

# Electric Utility

## Electrical Worker Training (29 CFR 1910.269)

### Communications Facilities

#### Requirement References:

- 29 CFR 1910.269 Subpart R: Special Industries Section (s)

#### Goal:

This lesson covers the dangers involved and the unique practices needed to safely work on microwave equipment.

#### Course outline:

Introduction  
Microwave Equipment  
Power Line Communication Carrier

#### Objectives:

- Correctly identify the appropriate safety practices to be used around microwave transmission facilities.
- Recognize that power line carrier work requires the same safety practices as when working on energized lines.

### Electrical Clearances

#### Requirement References:

- 29 CFR1910.269, paragraph m

#### Goal:

The goal of this lesson is to provide awareness training for electrical workers in the safe procedures for de-energizing and reenergizing transmission and distribution lines and equipment.

#### Course Outline:

Introduction  
Performing an Electrical Clearance  
Transferring an Electrical Clearance  
Releasing an Electrical Clearance

#### Objectives:

- Identify procedures for de-energizing transmission and distribution lines and equipment.
- Identify procedures for transferring an electric clearance.
- Identify procedures for releasing an electrical clearance and reenergizing transmission and distribution lines and equipment.

## Enclosed Spaces

### Requirement References:

- 29 CFR 1910.269 Subpart R: Special Industries Section (e)

### Goal:

This lesson covers when a manhole, ditch or trench can change from an enclosed space into a confined space, the significance of appropriate ventilation to prevent or clear unsafe atmospheres, and the safety practices needed to work in tight spaces.

### Course Outline:

Introduction  
Enclosed and Confined Spaces  
Safe Practices  
Safe Atmosphere

### Objectives:

- Correctly identify the similarities and differences between enclosed and confined space.
- Correctly identify safe practices for using rescue equipment, evaluating potential hazards, removing covers on vaults, hazardous atmospheres, and the role of attendants at enclosed spaces.
- Correctly identify appropriate practices to be used to maintain a safe atmosphere in an enclosed space.

## Excavations

### Requirement References:

- 29 CFR 1910.269, Subpart R: Special Industries, Section (f)

### Goal:

This lesson covers key terms used in excavation work, and how to properly design, construct and work in and around excavations.

### Course Outline:

Introduction  
Key Terms  
Designing an Excavation  
Constructing an Excavation  
Working In and Around Excavations

### Objectives:

- Correctly identify the keywords associated with excavations.
- Correctly identify principles and practices used in designing excavations.
- Correctly identify the principles and practices associated with constructing an excavation.
- Correctly identify the dangers and safe practices to follow when working in or near an excavation.



## General Concepts

### Requirement References:

- 29 CFR 1910.269 Subpart R: Special Industries Sections (a)(3) and (x)

### Goal:

This lesson covers definitions of terms, descriptions of common equipment, and safety policies and processes.

### Course outline:

Introduction  
Definition of Terms  
Description of Equipment  
Safety Polices and Processes

### Objectives:

- Identify definitions of terms presented in the lesson.
- Identify definitions of equipment presented in the lesson.
- Identify policies and processes that relate to safety in the workplace.

## Grounding

### Requirement References:

- 29 CFR 1910.269, Subpart R: Special Industries, Section (n)

### Goal:

This lesson covers proper grounding techniques, some general safety issues with grounds, and protection against fault currents. It also covers the importance of personal protective equipment, and how to correctly connect and remove grounds.

### Course outline:

Introduction  
Safe Conditions for Bare Hand Work  
Fault Current  
Protective Equipment and Practices  
Connecting and Removing Grounds

### Objectives:

- Correctly identify the three conditions to be met to consider lines or equipment dead.
- Correctly identify the definition and dangers of a fault current.
- Correctly identify the purpose and use of protective grounds.
- Correctly identify the proper techniques for connecting and removing grounds.



## Hand and Portable Power Tools

### Requirement References:

- 29 CFR 1910.269, Subpart R: Special Industries, Section (i)

### Goal:

This lesson covers the OSHA requirements for working with portable equipment, hydraulic and pneumatic power tools, live-line tools, and the requirements for maintaining them.

