Flammable Liquids

Preparation

1. Read Applicable Background information and related Company Policy Chapter.
2. Make _____ Copies of this Lesson Plan for Personnel
3. Make Transparency, procure transparency pens, etc.
4. Coffee, tea, snacks

Other:

Material

1. Appropriate Flammable Liquids

Objective

By the end of this session, personnel shall be able to discuss:

1. Employee Responsibilities
2. Define:
   ~ Flammable Liquid
   ~ Combustible Liquid
   ~ Class II & Class III Liquid
3. The proper storage and usage procedures of flammable liquids
4. Define "No Flame Zone"
5. Identify the locations of the Company's designated flammable storage areas
6. Conduct a flammable and combustible materials inspection checklist

Background

Proper Storage and use of flammable liquids can significantly reduce the possibility of accidental fires and injury to employees. To minimize risk to life and properly, the requirements of NFPA 30 & 321 and OSHA Standard 1910.106 have been implemented. MSDS for flammable liquids are kept in the Safety and Health Office and at each storage location.

Notes

Lesson

Employee Responsibilities

Employees shall:

- Follow all storage and use requirements
- Report deficiencies in storage and use to supervisors
- Immediately report spills to supervisors

Definitions

Flammable Liquid - a liquid with a flashpoint below 100^0F

Class IA - flashpoint below 73^0F and boiling point below 100^0F

Class IB - flashpoint below 73^0F and boiling point above 100^0F

Class IC - flash at or above 73^0F and below 100^0F

Combustible Liquids - a liquid having a flash point at or above 100^0 F.

Class II Combustibles - Flashpoint above 100^0F and below 140^0F

Class III Combustibles - Flashpoint at or above 140^0F

Subclass IIIA - flashpoint at or above 140^0F and below 200^0F

Subclass IIIB - flashpoint at or above 200^0F

Storage & Usage of Flammable Liquids

Flammable and combustible liquids require careful handling at all times. The proper storage of flammable liquids within a work area is very important in order to protect personnel from fire and other safety and health hazards.

- Storage of Flammable liquids shall be in NFPA approved flammable storage lockers or in low value structures at least 50 feet from any other structure. Do not store other combustible materials near flammable storage areas or lockers

Notes

- Bulk drums of flammable liquids must be grounded and bonded to containers during dispensing
- Portable containers of gasoline or diesel are not to exceed 5 gallons
- Safety cans used for dispensing flammable or combustible liquids shall be kept at a point of use.
- Appropriate fire extinguishers are to be mounted within 75 feet of outside areas containing flammable liquids, and within 10 feet of any inside storage area for such materials.
- Storage rooms for flammable and combustible liquids must have explosion-proof light fixtures
- Bulk storage of gasoline or diesel are kept in above ground tanks. Tank areas are diked to contain accidental spills. Tanks shall be labeled IAW NFPA guidelines. All tank areas shall be designated no smoking - no hot work - no open flame areas.

No Flame Zones – No hotwork or smoking is permitted in flammable or combustible liquid storage areas.

The maximum amount of flammable liquids that may stored in a building are:

20 gallons of Class IA liquids in containers

100 gallons of Class IB, IC, II, or III liquids in containers

500 gallons of Class IB, IC, II, or III liquids in a single portable tank.

Usage of Flammable Liquids

- Flammable liquid transfer areas are to be separated from other operations by distance or by construction having proper fire resistance.
- When not in use flammable liquids shall be kept in covered containers.
- Class I liquids may be used only where there are no open flames or other sources of ignition within the possible path of vapor travel.

Notes

Usage of Flammable Liquids (continued)

- Flammable or combustible liquids shall be drawn from or transferred into vessels, containers, or portable tanks within a building only through a closed piping system, from safety cans, by means of a device drawing through the top, or from a container or portable tanks by gravity through an approved self-closing valve. Transferring by means of air pressure on the container or portable tanks shall be prohibited.
- Maintenance and operating practices shall be in accordance with established procedures which will tend to control leakage and prevent the accidental escape of flammable or combustible liquids. Spills shall be cleaned up promptly.
- Combustible waste material and residues in a building or unit operating area shall be kept to a minimum, stored in covered metal receptacles and disposed of daily.
- Rooms in which flammable or combustible liquids are stored or handled by pumps shall have exit facilities arranged to prevent occupants from being trapped in the event of fire.

Cabinets

Not more than 120 gallons of Class I, Class II, and Class IIIA liquids may be stored in a storage cabinet. Of this total, not more than 60 gallons may be Class I and II liquids. Not more than three such cabinets (120 gallons each) may be located in a single fire area except in an industrial area.

