to determine the contents. No federal regulation currently exists that mandates a specific color code for industrial cylinders. Airgas is working towards a standard color code, but this will not apply to customer owned cylinders. Again, the only way to determine the contents is to read the label/marketing. If a container does not have the proper label/marketing, contact you supervisor before handling.

**?** *What is the difference between a label and a marking?* A label is a 3.9 inch by 3.9 inch diamond. It only tells the hazard class. A marking is what is placed on the shoulder of the cylinder; this marking is produced according to the guidelines in CGA pamphlet C-7. The diamond on a marking is 1.25 inch by 1.25 inch. It contains the DOT proper shipping name, UN number, hazard class diamond, and precautionary wording.

**?** *When do we use a label?* A label can be used for any product listed in the table in 49 CFR §172.400. You will usually see labels used except for the example listed below. Remember, that if the Hazardous Material table shows that the material requires more than one label, the first label listed is the primary and the second label listed is the subsidiary label. The hazard class number is required to be displayed in the lower point of the diamond for the primary hazard. The subsidiary label(s) are now required to display the hazard class number. This changed on September 30, 2001. There is still a grace period that if your container was properly labeled before the rule change, it is still acceptable until October 1, 2005. After October 1, 2005, all subsidiary labels and placards must display the hazard class number. Airgas has updated their labels and placards to reflect this change.

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**Remember that a label and a placard are different. A label is not a placard and a placard is not a label. Both perform different roles in the communication of hazardous material to the public.**

**?** **When do we use the marking?** A marking is authorized in 49 CFR §172.400(a). It states that if a cylinder contains a 2.1 (flammable gas), 2.2 (nonflammable gas) or 2.3 inhalation hazard, then it can be marked according to the guidelines in CGA pamphlet C-7. The guidelines provide for the proper shipping name, UN number to be on the left side of the marking, the diamond that represents the hazard class displayed next, and the precautionary wording is contained on the right side. The law changed on December 6, 2004 to allow a 2.3 product to be shipped using a marking instead of a label. The change also allows all forms of transportation, such as common, contract or private carriers.

**?** **What is the difference between a private, contract and common carrier?** 49 CFR §390.5 provides the definition for a private carrier. The definition for a common and contract carrier are found in the definitions established during the period that the Interstate Commerce Commission (ICC) existed.

A private carrier is a motor carrier who provides transportation of property by commercial motor vehicle and is not a for-hire motor carrier.

Before January 1, 1996, a **common** carrier was a motor carrier that provided for-hire truck transportation to the general public. The services offered and the prices charged were published in a public tariff and these were the only prices the common carrier could charge.

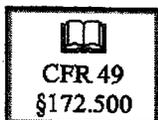
Before January 1, 1996, a **contract** carrier was a motor carrier that provided for-hire truck transportation to specific, individual shippers based upon private contracts between the carrier and each shipper, stipulating the services offered and the prices charged.

**NOTE** A welding supply company that transports their own cylinders and/or customer owned cylinders is considered a private carrier. A customer that transports their own cylinders is considered a private carrier.

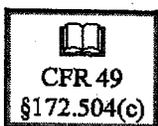
**?** **What do I do if a container/cylinder does not have a label or marking?** Do not ship or handle this material. Remember that this includes labels or markings that are faded, torn, worn, or illegible. Try to find out where it came from, how it arrived at your facility, etc. Set it in a quarantine area and contact your supervisor.

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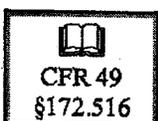
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**?** **What is a placard?** A placard is "diamond shaped" and is at least 10.8 inches long on each side. It is usually made from tagboard, plastic, metal, etc. It is displayed on a vehicle, vessel, or container to communicate the hazard to the public. It is displayed on the vehicle or vessel in the point down position (diamond). The lower point of the diamond is required to display the hazard class number. The rules governing the use of placards are found in 49 CFR §172.500. This section tells the color, wording, placement and use of placards.



**Remember that not all hazardous material shipments will require placards.** An example is found in 49 CFR §172.504(c). It says that a shipment of a 2.2 product (nonflammable gas) or 2.1 product (flammable gas) does not require a placard as long as the aggregate weight is less than 1,001 pounds. Aggregate weight means the weight of the cylinder and the gas inside.



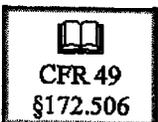
**?** **How many placards are required?** 49 CFR §172.516 requires that the placards must be visible from the direction the vehicle travels. Basically this means that all four sides of the vehicle must display a placard. You must be able to determine what is on the vehicle regardless of the direction it travels.



**Caution:** All four placards must be identical placards. Review your vehicles for compliance. Remember that the new "Inhalation Hazard Placard" is required as of October 1, 2001.



**?** **Do I need a new set of placards for each shipment?** If the placards are maintained and they still comply with the proper color, wording, etc., then they can be reused. Any placard that is faded, broken, or unreadable cannot be reused. Contact your supervisor for replacements.



**?** **Who must supply the placards?** 49 CFR §172.506 states "Each person offering a motor carrier a hazardous material for transportation by highway shall provide to the motor carrier the required placards for the material being offered". It does not say that they must be provided free of charge. The shipper is required by law to provide the placards; it is a region decision whether to charge for the placards. Once you have offered the placards, if the driver refuses them, make sure this is noted on the shipping paper. This will protect you in the event the driver is stopped during transportation without the proper placards.

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CFR 49  
§172.600

**?** **What is the Emergency Response Guidebook?** The DOT in conjunction with the governments of Canada and Mexico worked to produce what is called the 2004 North American Emergency Response Guidebook. This is a guide to be used by the first responders during the initial phase of a hazardous material incident. We are required by 49 CFR §172.600 to maintain emergency response information for the hazardous materials that we store, ship, load, or otherwise handle during any phase of transportation. Further use of the Emergency Response Guidebook will be covered in the function specific portion.

**Shipping Paper/Manifest:** The CFR **does not** dictate the name that is given to the document that is used for recording hazardous materials for shipment. For this reason, you will hear this document referred to as shipping paper, hazardous shipping paper, manifest, pick ticket, load sheet, etc. The CFR **does** dictate the manner in which the hazardous material is entered onto this document, how it is to be completed, and where it is to be kept during shipment. Further information on how to properly complete a manifest will be covered in the function specific portion. Do not confuse a hazardous material shipping paper with an invoice, delivery ticket, etc. If asked by a law enforcement officer for a hazardous material shipping paper, ensure you show the correct document. We are required to maintain a copy of a hazardous material shipping paper for 375 days. An invoice or delivery ticket is left with the customer.

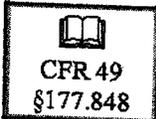
  
CFR 49  
§172.101

**?** **Is a shipping paper/manifest required for each shipment?** Yes, regardless of the amount shipped. If the substance is listed in the table found in 49 CFR §172.101, and it is classified as a hazardous material, a complete proper hazardous material shipping paper must be completed.

