Loss Control Services: *SAFETY TOPIC OF THE MONTH*

0802: *Electrical Safety*

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: Electrical Safety Quiz

1. Which terms best describe persons that should perform electrical work. *(Cal-OSHA regulations!)*
a) trained b) unauthorized c) meticulous ***d) qualified*** e) voluntary f) none of these are correct

2. Which words are related to electricity: << *each word is applicable to electrical applications.*
a) Resistance b) Voltage c) Current d) Amperage ***e) "All of these" are correct***

3. Only voltage greater than 120 volts can cause a fatal shock. ***False*** **<<** *It is the current that kills – voltages as low as 12 volts have been fatal.*

4. A wet surface increases the ability of electrical current to flow. ***True*** < < *less resistance*

5. The ability to inhibit electrical current flow is called renaissance. ***False*** **<< "***resistance" is correct*

6. Approved (UL Listed) extension cords may be used for permanent wiring. ***False*** << *extension cords are never allowed to be used for permanent wiring per electrical code and safety standards*

7. If a person is being shocked and unable to pull away from the electrical source, first try to:
a) pull them away from the electrical source ***b) de-energize the circuit*** c) call a qualified electrician

8. Water is the best way to put out an electrical fire because it conducts electricity. ***False*** << *because water is such a good conductor of electricity – it may cause more danger than the fire.*

9. A frayed or damaged electrical cord is dangerous because it may: (check all that apply)
a) smell bad ***b) cause a shock*** ***c) catch fire*** d) cause static e) get stolen f) create higher voltages

10. A tripped circuit breaker means too much voltage is being used. ***False*** << *a circuit breaker trips when too much current (amps) flows through it.*

11. The "bonus" question adds extra feedback and interactive discussion from the group.

Gary Metzler, MERMA Loss Control Manager may be contacted regarding this topic by email or phone:

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Electrical Safety

Electrical Safety Handout #1 – A shocking experience?

Cal-OSHA regulations require that only **trained** and **qualified** persons perform electrical work – that includes installation, repair, testing and troubleshooting of electrical equipment of any type. You do not have to be an "expert" to avoid electrical shock – just know the hazards of electricity and follow some simple rules! Electrical shock kills and injures hundreds of workers each year. Most of these accidents happen because people don't look, don't think, or just don't understand the shocking power of electricity.

A. Voltage, current, and resistance are the basic terms used when talking about electricity. Voltage is the force that causes the current to flow. Current (amperage) refers to the amount of electricity that is flowing. Resistance denotes the restrictions that try to slow down or stop the flow. Electrical shock can occur only when a part of the body completes a circuit between a conductor and another conductor or a grounding source.

B. Death or injury is not caused by the voltage, but rather by the amount of current that flows through the body. Of course, the higher the voltage, the greater the danger if shocked. Some people have survived shocks of several thousand volts, while others have been killed by voltages as low as 12.

C. The dry outer skin of the human body offers extremely high resistance to electrical flow. However, the resistance is reduced to almost zero when the skin is wet— especially if the skin is wet because of perspiration, which comes out of pores in the skin.

D. If your body is sweaty or damp, an oversensitive ground within it is created, which easily causes electrical shock. One way to keep the body's resistance high is to keep it dry, particularly the hands and feet. This can be accomplished by wearing rubber gloves, boots, and rubbers.

E. An important phase of electrical safety is to know how to help a victim of electrical shock. First, stop the current flowing from the circuit through the victim's body. Often, particularly in cases of low voltage shock, victims are unable to pull away from the source of the current. In this case, disconnect or de-energize the circuit, if possible. If you can't de-energize the circuit, get a non-conductive item, such as dry clothing, dry rope, or a dry stick, and remove the victim from the source of the current. Never use your bare hands. As soon as it is safe to do so, call 9-1-1 or send for help if a call cannot be made. If the victim's heart or breathing has stopped, give needed first aid (if trained to do so) until professional help arrives.

F. We can reduce the risk of electrical shock by keeping in mind these guidelines:

- ▷ Keep electrical equipment away from water and dampness. Water is a great electrical conductor.
- ▷ Never use water to put out an electrical fire; water can cause a fatal shock. Use a class C-rated fire extinguisher for electrical fires; shut off the source of power.
- ▷ Inspect the area you're working in for electrical hazards. Report suspected hazards to your supervisor.
- ▷ Don't overload circuits. A circuit breaker trips open because too many amps of current are flowing through it. A qualified person should determine the cause of the problem and have it corrected.
- ▷ Check electrical cords for fraying and other signs of wear. Extension cords are not allowed to be used for permanent wiring per electrical code and safety regulations.
- ▷ Be sure not to tamper with "tag out and lock out" devices that have been put on electrical equipment.

Remember, electricity can be an ally or an enemy. Treat it with respect and it will provide the service you expect.

NOTES:

Handout #2: PRE -QUIZ *"Electrical Safety"*

Name: _____ Date: _____

Department _____ Job Title _____

Instructions: Please provide the best answer(s) for each question – the "best" answer may be open to discussion during review of the quiz!

1. Which terms best describe persons that should perform electrical work.

   a) trained b) unauthorized c) meticulous d) qualified e) voluntary f) none of these are correct

2. Which words are related to electricity:

   a) Resistance b) Voltage c) Current d) Amperage e) All of these are correct

3. Only voltage greater than 120 volts can cause a fatal shock. True False

4. A wet surface increases the ability of electrical current to flow. True False

5. The ability to inhibit electrical current flow is called renaissance. True False

6. Approved (UL Listed) extension cords may be used for permanent wiring. True False

7. If a person is being shocked and unable to pull away from the electrical source, first try to:

   a) pull them away from the electrical source b) de-energize the circuit c) call a qualified electrician

8. Water is the best way to put out an electrical fire because it conducts electricity. True False

9. A frayed or damaged electrical cord is dangerous because it may: (circle all that apply)

   a) smell bad b) cause a shock c) catch fire d) cause static e) get stolen f) create higher voltages

10. A tripped circuit breaker means too much voltage is being used. True False

11. Bonus Question: Do you have something to add to the discussion regarding your experience with situations involving electrical safety? Make notes below:

_____

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