



Fire Safety Part 2, Hazards

Hazardous Materials

How do you know if a material is hazardous? If it has any of the following characteristics:

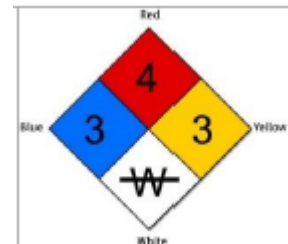
- Corrodes other materials
- Explodes or ignites easily
- Reacts strongly with water
- Unstable when exposed to heat or shock
- Toxic to humans, animals or the environment

Unfortunately, hazardous materials are commonplace throughout every community. These materials are used in manufacturing, household cleaners, big box stores, and delivery vans. If a large amount is being stored, used or transported a warning placard is to be displayed.

This course will first (1) review some hazardous material signage systems and (2) review three prominent categories of hazards found in the home and workplace and provide overview for appropriate management: Electrical, Natural Gas, and Combustible Liquids.

Hazardous Material Signage

The National Fire Protection Association (NFPA) has a set of diamond placards. The red quadrant describes the flammability. The blue indicates the health hazard. The yellow indicates reactivity. The white is for special precautions.



The Department of Transportation also has a set of placards.



And, of course, in order to help all countries communicate due to global commerce, the UN made a Globally Harmonized System of Classification and Labeling of Chemicals (GHS). This started out as voluntary, but some ports and transportation hubs now require them to be displayed also.



Electrical Hazards

The following is a list of simple ways to reduce or prevent fires from electrical hazards, that are rather common problems.

- Avoid tangles of electrical cords.
- Do not overload electrical outlets.
- Do not plug power strips/extension cords into other power strips/extension cords (aka “Daisy Chains”).
- Do not run electrical cords under carpets.
- Replace broken or frayed cords immediately.
- Maintain electrical appliances.

Responding to Electrical Emergencies

These are some things to do that every member should know and practice in their home.

- Locate the circuit breakers or fuses and know how to shut off the power.
- Post instructions on how to shut off power next to the breaker box.
- Unscrew the fuse or switch off smaller breakers first, then pull the main switch or breaker.
- When turning the power back on, turn on the main, then turn on the smaller breakers one at a time.
- DO NOT enter a flooded basement or standing water to shut off the electrical supply.

Natural Gas Hazards

There are two types of hazards:

- Asphyxiant: displaces oxygen in the body
- Flammable: can readily ignite under the right conditions.

Natural gas is lighter than air, so you cannot feel when there is a leak. This is why gas detectors are important along with smoke alarms. Gas detectors are placed near gas appliances such as a dryer, water heater, and furnace. Three different types of natural gas hazards are reviewed below: carbon monoxide, natural gas, and propane.

Carbon Monoxide

This is a deadly, colorless, odorless, and poisonous gas that is also lighter than air. Incomplete burning of various fuels produces carbon monoxide. Things that produce a sizable amount are portable generators, charcoal burned in an enclosed space, and fireplaces. There are detectors specifically for carbon monoxide.

Natural Gas

Try to locate and label a gas shutoff valve near your home, if possible. There may be multiple shutoffs inside a gas appliance equipped home also, in addition to the main outside. To shut the main off requires a non-sparking tool. Once turned off only a trained technician can turn it back on again.



Propane

This is a compressed liquid, which as a liquid is not flammable. But, it vaporizes quickly into a gas which is flammable. There are many portable cylinders used all over as a fuel source. The containers are supposed to give you 10 minutes of protection from a fire to evacuate safely. Do not store propane next to gasoline or other flammable materials.

Flammable Liquid Hazards

Remember to store these properly. Use the LIES method. (Limit, Isolate, Eliminate, Separate). The Class B fire extinguisher is needed to extinguish a flammable liquid.

Exercise

- Do a walk around your building, checking for fire extinguishers, and whether it is the correct type for its location.
- Check for the breaker panel, and posted instructions for an emergency.
- Look for any stored hazardous materials and see if stored next to other materials that could be dangerous.
- Don't forget to check for gas detectors or smoke alarms.
- Finally, take a look at your own household. Prevention is cheaper than intervention.

Knowledge Assessment

What are the three categories of Hazards?

1.

2.

3.

Circle the hazard detectors in the list below:

- a. Sprinkler systems
- b. Carbon monoxide
- c. Natural gas
- d. Fire extinguishers

Circle True or False for the corresponding statements that follow.

True or **False** To tell if there is a gas leak from a stove, place your hand over the suspected site.

True or **False** Hazardous materials are safe to keep beside each other regardless of type.

True or **False** All agencies universally use the same safety placards.

Fire Safety Part 2: Hazards

For course certification, the form must be filled out.

Member Name (Print) _____ Instructor Name (Print) _____

Member Position Number _____ Instructor Position Number _____

Member FEMA SID _____ Instructor FEMA SID _____

Date of Instruction _____

_____ Know the defining properties for **hazardous materials** and some systems of identification symbols.

_____ Review the principles for identification and management for **electrical** hazards.

_____ Review the principles for identification and management for **natural gas** hazards.

_____ Review the principles for identification and management for **flammable** liquid hazards.

With a complete sheet of initials, the instructor's signature signifies certification of completion for the Fire safety Part 2: Hazards course.

Instructor Signature _____