### Course outline:

Introduction  
Cord- and Plug-Connected Equipment  
Portable and Vehicle Mounted Generators  
Hydraulic and Pneumatic Tools  
Selection and Maintenance

### Objectives:

- Correctly identify appropriate safety practices for cord and plug-connected equipment.
- Correctly identify appropriate safety practices for portable and vehicle mounted generators.
- Correctly identify appropriate safety practices for hydraulic and pneumatic tools.
- Correctly identify the appropriate practices to use in caring for tools.

## Hazardous Energy Control Procedures

### Requirement References:

- 29 CFR1910.269, paragraph m

### Goal:

The goal of this lesson is to provide awareness training for electrical workers in the safe procedures for using lockout/tagout devices for the control of energy sources in installations for the purpose of electric power generation.

### Course outline:

Introduction  
What is a Hazardous Energy Control Program?  
Authorized and Affected Employees  
Locks, Tags, and Devices  
Applying and Removing Locks and Tags  
Group Lock/Tagout  
Training and Retraining

### Objectives:

- Identify the differences among Authorized, Affected, and Designated employees in relation to lock and tag procedures.
- Identify the fundamental procedures to follow for establishing and working under locks and tags.
- Identify the limitations of a tagout.
- Identify the process for releasing a lock and tag clearance.
- Identify the OSHA requirements for training and retraining.
- Identify the special OSHA requirements for temporary removal of locks or tags, group lockouts and tagouts, shift change turnover, and training of outside service personnel.



## **Job Briefings**

### **Requirement References:**

- 29 CFR 1910.269, Subpart R, Special Industries, Section (c)

### **Goal:**

The lesson covers why job briefings are important, when they should be held, and what information should be given to a work crew during the briefing.

### **Course outline:**

Introduction  
Importance of Job Briefings  
Frequency of Job Briefings  
Length of Job Briefings  
Contents of a Briefing  
Techniques for Presenting a Job Briefing

### **Objectives:**

- Correctly identify the importance of a job briefing.
- Correctly identify the frequency and length of a job briefing under different situations.
- Correctly identify the length of a job briefing under different situations.
- Correctly identify the information to be covered in a job briefing.
- Correctly identify techniques for presenting a job briefing.

## **Ladders, Platforms, Step Bolts, and Manhole Steps**

### **Requirement References:**

- 29 CFR 1910.269, Subpart R: Special Industries, Section (h)

### **Goal:**

This lesson covers why ladders should be used appropriately, how to safely use special ladders and platforms, using step bolts and manhole steps, and when and how to use ladders made from conductive material.

### **Course outline:**

Introduction  
Special Ladders and Platforms  
Step Bolts and Manhole Steps  
Conductive Ladders

### **Objectives:**

- Correctly identify the industry-specific exemptions to the general OSHA requirements for ladder use.



## Line-Clearance Tree Trimming

### Requirement References:

- 29 CFR 1910.269, Subpart R: Special Industries, Section (r)

### Course outline

Introduction  
Electrical Hazards  
Gasoline Engine Power Saws  
Chippers, Cutters and Sprayers  
Backpack Power Units  
Ropes and Fall Protection

### Objectives:

- Identify the appropriate safety practices around electrical hazards while performing line-clearance tree trimming.
- Identify the appropriate safety practices for transporting, starting, stopping and using gasoline engine power saws.
- Identify the appropriate safety practices to be followed when using brush chippers, stump cutters, sprayers, and related equipment.
- Identify the appropriate safety practices when using a backpack power unit for pruning and clearing.
- Identify the appropriate practices for inspecting, using, and storing ropes.

## Mechanical Equipment

### Requirement References:

- 1910.269 (p)

### Goal:

The student will correctly identify the general requirements for using mechanical equipment, and identify safe practices when using mechanical equipment near energized lines and equipment.

### Course outline:

Introduction  
Special Requirements  
Operations Near Energized Lines or Equipment

### Objectives:

- Identify the general requirements for using mechanical equipment.
- Identify safe practices when using mechanical equipment near energized lines and equipment.



