



# Arc Flash Training - CSA Z462 Electrical Safety

Course details: <https://electricityforum.com/electrical-training/arc-flash-training>

## COURSE DATES AND TIMES

**October 16, 2024**

10:00 am - 4:30 pm ET

**November 13, 2024**

10:00 am - 4:30 pm ET

**December 17, 2024**

10:00 am - 4:30 pm ET

This 6-Hour live online, Instructor-led certified Arc Flash and Shock online electrical safety course incorporates recent revisions to the CSA Z462 Arc Flash Electrical Safety in the Workplace Standard. This CSA Z462 Workplace Electrical Safety Course Exceeds Canadian Arc Flash Training Expectations.

Visit Our 6-Hour [NFPA 70e Arc Flash Training](#) Course Page:

### Who needs arc flash training?

Arc flash safety training is both the duty of employers and employees when working on energized electrical equipment. This is mandated in OHS legislation by OSHA and NFPA 70e, due diligence clauses, electrical safety programs, the CSA Z462 standard and various other legislation.

This workplace electrical safety course covers electrical safety and discusses electrical safety topics relating to the following topics:

- the latest changes to arc flash standards
- arc flash protection rules and duties

- electrical safety programs, safety related maintenance dictates
- lock out tag out procedures, safety expectations for special equipment
- arc flash boundary determination
- hazard mitigation
- shock protection and arc flash ppe specifications
- arc flash hazard labels.

One workplace electrical incident can cost an organization a huge price in terms of injuries, fines, reputation and workers compensation premiums. Employers and supervisors can face personal liability for an injury in their workplace that could result in fines up to \$1,000,000, four years, or more, in jail, or both.

Many workers may not have received arc flash hazard information in their apprenticeship training and many organizations do not meet current workplace electrical safety standards. This certification course identifies what it means to be a “qualified electrical worker” and organizations should be aware that holding a license as a journeyman may not be enough to qualify.

The importance of developing safe work procedures, training workers, identifying hazards, evaluating risks, planning and documenting safe work is covered.

This electrical safe work practices course provides many benefits of an instructor-led course, including electrical safety examples, discussion, demonstrations and hands-on protective personal equipment instruction. This provides much more benefit than watching a video. There is no room for error when working with electrical equipment so why compromise on electrical arc flash safety education?

**Note: Employers have the legislated obligation to identify hazards, evaluate the risks, and select and implement the appropriate controls. This course helps companies to understand their legal duties and what due diligence is required to avoid conviction under provincial or federal OHS legislation, or the Criminal Code of Canada.**

### **Learn from our instructor and others in the class**

Students will learn real-life examples and have their electrical safety questions answered by a safety professional with years of electrical safety experience in the development and implementation of a z462 safety program.

Class discussion is encouraged and students also have an opportunity to learn from each other. They will understand the hazards of energized electrical work and how the following Top 5 mistakes workers make can lead to a very serious injury, lost production and/or a fatality.

### **Top 5 mistakes workers make when it comes to electrical safety.**

1. Failure to verify the absence of voltage before beginning work.
2. Failure to identify the arc flash hazard, evaluate the risk of arc flash and implement the appropriate controls.
3. Inappropriate selection and/or use of personal protective equipment.
4. Complacency to low voltage hazards (typically 115 to 250 volts).
5. Failure to develop and communicate an emergency response plan.

Our electrical safe work practices training course will students avoid these mistakes and help students to recover if they already made these kinds of mistakes.

### **Top 5 Benefits of Instructor-led Training**

1. Learn from an instructor who is trained and knowledgeable regarding electrical safety.
2. Students have the opportunity to ask questions which are answered in class while the thoughts are fresh.
3. Students can enter discussion and get feedback from other attendees with examples of best practices.
4. Real life examples and solutions are used to present the information in a meaningful way which helps students relate to their own workplace experiences.
5. All levels of experience and knowledge are accommodated.

Instructor-led arc flash electrical safety classes and case studies have the flexibility to cater to all levels of experience and electrical knowledge. Even non-electrical workers will gain an appreciation for the hazards of electrical work.

