Lesson Plan
General Industry Training Program (10-hour)

**Topic: Flammable and Combustible Liquids**

**Overview of the OSHA Standard**
This standard applies to the handling, storage and use of flammable and combustible liquids with a flash point below 200\(^0\) F. There are two primary hazards associated with flammable and combustible liquids: explosion and fire. In order to prevent these hazards, this standard addresses the primary concern of design and construction, ventilation, ignition sources and storage.

**Step 1: Planning the Lesson**

- **Instructional Materials.**
  1. PowerPoint presentation
  2. Instructor notes.
  3. Other materials.

- **Instructional Objectives.**
  1. Complete the required topics for the OSHA 10-hour course.
  2. Complete the following optional topics:
     a. 
     b. 
     c. 
  3. Present *Flammable and Combustible Liquids* to [number] participants.
  4. Incorporate active participation in each lesson.
  5. Provide a quiz or short evaluation at the end of the course.
  6. Ensure feedback from participants at various points in the training.

- **Guest Speakers/Presenters and Topics/Responsibilities.**

**Step 2: Presenting the Lesson**

- **Lesson Introduction**
  Introductory remarks or transition from previous lesson.

- **Learning Objectives/Outcomes.**
  Upon completion of the lesson, participants will be able to:

  1. Define **flash point**, **flammable liquid**, and **combustible liquid**.

  **Possible responses.**
  - The **flash point** is the minimum temperature at which a liquid gives off enough vapor to form an ignitable mixture.
  - **Flammable liquids** have flash points below 100\(^0\) F.
  - **Combustible liquids** have flash points at or above 100\(^0\) F.
Learning Objectives/Outcomes (Continued)

2. Explain at least 2 ways to avoid explosion or fire from flammable or combustible liquids.

*Possible responses.*
- Practice safe handling, storage, fire control and ventilation.
- Ensure flammables and combustibles are properly stored.
- Always handle and transfer flammable or combustible liquids using proper containers; or through proper transfer systems that employ a safety faucet, a safety pump, or a closed piping system.

3. List 4 potential sources of ignition for flammable and combustible liquids.

*Possible responses.*
- open flames
- smoking
- static electricity
- cutting and welding
- hot surfaces
- electrical and mechanical sparks
- lightning
- lightning
- cutting and welding

4. Identify at least 2 actions that apply to each of the 4 components of a good plan for safe use of flammable and combustible liquids.

*Possible responses.*

- **Control of Ignition Sources**
  a. Identify sources of ignition.
  b. Always use bonding and grounding when transferring flammable liquids into/from containers.
  c. Always provide adequate ventilation to reduce the potential for ignition.

- **Proper Storage**
  a. Identify compatible chemicals.
  b. Isolate and separate incompatible materials.
  c. Ensure storage doesn’t limit safe egress.
  d. Store in proper area, cabinet, or container.
  e. Label storage areas/cabinets.
  f. Store waste and residue in covered containers and dispose of daily.
• Learning Objectives/Outcomes (Continued)

  • Fire Control
    a. Ensure proper hoses, fire extinguishers or other fire control devices are available where flammable or combustible liquids are stored.
    b. Do not permit flames or smoking in areas where flammable or combustible liquids are stored.
    c. Store materials that react with water in a room separate from flammable and combustible liquids.

  • Safe Handling
    a. Transfer by means of a safety pump.
    b. Transfer by gravity through an approved self-closing safety faucet.
    c. Transfer through a closed piping system.
    d. Transfer from safety cans.

• Planned Activities, Discussion or Participant Interaction.

  Step 3: Evaluating Student Learning and Instruction

• Lesson Evaluation and Comments.

  References

OSHA Standard

OSHA Publications
  ➢ http://www.osha-slc.gov/OshDoc/Additional.html
  • 3088 How to Prepare for Workplace Emergencies

OSHA References/Resources
  • OSHA’s Small Business Outreach Training Program, Flammable and Combustible Liquids
  • OSHA Technical Links – Ventilation
  • Self-Inspection Checklists
    ➢ http://www.osha-slc.gov/SLTC/smallbusiness/chklist.html#Flammable