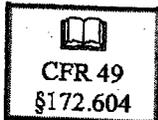
**?** **Do we have to retain the shipping paper/manifest?** Yes, 49 CFR §172.201(e) requires that we maintain the shipping paper/manifest for 375 days. Remember that there are many names for a hazardous shipping paper. Whatever document you use to record your hazardous material shipments must be kept for 375 days. The DOT will ask to look at these documents and then ask to see your training records for the employees completing these documents. If you have a salesman that makes occasional deliveries, clerical staff that makes corrections to paper work, etc., they must receive documented training.

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**Can all hazardous materials be shipped together?** NO. 49 CFR §177.848 provides a segregation table for hazardous material. This is a safety measure to separate the products in the event of an accident or spill. Everyone who ships a hazardous material should become familiar with the segregation table. Contact your supervisor regarding segregation for the products you ship/handle. Further information on segregation will be covered in the function specific portion.



**What is an Emergency Response telephone number?** 49 CFR §172.604 says "A person who offers a hazardous material for transportation must provide a 24-hour emergency response telephone number (including the area code or international access code) for use in the event of an emergency involving the hazardous material". Most companies list one of the "for hire" emergency contact service providers, such as Chemtrec™ or others. The "for hire" company maintains a list of contact persons who can answer/handle after-hour emergencies. The most common "emergency" call received has to do with beverage accounts that are low on product or have leaking or frosting equipment. These types of calls are not emergencies under the meaning of §172.604, as they do not pertain to a hazardous materials incident. Work within your region to educate the customer on the purpose of the emergency number, and provide them with an after-hours service contact number.

The emergency response phone number **must** be listed on your hazardous material shipping paper. It must be listed in a manner that will draw your attention when looking at the document. It must be listed on the front of the hazardous material shipping paper.

**Facility Layout:** All employees should become familiar with the layout of their location. Employees in small locations will naturally be familiar with the entire store/location. But larger facilities with many employees will need to conduct tours showing where hazardous materials are stored, handled, and shipped from. OSHA publication OSHA 3088 details the basic steps for preparing for workplace emergencies such as a spill, leak, fire or explosion. Where required by OSHA, firms with more than 10 employees must have a written emergency action plan. Smaller firms may communicate their plans orally. At a minimum the plan must include:

- Escape procedures and escape route assignments.
- Special procedures for employees who perform or shut down critical plant operations.
- A system to account for all employees after evacuation.
- Rescue and medical duties for employees who perform them.

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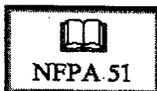
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- Means for reporting fires and other emergencies.
- Contacts for information about the plan.

A detailed map of the facility with the evacuation routes marked should be posted. Remember to conduct practice drills to ensure compliance in the event of an emergency. Plans should be reviewed and updated as needed.

**Emergency Phone Numbers:** Emergency phone numbers should be posted by all phones and instruction given to the employees on what to do in the event of an emergency. A clear definition of what constitutes an emergency needs to be determined. The extent that the facility will be able to handle emergencies in house will be determined by location. A list of emergency after-hours phone numbers (6 contacts are preferred) will also be provided to the director of SAFECOR. This will allow Airgas to contact someone on the regional level in the event of an after-hour emergency.

**?** **What is SAFECOR?** SAFECOR is the safety, environmental and regulatory compliance division of Airgas. SAFECOR is an acronym for SAFety, Environmental, Compliance and Risk Management. SAFECOR has "Field Representatives" that travel within Airgas providing training, education, and assistance with any operational, safety, regulatory, environmental question/problem. SAFECOR provides guidance with updated SAFECOR Bulletins that are distributed to the field. SAFECOR is provided for your benefit, please use it. If you have any questions/problems, contact your SAFECOR Field Representative.



**Storing Hazardous Material at your location:** OSHA, NFPA, and DOT all regulate the storage of hazardous material. The most common rule is to separate any oxidizer from any flammable product by either 20 feet or by a firewall that is at least five feet tall and provides one half hour fire protection. Refer to NFPA (National Fire Protection Association) Publication 51 for further information. Cylinder nesting is also important. Cylinder nesting is a way to organize your cylinders so that they maintain contact with each other, or a wall, on three points. Cylinder nesting is recognized by OSHA, NFPA and the CGA. Many facilities are being cited for improper cylinder storage. The alternative is to either secure the cylinders with chains and/or racks.

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**Fire Extinguishers and Fire Protection:** There are different opinions and different requirements concerning who must be trained, what to do in the event of a fire. You are required by state and federal codes to maintain fire extinguishers within your facility. The facility is to maintain their fire extinguishers, having them inspected at least annually. General good safety rules also dictates employee training. Whether your company policy is to respond to the fire or evacuate the area, training on the proper use of a fire extinguisher is important. Remember the fire extinguishers in your vehicles. They are also required to be inspected and marked accordingly on at least an annual basis.



**Housekeeping is very important.** Housekeeping is one of the major ways to check your locations attention to safety. No plant that has poor housekeeping can really be pro-active in their safety efforts. This point is obvious to OSHA inspectors, and their safety audit list specifically addresses this very important point. Housekeeping is also a major factor in fire prevention. Review your facility. Everyone is responsible for maintaining a safe, clean, work environment.

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## HM 126 General Awareness Test

\_\_\_\_\_  
Haz-Mat Employee Name

\_\_\_\_\_  
Date

\_\_\_\_\_  
Trainer / Address of Trainer

\_\_\_\_\_  
Location

The training material for this test is provided in the HM 126 instruction material presented in today's class. A copy of the instructional material should be maintained for further reference.

This test certifies that the above named hazmat employee has been trained and tested as required by 49 CFR §172.700.

### Questions:

1. What does MSDS stand for?
2. Where are MSDSs kept at your location?
3. When must an employee have access to a MSDS?
4. What is the goal of the MSDS?
5. What does PPE stand for? Name three types of PPE.
6. What is a label as defined by 49 CFR?

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## HM 126 General Awareness Test - (continued)

7. What is a marking as defined by CGA pamphlet C-7?
8. Name the hazard class and provide an example of a gas found in that hazard class.

Hazard Class	Example Gas
2.1	
2.2	
2.3	

9. What is a placard?
10. When are placards required, how many should the average transport vehicle display?
11. Where should the average transport vehicle display placards?
12. What is the Emergency Response Guidebook? What version do you use?
13. When do you need emergency response information?
14. When do you need a hazardous material shipping paper?