**Note:** Students will demonstrate an understanding of arc flash hazards and PPE protection by passing a proficiency examination at the end of the course and receiving an Arc Flash Certificate of Completion.

### **WHO SHOULD ATTEND**

#### **THIS COURSE IS IDEAL FOR:**

- Industrial, Commercial, Institutional Electrical Industry Engineering and Maintenance Personnel
- Electrical personnel who work on or near energized and de-energized electrical equipment
- Electrical Safety Managers and Safety Professionals
- Non-Electrical Personnel working in the vicinity of energized systems, or involved in Lock Out/Tag Out of Motor Control Sections
- Electrical Engineers
- Plant Electricians
- Qualified Electrical Workers
- Instrumentation Mechanics
- Electrical Technicians
- Managers & Safety Professionals

### **STUDENTS RECEIVE**

- 100-Page Electrical Safety Handbook - Value \$20 (details below)
- .6 Continuing Education Unit (CEU) Credits (6 Professional Development Hours)

- A **FREE** Magazine Subscription (Value \$25)
- **\$100** Coupon toward any future Electricity Forum event (restrictions apply)
- Course Presentations in PDF Format
- NOTE: This course DOES NOT INCLUDE A CSA Z462\* Standard. Copies of the CSA Z462\* Standard must be purchased separately from Canadian Standards Association and brought to the course.
- This course comes with an Certificate

## **COURSE OUTLINE**

### **CSA Z462 Arc Flash/Electrical Safe Work Practices Training Course Outline**

#### **WORKPLACE SAFETY**

- OHS legislation
- Right to refuse unsafe work
- Legal duties relating to safe work practices

#### **ELECTRICAL HAZARDS**

- Electrical Shock
- Effects of current on human beings
- Shock Protection Boundaries
- Approach to Energized electrical conductors or circuit parts operating at 50 Volts or more
- Arc Flash/ Arc Blast
- Elements and characteristics of an Arc Flash Event
- Arc Flash Hazard Analysis
- Arc Flash Protection Boundary for voltages between 50 and 600 Volts

#### **Safety Work Related Practices**

- Worker Responsibility
- Employer Responsibility
- Electrical Safety Program
- Host and Contract Employers Responsibilities
- Establishing an electrically safe work condition
- Energized Electrical Work Permit

#### **Safety Maintenance Dictates**

- General maintenance expectations

- Substation, switchgear assemblies, switchboards, panelboards, motor control centres and disconnect switches
- Control equipment
- Fuses and circuit breakers
- Rotating equipment
- Hazardous Locations
- Batteries and battery rooms
- Portable electric tools and equipment
- Personal safety and Protective Equipment

### **Safety Specifications For Special Equipment**

- General
- Safety related work practices for electrolytic cells
- Safety related to battery rooms or battery room enclosures
- Safety related work practices for use of lasers
- Safety related work practices for power electronic equipment
- Safety related procedures for research and development laboratories

### **PREPARING TO WORK SAFELY**

- Hazard Risk Analysis/ Task Assessment
- Assessment to Lockout or Work Energized
- Overview of Lockout Fundamentals
- Working Energized defined
- Preparing a Job Briefing and Planning Checklist
- How to plan for an Energized Electrical Work Permit
- Elements of an Energized Electrical Work Permit

### **ELECTRICAL HAZARDS**

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### **ESTABLISHING AN ELECTRICALLY SAFE WORK CONDITION**

The most effective way to prevent electrical injury is to completely remove the source of supply. This section will discuss the methods and process of achieving an electrically safe work condition. Including the following:

## Working On or Near De-energized Electrical conductors or Circuit Parts That Have Lockout Devices Applied

### Principles of Lockout Tagout Execution

- a. Employee Involvement
- b. Training
- c. Plan
- d. Control of Energy
- e. Identification
- f. Voltage
- g. Coordination

### **Hazardous Electrical Energy Control Procedures**

- a. Individual Qualified Employee Control Procedure
- b. Simple Lockout Tagout Procedure
- c. Complex Lockout Tagout Procedure
- d. Coordination
- e. Training and Retraining

