

## Arc Flash & High Voltage Safety

Cost: \$1495.00

City & Prov	Dates	Code
Toronto, ON	<a href="#">Feb 13, 2012 - Feb 14, 2012</a>	<a href="#">OR12004</a>
Calgary, AB	<a href="#">Feb 23, 2012 - Feb 24, 2012</a>	<a href="#">OR12025</a>
Victoria, BC	<a href="#">Mar 05, 2012 - Mar 06, 2012</a>	<a href="#">OR12008</a>
Edmonton, AB	<a href="#">Mar 12, 2012 - Mar 13, 2012</a>	<a href="#">OR12028</a>
Dartmouth, NS	<a href="#">Mar 15, 2012 - Mar 16, 2012</a>	<a href="#">OR12040</a>
Saskatoon, SK	<a href="#">Apr 23, 2012 - Apr 24, 2012</a>	<a href="#">OR12032</a>
Richmond, BC	<a href="#">Apr 24, 2012 - Apr 25, 2012</a>	<a href="#">OR12211</a>
Winnipeg, MB	<a href="#">May 24, 2012 - May 25, 2012</a>	<a href="#">OR12034</a>
Dartmouth, NS	<a href="#">Nov 12, 2012 - Nov 13, 2012</a>	<a href="#">OR12038</a>

This two-day program was designed, and is taught, by senior electrical professionals, each with over 40 years experience on electrical systems from 2300V to 500kV. It is taught regularly to substation electricians responsible for medium voltage systems to 25kV and to utility personnel responsible for 69kV to 500kV systems.

It combines in-depth exploration of the Workplace Electrical Safety standard, CSA Z462-08 and practical workshops assessing and mitigating hazards for anyone working on or near high voltage systems. Since 1981, several thousand international participants have learned to recognize HV hazards created by electrical systems, equipment and devices and determined the controls used to protect themselves from these hazards.

This program is taught by certified electrical professionals with decades of field experience and solid credentials as professional adult learning instructors and includes professionally designed slides, videos and extensive use of case studies. It examines the electrical hazards found in industry and stresses the importance of the individual employee proactively recognizing hazards and applying safe work practices with the goal of zero incidents.

### Who Should Attend:

Substation Electricians, Engineers, Commercial and Industrial Electricians, Instrumentation Mechanics, Technicians, Managers & Safety Professionals.

### You Will Be Able To:

Safely operate and maintain High Voltage systems. Work confidently using established safety procedures. Organize HV workers under your lead. Communicate fluently regarding your High Voltage systems. Avoid accidents and injuries. Comply with provincial/state and federal legislative requirements.

### ELECTRICAL ACCIDENTS:

*Objective: Realize the damage electricity can cause to the human body and understand the basic principles of*

safety in normal and abnormal conditions.

**SUBTOPICS:**

- Electrical Faults
- Electrical Accidents

**CSA Z462**

*Objective: Understand how to relate and apply the Arc Flash mitigation guidelines as set out by the Canadian Standards Association.*

**SUBTOPICS:**

- Limits of approach for electrical shock and flash hazards
- Arc flash parameters
- Determine curable burn distance during a short circuit
- Determine energy released during a short circuit
- Techniques for reducing arc flash energy
- Selection of proper personal protective equipment (PPE)
- Review the three types of electrical hazards: electrocution, arc flash, and arc blast
- Describe conditions required for each to occur
- Describe procedures to reduce these hazards
- Describe the impact of voltage, amperage and time on the level of electrocution and flash hazard
- Describe fault current available
- Review calculation methods for a supply transformer
- Describe the impact of fault current on the level of electrical hazard

**RECOGNIZING HAZARDS**

*Objective: Learn to recognise all energy sources and hazards created by various electrical equipment and devices.*

**SUBTOPICS:**

- Insulation
- Cables
- Power Transformers
- Instrument Transformers
- Fault Currents
- Disconnects
- Switchgear
- Breakers
- Fuses
- Relays
- Starters
- Motors
- Capacitors
- Emergency Systems

**MANAGEMENT CONTROL**

*Objective: Understand legislation and apply methodologies to comply.*

**SUBTOPICS:**

- Legislation
- Electrical Code
- Purchasing Controls
- Engineering Controls
- Training