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**Function Specific Training**

**SECTION**

**3**

  
CFR 49  
§172.101  
§172.200

**Hazardous Material Shipping Papers:** 49 CFR §172.200 provides the guidelines for the completion of your hazardous material manifest. *An improperly prepared manifest is one of the most common violations noted by the DOT.* Most manifests will be either computer generated, or they will

already have the proper shipping name entered. Your function will be to fill in the quantity of product shipped. If you do have to add a hazardous material make sure it is the correct information. You will often hear the term "proper shipping name". The proper shipping name is the shipping name listed (**IN ROMAN TYPE**) in the hazardous material table, 49 CFR §172.101. It contains the information found in columns 2,3,4, and sometimes 5. Example, look up the entry for Argon. The proper shipping name is:

**Argon, compressed 2.2 UN 1006**

Refer to the page taken from 49 CFR §172.101. In the example for argon, compressed you will note the heading in column (2) Hazardous material descriptions and proper shipping names. This is the proper shipping name that is used by the DOT to describe this hazardous material. If any information in column (2) is printed in *italics*, this information is optional. Argon, refrigerated liquid (*cryogenic liquid*) is an example. *Cryogenic liquid* may be used to help define the entry if you prefer.

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Symbols (1)	Hazardous materials descriptions and proper shipping names (2)	Hazard class or Division (3)	Identification Numbers (4)	PG (5)	Label Codes (6)	Special provisions (7)	Packaging (\$173.00) (8)			Quantity limitations (9)		Vessel stowage (10)	
							Exceptions (8A)	Non- bulk (8B)	Bulk (8C)	Passenger aircraft/rail (9A)	Cargo aircraft only (9B)	Location (10A)	Other (10B)
	Antimony pentatelluride	8	UN1732	II	8, 8.1	A3, A6, A7, A10, N3, T12, T28	None	202	243	Forbidden	30L	D	40
	Antimony potassium tartrate	8.1	UN1551	III	8.1		153	213	240	100 kg	200 kg	A	
	Antimony powder	8.1	UN2871	III	8.1		153	213	240	100 kg	200 kg	A	
	Antimony sulfide and a chlorate, mixtures of	Forbidden											
	Antimony sulfide, <i>solide</i> , see Antimony compounds, inorganic, n.o.s.												
D	Antimony tritelluride, solid	8	NA1549	II	8		154	212	240	25 kg	100 kg	A	13
D	Antimony tribromide, solution	8	NA1549	II	8	B2	154	202	242	1L	30L	C	13
	Antimony trichloride, liquid	8	NA1733	II	8	B2	154	202	242	1L	30L	C	40
	Antimony trichloride, solid	8	NA1733	II	8	B106	154	212	240	15 kg	50 kg	A	40
D	Antimony trifluoride, solid	8	NA1549	II	8		154	212	240	25 kg	25 kg	A	13
D	Antimony tribromide, solution	8	NA1549	II	8	B2	154	202	242	1L	30L	C	13
	Aqua ammonia, see Ammonia solution, etc.												
	Argon, compressed	2.2	UN1008		2.2		308	302	314, 315	75 kg	150 kg	A	
	Argon, refrigerated liquid ( <i>cryogenic liquid</i> )	2.2	UN1851		2.2		320	316	318	50 kg	500 kg	B	
	Arsenic	8.1	UN1558	II	8.1		None	212	242	25 kg	100 kg	A	
	Arsenic acid, liquid	8.1	UN1553	I	8.1	T18, T27	None	201	243	1L	30L	B	48
	Arsenic acid, solid	8.1	UN1554	II	8.1		None	212	242	25 kg	100 kg	A	
	Arsenic bromide	8.1	UN1555	II	8.1		None	212	242	25 kg	100 kg	A	12, 40
	Arsenic chloride, see Arsenic trichloride												

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In column (3) the heading is Hazard class or Division. Argon, compressed is 2.2. For compressed gases you will find three classes or divisions:

2.1	Flammable gas
2.2	Nonflammable gas
2.3	Poison gas – inhalation hazard

**NOTE** Note: The word poison and toxic are interchangeable.

Column (4) is the Identification Numbers. For argon compressed the UN number is 1006. UN stands for United Nations. The United Nations works to establish international shipping laws for hazardous materials. The intent is to be able to ship hazardous material anywhere in the world and be able to identify the product by the proper shipping name and UN number. For some products you may see a NA number. This stands for North America. This is not an international shipping number.

**NOTE** Our government continues to try to bring the United States into compliance with International Hazardous Material shipping rules. This is the reason you have seen the implementation of docket number HM 181 and docket number HM 215B.

For a cylinder(s) of argon the proper shipping name is:

**Argon, compressed 2.2 UN 1006**

49 CFR §172.202 (5)(c) lists the requirement to enter either before or directly after the proper shipping name the quantity of hazardous material and container type (cyl) being shipped. For most locations this is accomplished by entering the total number of cylinders shipped by proper shipping name. For the above example:

**13 cyl. Argon, compressed 2.2 UN 1006**

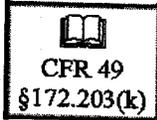
or

**Argon, compressed 2.2 UN 1006 13 cyl.**

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Remember that the proper shipping name must start at the far left hand side of the hazardous material shipping paper and proceed to the right. **Remember that the proper shipping name must be in the same sequence that it appears in the Hazardous Material table.**



The regulations are the same if you need to ship a material under a "generic" proper shipping name. 49 CFR §172.203(k) provides the guidelines for the use of generic proper shipping names. The basic rule is that if the substance is described by its technical name then you must use it, but if the substance is not or is a mixture, then you can use the generic proper shipping names. An example is compressed gas, n.o.s. N.O.S. stands for Not Otherwise Specified. So if you had a cylinder that contained argon and carbon dioxide, the proper shipping name would be:

Compressed gas, n.o.s. (argon, carbon dioxide) 2.2 UN 1956

You can either choose the singular or the plural version, gas or gases. You can either choose upper case or lower case lettering. SAFECOR suggests that you maintain the same style throughout your manifest. Also, with most generic proper shipping names you are required to list the two components that most predominately contribute to the hazard. You are not required to list the percentage, just the components.



A note of caution, not all generic proper shipping names require the listing of the two components that most predominately contribute to the hazard. 49 CFR §172.203(k)(3) states that if the proper shipping name, as listed in the Hazardous Material table, is identified by the letter G in column 1 then at least two components that most predominately contribute to the hazard must be listed.

Review your locations hazardous material manifest. Make sure you are familiar with all the products that are shipped and received. If your location handles a poison or toxic substance (inhalation hazard), follow the guidelines set forth by your location.

Column (5) lists the packaging group. There are no packing groups for compressed gases. The packing group number (I, II, III) indicates the degree of danger.