### **Equipment**

- a. Lock Application
- b. Lockout Tagout Device
- c. Lock out Device
- d. Tagout Device
- e. Electrical Circuit Interlocks
- f. Control Devices
- g. Procedures
- h. Planning

### **DETERMINING SAFE APPROACH DISTANCE**

- Determining Safe Approach Distance
- Definitions of Boundaries and Spaces
- Limits of Approach
- Shock Hazard Analysis
- Shock Protection Boundaries
- Limited Approach Boundary
- Restricted Approach Boundary
- Prohibited Approach Boundary
- Hazard Boundary

### **Shock Hazard Boundaries**

- Limits of Approach
- Preparation for Approach

- Qualified Persons, Safe Approach Distance
- Electrical Conductors or Circuit Parts for Shock Protection
- Safe Working Distances from Energized Conductors

## **BASIC METHOD FOR DETERMINING ARC FLASH HAZARD ASSESSMENT**

- Breakdown and characteristics of the 4 Hazard Risk Categories - NEW
- Selection of Personal Protective Equipment for Various Tasks
- Hazard/ Risk Category Classification
- Protective Clothing and Personal Protective Equipment (PPE)
- Protective Clothing Characteristics
- Factors in selection of Protective Clothing and Equipment
- Two Category, Flame Resistant (HRC/ Hazard Risk Category) Clothing System - NEW
- Layering Protective Clothing and Total System Arc Rating
- Arc Rating, Arc Thermal Performance Value (ATPV) and Break-open Threshold Energy (EBT)
- Brief overview of applicable ASTM standards for Protective Clothing and PPE

## **Safety-related Electrical Maintenance**

- Introduction
- Frequency of Maintenance Tests
- Maintaining Electrical Drawings
- Maintenance Standards

Electrical Hazard Labels, Arc Flash and Shock Labelling

General

Canadian Electrical Code Rule 2-306 Shock and Arc Flash Warning Label

Arc Flash Label Example

Detailed Arc Flash Hazard Analysis Label - NEW

## **NEW ANNEX: Prevention of Shock Injuries from Electrostatic Discharges**

Prevention of Shock Injuries from Electrostatic Discharges, describes workplace scenarios, such as high-speed network operations, in which potential for shock injury from electrostatic discharge exists. This Annex identifies methods to prevent, control, and protect personnel from injury.

## **NEW: DC Safety-related Work Practices**

The latest edition of CSA Z462 has considerably more information on safety-related practices relating to work on and around DC systems. A new Shock Protection Boundary Table for DC systems and an arc flash energy calculation method for DC systems have been added. Extensive revisions have been made to deal with safety-related practices for batteries, battery rooms and battery enclosures. Both high value for anyone working on or around DC

equipment. This new additional information is essential for working on DC systems.

## **ARC FLASH SOLUTIONS**

- Arc Flash Study Analysis and Implementation
- Power System Upgrades
- Arc Resistant Switchgear
- Circuit Breaker Retrofitting
- Remote Breaker Racking
- Regular Maintenance and Testing
- Arc Rated Power Switchgear
- Light Sensing trip breakers
- GE Arc Vault Protection system

## **CSA Z462 PPE CLOTHING SPECIFICATIONS Arc Rated CLOTHING TESTING STANDARDS, HOW TO ESTABLISH A PPE PROGRAM IN YOUR COMPANY**

- The evolution of Arc Resistant (AR or HRC) fabrics
- Changes in Clothing Specifications in Electrical Work - New
- The various types of HRC fabrics that are available in the marketplace
- HRC fabrics and the effects of undergarments
- Review the technology and effectiveness of inherently flame resistant fibers vs chemically treated fabrics
- Developing a PPE Program in Your Company
- Assessing the correct Arc Flash hazard and choosing the right level of protective clothing
- Company training and worker compliance
- Documentation

### **TEST**

A test to ensure student understanding of the days information

### **COURSE SCHEDULE:**

Start: 10 a.m. Eastern Time

Finish: 4:30 p.m. Eastern Time

Contact us Today for a FREE quotation to deliver this course at your company's location.

<https://electricityforum.com/onsite-requestforquote>