



# Workplace Safety Training Guide

WORK READY ESSENTIALS- Equipping Workers for Success

## WORKPLACE SAFETY TRAINING GUIDE

Company: \_\_\_\_\_ Training Date: \_\_\_\_\_

Trainer: \_\_\_\_\_ Location: \_\_\_\_\_

Training Duration: \_\_\_\_\_ Participants: \_\_\_\_\_

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### TRAINING OBJECTIVES

Upon completion of this training, participants will be able to:

- Identify electrical hazards in the workplace
  - Understand proper lockout/tagout procedures
  - Select and use appropriate personal protective equipment (PPE)
  - Recognize arc flash and shock hazards
  - Respond appropriately to electrical emergencies
  - Follow safe work practices for electrical tasks
  - Understand regulatory requirements and company policies
- 

## MODULE 1: ELECTRICAL HAZARDS IDENTIFICATION

### Primary Electrical Hazards

#### Shock Hazard

- Contact with energized conductors or circuit parts
- Can cause injury, death, or secondary injuries from falls
- Severity depends on current path, duration, and individual factors

#### Arc Flash Hazard

- Explosive release of energy during electrical faults
- Can cause severe burns, blindness, hearing damage
- Temperatures can exceed 35,000°F (4 times hotter than sun's surface)

#### Arc Blast Hazard

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- Pressure wave from arc flash events
- Can cause lung damage, hearing loss, concussion
- Can propel debris and molten metal

## Electrical Fire/Explosion

- Electrical equipment can ignite flammable materials
- Faulty wiring, overloaded circuits, damaged equipment

## Common Electrical Hazards

- ☐ Overhead power lines
- ☐ Exposed electrical parts
- ☐ Inadequate wiring
- ☐ Damaged insulation
- ☐ Overloaded circuits
- ☐ Wet conditions
- ☐ Improper grounding
- ☐ Faulty equipment

## Training Activity: Hazard Recognition Exercise

*Walk through workplace and identify potential electrical hazards*

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## MODULE 2: ELECTRICAL SAFETY STANDARDS & REGULATIONS

### Key Regulatory Standards

#### OSHA 29 CFR 1926.416-417 - Electrical Safety (Construction)

- General electrical safety requirements
- Personal protective equipment requirements
- Lockout/tagout procedures

#### NFPA 70E - Electrical Safety in the Workplace

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- Arc flash protection requirements
- Electrical safety program elements
- Approach boundaries and PPE selection

## National Electrical Code (NEC)

- Installation standards
- Grounding and bonding requirements
- Overcurrent protection

## Company Safety Policies

- ☐ Electrical safety program requirements
  - ☐ Qualified vs. unqualified person definitions
  - ☐ Personal protective equipment standards
  - ☐ Incident reporting procedures
  - ☐ Training and certification requirements
- 

## MODULE 3: PERSONAL PROTECTIVE EQUIPMENT (PPE)

### PPE Selection Matrix

Hazard Risk Category	Arc Rating (cal/cm <sup>2</sup> )	Required PPE
HRC 0	N/A	Non-melting shirt, pants, safety glasses
HRC 1	4	Arc-rated shirt/pants, hard hat, safety glasses

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HRC 2	8	Arc-rated shirt/pants/coverall, hard hat, face shield
HRC 3	25	Arc-rated coverall + shirt/pants, hard hat, face shield
HRC 4	40	Arc flash suit, hard hat, face shield

## PPE Requirements by Body Part

### Head Protection

- ☐ Hard hat with electrical rating (Class E or G)
- ☐ Arc-rated balaclava (if required)

### Eye and Face Protection

- ☐ Safety glasses with side shields (minimum)
- ☐ Arc-rated face shield (higher hazard levels)
- ☐ Arc flash hood (HRC 3-4)

### Hand Protection

- ☐ Rubber insulating gloves with leather protectors
- ☐ Voltage rating must exceed system voltage
- ☐ Regular inspection and testing required

### Body Protection

- ☐ Arc-rated shirts, pants, coveralls
- ☐ Natural fiber undergarments only
- ☐ No synthetic materials next to skin

### Foot Protection

- ☐ Leather safety shoes/boots

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- ☐ Electrical hazard rated
- ☐ No exposed metal parts

## PPE Inspection Checklist

- ☐ Visual inspection before each use
  - ☐ Check for cuts, tears, punctures
  - ☐ Verify proper ratings and certifications
  - ☐ Ensure proper fit and coverage
  - ☐ Remove from service if damaged
- 