## **SAFETY DOCUMENTATION**

*Objective: Establish an accessible and usable system of practice that will protect both life and liability.*

### **SUBTOPICS:**

- Rules
- Safe Work Practices
- Safe Work Procedures
- Codes of Practice
- Operating Procedures
- Permits & Clearances
- Switching Procedures

## **PHYSICAL EQUIPMENT**

*Objective: Gain a comprehensive knowledge of the required PPE and ancillary High Voltage safety equipment available.*

### **SUBTOPICS:**

- Personal Protective Equipment
- Safety Equipment
- Signs and Barriers
- Equipment Protection
- Interlock
- Grounding

## **FIELD CONTROL**

*Objective: Understand and apply preventative and post accident meetings, analyses and reports.*

### **SUBTOPICS:**

- Inspections
- Job Planning
- Pre-job Meeting
- Hazard Identification
- Hazard Reporting

## **WORK METHODS**

*Objective: Learn and apply safe practical skills.*

### **SUBTOPICS:**

- Limits of Approach
- Switching Practices

## **GROUNDING**

*Objective: Learn the dangers of and how induced currents and ground gradients are produced and how to safely select, install and maintain temporary grounds for protection of the worker.*

### **SUBTOPICS:**

- Describe potential gradients as they relate to ground faults
- describe how & where step, touch, mesh, and transferred potentials may appear during a ground fault
- Induced Voltages
- Safe Grounding Procedures
- Grounding and dissipation of residual energy
- Temporary Grounds

## **SWITCHING**

*Objective: Interpret and use a single line diagram to write a switching sequence to safely isolate an electrical device for work. Validate existing operating orders and switching procedures. Develop and maintain mandated documentation for all electrical equipment isolation and maintenance work.*

### **SUBTOPICS:**

- Single Line Diagrams
- Using Prints
- Electrical System Drawings
- Safety Documentation
- Isolation
- Lockout/Isolation
- Switching Workshop

## **JOB PLANNING**

*Objective: Carry out Hazard/Risk Analysis in determining the degree and extent of hazards for maintenance tasks on all electrical equipment.*

### **SUBTOPICS:**

- Necessity of job planning to safely perform task
- Hazard Control Workshop
- Job Planning Worksheet

"The instructor was well informed on a wide range of topics and presented the contents in an interesting manner. I would highly recommend this course with regards to safety awareness."

- **Jim Gillingham, Abitibi Consolidated**

"Our instructor is a very experienced man. He was able to reinforce topics by relating them to personal experience. We went through a lot of information in two days and the work on grounding is invaluable."

- **Doug Rolling, Anderson Exploration**

"Excellent! A fantastic course and the instructor had genuine concern for our safe working practices. This is a must. I would highly recommend it."

- **Kevin Wolfe, Kramer Ltd.**

"I learned a lot about safe grounding practices and isolating equipment. I would recommend this one but now I would like to take the more intensive, five-day course."

- **Daryl Herchuck, IMC Canada Ltd.**

"This course reminded me to have more respect for high voltage. It was taught in a way that is applicable to the way I work, and came from the instructor's own experiences."

- **Matt Messer, Enbridge**

"Set forth the value of not rushing into tasks. Take the course, especially for the Arc Flash component."

- **Tim Kupchanko, Spectra Energy**

"The course content was weighty but processable with the instructor very knowledgeable, relaxed and prepared. Overall very worthwhile and informative; a must for electrical workers."

- **Joseph te Bulte, Canfor**

"Informative instructor who would explain the material at any level needed to get his point across. Especially valuable was the content on arc flash surveys and proper grounding methods."

**- Jim Barazzuol, West Coast Reduction LTD**

"This is a good opportunity to refresh your safety training, see what's new and interact with other electrical personnel. It was interesting to hear the ideas and opinions of other participants

**- Larry Kamo, Provincial Papers**

"Most of the content of this course pertains to my day-to-day duties at work, and was explained in laymen's terms so it was easy to follow each step."

**- Paul Sherwood, Agrium**

Very good and informative about do's and don'ts

**- Ryan Shaw, Electrician, PCS Potash 02/09**

Lots of hands on information

**- Greg Beyers, Electrician, PCS Potash 02/09**

Very knowledgeable, well around course with a good mix of instruction, video and workshop.

**- Marc Thibert, Electrical Technologist, Agrium, 02/09**