

**Safety
Talk**

Propane Industry Safety Talks

Hazardous Chemicals & Materials





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This document includes *Safety Talks* relevant to *Hazardous Chemicals & Materials*. A comprehensive set of all 45 *Safety Talks* is also available.

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Safety Talk

Using Personal Protective Equipment (PPE)

Personal Protective Equipment (PPE) plays an important role in ensuring your safety when handling propane. While OSHA sets out certain employer requirements, it is your responsibility to know which PPE is required for specific tasks, how to use it appropriately, and secure it for your assignment. Always follow manufacturer and employer guidelines on the equipment's purpose, limitations, proper fit, and maintenance.

COMMON PPE AND TYPICAL USES INCLUDE:

- ✓ **Head and face protection, including face shields, protective goggles, and hard hats** — used for welding, chipping, grinding, drilling, or using air-powered tools for breaking concrete or hard surfaces. Goggles are also required for dispensing propane or repairing tanks, as leaking gas can be harmful to eyes. Hard hats are necessary during tank installations/moves or when working in crawl spaces or other small areas where irregular structures can cause head cuts or bruises.
- ✓ **Earplugs** — required any time steady or impulse noise levels are higher than 85 decibels, such as when using jackhammers. See your company's measures and guidelines.
- ✓ **Respirators** — vital in removing harmful substances from the air or supplying breathable, clean air. Consult relevant Safety Data Sheets (SDSs), your company's procedures, or your supervisor for which type of respirator to use with your specific task.
- ✓ **Hands, arms, and feet protection, including gloves and work boots** — required when dispensing or transferring propane, moving tanks or cylinders, handling pipes, or cutting or welding.

Depending on your work area or job function, your employer may require additional protection. If you are unsure of the proper PPE to use for a particular task, ask your supervisor.

SECURING, USING, AND MAINTAINING PPE:

- ✓ It is the job of everyone at your site to clean, store, and maintain PPE properly so that it is readily available when needed. Follow your employer's guidelines.
- ✓ Remove and report any damaged, cracked, or otherwise compromised PPE to your supervisor immediately, and request replacement.
- ✓ Check and follow manufacturer and employer protocols for cleaning and repairing PPE.
- ✓ Your safety is top priority. Advise your supervisor if you believe additional PPE is required or helpful for a particular task.

Discussion Topics

1. Whose responsibility is it to ensure you have the correct PPE for your job?
2. What should you do if you arrive at a job site and no PPE is available?
3. Is it acceptable to use PPE that is in poor condition if it is the only available PPE on site?

LEARNING ACTIVITY

Set up a number of scenarios where PPE is necessary. Have participants explain which PPE is necessary for which tasks and why.

Source: *Basic Principles and Practices of Propane* (PERC)

For more information about using personal protective equipment, visit propanesafety.com.



Safety Talk

Using and Maintaining Fire Extinguishers

Because propane is flammable, fire extinguishers must be available at all facilities and on all vehicles. They can keep a small incident from becoming a major accident. It is important that all workers and operators understand how to maintain and use fire extinguishers, in the event of a safety-related issue.

THINGS TO KNOW ABOUT FIRE EXTINGUISHERS:

- ✓ NFPA 58 requires at least one fire extinguisher be available at a bulk propane plant. Multiple extinguishers are a good idea in a large or spread-out facility.
- ✓ OSHA requires that employees be trained to use fire extinguishers when they are first hired and every year thereafter. Advise your supervisor if you are due for training.
- ✓ Fire extinguishers are vital for creating escape routes or for small fires, such as those involving combustible materials. They are not intended to put out a large blaze or propane fire.
- ✓ Make sure no propane leaks are present when using a fire extinguisher.

UNDERSTANDING FIRE EXTINGUISHER RATINGS:

- ✓ Fire extinguishers are rated by the NFPA by the class(es) of fire they are suitable for suppressing. Most extinguishers carry multiple ratings.
 - Type A: Paper, wood, or other similar fires
 - Type B: Flammable liquid or propane
 - Type C: Electrical
- ✓ Per NFPA 58, all propane delivery vehicles should carry one portable fire extinguisher having a minimum capacity of 18 lb. of dry chemical with a B:C rating. Check your local or state codes if they require a higher rating.