I	Great
II	Medium
III	Minor

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The packing group, if required, must follow the basic description (after the UN number) with the prefix PG. Example, PGI or PGII. Such as:

Anisole 3 UN 2222 PG III

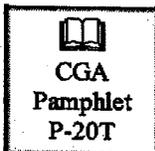
Column (6) list the label(s) required to properly ship this material. The first label listed is the primary label, any additional labels are subsidiary labels. The primary label is required to show the hazard class in the lower point of the diamond. The subsidiary label(s) are now required to display the hazard class number. This changed on September 30, 2001. There is still a grace period that if your container was properly labeled before the rule change, it is still acceptable until October 1, 2005. After October 1, 2005, all subsidiary labels and placards must display the hazard class number. Airgas has updated their labels and placards to reflect this change. Note that as of October 1, 2005 your hazardous material shipping paper must also list all subsidiary hazard class numbers. Any subsidiary hazard class numbers will immediately follow the primary hazard class number in parenthesis.

Column (7) lists any special provision that may apply to this material. If a number or code appears in this column, refer to the appendix at the end of the table (Code/special provisions) for further information. For division 2.3 gases, this column will assign the Hazard Zone. You will find four listed hazard zones. Column (7) will indicate the zone 1, 2, 3, 4. But you will need to enter Zone A, Zone B, etc.

1	Zone A
2	Zone B
3	Zone C
4	Zone D

Also, the wording "Inhalation Hazard" must be entered as part of the proper shipping name. Example - Chlorine:

Chlorine 2.3 UN 1017 poison-inhalation hazard Zone B



The Hazard Zone is based on the LC<sub>50</sub> rating. LC is the Lethal Concentration as determined by exposing a population of laboratory animals to the hazardous material. CGA P-20T defines LC<sub>50</sub> as "A concentration of a substance in air, exposed to which for a specific length of time is expected to cause the death of 50 percent of the entire experimental animal population." The LC<sub>50</sub> rating is listed in parts per million (PPM). For further information refer to CGA pamphlet P-20T.

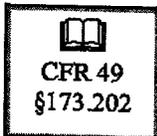
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If the number is preceded by a letter it refers to the following. These provisions apply only to that form of transportation.

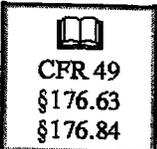
A	Aircraft
B	Bulk
H	Highway
N	Non-bulk
R	Railroad
T	IM Portable Tanks
W	Water

An IM portable tank is an Intermodal portable tank designed primarily for international intermodal use.



Column (8) lists any special packaging authorizations. You will see at the top of the table it indicates 173 \*\*\*. This means that if a number is listed in column (8), then you need to refer to the appropriate section of 49 CFR §173. Example, if you refer to gasoline, it lists 202 in column 8b. If you refer to §173.202, it will tell what the requirement is.

Column (9) lists the quantity limitations if you will be shipping this material by passenger aircraft or railcar (9A) or cargo aircraft (9B). With all the media attention that the airline industry has received since the Value Jet incident, be prepared to see an increase in regulations in this area.



Column (10) lists any special provisions for vessel stowage. Both columns A and B pertain to vessel stowage. The meaning of the letters, A, B, C, can be found in 49 CFR §§176.63 and 176.84.

Refer to the beginning of the table to Column (1). In column (1) you will find the following letters and signs (+, A, D, G, I, W). Note that not all entries have this notation.

- The "+" fixes the proper shipping name, hazard class and the packaging group for that entry without regard to whether the material meets the definition of that class. An appropriate alternate proper shipping name and hazardous class may be authorized by the Associate Administrator for Hazardous Material Safety.

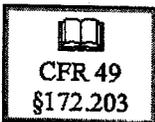
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- The letter "A" restricts the application of requirements of this subpart to materials offered or intended for transportation by aircraft, unless the material is a hazardous substance or a hazardous waste.
- The letter "D" provides the proper shipping name for domestic transportation, but they may not be correct for international transportation. An example is Ammonia, Anhydrous. For domestic transportation, it is shipped as a division 2.2 nonflammable gas with the addition of the "inhalation hazard" warning. For international transportation, it is shipped as a division 2.3 poison inhalation hazard, with a subsidiary hazard of corrosive.
- The letter "G" identifies proper shipping names for which one or more technical names of the hazardous material must be entered in parentheses, in association with the basic description.
- The letter "I" provides the proper shipping name for international shipments. International Transportation is defined in 49 CFR §171.8.
  1. Between any place in the United States and any place in a foreign country.
  2. Between places in the United States through a foreign county.
  3. Between places in one or more foreign countries through the United States.
- The letter "W" pertains to the transportation by vessel unless the material is a hazardous substance or hazardous waste.

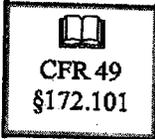
**NOTE**

If you ship a cylinder in conjunction with a DOT Exemption, it must be noted on the manifest. 49 CFR §172.203 states "Each shipping paper issued in connection with a shipment made under an exemption must bear the notation "DOT-E" followed by the exemption number assigned and so located that the notation is clearly associated with the description to which the exemption applies". Most locations will list the DOT-Exemption number on the same line as the material, but make sure it is after the proper shipping description. Also, the container must be marked with the DOT Exemption number. Refer to the actual DOT exemption for instructions.



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Following the hazardous material table in 49 CFR §172.101, you will find a table (table 1) that lists all the hazardous substances that have a RQ (reportable quantity). What this means is that if we ship a cylinder/container that contains greater than or equal to the reportable quantity listed in the table, we must enter the letters RQ either directly before or after the proper shipping name.

If we are handling a cylinder/container that has a RQ value that develops a leak or spill we must report this to the United States Coast Guard National Response Center @ 1-800-424-8802 or 1-202-267-2675. The quantity that is released must exceed the RQ limit. If you have any doubt if the leak was great enough to prompt a report, notify your supervisor immediately.

**All hazardous material shipping papers must list an emergency response telephone number.** This number must be displayed on the front of the hazardous material shipping paper and in a manner that distinguishes it from the text. This number must be monitored at all times the hazardous material is in transportation, including storage incidental to transportation. Basically, this means that the number must be answered 24 hours a day, 7 days a week by a competent individual that can provide answers and/or contact someone who can. Most locations will contract with a "1-800" company like Chemtrec. Chemtrec acts as the "filter" for all calls pertaining to an incident. They maintain a listing of contacts within your region for after-hours emergencies.

**?** **What is a shipper certificate and when do I need to issue one?** The definition for a shipper's certificate is found in 49 CFR §172.204. An example is:

"This is to certify that the above-named material are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation."

This is only one example given. Other examples are provided if you are going to ship the product by air, or international.

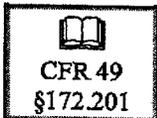
The text is designed to assure the carrier that the shipper is operating according to the law. The shipper is required to provide this text on the hazardous material shipping paper and **sign it**. It must be legibly signed by a principal, officer, partner, or employee of the shipper. It may be legibly signed mechanically, by typewriter or other mechanical means.