Containers

The capacity of flammable and combustible liquid containers will be in accordance with the table on the next page.

Notes

	Flammable Liquids		Combustible Liquids		
Container	**1A**	**1B**	**1C**	**II**	**III**
Glass or approved plastic1	1 pt[2]	1 qt[2]	1 gal	1 gal	1 ga
Metal (Other than DOT drums)	1 gal	5 gal	5 gal	5 gal	5 ga
Safety Cans	2 gal	5 gal	5 gal	5 gal	5 ga
Metal drums (DOT specifications)	60 gal	60 gal	60 gal	60 gal	60 ga
Approved portable tanks	660 gal	660 gal	660 gal	660 gal	660 ga

(1) Nearest metric size is also acceptable for the glass and plastic
(2) One gallon or nearest metric equivalent size may be used if metal and labeled with their contents.

Maximum allowable capacity of containers and portable tanks

Storage Inside Buildings

Where approved storage cabinets or rooms are not provided, inside storage will comply with the following basic conditions:

The storage of any flammable or combustible liquid shall not physically obstruct a means of egress from the building or area.

Containers of flammable or combustible liquids will remain tightly sealed except when transferred, poured or applied. Remove only that portion of liquid in the storage container required to accomplish a particular job.

If a flammable and combustible liquid storage building is used, it will be a one-story building devoted principally to the handling and storing of flammable or combustible liquids. The building will have 2-hour fire-rated exterior walls having no opening within 10 feet of such storage.

Flammable paints, oils, and varnishes in 1 or 5 gallon containers, used for building maintenance purposes, may be stored temporarily in closed containers outside approved storage cabinets or room if kept at the job site for less than 10 calendar days.

Ventilation

Every inside storage room will be provided with a continuous mechanical exhaust ventilation system. To prevent the accumulation of vapors, the location of both the makeup and exhaust air openings will be arranged to provide, as far as practical, air movement directly to the exterior of the building and if ducts are used, they will not be used for any other purpose.

Designated Flammable Storage Areas are:

1.

2.

3.

Notes

Flammable and Combustible Materials Checklist

Are combustible scraps, debris, and waste materials (oily rags, etc.) stored in covered metal receptacles and removed from the work site promptly?
Is proper storage practiced to minimize the risk of fire including spontaneous combustion?
Are approved containers and tanks used for the storage and handling of flammable and combustible liquids?
Are all connections on drums and combustible liquid piping, vapor and liquid tight?
Are all flammable liquids kept in closed containers when not in use (for example, parts cleaning tanks, pans, etc.)?
Are bulk drums of flammable liquids grounded and bonded to containers during dispensing?
Do storage rooms for flammable and combustible liquids have explosion-proof lights?
Do storage rooms for flammable and combustible liquids have mechanical or gravity ventilation?
Is liquefied petroleum gas stored, handled, and used in accordance with safe practices and standards?
Are "NO SMOKING" signs posted on liquefied petroleum gas tanks?
Are liquefied petroleum storage tanks guarded to prevent damage from vehicles?
Are all solvent wastes and flammable liquids kept in fire-resistant, covered containers until they are removed from the work site?
Is vacuuming used whenever possible rather than blowing or sweeping combustible dust?
Are firm separators placed between containers of combustibles or flammables, when stacked one upon another, to assure their support and stability?
Are fuel gas cylinders and oxygen cylinders separated by distance, and fire-resistant barriers, while in storage?
Are fire extinguishers selected and provided for the types of materials in areas where they are to be used? Class A Ordinary combustible material fires. Class B Flammable liquid, gas or grease fires. Class C Energized-electrical equipment fires.
Are appropriate fire extinguishers mounted within 75 feet of outside areas containing flammable liquids, and within 10 feet of any inside storage area for such materials?
Are extinguishers free from obstructions or blockage?
Are all extinguishers serviced, maintained and tagged at intervals not to exceed 1 year?
Are all extinguishers fully charged and in their designated places?
Where sprinkler systems are permanently installed, are the nozzle heads so directed or arranged that water will not be sprayed into operating electrical switchboards and equipment?
Are "NO SMOKING" signs posted where appropriate in areas where flammable or combustible materials are used or stored?

Are safety cans used for dispensing flammable or combustible liquids at a point of use?
Are all spills of flammable or combustible liquids cleaned up promptly?
Are storage tanks adequately vented to prevent the development of excessive vacuum or pressure as a result of filling, emptying, or atmosphere temperature changes?
Are storage tanks equipped with emergency venting that will relieve excessive internal pressure caused by fire exposure?
Are "NO SMOKING" rules enforced in areas involving storage and use of hazardous materials?