

Loss Control Services: SAFETY TOPIC OF THE MONTH

0809: Fire Safety – Prevention First**Facilitator Outline**

Purpose: Monterey Educational Risk Management Authority - Loss Control Services provides these monthly topics to promote safety awareness, injury prevention and regulatory compliance for member districts. These topics may be adapted specifically to the needs of your district by editing and reformatting. If desired, the topic may be expanded with video/DVD, Powerpoint, or other media.

Instructions: Make copies of the handouts and quiz for those attending. As the facilitator for this training – please keep track of attendance in accordance with your district recordkeeping requirements. Thirty minutes should be allocated to allow for review/discussion of the handouts and the quiz – it is possible to condense the topic time to 15 minutes or less if time constraints are severe. You may use the quiz as a pre or post discussion topic; using it as a pre-quiz and then discussing the answers after review of the materials is a good way to assure an interactive session in a minimal amount of time.

Answers to Handout #2: Fire Safety – Prevention First

1. Which of these terms is not part of the “Fire Triangle”?
a) ignition source b) fuel c) thermal layer d) oxygen e) low humidity **f) c and e**
2. Which term is not related to prevention of an electrical fire?
a) replace worn/frayed wires b) good ground connection **c) oversized fuse** d) a and b
3. The vapors from a flammable liquid may be invisible and may spread quickly. **True**
4. Good housekeeping and use of equipment properly reduces risk of fire. **True**
5. The use of space heaters should be approved by the employer in a written policy. **True**
6. Spontaneous Combustion is the result of a slow build up of heat within a combustible material. **True**
7. Which of the following terms describes the highest priority if a fire occurs?
a) good insurance b) use of fire extinguisher **c) life safety** d) property protection e) b and d
8. Fire extinguishers should only be used by trained and authorized persons. **True**
9. Which term best describes the various classes of fire extinguishers?
a) Class A: ordinary combustibles b) Class B: liquids and gases c) Class C: electrical
d) Class D: metals **e) all of these are correct** f) none of these are correct
10. Cal-OSHA regulations require a fire prevention plan and evacuation plan at each workplace. **True**
11. The “bonus” question adds extra feedback and interactive discussion from the group.

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Handout #1 Fire Safety - Prevention First

Background

Fire is a very real danger in any workplace. For employees that handle hazardous chemicals, the risks of injury and property damage from flames and smoke are compounded by concerns about fire-created toxic gases. Employers take many steps to prevent fires, such as using fire-retardant construction materials and equipping their buildings with smoke alarms, sprinklers, and fire extinguishers. Cal-OSHA regulations require emergency and fire prevention plans to be implemented and maintained at each worksite. Because the potential for fire lurks in every corner of the work area, every supervisor and employee must be aware of the fire risks of the materials, equipment, and processes that pose a risk—and how to keep fires from starting—to reduce the chance of ever having to worry about how to deal with a real fire.

“The Fire Triangle”: Fire is a product of three components:

1. Fuel (paper, wood, oil, etc.)
2. Oxygen (present in the air)
3. Ignition source (from flame, electrical arcs, and sparks).

Fires can also result from friction, electrical problems, or chemical reactions. The key to fire prevention, then, is making sure that these conditions never happen.

Electricity

Most industrial fires and many home fires are the result of improper use or poor maintenance of electrical equipment. Not being fully aware of its fire potential, we may become casual about safe electrical work practices or fail to check wiring and electrical gear during regular inspections. Only qualified and competent persons should perform electrical troubleshooting or repairs. To prevent electrical fires, keep the following "Do's" and "Don'ts" in mind:

Do:

1. Replace wires if they're frayed or have worn insulation. Use the correct size fuses.
2. Keep combustible materials away from lights.
3. Make sure ground connections are sound.
4. Minimize use of extension cords; when they're used, be sure they're in good condition and adequate for the job. Extension cords are never allowed to be used as permanent wiring.
5. Lubricate bearings so they don't run too hot.
6. Keep motors and machine tools clean and free of dust and grease.