STORING, INSPECTING, AND MAINTAINING FIRE EXTINGUISHERS:

- ✓ Know the location(s), condition, and limitations of all fire extinguishers at your plant or on your vehicle.
- ✓ **Monthly Inspections** — Every propane facility must verify that fire extinguishers are intact and fully charged each month. Check with your supervisor for your site's schedule.
- ✓ **Annual Inspection** — Once a year, all units must be inspected by a fire inspection company or the fire department. These agencies will affix a special tag to the extinguisher, showing the test date.
- ✓ It is your job to frequently check the fire extinguisher in your work area or on your service vehicle. If the extinguisher is due for inspection, low on charge, damaged, or missing an inspection tag, notify your supervisor immediately.

Discussion Topics

1. You are ready to leave for a job site and notice that your vehicle's fire extinguisher is missing. How should you respond?
2. What could occur if you use a fire extinguisher not rated for the specific incident?

LEARNING ACTIVITY

Conduct a demonstration on the proper use of extinguishers for various types of fires. Cover specific suppression strategies applicable to paper, electrical, or propane incidents.

Source: *Basic Principles and Practices of Propane* (PERC)

For more information about using fire extinguishers, visit propanesafety.com.



Safety Talk

Basic Fire Prevention Rules and Procedures

Because propane is flammable, everyone involved in its handling must know and follow fire prevention and containment rules at all times. Your knowledge will help protect against property damage and ensure the safety of you and your customers.

RULES TO FOLLOW WHEN WORKING WITH PROPANE:

- Observe all fire prevention signs posted at the plant and warnings marked on containers with flammable material.
- Note the location of emergency shutdown controls and fire extinguishers at the plant and on the truck.
- Never block access to fire control equipment, including fire alarms, fire extinguishers, sliding fire doors, fire escapes, and sprinklers.
- Know how to use the fire extinguishers and inspect them frequently to verify they are properly sized, properly rated, and fully charged.
- Keep all ignition sources — including cigarettes and open flames — away from propane transfer areas. Never turn on or off any electrical switch in the area of a propane discharge. If power must be turned off to avoid a fire, turn it off from the circuit breaker in another location not affected by the discharge.
- Know the telephone number of the local fire department.
- Report any leak to your supervisor immediately.

STEPS TO FOLLOW WHEN A FIRE OCCURS:

In the unlikely event of a fire or an uncontrolled propane leak, remain calm and take the following steps, if it is safe to do so.

- If there is an emergency shutdown device, activate it.
- Immediately eliminate any sources of ignition.
- Evacuate the immediate area, contact the fire department, and do not re-enter until it has been determined safe. Move and stay upwind of a propane leak, fire, or vapor cloud.
- Shut off the electrical power at the main power source.
- If the fire involves a propane delivery vehicle on a highway, block off the roadway at least 2,500 feet in both directions from the accident.
- Contact your supervisor from a safe location. Do not approach the fire.
- Evacuate the area and wait for fire fighters to arrive.

Discussion Topics

1. How do you verify your plant's extinguishers are fully charged?
2. There is a fire at the plant and you left the area but realize you did not activate the emergency shutdown device. What should you do?

LEARNING ACTIVITY

Set up a situation with potential hazards (incorrect signs, missing fire extinguishers, etc.). Have participants identify problems and discuss what may occur if these issues are not remedied.

Source: *Propane Delivery Operations and Cylinder Delivery* [PERC]

For more information on fire prevention rules and procedures, visit propanesafety.com.

