Supervisors Safety Bulletin™ Training Toolbox

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Staying safe from electrical hazards

■ *Almost every worker can be at risk*

Electrical injuries are one of the rare instances of a hazard that almost every worker in almost every industry is exposed to. Find out more about staying safe from the dangers here.

What to know

Every year, approximately 1,000 people will die of electrical injuries. Thousands more will be injured. Although electricity is used almost everywhere, work is where it is most dangerous.

Electrical injuries are classified as high-voltage (caused by a current more than 500 volts) or low-voltage (less than 500 volts).

The typical household appliance uses up to 240V, but work equipment can be much more powerful.

And direct exposure to 600V of electricity is associated with a high risk of death.

Common causes

One of the most common ways an electrical injury can occur is improper grounding of a current.

When equipment isn't grounded or the path has been broken, electricity can pass through the human body.

That can lead to shocks, burns and even death.

Other hazards include:

- **Electrical arcs.** When sparks form between two sources of electricity that aren't connected, they can form super-hot arcs. Temperatures can reach 4,500 to 9,000 degrees.
- **Flames.** Electricity can ignite clothing or other flammable material.
- **Flash burns.** Even if you're not directly exposed to electricity, the heat from a nearby incident can cause an intense burn across much of the skin.

4 main types

Together, these hazards account for the four main types of electrical injuries workers face:

- **Electric shock.** Contact with electricity.
- **Electrocution.** Fatal electric shock.
- **Burns** as a result of electricity passing through the body, and
- **Falls** as a result of exposure to electricity.

PREVENTION

Avoiding the hazards that lead to electrical injuries is crucial to staying safe.

Here are some steps and precautions you should take around electrical equipment:

1. Examine equipment

Check any electrical equipment for defects before you start using it. If equipment is damaged, remove it from service immediately.

Common defects include frayed cords, missing ground plugs or cracked casings.

2. Keep it dry

Don't use electrical equipment in wet conditions or while standing in water.

3. Watch extension cords

Use only approved extension cords that are 3-wire type or approved for hard or extra-hard usage. When removing a cord, pull from the plug, not from the cord itself.

4. Avoid power lines

Overhead power lines carry up to 800,000 volts. Always assume a power line is energized, and stay at least 10 feet away from them.

5. Use generators safely

Only use power generators outdoors. Make sure they're cooled down before fueling, and that the main circuit breaker is off and locked out prior to starting the generator.

Training Session Quiz

NAME

SIGNATURE

DATE

1 Avoid using electrical equipment in wet conditions or when standing in water.

❑ true ❑ false

2 Electrical arcs occur when the path of a circuit is completed, allowing a machine to be safely powered on.

❑ true ❑ false

3 The typical household appliance uses about 240V of electricity, but work equipment often uses much more than that.

❑ true ❑ false

4 You should always remove an extension cord by pulling on the plug, not the cord itself.

❑ true ❑ false

5 Keeping electrical generators dry is important. If you need to use a generator during a storm, bring it into your facility before starting it up.

❑ true ❑ false

6 Electrocution is a term for an electrical shock that causes painful burns to the skin.

❑ true ❑ false

7 As long as you're not in contact with an electrical malfunction, you should be safe from any injury.

❑ true ❑ false

8 Almost any worker in any industry is at risk of electrical injury due to the amount of electrical equipment in the workplace.

❑ true ❑ false

9 Electrical equipment should be inspected for defects such as frayed wires, cracked casings or missing grounding plugs before each use.

❑ true ❑ false

10 Improper grounding of electrical equipment can lead to damage to equipment, but injuries are rare.

❑ true ❑ false

ANSWERS

1. *True.* This increases the chances of receiving an electrical shock.
2. *False.* An electrical arc is an extremely dangerous situation that occurs when sparks form between two sources of electricity that aren't connected.
3. *True.* For reference, injuries caused by over 600V of electricity have a high probability of death.
4. *True.* Pulling from the plug prevents the cord from getting stressed and keeps it from straining the wires within the outlet.
5. *False.* Never use a generator indoors. Most are powered by gasoline, and using them indoors can lead to carbon monoxide poisoning. Operate only outdoors in well-ventilated areas.
6. *False.* Electrocution is a term for a fatal electric shock.
7. *False.* Flash burns can cause serious harm and even kill workers who are nearby during an electrical incident.
8. *True.* The risks are even greater if workers aren't careful or if equipment isn't used properly.
9. *True.* Damaged equipment should be taken out of service immediately or thrown away.
10. *False.* Improper grounding is one of the primary causes of electrical injury. Make sure grounding plugs are never removed from a cord.

TREATING ELECTRICAL INJURIES

If a co-worker suffers an electrical injury, dial 911 immediately.

If you can do so safely, turn off the source of the electrical current. If you can't, use a wooden object to move them away from the current.

Clean burns with cool running water. In some cases, it may be necessary to provide CPR or treat for shock.

Note: Never attempt to touch a person in contact with high-voltage lines. Stay at least 20 feet away, and wait for help to arrive.