Don't:

1. Use temporary wiring or place wiring under carpets or where it may be damaged.
2. Overload motors, circuits, or outlets.
3. Leave circuit breakers blocked in a closed position.
4. Overheat transmission shafts or bearings, especially if they're in an area with dust or lint.

Flammable Liquids

Another common fire hazard is flammable liquids like oil, gasoline, kerosene, solvents, and other chemicals. The biggest danger is that their vapors become flammable when they mix with air and come in contact with an ignition source. Worse still, flammable vapors are usually invisible and spread quickly—moving fastest in warm, still air. Any kind of ignition source, even an electrical spark, can set these vapors on fire, so practice these safety habits with flammable liquids:

- ✓ Use them only in areas with plenty of ventilation.
- ✓ Don't use or store them near heat or fire; don't use heat or fire or smoke near them.
- ✓ Use non-sparking tools.
- ✓ Store flammable liquids only in approved tight, metal containers—never in breakable containers. Always keep the containers closed when not in use.
- ✓ Take only the quantities of liquid needed for a job out of containers.

- ✓ Ground containers when making a transfer because static electricity could trigger ignition.
- ✓ Clean up leaks and spills immediately, and repair any leaks.
- ✓ Immediately remove any clothing that has absorbed a flammable liquid.

Be especially cautious with containers that once held a flammable liquid but are now apparently empty. Don't store them near any kind of heat or ignition source unless they have been tested first. Even a few drops left in an "empty" container could start a fire.

Smoking

Too many fires are caused by careless smoking, or throwing away cigarettes or matches that aren't quite out. Never permit smoking near anything that could possibly burn. That includes flammable liquids and chemicals, wood, paper, etc. Restrict smoking to designated areas, with tip-proof metal containers for proper disposal of cigarettes and matches. Posted "No Smoking" signs in work areas are to be obeyed and enforced by management. California has greatly restricted smoking in the workplace for both health and fire safety reasons.

Space Heaters

Space heaters create another workplace fire risk. The best bet is not to use them at all. If there's no choice, the employer should have a written policy on space heaters and require employees to observe these precautions:

- ✓ Use only space heaters that use a safe fuel or will not overload electrical circuits. Space heaters should have a UL listing or other type of approved rating for the intended use.
- ✓ Turn off a fueled heater and allow it to cool before refilling. Electrical heaters should be unplugged when not in use. Fueled heaters are normally used outdoors or in large indoor spaces such as a warehouse.
- ✓ Keep the area around a space heater free of combustible materials for at least two feet on all sides, and at least six feet above.
- ✓ Make sure space heaters have handles for safe carrying and have grilles to protect from touching hot elements.
- ✓ Be sure heaters are constructed, supported, and positioned so they can't fall over.

Spontaneous Combustion

Fires don't always start instantly. Sometimes they occur as the result of slow heat buildup within a material. This is known as spontaneous combustion. Spontaneous combustion often occurs with rags and scraps that are saturated with oil, paint, or other flammable liquids. To prevent such an occurrence, dispose of flammable wastes in closed, airtight metal containers—and empty the containers daily. Keep flammable scrap that can't be containerized in a cool dry well-ventilated area—with frequent disposal.

Other Fire Prevention Precautions

Welding and cutting operations create flames and sparks that are an obvious fire hazard. So it makes sense to keep these operations as far as possible from flammable liquids, vapors, or dusts. Areas or containers that have held flammable liquids must be tested for flammable residues before performing welding in their vicinity. If welding or cutting cannot be done in a separate location with a fire-resistant floor, be sure to keep your wood floor clean, dry, and covered with some material that won't burn. Use welding screens to contain the activity - have a fire extinguisher close at hand and be trained how to use it. Have a "spotter" or "fire watch" stand by to watch for fire. Get permission and know if "hot work" permits are required by the agency fire safety policy.

Material safety data sheets provide important fire prevention information in the form of reactivity data. Mixing incompatible substances—or even having them too close together— could cause a fire or explosion. Be sure everyone checks labels and MSDSs for reactivity information and uses that information to store and use the chemical at a safe distance from the reactive substance.