Safety Talk

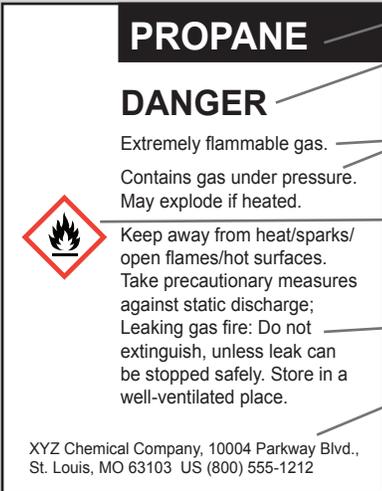
OSHA Requirements for Labels in Revised Hazard Communication Standard

In March 2012, the Occupational Safety and Health Administration (OSHA) updated its *Hazard Communication Standard (HCS)* to become more aligned with the United Nations' *Globally Harmonized System (GHS) of Classification and Labeling of Chemicals*. This Standard requires workers be trained to facilitate their recognition and understanding of the new labels and safety data sheets.

NEW LABEL REQUIREMENTS PROVIDE UNIFORMITY

- ✓ The HCS mandates that information about chemical hazards be conveyed on labels using quick visual notations that provide immediate recognition of hazards. The labels also must provide instructions on how to handle the chemical so that users are informed about how to protect themselves.

Per new OSHA requirements, the following must be included on hazardous materials labels:

	<p>Product identifier: How the hazardous chemical is identified.</p> <p>Signal word: Alerts the reader/user to a potential hazard and indicates the level of severity. There are only two words that are used as signal words, "Danger" and "Warning." If more than one applies, only the more severe will appear on the label.</p> <p>Hazard statement(s): Describes the nature of the hazard(s) of a chemical, including, where appropriate, the degree of hazard. For example: "Can cause damage to kidneys through prolonged or repeated exposure when absorbed through the skin." All applicable hazard statements must appear on the label.</p> <p>Pictogram: Graphic symbols used to communicate specific information about the hazards of a chemical. OSHA's required pictograms must be in the shape of a 90-degree-angled square and include a black hazard symbol on a white background with a red frame sufficiently wide enough to be visible easily.</p> <p>Precautionary statement(s): Recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical or improper storage or handling.</p> <p>Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party: All hazardous chemical labels must include appropriate contact information.</p> <p><i>All information contained on the Hazardous Materials Label must coincide with the information contained on the Safety Data Sheet (SDS) for the chemical.</i></p>
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Illustrative sample only. Not an actual label.

OTHER TYPES OF LABELS

- ✓ OSHA pictograms do not replace the diamond-shaped labels that the U.S. Department of Transportation (DOT) requires for the transport of chemicals, including chemical drums, chemical totes, tanks, or other containers.
- ✓ Companies can continue to use rating systems such as National Fire Protection Association (NFPA) diamonds or Hazardous Materials Information System (HMIS) requirements for workplace labels as long as they are consistent with the requirements of the HCS. It is required that employees have immediate access to the specific hazard information.
- ✓ OSHA requires that all hazardous material containers transported in commerce be labeled according to DOT regulations and include the proper shipping name and material hazard class.
- ✓ For cylinders of 100 pounds propane capacity or less, NFPA 58 requires a warning label that includes information on the potential hazards of propane. Check to determine whether this requirement has been adopted in your jurisdiction.

Discussion Topics

1. Identify labels that are common to the propane industry and your company. Discuss how the new label standards differ from older labels.
2. Discuss the importance of understanding and recognizing all visual and text elements that are included on the labels.

Source: *OSHA Hazard Communication Awareness Training* [PERC]

For more information regarding labeling requirements, visit propanesafety.com.



Safety Talk

Understanding the Safety Data Sheet (SDS) An Integral Part of the Hazard Communications Toolbox

The Occupational Safety and Health Administration (OSHA) recently revised its *Hazard Communication Standard (HCS)* to better align with the United Nations' *Globally Harmonized System (GHS) of Classification and Labeling of Chemicals*. As a result, the Safety Data Sheet (SDS) will be standardized by hazard category to make information easier to locate when working with these materials.

WHAT IS AN SDS?

