



شركة ميرك العربية السعودية
MEIRC Saudi Arabia

High Voltage Electrical Safety

Duration 5 Days

Introduction

This intensive course aims at providing participants with In-depth working knowledge on the application of High voltage safety, regulations and codes in the safe operation installation, commissioning, maintenance, repair and selection of electrical equipment with especial emphasis on the hazardous locations in the plant. OSHA requirements 29 CFR 1919.269 for power generation, transmission, and distribution will be covered.

Who Should Attend

Anyone working with chemicals and hazardous materials

Course Objectives

Upon completion this program Participants will be able to:

- ↻ Conduct required inspections.
- ↻ Define what a periodic inspection means.
- ↻ Understand and use concepts of minimum approach distance and FR clothing.
- ↻ Accomplish EPZ grounding.
- ↻ Create a safe work environment.
- ↻ Use the ultimate key to avoiding accidents

Course Outlines:

1. Electricity Hazards

- 1.1. Introduction
- 1.2. Hazard analysis
 - 1.2.1. Electric shock:
 - 1.2.1.1. Description
 - 1.2.1.2. Influence factors
 - 1.3. Electric arcs:
 - 1.3.1. Definition and descriptions
 - 1.3.2. Arc energy, voltage, and surface area
 - 1.3.3. Arc burns
 - 1.4. Affected body parts
 - 1.4.1. General
 - 1.4.2. Skin
 - 1.4.3. Nervous system
 - 1.4.4. Muscular system
 - 1.4.5. The heart
 - 1.4.6. The pulmonary system
 - 1.5. Summary of causes
 - 1.5.1. Shock effect
 - 1.5.2. Causes of injury
 - 1.5.3. Protective strategies

2. Electrical Safety Equipment

- 2.1. Inspection & testing requirements for electrical safety equipment
- 2.2. Flash and thermal protection
- 2.3. Head and eye protection
- 2.4. Rubber Insulating Equipment: gloves, mats, blankets, covers ...etc.
- 2.5. Hot sticks
- 2.6. Insulated tools
- 2.7. Barriers and signs
- 2.8. Locks and tags



- 2.9. Measuring instruments
- 2.10. Grounding equipment
- 3. **29 CFR 1910.269: Electric Power Generation, Transmission, & Distribution**
 - 3.1. §1910.269(a): Application
 - 3.2. §1910.269(c): Job briefing
 - 3.2.1. Required topics
 - 3.2.2. Number of briefings
 - 3.3. §1910.269(d): Hazardous energy control
 - 3.4. (lockout/tagout) procedures
 - 3.4.1. Clearance procedures
 - 3.4.2. Switching procedures
 - 3.5. §1910.269(g): Personal protective equipment
 - 3.5.1. Flame resistant (FR) clothing
 - 3.5.2. Rubber protective equipment
 - 3.6. §1910.269(i): Hand and portable power tools
 - 3.6.1. Portable equipment grounding
 - 3.6.2. Ground Fault Circuit Interrupters (GFCI)
 - 3.7. §1910.269(j): Live-line tools
 - 3.7.1. Primary vs secondary protection requirements
 - 3.8. §1910.269(l): Working on or near exposed
 - 3.8.1. Approach distances
 - 3.8.2. Safe work practices
 - 3.9. §1910.269(m): De-energizing lines and equipment for employee protection
 - 3.9.1. Switching procedures
 - 3.9.2. Clearance procedures
 - 3.10. §1910.269(n): Grounding for the protection of employees
 - 3.10.1. Equipotential grounding
 - 3.10.2. Testing/maintaining grounds
 - 3.11. §1910.269(p): Mechanical equipment
 - 3.12. §1910.269(q): Overhead lines
 - 3.12.1. Minimum clearance distances
 - 3.12.2. Stringing/removing lines
 - 3.13. §1910.269(t): Underground electrical installations
 - 3.13.1. Protective grounding
 - 3.13.2. Special hazards
 - 3.14. §1910.269(w): Special conditions
 - 3.14.1. Capacitors
 - 3.14.2. Current transformers
- 4. **Mechanical Safety**
 - 4.1. The six steps safety method
 - 4.2. Pre-job briefing
 - 4.3. Safe switching of power systems
 - 4.4. Energy control program
 - 4.5. Tagout-lockout
 - 4.6. Voltage measurement techniques
 - 4.7. Placement of safety grounds
 - 4.8. Flash hazards and approach distances
 - 4.9. Tools and test equipment
 - 4.9.1. Use of ground circuit for grounding equipment.



5. Work Environment

- 5.1. Benefits of clean, orderly work area.
- 5.2. Lighting and ventilation.
- 5.3. Safe storing of tools and equipment.
- 5.4. Lifting techniques.
- 5.5. Procedures for the safe disposal of rubbish, waste, and spills.

6. Emergency Procedures

- 6.1. Types of alarm systems
- 6.2. Emergency communication procedures.
- 6.3. Emergency evacuation procedures.
- 6.4. First purpose and steps.
- 6.5. First procedures for resuscitation, bleeding, electric shock, poisoning, fractures, and burns.