Good housekeeping can go a long way toward preventing fires, as well as permitting quick response if a fire does start. Don't, for example, let dust and/or lint build up on machinery, work surfaces, or floors. Dispose of debris promptly and properly and see that trash containers are emptied frequently. Don't store materials so high that they block sprinklers. Keep doorways and passageways clear and keep fire extinguishers in easily seen, easy-to-reach locations.

If there is a Fire!

Small fires often become big ones because people don't know what to do when they first spot them. One rule should always apply. If you spot a fire, activate the alarm system immediately. Then, if it's a very small fire, a trained and authorized worker may try to put it out with an extinguisher. Fires of any size should be handled by trained, equipped personnel. Everyone else should quickly follow emergency evacuation procedures. Life safety is the priority! Periodic fire drills help ensure that people will be able to react automatically and calmly if they are ever faced with the real thing. Although emergency procedures vary somewhat to address specific workplace requirements, the following are some that usually apply in case of fire:

- ✓ Turn off machinery and equipment if time allows – and can be done safely.
- ✓ Close any windows or doors that aren't fire exits as you leave the area.
- ✓ Clear passageways – help direct others out of the building.
- ✓ Leave the building quickly but calmly through your assigned exit.
- ✓ Report to your assigned evacuation location.
- ✓ Stay out of the building unless you have been assigned, trained, and equipped to fight the fire.

Fire Extinguishers

Everyone should know where to find fire extinguishers—and how to use them. Extinguishers should be in plain sight and easy reach—and tested periodically to be sure they'll work when needed. Each type and size of fire calls for a different kind of extinguisher. They are labeled as to type, usually based on the National Fire Protection Association (NFPA) classification system:

Class A: Puts out fires involving ordinary combustibles like wood, paper, trash, etc. where you want to wet down and cool the area. Class A extinguishers also have a number—1-A, 2-A, etc. The higher the number, the larger the fire it can handle. Remember Class A is for material that turns to **ASH**.

Class B: Puts out flammable liquid and gas fires, either cutting off oxygen or reducing flame. The numbers on B extinguishers tell how many square feet the extinguisher can handle—5-B is adequate for a five square foot fire. Remember Class B is for materials that **BOIL**.

Class C: Extinguishes fires in electrical equipment. Do not use water on electrical fires; water conducts electricity and can shock the firefighter. Remember Class C is for things that **CONDUCT**.

Combination Extinguishers (ABC, BC): Extinguishers that are effective against more than one of the above three types of fires.

Class D: Puts out fires in combustible metals such as sodium, magnesium, zinc, etc. Class Ds have no numbers. Remember Class D is for things that will **DENT**.

Always – life safety comes first – only trained and authorized persons should attempt to fight a fire of any size in the work place.

NOTES:

Handout #2: PRE-QUIZ - *Fire Safety – Prevention First*

Name: _____ Date: _____

Department _____ Job Title _____

Instructions: Please provide the best answer for each question – the “best” answer may be open to discussion during review of the quiz!

- Which of these terms is not part of the “Fire Triangle”?
a) ignition source b) fuel c) thermal layer d) oxygen e) low humidity f) c and e
- Which term is not related to prevention of an electrical fire?
a) replace worn/frayed wires b) good ground connection c) oversized fuse d) a and b
- The vapors from a flammable liquid may be invisible and may spread quickly. True False
- Good housekeeping and use of equipment properly reduces risk of fire. True False
- The use of space heaters should be approved by the employer in a written policy. True False
- Spontaneous Combustion is the result of a slow build up of heat within a combustible material. True False
- Which of the following terms describes the highest priority if a fire occurs?
a) good insurance b) use of fire extinguisher c) life safety d) property protection e) b and d
- Fire extinguishers should only be used by trained and authorized persons. True False
- Which term best describes the various classes of fire extinguishers?
a) Class A: ordinary combustibles b) Class B: liquids and gases c) Class C: electrical
d) Class D: metals e) all of these are correct f) none of these are correct
- Cal-OSHA regulations require a fire prevention plan and evacuation plan at each workplace. True False
- Bonus Question: Do you have something to add to the discussion regarding your experience with situations involving fire safety?