## Medical Services and First Aid

### Requirement References:

- 29 CFR 1910.151 Medical Services and First Aid
- 29 CFR 1910.269 Electric Power Generation, Transmission, and Distribution
- 29 CFR 1910.269 Subpart R: Special Industries - Section (b)

### Goal:

The learner will identify the OSHA requirements related to the electrical utility industry for medical services and first aid, the correct actions to take during an initial response to an accident or first aid situation, including examining the victim for bleeding, shock, burns, electrocution, head or spinal injuries, and fractures.

### Course outline:

Introduction  
OSHA Requirements  
Initial Response  
First Aid Refresher

### Objectives:

- Identify the OSHA requirements for medical services and first aid as they relate to the electrical utility industry.
- Identify the correct actions to take during an initial response to an accident or first aid situation.
- Identify the correct actions to take when providing first aid for the following situations: examining the victim, bleeding, shock, burns, electrocution, head or spinal injuries, and fractures.

## Overhead Lines

### Requirement References:

- 29 CFR 1910.269 Electric Power Generation, Transmission, and Distribution
- 29 CFR 1910.269 Subpart R: Special Industries - Section (q)

### Goal:

The learner will apply safe practices for working on or around poles, towers, and elevated structures, installing and removing overhead lines, and using aerial lifts.

### Course outline:

Introduction  
Poles, Towers and Elevated Structures  
Installing and Removing Overhead Lines  
Using Aerial Lifts

### Objectives:

- Correctly identify the general safety rules, which apply to erecting, working on, or moving elevated structures.
- Correctly identify appropriate safety practices for installing and removing overhead lines.
- Correctly identify the appropriate safety practices when working on or near a tower or elevated structure.



## Overhead Lines with Live-Line Bare-Hand Work

### Requirement References:

- 29 CFR 1910.269 Electric Power Generation, Transmission, and Distribution
- 29 CFR 1910.269 Subpart R: Special Industries - Section (q)

### Goal:

The learner will apply safe practices for working on or around poles, towers, and elevated structures, installing and removing overhead lines, performing live-line bare-hand work, and using aerial lifts.

### Course outline:

Introduction  
Poles, Towers and Elevated Structures  
Installing and Removing Overhead Lines  
Using Aerial Lifts  
Live-Line Bare-Hand Work

### Objectives:

- Correctly identify the general safety rules, which apply to erecting, working on, or moving elevated structures.
- Correctly identify appropriate safety practices for installing and removing overhead lines.
- Correctly identify appropriate safety practices to be used during live-line bare-hand work.
- Correctly identify the appropriate safety practices when working on or near a tower or elevated structure.

## Personal Protective Equipment

### Requirement References:

- 29 CFR 1910.269, Subpart R: Special Industries, Section (g)

### Goal:

This lesson covers why wearing the right equipment is important, how to use it properly, how equipment can help in case of a fall, and how workers are insulated from energized parts.

### Course outline:

Introduction  
Using Personal Protective Equipment  
Fall Protection  
Insulation from Energized Parts

### Objectives:

- Correctly identify the importance of correct usage of personal protective equipment for electrical workers.
- Correctly identify fall protection equipment as required by OSHA for electrical workers.
- Correctly identify the typical insulating safety tools and equipment, and their characteristics and uses as required by OSHA

## Power Generation

### Requirement References:

- 29 CFR 1910.269, Subpart R: Special Industries, Section (v)

### Goal:

This lesson covers general safety practices for working in power generating plants, how to guard energized equipment and energized parts, and work around steam boilers, chlorine systems, coal, and ash.

### Course outline:

Introduction  
General Safety Practices  
Guarding Equipment and Energized Parts  
Boilers  
Chlorine Systems  
Coal and Ash Handling

### Objectives:

- Correctly identify the general safety practices for working in power generation facilities.
- Correctly identify the appropriate safety practices for guarding equipment and energized parts.
- Correctly identify appropriate safety practices when working on boilers.
- Correctly identify the appropriate safety practices when working on chlorine systems.
- Correctly identify the appropriate safety practices for working with coal and ash.

## Special Conditions and Materials Handling

### Requirement References:

- 29 CFR 1910.269 Electric Power Generation, Transmission, and Distribution
- 29 CFR 1910.269 Subpart R: Special Industries - Section (k) Materials handling and storage
- 29 CFR 1910.269 Subpart R: Special Industries - Section (w) Special conditions

### Goal:

The learner will understand the special safe practices needed when working around some equipment, such as capacitors, and the proper storage locations for certain things in the work area.