- ✓ A Safety Data Sheet [SDS], formerly known as a Materials Safety Data Sheet [MSDS], provides information about chemical hazards. Anyone who might come into contact with the chemical should understand potential dangers and how to safely handle the product. Although each SDS may look a bit different, they all must provide the same information. An SDS must explain, in English, how to safely use, handle, and store a hazardous chemical.
- ✓ The SDS must be updated when significant changes are made to the chemical compound or previously unknown health and physical hazards are discovered.

COMMON SECTIONS WITHIN AN SDS:

All SDSs contain the same basic sections, in the following order. Sections 12, 13, 14, and 15 are not enforced by OSHA.

- **Section 1: Identification** — Identifies the chemical on the SDS as well as the recommended uses. Also provides supplier contact information.
- **Section 2: Hazards Identification** — Explains the chemical's hazards and the appropriate warning information associated with those hazards.
- **Section 3: Composition and Information on Ingredients** — Indicates ingredient[s] contained in the product, including impurities and stabilizing additives. This includes information on substances, mixtures, and all chemicals where a trade secret is claimed.
- **Section 4: First Aid Measures** — Describes the initial care that should be given by untrained responders to an individual exposed to the chemical.
- **Section 5: Fire-Fighting Measures** — Provides recommendations for fighting a fire caused by the chemical.
- **Section 6: Accidental Release Measures** — Offers recommendations on the appropriate response to spills, leaks, or releases, including containment and cleanup practices, to prevent or minimize exposure to people, properties, or the environment.
- **Section 7: Handling and Storage** — Delivers guidance on the safe handling practices and conditions for safe storage of chemicals. Because many workplaces have different storage considerations and hazards on site, be sure to read your company-specific SDS for the chemical you will be working with.
- **Section 8: Exposure Controls/Personal Protection** — Indicates the exposure limits, engineering controls, and personal protective measures that can be used to minimize worker exposure. NOTE: You should always consult your company's PPE policy for any further instructions.
- **Section 9: Physical and Chemical Properties** — Identifies the physical and chemical properties associated with the substance or mixture.
- **Section 10: Stability and Reactivity** — Covers the reactivity hazards of the chemical and chemical stability information.
- **Section 11: Toxicological Information** — Identifies toxicological and health effects information or indicates that such data are not available.
- **Section 12: Ecological Information** — Helps evaluate the environmental impact of the chemical[s] if it were released to the environment.
- **Section 13: Disposal Considerations** — Offers guidance on proper disposal practices, recycling, or reclamation of the chemical[s] or its container, and safe handling practices.
- **Section 14: Transport Information** — Delivers guidance on classification information for shipping and transporting of hazardous chemical[s] by road, air, rail, or sea.
- **Section 15: Regulatory Information** — Identifies the safety, health, and environmental regulations specific for the product that are not indicated elsewhere on the SDS.
- **Section 16: Other Information** — Indicates when the SDS was prepared or when the last known revision was made. The SDS may also state where the changes have been made to the previous version. You may wish to contact the supplier for an explanation of the changes.

Source: *OSHA Hazard Communication Awareness Training* [PERC]

For more information regarding SDS requirements, visit propanesafety.com.





Safety Talk

Handling, Storing, and Transferring Methanol and Other Flammable Liquids

Propane delivery drivers and plant operations personnel will come into contact with various flammable and combustible liquids that require caution. The most common is methanol, which you may need to inject into propane storage containers to displace moisture. As a toxic substance, methanol must be handled with caution.

HAZARDS OF METHANOL AND PRECAUTIONS:

- ✓ Methanol should never come in contact with your skin, eyes, or mouth. Always wear appropriate personal protective equipment (PPE) whenever you handle methanol.
- ✓ Methanol is highly flammable. Any container used for methanol must be approved for flammable liquids and equipped with a self-closing and sealing spout.
- ✓ Methanol typically does not produce a visible flame or smoke when it burns, thus a methanol fire can be difficult to detect.
- ✓ Methanol vapors in confined spaces have an effect similar to ether. Breathing methanol spilled onto clothing or the tightly closed cab of your vehicle can make you drowsy or unconscious.
- ✓ Methanol is an aggressive solvent and should be used sparingly.

