

# July 2008 Safety Meeting

## Identifying Hazards Associated With Propane Transfer

Propane transfer operations involve moving product from one container to another. Transfer procedures and methods will vary based upon the type of container involved, container design and construction and location of the container. It is very important to follow the proper safety practices during a propane transfer operation, including the use of Personal Protective Equipment (PPE).

OSHA safety standards for employees and recognized safety principles call for identifying and using PPE when the hazards associated with the task or operation cannot be eliminated or fully controlled through the use of process engineering and/or process controls.

### Engineering

With the exception of stationary ASME tanks, which can only be used to transport small amounts of liquid propane, the containers approved for transporting propane are designed to prevent a propane release in transit. The container appurtenances that might be sheared off or damaged during handling or transportation must be recessed within the container or protected. DOT specifications set forth the type of materials and fabricating processes that can be used to construct containers used in transportation. Cargo tank specs include shut off systems and transfer components such as pumps, delivery hoses, and valves.

### Process Controls

Process controls for the storage, handling and transportation of propane are detailed in U.S. DOT HMR and NFPA 58. Some process controls are:

- The requirements for periodic testing, inspection and requalification of containers after their manufacture and/or fabrication.
- Ignition source controls during transfer operations incorporate the use of non-sparking valves and adapters, “explosion proof” electrical systems, minimum separation distance requirements that apply to dispensing and transfer distances.
- Personnel qualification requirements state that only persons who are trained and qualified to perform propane transfer and transportation tasks are permitted to transfer propane, load and unload vehicles and operate vehicles transporting propane. They are required to complete recurrent training every 3 years.

Hazards associated with the handling and transfer of propane are:

**Chemical Hazards**

- Propane is highly flammable and presents the risk of fire.
- Propane is not toxic but in certain conditions may displace oxygen.

**Electrical Hazards**

- Prevention of ignition is accomplished by the installation of properly selected electrical equipment and wiring. Electrical wiring must be installed in accordance with NFPA 70.

**Mechanical Hazards**

- Failure or removal of transfer equipment can result in exposure to product under pressure.

**Temperature Hazards**

- Exposure of liquid propane to body parts can cause immediate freezing with symptoms similar to frostbite.

Eliminating the ignition source is an important consideration in preventing fires in each of the above hazards. Some ways to eliminate ignition sources are:

- Smoking and open flame should be prohibited.
- Flashlights, portable lights, extension cords, and other electrical power tools should be approved for hazardous atmospheres.
- Internal combustion engines such as trucks, cars, pumps, generators and other equipment should not be operated in hazardous atmospheres.
- Controlling electrical equipment and static electricity.

Class Discussion

Ask employees to identify hazards that they may encounter while transferring product. Each employee should identify safety measures that can be used to ensure employee and citizen safety.

Closing

Remember, propane is a highly flammable product in the correct gas in air mixture (flammable limits). The ignition temperature is a very low 920 degrees when considering the temperature of a match is 1300 degrees and sparks in an electrical switch may reach 1500 degrees. Use all safety precautions possible and remember the February Safety topic on PPE when transferring product.

# July 2008 Safety Test

## Identifying Hazards Associated With Propane Transfer

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Instructions: Read and answer each of the following questions. When complete, grade the test and review incorrect answers so each employee is “armed” with the correct answers before they leave the training.**

- (1) Hazards associated with propane transfer operations include:
- A. Propane is highly flammable and presents the risk of fire.
  - B. Propane is not toxic but may displace the oxygen.
  - C. Failure or removal of transfer equipment can result in a release of product.
  - D. All of the above
- (2) \_\_\_\_\_ for propane could be an open flame, electrical switch, combustion engine or static electricity.
- A. An ignition source
  - B. Flammable limits
  - C. An ignition temperature
  - D. Flash point
- (3) Personnel shall receive recurrent training every \_\_\_\_\_ years.
- A. 1
  - B. 3
  - C. 9
  - D. No recurrent training is required.
- (4) Propane is not toxic but in certain conditions may displace oxygen.
- A. True
  - B. False
- (5) The ignition temperature for propane is \_\_\_\_\_ degrees.
- A. 600
  - B. 920
  - C. 1300
  - D. 1500

**July 2008  
Answer Sheet**

1. D
2. A
3. B
4. T
5. B