

Lesson Plan
General Industry Outreach Training Program (10-hour)

Topic: Electrical

Overview of the OSHA Standard

Electricity is accepted as a source of power without much thought to the hazards encountered. Some employees work with electricity directly. This is the case with engineers, electricians, electronic technicians and power line workers. Others, such as office workers and salespeople work with it indirectly.

OSHA's electrical standards address this serious workplace hazard which exposes employees to such dangers as electric shock, electrocution, fires and explosions. The objective of the standards is to minimize the potential hazards by specifying design characteristics of safety in use of electrical equipment and systems.

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 *Electrical* 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. Describe four types of injuries that may result from contact with electricity.

Possible responses.

- Electrocution or death due to electrical shock
- Electrical shock
- Burns
- Falls

2. List the three main electrical hazards that may be encountered at a worksite.

Possible responses.

- Inadequate wiring
- Improper grounding
- Overloads

3. Discuss at least three methods of protection from electrical hazards.

Possible responses.

- Use proper sized fuses, circuit breakers, and GFCI's.
- Never disconnect the ground wire from a plug.
- Inspect all flexible cords before use.
- Guard live electrical parts.
- Use proper grounding.
- Train workers, staff, and employees.
- Shut off electricity at the source before doing electrical work.

4. Describe the function of a ground fault circuit interrupter (GFCI).

Possible responses.

- A GFCI detects current leakage rather than an overload and switches off current when leakage is detected.
- A GFCI matches the amount of current going to an electrical device against the amount of current returning. If it detects a difference in current, it switches circuit off.

- **Learning Objectives/Outcomes (Continued)**

5. Name at least three warning signs or clues that an electrical hazard exists.

Possible responses.

- A GFCI that shuts off a circuit
- Tripped circuit breakers or blown fuses
- Warm tools, wires, cords or connection boxes
- Worn or frayed insulation around a wire or connection

- **Planned Activities, Discussion, or Participant Interaction.**

Step 3: Evaluating Student Learning and Instruction

- **Lesson Evaluation and Comments.**

References

OSHA Standard

- 29 CFR 1910 Subpart S (1910.301 to 1910.399)
 - http://www.osha-slc.gov/OshStd_toc/OSHA_Std_toc_1910_SUBPART_S.html

OSHA Publications

- <http://www.osha-slc.gov/OshDoc/Additional.html>
- 3075 Controlling Electrical Hazards
- 3080 Hand and Power Tools
- 3120 Control of Hazardous Energy (Lockout/Tagout)

OSHA References/Resources

- LOTO Plus Expert Advisor
 - <http://www.osha-slc.gov/dts/osta/oshasoft/lotoplus.html>
- OSHA's Small Business Outreach Training Program, Electrical
 - <http://www.osha-slc.gov/SLTC/smallbusiness/sec14.html>
- OSHA Technical Links – Electrical
 - <http://www.osha-slc.gov/SLTC/electrical/index.html>
- OSHA Technical Links – Control of Hazardous Energy (Lockout/Tagout)
 - <http://www.osha-slc.gov/SLTC/controlhazardousenergy/index.html>
- Self-Inspection Checklists
 - <http://www.osha-slc.gov/SLTC/smallbusiness/chklist.html#Electrical>
- Self-Inspection Checklists – Lockout/Tagout Procedures
 - <http://www.osha-slc.gov/SLTC/smallbusiness/chklist.html#Lockout>