Refer to the *Safety Data Sheet for Methanol* for additional information and precautions.

OUTDOOR STORAGE REQUIREMENTS:

- ✓ Store methanol and other flammable liquids in approved storage tanks or metal drums.
- ✓ Make sure outdoor storage areas or tanks are at least 20 feet away from propane transfer areas, and isolated from ignition sources and other combustible materials. Flammable liquids should not be stored in cylinder fill rooms or any enclosed area that has open electrical wiring.
- ✓ Make sure that drums and bulk tanks are labeled to indicate their contents and associated hazards.
- ✓ Never store filled containers in direct sunlight or near intense heat sources.

Your company may have additional guidelines regarding outdoor storage and marking for flammable liquids. Check with your supervisor.

RULES WHEN TRANSFERRING METHANOL OR OTHER FLAMMABLE LIQUIDS:

- ✓ Isolate the transfer area from potential ignition sources, and wear proper PPE throughout the operation.
- ✓ When working with metal safety cans, use an electrical bond to connect the can and the storage drum.
- ✓ Ensure liquid storage drums are grounded. Grounding may be by individual electrical wire to a grounding stake, or by connection to a common grounding strip that is electrically grounded.
- ✓ Ensure that receiving containers are approved and labeled for the liquid. The label should state the common name of the liquid, such as GASOLINE, METHANOL, NAPHTHA, or PAINT THINNER.
- ✓ Exercise care to avoid spills. In the event of a spill, clean up promptly, following your company's spill and disposal procedures.
- ✓ Never fill a methanol container 100% full. Allow room for liquids or vapors to expand.

Discussion Topics

1. Leaving a customer site, you realize that you have spilled a substance you think may be toxic onto your uniform. How do you respond?
2. During inclement weather, you have flammable liquids to transfer to outdoor tanks. Is it acceptable to store the transfer container indoors for a limited time?

LEARNING ACTIVITY

Demonstrate the correct way to ground liquid storage drums. Have participants handle the stakes and wires to ensure they are comfortable with the process.

Source: *Propane Delivery Operations and Cylinder Delivery* and *Basic Plant Operations* (PERC)

For more information about handling methanol and other flammable liquids, visit propanesafety.com.



Safety Talk

Anhydrous Ammonia Properties and Hazards

Since some propane distributors transport both propane and anhydrous ammonia, there is the possibility of contamination of bulk propane containers. In addition to affecting propane's performance, such contamination can present safety risks. By understanding the characteristics and hazards of anhydrous ammonia, you can detect contamination and help avoid potential hazards.

PHYSICAL PROPERTIES OF ANHYDROUS AMMONIA

Anhydrous ammonia (or simply "ammonia") shares some of the same characteristics of propane, but has some notable differences to help in its detection.

- ✓ Anhydrous ammonia is a compound of nitrogen and hydrogen. Similar to propane, it is a colorless gas with a characteristic pungent odor.
- ✓ At room temperature and atmospheric pressure, anhydrous ammonia is lighter than air, whereas propane is heavier than air.
- ✓ Compressed and cooled, anhydrous ammonia is a colorless liquid and is lighter than water.
- ✓ At atmospheric pressure, its boiling point is -28°F versus -44°F for propane.
- ✓ In a closed, pressurized container, anhydrous ammonia is stored and transported as a liquid, and vaporizes when depressurized.

HAZARDS OF ANHYDROUS AMMONIA

- ✓ Anhydrous ammonia is both caustic and hazardous.
- ✓ Anhydrous ammonia is an inhalation hazard. At certain concentrations, exposure to anhydrous ammonia can disable or suffocate you.
- ✓ Direct contact with your skin or eyes can cause frostbite, burns, or blindness.
- ✓ Under certain conditions, it is flammable, chemically reactive, and potentially explosive.
- ✓ Anhydrous ammonia is corrosive to brass, copper, and their alloys. Exposure to anhydrous ammonia causes a blue-green corrosion on the brass portion of the container valve.
- ✓ Anhydrous ammonia weakens brass valves on propane containers, which can cause cracks and product leakage. Such damage can lead to violent, unexpected expulsion of the valve and cause serious injury or even death.