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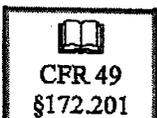
**NOTE** Note that a shipper's certificate is not required of a private carrier transporting his own shipments. This means that a welding supply company transporting their own cylinders or customer owned cylinders would not need a shipper's certificate. Our industry recommends that ALL shipments of hazardous material contain a properly prepared and signed shipper's certificate. This will eliminate the possibility of not completing it for a contract or common carrier.

If your hazardous material shipping paper is more than one page, then all the pages must be numbered. Example page 1 of 2, page 2.



All hazardous material shipping papers must be legible and printed in English.

The name of the shipper is not required unless the hazardous material is to be transported by water. Note that there is pending legislation that may require a shipping paper to contain the name and address of the person offering the shipment and the name and address of the person receiving the shipment.



**?** What are the rules for having hazardous and non-hazardous material on the same shipping paper? 49 CFR §172.201 states that you have three options:

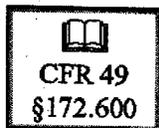
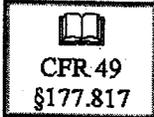
1. You can enter an "X" in the HM (Hazardous Material) column for each shipment of hazardous material.
2. You can enter all the hazardous material first.
3. You can enter the hazardous material in a different color or some other means to draw attention to it.

Remember that the hazardous material shipping paper must be on top of any other paperwork your driver may be carrying. This is the first thing the DOT inspector will want to see. Do not confuse a hazardous material shipping paper with an invoice, delivery ticket, etc. If a law enforcement officer asks to see an invoice, delivery ticket, etc., **ONLY** show the officer your hazardous material shipping paper. Numerous Airgas drivers have been cited for non-compliance, with regard to a hazardous material shipping paper, for showing the officer an invoice, delivery ticket, etc. **If you have any questions about the difference in these documents, please ask your supervisor now.**

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**?** Where are hazardous material shipping papers to be kept during shipment? 49 CFR §177.817 states that the hazardous material manifest must be kept within the drivers reach when restrained by the lap belt. It must be easily seen by anyone entering the cab of the vehicle. If the hazardous material shipping paper is carried with other documents it must be clearly distinguished from the rest. Basically, the driver needs to have the hazardous material manifest within arms reach at all times. When the driver leaves the vehicle, the hazardous material manifest must be either placed on the drivers seat or placed in the inside pocket on the driver's door. This requirement will allow an emergency responder to find and read the hazardous material manifest in the event of an emergency and the driver is not available.



**2004 North America Emergency Response Guidebook:** 49 CFR §172.600 requires us to maintain emergency response information for the hazardous materials that we store, ship, load, or otherwise handle during any phase of transportation. This means that we must maintain this information in all our vehicles and facilities. Airgas complies with this requirement by having a legible copy of the 2004 North America Emergency Response Guidebook in the vehicles and also a copy at each location. All employees must receive training on how to read and understand this information.

The guidebook is divided into 4 different color coded sections. The first section (yellow color coded) lists all the substances numerically by UN/NA number. The second section (blue color coded) lists all the substance alphabetically by substance. The third section (orange color coded) contains the Emergency Response guides. The fourth section (green color coded) contains information on initial isolation and protective action distances. Once you have determined which guide to refer to, the guide is divided into the following sections:

### Potential Hazards

Describes potential hazards that the material may display in terms of a fire and/or explosion. Also, the health effects upon exposure.

### Public Safety

Provides suggestions for public safety measures based on the situation at hand.

Provides suggestions for protective clothing, respiratory protection and initial isolation of the incident area. Distances for suggested evacuations are also provided.

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## Emergency Response

Provides suggestions for emergency response actions and first aid. The first aid suggestions are only the basics, trained medical personnel should make the final decision.

## Table of Initial Isolation and Protective Action Distances

This table lists the substances numerically by UN number. The table provides suggested distances useful to protect people from vapors resulting from spills involving dangerous goods which are considered poison/toxic by inhalation. The distance is the area that is likely to be affected within the first 30 minutes of a spill. As the time span increases, so can the physical area.

The table also has an appendix that lists "Dangerous Water-Reactive Material". The table lists the substance numerically by UN number and also the toxic vapor that is formed with the addition of water.



### Exercise

Look up the substance that is classified as UN 1072. Since we know the UN number we would refer to the yellow coded pages that list the products numerically by UN number. We find that UN 1072 refers to Oxygen, compressed. What guide pertains to this substance? Guide number 122. If we refer to guide 122 (orange coded pages) it provides the basic information that an emergency responder would need.



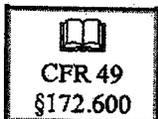
### Exercise

Look up the substance chlorine. Since we know the name of the substance we refer to the blue coded pages that list the products alphabetically. We find that chlorine is highlighted. If the index entry is highlighted, LOOK FOR THE ID NUMBER AND THE NAME OF THE SUBSTANCE IN THE TABLE OF ISOLATION AND PROTECTIVE ACTION DISTANCES. If necessary, BEGIN PROTECTIVE ACTION IMMEDIATELY.

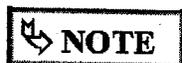
Review all the substances that your location ships, handles, or stores. You need to be prepared to handle an emergency if it should arise. Never try to respond or correct an incident without the proper training and proper equipment. Always work within the "buddy system". Never attempt to make repairs or rescue attempts alone.

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The rules covering Emergency Response information are found in 49 CFR §172.600. It states that anyone who offers for transportation, accepts for transportation, transfers, stores or otherwise handles must comply with this subsection. This means that we must also provide Emergency Response Information to our customers that pick up hazardous material. Most locations comply with this rule by either printing the Emergency Response Information on the back of the invoice or attaching the information to the invoice. Is your Emergency Response Information based on the 2004 edition, 2000 edition or the 1996 edition?



**Remember that your Emergency Response information is to be carried with your Hazardous Material Shipping Paper. You will have a hard time explaining compliance to the officer, if the DOT inspectors find the Emergency Response Guidebook shoved in the glove compartment, shoved under the seat, etc.**

**DOT Exemptions:** If a cylinder manufacturer wants to produce a cylinder to 3AA 2015 specification, 49 CFR §178.37 provides the guidelines for which it is to be produced, tested, marked, etc. But if a manufacturer would like an "exemption" from certain portions of the regulations, they can apply for an "exemption". In 2005 there was a name change with the DOT regarding who issues exemptions. In the past RSPA (Research and Special Programs Administration) was the division of the DOT that issues/approves exemptions. Now PHMSA (Pipeline and Hazardous Materials Safety Administration) is the division of the DOT that issues/approves exemptions.

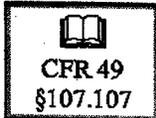
A cylinder that is produced under a DOT exemption will have that exemption number stamped on the cylinder. Instead of "3AA" it may be stamped "DOT-E 9370", for example. In order to be able to fill, test or transport this cylinder you will need to have a current copy of the exemption. Some exemptions will state that a copy must be carried in the vehicle that transports the cylinder; others might state that the cylinder may only be used for a specific period of time before it must be taken out of service. Refer to the specific exemption for clarification.