### Course outline:

Introduction  
Safe Work Practices  
Special Conditions  
Lasers  
Materials Handling

### Objectives:

- Correctly identify the 10 safe work practices recommended when working around energized parts.
- Correctly identify special conditions to be considered when working with capacitors, current transformers.
- Correctly identify specific conditions for working with lasers.
- Correctly identify appropriate safety practices to be used for storing materials near energized lines.

## Substations

### Requirement References:

- 29 CFR 1910.269 Electric Power Generation, Transmission, and Distribution
- 29 CFR 1910.269 Subpart R: Special Industries - Section (u)

### Goal:

The learner will know the standards for entering, operating, and performing maintenance in substations, preventing unauthorized access, and when and how to guard their lines and equipment.

### Course outline:

Introduction  
Entrance and Work Procedures  
Guarding Equipment

### Objectives:

- Correctly identify the appropriate safety practices to be followed when entering and working in substations.
- Correctly identify when and how to guard lines and equipment in substations.

## Testing and Test Facilities

### Requirement References:

- 29 CFR 1910.269, Subpart R: Special Industries, Section (o)

### Goal:

This lesson covers safety items unique to permanent or field testing facilities, guarding and grounding practices, how to safely use control and measuring circuits under testing conditions, and safety checks.

### Course outline:

Introduction  
Guarding of Test Areas  
Grounding Practices  
Control and Measuring Circuits  
Safety Check

### Objectives:

- Identify the situations and conditions under which the Testing and Test Facilities rules apply.
- Identify how guarding of a test area is accomplished.
- Identify appropriate grounding practices to be used during testing and within a testing facility.
- Identify the appropriate practices regarding control and measuring circuits in a testing facility.
- Identify the appropriate safety practices for testing facilities.



## Underground Electrical Installations

### Requirement References:

- 29 CFR 1910.269, Subpart R: Special Industries Section (t)

### Goal:

This lesson covers the safety requirements for working in manholes and vaults, and working with underground lines and cables.

### Course outline:

Introduction

Working in Manholes and Vaults

Working with Underground Lines and Cables

### Objectives:

- Identify the appropriate safety practices to be followed when working in manholes and vaults.
- Identify the appropriate safety practices to be followed when working on underground lines and equipment.

## Vault and Pole-Top Rescue

### Requirement References:

- 29 CFR 1910.269 Electric Power Generation, Transmission, and Distribution Subpart R: Special Industries Section (b)

### Goal:

The student will recognize the proper procedure to safely perform a vault rescue and pole-top rescue.

### Course outline:

Introduction

Vault Rescue

Pole-Top Rescue

### Objectives:

- Identify the proper procedure to perform a vault rescue.
- Identify the correct actions to take when performing a pole-top rescue.



## **Working On or Near Exposed, Energized Parts**

### **Requirement References:**

- 29 CFR 1910.269 Electric Power Generation, Transmission, and Distribution
- 29 CFR 1910.269 Subpart R: Special Industries - Section (I)

### **Goal:**

The learner will identify methods for guarding against electrical contact in the work area, including OSHA requirements for working alone, working safely, achieving minimum workspace, and maintaining minimum approach distances around electrical or energized equipment. The learner will also identify OSHA requirements for working with at least two employees during certain electrical work situations, and for performing inspections of electrical equipment.

### **Course outline:**

Introduction  
Guarding Against Electrical Contact  
Working Alone  
Working With At Least Two  
Minimum Work Space  
Working Safely Around Electrical Equipment  
Inspections  
Minimum Approach Distances

### **Objectives:**

- Identify the methods for guarding against electrical contact in the work area.
- Identify the OSHA requirements for working alone around electrical equipment.
- Identify the electrical work situations where OSHA requires working with at least two employees.
- Identify the OSHA requirements minimum workspace when working around electrical equipment.
- Identify the OSHA requirements for working safely around energized equipment.
- Identify the OSHA requirements for performing inspections of electrical equipment.
- Identify the purpose and proper application of the OSHA minimum approach distances.