## MODULE 4: SAFE WORK PRACTICES

### General Safety Rules

1. De-energize before work - Always work de-energized when possible
2. Test before touch - Verify de-energized state with calibrated test equipment
3. Treat all circuits as energized - Until proven otherwise
4. Use appropriate PPE - Based on hazard assessment
5. Work with qualified personnel - Never work alone on electrical systems
6. Follow procedures - Use written work procedures and safety practices

### Approach Boundaries

#### Limited Approach Boundary

- Distance: Based on voltage level
- Only qualified persons may cross
- Shock hazard protection required

#### Restricted Approach Boundary

- Closer distance requiring higher protection
- Enhanced PPE and safety measures required

#### Prohibited Approach Boundary

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- Treated as same as making contact
- Only for very specific, qualified work

## Safe Work Procedures

### Before Starting Work:

- ☐ Conduct job hazard analysis
- ☐ Review electrical drawings and procedures
- ☐ Verify proper PPE for hazard level
- ☐ Ensure proper tools and equipment
- ☐ Notify other personnel of work activity
- ☐ Establish communication methods

### During Work:

- ☐ Follow lockout/tagout procedures
- ☐ Use insulated tools rated for voltage level
- ☐ Maintain proper approach boundaries
- ☐ Work with qualified personnel only
- ☐ Stop work if conditions change

### After Work:

- ☐ Remove locks and tags properly
  - ☐ Test equipment operation
  - ☐ Clean up work area
  - ☐ Document any issues or concerns
- 

## MODULE 5: LOCKOUT/TAGOUT (LOTO) PROCEDURES

### LOTO Purpose

- Prevent unexpected startup of equipment
- Control release of stored energy
- Protect workers from electrical shock and arc flash

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## LOTO Steps

1. Preparation - Identify energy sources and shutdown procedures
2. Notification - Inform affected personnel of shutdown
3. Shutdown - Use normal stopping procedures
4. Isolation - Disconnect from all energy sources
5. Lockout - Apply personal locks to isolation devices
6. Stored Energy - Release or control stored energy
7. Verification - Test that equipment cannot start

## LOTO Requirements

- ☐ Written procedures for each piece of equipment
- ☐ Personal locks for each authorized employee
- ☐ Tags for identification and information
- ☐ Training for authorized and affected employees
- ☐ Periodic inspection of procedures

## Common LOTO Mistakes

- Not identifying all energy sources
  - Failing to test after lockout
  - Removing another person's lock
  - Working without proper LOTO procedures
  - Inadequate stored energy control
- 

## MODULE 6: ARC FLASH PROTECTION

### Arc Flash Basics

- Occurs during electrical faults or switching operations
- Temperature: Up to 35,000°F
- Pressure: Can exceed 2,000 pounds per square foot

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- Light: Brighter than the sun
- Sound: Can cause permanent hearing damage

## Arc Flash Risk Assessment

### Incident Energy Calculation

- Determines potential energy at working distance
- Expressed in calories per square centimeter (cal/cm<sup>2</sup>)
- Used to select appropriate PPE

### Arc Flash Boundary

- Distance where incident energy equals 1.2 cal/cm<sup>2</sup>
- Minimum approach distance for unprotected personnel
- Must be marked on equipment

## Arc Flash PPE Selection

- ☐ Calculate incident energy level
  - ☐ Determine hazard risk category
  - ☐ Select PPE with appropriate arc rating
  - ☐ Ensure complete coverage of exposed skin
  - ☐ Use arc-rated face protection
  - ☐ Include hearing protection
- 

## MODULE 7: ELECTRICAL TOOLS AND EQUIPMENT

### Insulated Tools

#### Requirements:

- ☐ Rated for maximum voltage encountered
- ☐ 1000V or 1500V ratings most common
- ☐ Regular inspection for damage
- ☐ Proper storage to prevent damage

#### Types:

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- Insulated screwdrivers, pliers, wrenches
- Insulated measuring devices
- Insulated blankets and barriers
- Insulated ladders and platforms

## Test Equipment

### Voltage Detectors

- ☐ Test on known energized source before use
- ☐ Test on known de-energized source after use
- ☐ Use contact and non-contact types appropriately
- ☐ Verify proper operation daily

### Multimeters

- ☐ Proper category rating for application
  - ☐ Inspect test leads for damage
  - ☐ Use appropriate measurement techniques
  - ☐ Never measure across open switches
- 

## MODULE 8: EMERGENCY PROCEDURES

### Electrical Emergency Response

#### Electrical Shock Response:

1. Do not touch victim if still in contact with electrical source
2. Turn off power at source if possible
3. Call 911 immediately
4. Begin CPR if qualified and needed
5. Treat for shock and burns
6. Document incident thoroughly

#### Electrical Fire Response:

1. De-energize equipment if safely possible
2. Use Class C fire extinguisher for energized equipment

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3. Evacuate area if fire spreads
4. Call fire department
5. Never use water on electrical fires