Another example of an exemption is one that allows the "user" to perform an act that is exempt from certain regulations, such as DOT-E 6530. This exemption allows certain flammable gases to be filled to 110% of their marked service pressure. The exemption number that allows this (DOT-E 6530) must be marked on the cylinder/container. This can be accomplished by decals, painting, etc.

A DOT exemption has an expiration date. Most exemptions are only valid for 1 or 2 years. You are required to maintain a current copy.

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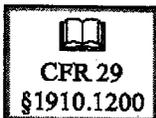
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If the exemption is issued to a manufacturer to allow them to produce a special cylinder, then you need to obtain a copy of the exemption in order to operate under its terms. But if the exemption allows the operator to perform an act or function that is contrary to CFR regulations, you must be listed on the exemption as a "party to the exemption". This is known as PTE (Party to The Exemption). **You are not allowed to participate in this type of exemption unless you are listed on the exemption by PHMSA.** Only PHMSA can grant "party to the exemption" status. 49 CFR §107.107 provides the guidelines to apply for "party to the exemption status".



**Review your operation to see what exemptions you are currently operating under. Check your last hydrostatic renewal application, as it will list the exempt cylinders your facility indicated it would be hydrotesting. Failure to produce current copies of any exemption you are operating under is a DOT violation.**



**Reading and Understanding a MSDS:** A MSDS (Material Safety Data Sheet) is a printed document, concerning a hazardous chemical, that is prepared according to OSHA regulations found in 29 CFR §1910.1200.

Two of the main uses are:

- A training and reference tool for workers.
- A resource for emergency responders.

A MSDS should contain the following information:

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>• Chemical product and company identification</li> <li>• Composition, information on ingredients</li> <li>• Hazard identification</li> <li>• First aid measures</li> <li>• Fire fighting measures</li> <li>• Accidental release measures</li> <li>• Handling and storage</li> </ul> | <ul style="list-style-type: none"> <li>• Exposure control, personal protection</li> <li>• Physical and chemical properties</li> <li>• Stability and reactivity</li> <li>• Toxicological information</li> <li>• Ecological information</li> <li>• Disposal considerations</li> <li>• Transport information</li> <li>• Regulatory information</li> </ul> |
|--|--|

Refer to the oxygen MSDS provided by your instructor. Most MSDSs will be organized in a similar manner. The facility is required to maintain a current MSDS for all the hazardous material that is stored, used, or handled at their facility. They must be available to the employee at all times. An inventory of MSDSs shall be maintained as well.

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**Segregation Tables:** The question is often asked about segregation of cylinders during shipment. 49 CFR §174.81 provides the guidelines for segregation, it states "Hazardous material may not be loaded, transported, or stored together, except as provided in this section, and in accordance with the following Table." Refer to the attached table.

**Segregation Table for Hazardous Materials**

Class or Division	Notes	1.1 1.3	1.3	1.4	1.5	1.6	2.1	2.2	2.3 Gas Zone A	2.3 Gas Zone B	3	4.1	4.2	4.3	5.1	5.2	6.1 Liquids PG I Zone A	7	8 Liquids Only
Explosives 1.1 and 1.2	A	*	*	*	*	*	X	X	X	X	X	X	X	X	X	X	X	X	X
Explosives 1.3		*	*	*	*	*	X		X	X	X		X	X	X	X	X		X
Explosives 1.4		*	*	*	*	*	O		O	O	O		O				O		O
Very insensitive explosives 1.5	A	*	*	*	*	*	X	X	X	X	X	X	X	X	X	X	X	X	X
Extremely insensitive explosives 1.6		*	*	*	*	*													
Flammable Gases 2.1		X	X	O	X				X	O							O	O	
Non-toxic, non-flammable gases 2.2		X			X														
Poisonous gases Zone A, 2.3		X	X	O	X		X				X	X	X	X	X	X			X
Poisonous gases Zone B, 2.3		X	X	O	X		O				O	O	O	O	O	O			O
Flammable liquids 3		X	X	O	X				X	O					O		X		
Flammable solids 4.1		X			X				X	O							X		O
Spontaneously combustible materials 4.2		X	X	O	X				X	O							X		X
Dangerous when wet materials 4.3		X	X		X				X	O							X		O
Oxidizers 5.1	A	X	X		X				X	O	O						X		O
Organic peroxides 5.2		X	X		X				X	O							X		O
Poisonous liquids PG I Zone A, 6.1		X	X	O	X		O				X	X	X	X	X	X			X
Radioactive materials 7		X			X		O												
Corrosive liquids 8		X	X	O	X				X	O		O	X	O	O	O	X		

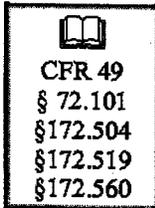
- The absence of any hazard class, division, or a blank space in the Table indicates no restrictions apply.
- An "X" in the table indicates that the materials **may not** be loaded, transported, or stored together during transportation.
- An "O" in the table indicates that the material **may not** be loaded, transported, or stored together during transportation **unless** separated in a manner that, in the event of leakage from packages under conditions normally incident to transportation, commingling of hazardous material would not occur.

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- A "\*" in the table pertains to segregation of Class 1 explosives.
- An "A" in the second column of the table pertains to Division 1.1 (Class A explosive) and Division 1.5 (blasting agents).

For the average welding supply company the only restrictions may come from the transportation of a class 2.3 Zone A or Zone B poison - inhalation hazard. **If you have any questions, contact your supervisor before making any shipment.**



**Placarding Rules:** Placards are a means to communicate the hazards of the products we transport to the public. Just as a cylinder needs a marking/label, a commercial vehicle transporting hazardous material needs placards. **Note that not all shipments of hazardous material require placarding.** The aggregate gross weight (this is the weight of the cylinder and the gas) must meet or exceed the placarding limit. Example, for a division 2.2 product the placarding limit is 1,001 pounds aggregate. If you were only shipping one (1) oxygen cylinder that had an aggregate weight of 160 pounds, the shipment would not require placards. If you were shipping seven (7) oxygen cylinders that had an aggregate weight of 1,120 pounds, the shipment would require placards. Refer to the hazardous material table in 49 CFR §172.101. In column (3) it will list the division or class for the product you wish to ship. Once you know the division or class, refer to 49 CFR §172.504 table 1 and/or table 2. The table will instruct you on which placard is required. 49 CFR §172.519 through §172.560 provides the size, color, symbols, etc. that must be included on the placards.

Placards must always represent the hazards that are present. In the example given above, you were not required to display placards when only hauling the one oxygen cylinder, but you may. Once you delivered the oxygen cylinder, and you no longer had a cylinder on board, you must remove the placards.