Always use appropriate PPE and handling procedures when working around ammonia. Make sure you are familiar with the most current Safety Data Sheet and your plant's safety protocols and know how to respond in the event of a spill or accidental exposure.

Discussion Topics

1. How do anhydrous ammonia properties differ from those of propane? Why is it important to understand these differences?
2. What kinds of PPE should be used when handling anhydrous ammonia?

LEARNING ACTIVITY

Using pictures, online resources, or actual propane containers, if available, have participants identify damage and corrosion caused by anhydrous ammonia versus other sources.

Source: *Basic Plant Operations* [PERC]

For more information about anhydrous ammonia properties and hazards, visit propanesafety.com.



Safety Talk

Recognizing and Testing for Anhydrous Ammonia

Because of the safety hazards posed by anhydrous ammonia, propane workers should be trained and cognizant of how to detect anhydrous ammonia contamination at both the bulk plant and in portable containers. The tips below will help supplement your knowledge and ability to test for, detect, and address issues.

RECOGNIZING AND TESTING FOR CONTAMINATION IN PORTABLE CONTAINERS:

- ✓ **Odor or visual evidence.** You can recognize anhydrous ammonia contamination by its smell or by evidence of a blue-green corrosion on brass or copper fittings. If either of these signs are present, stop your activity, isolate the container, and alert your supervisor.
- ✓ **History of contamination or suspect circumstances.** If no visible signs exist, but there is reason to believe there may be an ammonia issue, perform a *litmus test* (see below) to determine whether that the tank is contaminated.

Contaminated containers are often purged with water in an effort to remedy. Even if this occurs, ammonia vapor may still remain. It is important to test all returning containers for evidence of such vapor, as it could damage a propane system's copper and brass components.

RECOGNIZING AND TESTING FOR CONTAMINATION IN BULK TANKS:

The best ways to recognize possible contamination in bulk storage tanks is by odor or evidence of corrosion. However, since corrosion may take time, it is important to also:

- ✓ Perform a litmus test (see below) to confirm that the tank is contaminated.
- ✓ Stop activities, isolate the container, and alert your supervisor.
- ✓ Follow your company's guidelines about what to do with the potentially affected container.

If a litmus test is positive for ammonia, stop all deliveries, secure the tank, and consult with your supervisor for the best approach to remedy.

STEPS FOR PERFORMING A LITMUS TEST:

- ✓ Obtain a bottle of distilled water; clean tweezers; a clean, dry cloth; and a package of red litmus paper.
- ✓ Remove work gloves, as they could affect litmus readings and invalidate the test.
- ✓ Clean and wipe the tweezers with the water and dry cloth.
- ✓ Remove one piece of litmus paper from the package using the tweezers. Do not allow the litmus paper to touch anything.
- ✓ Carefully soak the litmus paper with distilled water.
- ✓ Open any valve that is in the vapor space such as the service valve or fixed maximum liquid level gauge.
- ✓ Hold the paper directly in the stream of propane vapor for at least 30 seconds.

If the litmus paper remains red, verify that your company's policies allow the container to be put back into service. If the litmus paper turns blue, the propane may be contaminated with anhydrous ammonia. Notify your supervisor and follow your company's safety protocols.

Discussion Topics

1. As you unload cylinders at a site, you notice bluish discoloration around the fittings, but are unsure if it is corrosion. The customer has expressed need for immediate propane delivery. How do you respond?
2. The results of a litmus test on a propane container are inconclusive. What should be your next steps?

LEARNING ACTIVITY

Walk participants through the process of performing a litmus test. Discuss your company's specific procedures for testing for ammonia and for handling potentially contaminated tanks.

Source: *Basic Plant Operations* (PERC)

For more information about recognizing and testing for anhydrous ammonia, visit propanesafety.com.