

Before you begin

- Gather information about the flammable liquids in your facility.
- Review the chemical inventory lists prepared for the Hazard Communication standard requirement.
- Verify storage locations of flammable liquids that are used.
- Utilize safety data sheets (SDSs) as a useful resource for your discussion.
- Obtain samples of the warning labels you use in your Hazard Communication program.
- Collect safety containers used in your facility for this demonstration.
- Review your Fire Prevention Plan.



Introduction

According to OSHA, flammable liquids are liquids with a flash point of less than 100 F.

What are the hazards associated with flammable liquids? Fire and explosions are the biggest concern and could result in loss of life and property damage.

For a fire to occur you must have three things: air, fuel, and an ignition source. If any of these are missing, a fire cannot occur.

Definitions

Flammable liquids, as defined by OSHA 29CFR 1910.106(a)19, are any liquid having a flash point at or below 199.4 F. These liquids are further divided into four categories.

Flash point is the lowest temperature at which a liquid gives off enough vapor to form a flammable mixture with air.

Discussion

There are four types of labeling systems used to identify flammable liquids:

- The NFPA 704 diamond label. A fire hazard rating of three or four denotes a flammable liquid.
- The HMIS system, which uses a similar color and numbering method. With both systems the color red refers to flammability.
- Globally Harmonized Systems pictograms ([See OSHA Quick Card on Pictograms](#)).
- In house labeling.

The explosive concentration of vapors in air has a lower and upper limit. The lower explosive limit (LEL) is the lowest concentration that will ignite. The upper explosive limit (UEL) is the highest concentration that will ignite. If the vapor concentration is between the LEL and the UEL, a fire or explosion will occur if an ignition source is present.

Vapors that are heavier than air will flow from an open container to a lower level. A spark or other ignition source can ignite the vapors.

Here are some common types of ignition sources.

- Smoking.
- Electrical motors or switches.
- Static electricity.
- Heat guns.
- Welding.
- Radiant heat.
- Sparks from hand tools.

The methods we may employ to reduce or eliminate hazards associated with flammable liquids include:

- Substitute a less hazardous product.
- Maintain only the amount needed to perform the task.
- Remove outdated, unused, or waste materials from the premises.
- Control ignition sources.
- Do not dispose of flammable liquids in drains.
- Use safety containers designed for flammable liquids.
- Place containers of flammable liquids, such as spray cans, thinners, and solvents in approved flammable safety cabinets (see resources below).
- Store large containers of flammable liquids, such as drums, in an approved flammable liquid storage area (see resources below).
- Install automatic alarms, fire suppression systems, and fire extinguishers.
- Restrict entry to only authorized persons.

Flammable liquids may present health hazards due to exposure. Check a product's SDS for its specific permissible exposure limit or threshold limit value. Typical symptoms are:

- Inhalation of flammable liquids can cause irritation to the respiratory passages, nausea, headaches, muscle weakness, drowsiness, loss of coordination, disorientation, confusion, unconsciousness, and death.
- Skin contact with flammable liquids can cause the skin's oils to be removed, resulting in irritated, cracked, dry skin, rashes, and dermatitis.
- Eye contact with flammable liquids can cause burning, irritation, and eye damage.
- Ingestion of flammable liquids can irritate the digestive tract, causing poisoning and death.

Conclusion

The use of flammable liquids is a necessary part of our work. It poses an element of danger to our operation. However, with the proper level of respect and caution it is possible to maintain a safe workplace. Fire and explosions have been a source of personal injury and property damage. All of these precautions are necessary to protect our people and our jobs.

Group activity

Ask all attendees to review their respective areas for containers of flammable liquids. Check to see if the containers are:

- Inventoried.
- Properly labeled.
- Properly stored.
- Maintained away from ignition sources.

Show the types of safety containers your facility uses. Point out the features they possess and, at the same time, display an appropriate label.

Have them bring their findings for discussion to the next meeting.

Resources

[Justrite: Red Book –Your Guide to Handling Flammable Liquids Safely](#)

[NFPA 30: Flammable and Combustible Liquids Code](#)

[OSHA 1910.106: Hazardous Materials – Flammable Liquids \(general industry\)](#)

[OSHA 1926.152: Fire Protection and Prevention – Flammable Liquids \(construction industry\)](#)

[OSHA link to GHS Pictograms](#)