Some exemptions to the normal placarding rules are found in 49 CFR §172.504. The common ones that pertain to the welding supply distributors are:

1. A Non-flammable gas placard is not required on a vehicle which contains non-flammable gas if the vehicle also contains flammable gas or oxygen and it is placarded with Flammable Gas or Oxygen placards.

**Example:** If your load of cylinders consists of nitrogen, argon and acetylene, you would only need to placard for the Flammable gas. You could display placards for both the Non-flammable gas and the Flammable gas if you would like.

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**Example:** If you have a pickup that is hauling both oxygen and acetylene and the weight requires you to display placards, you could legally only display the Flammable gas placard (4 - one on each side of the vehicle).



Remember that the 1,001 limit is not for just one class, it is the combined weight of all hazardous material. Example, if you had 600 pounds of oxygen cylinders and 500 pounds of acetylene cylinders, you would exceed the 1,001 pound limit and this load would require placards. You would have two choices:

- Flammable gas placard
- Flammable gas placard and Non-flammable gas placard

You can placard for loads less than the 1,001 pound limit. It is suggested that you placard when the weight approaches the limit. It is better to be safe than sorry.

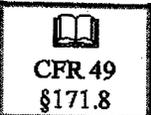
“You seldom win an argument on the side of the road.”

Any shipment of a division 2.3 poison – inhalation hazard must be placarded.

1. For domestic shipments of oxygen, compressed or oxygen refrigerated liquid, the Oxygen placard can be used in place of the Non-flammable gas placard.



Remember that a label and a placard are different. A label is not a placard and a placard is not a label. Both perform different roles in the communication of hazardous material to the public. If you have any questions about their roles, contact your supervisor.



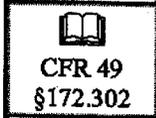
**Placarding for Bulk Shipments:** Bulk packaging is described in 49 CFR §171.8. It is defined as “a packaging, other than a vessel or barge, including a transport vehicle or freight container, in which hazardous materials are loaded with no intermediate form of containment and which has:

1. A maximum capacity greater than 450 L (119 gallons) as a receptacle for a liquid.
2. A maximum net mass greater than 400 kg (882 pounds) and a maximum capacity greater than 450 L (119 gallons) as a receptacle for a solid; or
3. A water capacity greater than 454 kg (1000 pounds) as a receptacle for a gas”

The normal bulk packaging that is used by a typical welding supply company is a cargo tank (for cryogenic liquid). Other examples are a tube trailer for compressed gas or a hopper for calcium carbide.

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The marking requirements for bulk packaging are found in 49 CFR §172.302. There are three choices, but the average welding supply company will choose one of the following:

1. You can either use the proper placard with the UN number listed on it as prescribed in 49 CFR §172.302. In addition, you will need to have the proper shipping name listed next to the placard.
2. You can use the placard that represents the hazard class and then display the UN number on an orange panel next to it. In addition, you will need to have the proper shipping name listed next to the placard.

This information must be displayed on each side and each end.

If the bulk package is being operated under the terms of an exemption, then that exemption number must be plainly and durably marked "DOT-E", followed by the exemption number assigned. Refer to the actual exemption for the location the DOT E number must be displayed.

The required size of the marking is found in 49 CFR §172.302.

Note that all of this information must be kept separate from any advertisement that is displayed on the cargo tank that would distract from the marking's intent.

**HM 215:** December 29, 1994 U.S. government passed legislation to bring the domestic shipment of hazardous material more in compliance with International standards. The docket is referred to as HM 215. The mandatory compliance date was October 1, 1996. It basically redefined some of the proper shipping names. It changed a total of approximately 30% of all entries in the Hazardous Material table. The changes have been minimal for most welding supply distributors. Review your hazardous material shipments for compliance.

HM 215 established Rare Gases. They are defined as Argon, Helium, Krypton, Xenon, Neon, and Radon. These gases are important to remember because along with these rare gases are some new proper shipping names.

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Some of the most common are:

Rare gas mixtures, compressed
Rare gas and oxygen mixtures, compressed
Rare gas and nitrogen mixtures, compressed
Compressed gas, oxidizing, n.o.s.
Carbon dioxide and oxygen mixtures, compressed
Carbon dioxide and nitrous oxide mixture

Examples of their use:

If you ship an argon and oxygen mixture it is shipped as a:

**Rare gas and oxygen mixtures, compressed 2.2 UN 1980**

If you ship an argon and helium mixture it is shipped as a:

**Rare gas mixtures, compressed 2.2 UN 1979**

If you ship an argon and carbon dioxide mixture it is shipped as a:

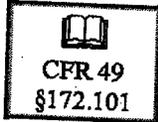
**Compressed gas, n.o.s. (argon, carbon dioxide) 2.2 UN 1956**

**?** **Why aren't the two components in the Rare gas and oxygen mixture listed like they are for the compressed gas, n.o.s.?** In the Hazardous Material table, the proper shipping name rare gas and oxygen mixture is not preceded by a G in column 1. Since there is no G listed, the DOT does not require the two components to be listed.

**?** **If argon is a rare gas why is the argon, carbon dioxide mixture listed as a compressed gas n.o.s.?** Argon is a rare gas, but no proper shipping name is listed for a rare gas and carbon dioxide mixture so you must use the "generic" compressed gas n.o.s. proper shipping name.

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The rule is that if the substance is listed in 49 CFR §172.101 (Hazardous Material Table) by name, then you must use this proper shipping name. If the substance is not defined in the Hazardous Material Table, then you must use a "generic" proper shipping name such as Compressed gas, n.o.s.

HM 215 also introduced the definition of an oxidizing gas. An oxidizing gas is one that contributes to the atmosphere more oxygen than air does. The DOT has determined that an oxidizing gas is one that contains more than 23.5% oxygen. **Example:** If you ship an argon and oxygen cylinder it would be shipped as a:

Rare gas and oxygen mixtures, compressed 2.2 UN 1980

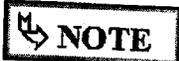
But if you ship the same argon and oxygen mixture and the oxygen content was over 23.5%, it would have to be shipped as a:

Compressed, gas oxidizing n.o.s. (argon, oxygen) 2.2, (5.1) UN 3156

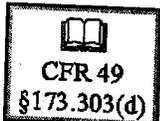
HM 215 also changed some of our cylinder markings. An example is nitrous oxide. Nitrous oxide is now classified as a nonflammable and an oxidizer. It will require the use of both the green nonflammable diamond and the yellow oxidizer diamond.

N.O.S. classifications for liquefied gases were added to separate them from the compressed gas, n.o.s. entries.

If your location handles poison/toxic, contact your supervisor for any updates.