Arc Flash Incident:

1. Call 911 immediately
2. Do not approach victim until power confirmed off
3. Treat severe burns and trauma
4. Clear area of other personnel
5. Preserve scene for investigation

## Emergency Contacts

911 Emergency Services: 911

Company Emergency Line: \_\_\_\_\_

Poison Control: (800) 222-1222

Medical Facility: \_\_\_\_\_

Utility Emergency: \_\_\_\_\_

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## MODULE 9: HAZARD COMMUNICATION

### Electrical Safety Signs and Labels

Danger Signs - Red background, immediate hazard

Warning Signs - Orange/yellow background, caution required

Caution Signs - Yellow background, general precaution

### Arc Flash Labels

Required information:

- ☐ Nominal system voltage
- ☐ Arc flash boundary
- ☐ Incident energy at working distance

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- ☐ Required PPE for the task
- ☐ Date of last arc flash study

## Equipment Labeling

- ☐ Voltage levels clearly marked
  - ☐ Lockout points identified
  - ☐ Switch positions labeled
  - ☐ Emergency shutdown locations marked
  - ☐ PPE requirements posted
- 

## MODULE 10: TRAINING DOCUMENTATION

### Required Training Records

- ☐ Initial safety training completion
- ☐ Task-specific training records
- ☐ Annual refresher training
- ☐ Incident-based training
- ☐ Equipment-specific training
- ☐ Competency assessments

### Qualified Person Requirements

Training must include:

- Electrical theory and safety principles
- Hazard recognition and assessment
- Proper use of PPE and tools
- Safe work practices and procedures
- Emergency response procedures
- Hands-on practical training

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## Retraining Requirements

Annual retraining required for:

- Changes in job assignment
  - Changes in workplace conditions
  - Equipment modifications
  - Incident involvement
  - Observed unsafe behavior
  - Regulatory updates
- 

## TRAINING ASSESSMENT

### Knowledge Check Questions

1. What is the minimum approach distance for unqualified persons to a 480V panel?
2. What PPE is required for HRC 2 work?
3. List the steps in the LOTO procedure.
4. What should you do if you encounter an electrical emergency?
5. How often should insulated gloves be tested?

Answers:

1. Arc flash boundary distance (varies by equipment)
2. Arc-rated shirt/pants or coverall, hard hat, safety glasses, face shield
3. Prepare, notify, shutdown, isolate, lockout, control stored energy, verify
4. Ensure safety first, call 911, provide aid if qualified, document
5. Every 6 months or per manufacturer recommendations

### Practical Skills Assessment

- ☐ Proper PPE selection and donning
- ☐ Lockout/tagout procedure execution
- ☐ Voltage testing procedures

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- ☐ Hazard identification skills
  - ☐ Emergency response actions
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## TRAINING COMPLETION CERTIFICATE

I certify that I have completed the Workplace Safety Training and understand:

- Electrical hazards and safety requirements
- Proper PPE selection and use
- Safe work practices and procedures
- Lockout/tagout requirements
- Emergency response procedures
- Company safety policies

Participant Name: \_\_\_\_\_ Signature: \_\_\_\_\_

Employee ID: \_\_\_\_\_ Department: \_\_\_\_\_

Date Completed: \_\_\_\_\_ Trainer Signature: \_\_\_\_\_

Next Refresher Due: \_\_\_\_\_ Competency Level: \_\_\_\_\_

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## TRAINER RESOURCES

### Training Materials Needed

- ☐ PowerPoint presentation slides
- ☐ Handout materials and worksheets
- ☐ Sample PPE for demonstration
- ☐ Insulated tools for hands-on practice
- ☐ Voltage detector for testing demonstration
- ☐ LOTO devices for practice
- ☐ Safety videos or interactive modules

### Recommended Training Schedule

- Initial Training: 8 hours (full day)

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- Annual Refresher: 4 hours
  - Task-Specific Training: 2-4 hours as needed
  - Emergency Response Drill: 1 hour quarterly
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## CONTINUOUS IMPROVEMENT

### Training Effectiveness Measures

- ☐ Incident rate reduction
- ☐ Near-miss reporting increase
- ☐ Safety audit scores improvement
- ☐ Employee feedback and suggestions
- ☐ Knowledge retention assessments

### Program Updates

- ☐ Regulatory changes incorporation
  - ☐ Incident lessons learned integration
  - ☐ New technology and procedures
  - ☐ Industry best practices adoption
  - ☐ Employee feedback implementation
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*This training guide complies with OSHA and NFPA 70E requirements. For additional safety resources and ongoing support, contact Work Ready Essentials.*