**Remember that your hazardous material shipping paper and the cylinder marking/labeling must match.**



**Cylinder Settled Pressure:** Before October 1, 2002 (HM-220D), 49 CFR §173.302(e) described the requirement for verification of cylinder pressure. "Each day, the pressure in a container representative of that day's compression must be checked by the charging plant after the container has cooled to a settled temperature and a record of this test kept for at least 30 days". There is no longer a DOT requirement to maintain a settled pressure log for high-pressure cylinders. There still is the requirement to maintain a settled pressure log for 30 days when filling acetylene cylinders, 49 CFR 173.303(d). Note that no settled pressure above the temperature compensated fill pressure is allowed. Please refer to CGA Technical Bulletin #26 for further guidance. SAFECOR has developed the settled pressure form for compliance. Refer to the attached form.

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**?** *How do I make my Function Specific Training efforts meet the federal requirements?* The DOT does not expect you to duplicate training that other government agencies may require - they only require that such training be *documented*. You are not expected to "re-invent the wheel"; you may only need to use the training material already provided.

Function specific training will vary from location to location. Review the job functions that your associates perform in order to compile a complete list of their required training. Remember that the training required by the FDA, OSHA, EPA, etc. will satisfy the function specific training required by the DOT. Some examples of training that might be used to satisfy "dual requirements" are:

- ◆ DOT training of hydrostatic testers. The Airgas Hydrotesting manual contains test and documentation of training. Also some regions attend outside training, such as Galiso. These records can be used to demonstrate compliance.
- ◆ FDA requirements for documented training of operator competency in the production of medical gas operations. This training might include documentation on the safe handling of cylinders, very specific filling operations, analysis of the finished product, and so forth.
- ◆ EPA certified Emergency Responder training.
- ◆ OSHA training covering such items as:
  - ◇ HAZWOPER (Hazardous Waste Operations and Emergency Response). This alone can easily cover 40 hours of documented training.
  - ◇ Forklift operation.
  - ◇ Etc.

As you can tell, the list of function specific training is almost endless. The goal that we must strive for is the continual training of our associates to improve both their safety and performance in the workplace. As our government continues to update and change the regulations that govern our industry, so must we continue to train and educate our associates and ourselves in order to remain in compliance.

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## HM 126 Function Specific Test

Haz-Mat Employee Name \_\_\_\_\_

Date \_\_\_\_\_

Trainer / Address of Trainer \_\_\_\_\_

Location \_\_\_\_\_

The training material for this test is provided in the HM 126 instruction material presented in today's class. A copy of the instructional material should be maintained for further reference.

This test certifies that the above named hazmat employee has been trained and tested as required by 49 CFR §172.700.

### Questions:

1. Where is the hazardous material table found in the code of federal regulations?
2. If an entry in the hazardous material table is in Roman type, what does that mean?
3. Explain the following hazard or division class.

2.1	
2.3	
2.3	

4. True or False. The proper shipping name must be in the same order as shown in the hazardous material table. Proper shipping name, hazard class number, UN number.

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5. True or False. If you ship a cylinder in conjunction with an exemption, the DOT E number must be listed on the hazardous material manifest in association with that entry.
6. What is a shipper's certificate?
7. Can you ship both a hazardous and non-hazardous material on the same manifest? If so, what special precautions must you take?
8. What is the function of the Emergency Response Guidebook?
9. Provide an example of a DOT exemption.
10. If you are transporting 600 pounds of oxygen compressed and 500 pounds of acetylene dissolved, what placard(s) are required?
11. If you have 1,200 pounds of oxygen compressed, what placard(s) are required?
12. True or False. Any shipment (quantity) of poison gas requires placarding.
13. In order for a liquid shipment to fall under the bulk shipment requirements it must be greater than \_\_\_\_\_ gallons.

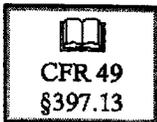
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**Driver Training**

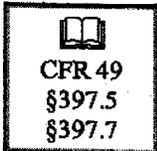
**SECTION**  
**4**

As mentioned earlier in the program, a CDL with the tanker and hazardous material endorsement will satisfy the requirement for the driver training. You may want to provide some additional training to ensure compliance. The following are some areas that should be considered.

The training requirements states that Motor Carriers and other persons shall comply with 49 CFR §§390 through 397. These sections are commonly referred to as the Federal Motor Carrier Safety Regulations. You may already be providing your drivers with a copy of these rules.



**Smoking Around a Hazardous Material.** No person may smoke or carry a lighted cigarette, cigar, or pipe on or within 25 feet of a motor vehicle that contains a flammable material classified as division 2.1 (flammable gas). It lists some additional classifications, but the common one for most welding supply distributors is the flammable gas rule. Remember that this includes the cab of the vehicle. Airgas policy prohibits smoking in or around any Airgas vehicle.

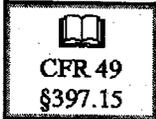


**Parking and Attendance of a Vehicle Carrying a 2.1, 2.2, or 2.3 Hazardous Material.** The parking and attendance rules are found in 49 CFR §§397.5 and 397.7. A motor vehicle that contains a hazardous material may not be parked on a public street, public highway, or shoulder of a public highway unless it is attended by the driver. It does allow the vehicle to be parked in the above manner if the driver is performing duties that require it to be parked there. The general rule for the welding supply distributor is not to park on or near a public road. When parked at a motel for the evening, make sure it is parked in the motel parking lot and the manager of the facility is aware of the vehicle and its contents. When the driver stops for lunch, make sure the vehicle is well off the roadway. It is always recommended that the driver is able to keep the vehicle within his vision. Refer to the Airgas En Route Security program found in the 2004 Airgas Driver's Training Manual.

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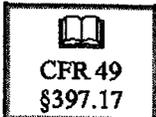
Some states also restrict your travel and/or parking ability based on local and state laws. Ensure compliance in your area.



**Fueling a Vehicle Transporting a Hazardous Material.** 49 CFR §397.15 states:

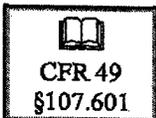
"When a motor vehicle which contains hazardous material is being fueled-

- a. Its engine must not be operating; and
- b. A person must be in control of the fueling process at the point where the fuel tank is filled."



**Tire Checks.** The DOT recently eliminated the requirement for tire checks while enroute. The new requirement is that the drivers check their vehicle's tires at the beginning of each trip and each time they are stopped. The tire checks should be recorded on the driver's hours of service record (log book).

**Hazardous Material Routing.** For the normal transportation of a class 2 hazardous material, no federal routing is required. Note that many states, especially cities, do require special routing and/or restrictions. Many times the average welding supply distributor transporting class 2 hazardous material is "grouped" with the rest of the hazardous material carriers.



**Federal Hazardous Material Registration Program.** This is the federal requirement to register a shipper, carrier, or handler of a hazardous material. The program is found in 49 CFR §107.601. It provides the details on who must register, when, how, and why.

Refer to the Airgas Driver's Training manual for complete training, January 2004 edition.

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