Compliance Review

eSafetyFirst Canada

Electrical Safety Awareness Training

The purpose of this document is to outline the compliance review for the eSafetyFirst Canada (eSafetyFirst) Electrical Safety Awareness Training course. The course was viewed in its entirety and then reviewed chapter by chapter to determine both compliance and alignment with OHS Legislation.

Electrical safety training courses in Canada need to align with Canadian provincial OHS legislative frameworks (such as WorkSafeBC OHS Regulation Part 19, Alberta OHS Code, Ontario OHSA/Regs, and Quebec's LSST/Safety Code) alongside the updated technical requirements of **CSA Z462.**

The online course covers the necessary theory for workers in any occupation where they will come into contact with electrical appliances or tools, there are no practical components. The eSafetyFirst course also provides a robust supplementary information article regarding electrical safety awareness, it can be found here, https://esafetyfirst.com/blog/electrical-safety-in-canada-an-overview-of-legislation-requirements-and-certification/. The course and the supplementary material provide the learner with the information necessary to work around electrical appliances and tools. The course confirms theory component understanding using quizzes.

To effectively evaluate a general theory-only Electrical Safety Awareness course for all occupations across Canada, the course learning outcomes must align with both **CSA Z462:24 (Workplace electrical safety)**—including references to the **2024 Canadian Electrical Code (CEC)**—and jurisdictional **Occupational Health and Safety (OHS)** requirements across provincial authorities, including WorkSafeBC, Alberta OHS, Ontario Ministry of Labour, Immigration, Training and Skills Development, and CNESST in Quebec.

Below are the summaries of the requirements for compliance mapped to each course modules. Corrections required for compliance are in **bold RED**. All other notes are for content improvement

Course Overview

In this module, non-electrical personnel will establish a foundational awareness of electrical energy, provincial regulatory frameworks, human physiological impacts, and basic hazard identification techniques.

Students are expected to master the following learning outcomes:

- **Fundamental Principles of Electricity:** Define basic electrical terms (voltage, current, resistance, and grounding) and explain how electricity travels along conductive paths—including accidental paths through human bodies or non-electrical tools.
- **Physiological Effects of Electrical Contact:** Describe how electric shock causes muscle contraction ("no-let-go" threshold), cardiac arrest (ventricular fibrillation), and severe thermal or internal tissue burns.
- **Primary Electrical Hazards Identification:** Differentiate between electrical hazards: electric shock, electrocution, arc flash, arc blast, and electrical fires.
- **Secondary Injuries:** Identify secondary hazards resulting from electrical incidents, such as falls from ladders, structural blast impact, or flying debris.
- **Proximity to Overhead & Underground Power Lines:** Understand safe approach distances for non-electrical equipment (e.g., ladders, scaffolding, dump trucks, cranes) near overhead power lines according to provincial OHS requirements (e.g., Alberta Schedule 4 limits, WorkSafeBC Part 19 clearance zones) and that approaching powerlines should only be done by qualified persons.

Module 1 covers all these components in-depth and meets compliance with the legislation and adherence to the CSA Standard

A point that should be considered on the next revision that would improve the course:

- **A reminder of the legal framework & worker rights:** it would be of benefit if there was a reminder of the worker rights and how they fit into electrical safety. This can be done in either section. Ideally, the right to know, following safe work procedures, the right to participate by reporting hazards, and the right to refuse to work with or around tools or appliances with damaged or faulty electrical components.

Electrical Safety

In this module, non-electrical workers will learn how to recognize workplace electrical boundary limits, safely operate user-interface equipment, respect Lockout/Tagout (LOTO)

protections, and respond safely to electrical emergencies without exposing themselves to hazard conditions.

Students are expected to master the following learning outcomes:

- **Circuit Protection Devices & Grounding Awareness:** Explain the safety purpose of equipment grounding, Ground Fault Circuit Interrupters (GFCIs), circuit breakers, and fuses, recognizing when GFCI protection is legally required under the 2024 CEC (e.g., damp/outdoor locations, construction sites).
- **Lockout / Tagout (LOTO) Awareness:** The purpose behind LOTO and to not tamper or circumvent LOTO devices.
- **Safe Visual Inspection Practices:** Conduct basic pre-use visual inspections of ordinary tools, extension cords, and wall receptacles to spot defects (e.g., missing ground prongs, frayed jackets, crushed conduit).
- **Electrical PPE Awareness & User PPE:** Differentiate between general workplace PPE (e.g., EH-rated safety boots, non-conductive hard hats) worn by non-electrical workers versus specialized arc-rated clothing/gloves required for qualified electrical work.
- **Emergency Response Procedures:** Formulate step-by-step emergency actions during an electrical contact event or arc flash incident, focusing on personal safety: **Do not touch the victim**, immediately disconnect the power source if safe to do so, call emergency services, and initiate local incident reporting under provincial OHS requirements.

Module 2 covers all of the above points and meets compliance. There are a few points that need to be addressed, see below:

~~**Slide 6:** The wording is incorrect as grounding does not prevent the buildup of electricity in AC or DC circuits. Electricity will continue to flow unless interrupted. This only applies to static electricity. Below is suggested wording:~~ **This slide has been corrected**

Grounding

Grounding provides a safe, low-resistance path for fault current to flow if insulation inside an electrical device fails. Instead of traveling through your body, accidental stray electricity is safely redirected to the earth, immediately tripping the breaker to remove the hazard.

Without proper grounding, your body can complete the circuit—resulting in electric shock or electrocution.

Slide 7: Double-insulated tools and appliances are **not** marked with a "D". This might be a confusion with the Square D corporation that produces electrical components. Internationally and under North American standards (CSA / UL), double insulation is denoted by the official **Class II symbol: a square within a square see below:**



In addition, there are some additional errors that need to be changed. The text focuses on portable plug-in power tools and appliance cords, but the photo shows permanent building wiring and terminal blocks. Showing a hardwired ceiling box on a slide meant to teach non-electrical workers about portable equipment grounding and plugs creates confusion.

- A **two-prong plug does not provide grounding**; two-prong devices rely entirely on double insulation (Class II) or basic insulation for safety.
- The text incorrectly conflates modern 3-prong grounding plugs with outdated **3-to-2 prong grounding adapters** (cheater plugs) that utilized a green pigtail lug/metal ring attached to the outlet cover screw. Modern portable tools do not use pigtail adapters to establish grounding.
- **The Image Used:** The photo shows a **hardwired ceiling junction box / light fixture connection** with European wiring color coding (Blue = Neutral, Brown = Line/Live, Green/Yellow = Earth/Ground). It would be better to show two different appliances or tools with the two different plugs, 2 and 3 prong.

This slide and images have been revised to correct this deficiency.

This slide needs to be redone.

Slide 17: Fibres is misspelled it reads as fibbers. **Corrected**

Some recommended additions for the next revision:

- **Hierarchy of Risk Controls (CSA Z462:24):** If there is an opportunity to remind workers to apply the Hierarchy of Risk Controls (Elimination, Substitution, Engineering Controls, Awareness, Administrative Controls, PPE) from a non-electrical worker's perspective it would be of benefit. However, this is not crucial to the content of the course, just a nice to have.

- **Role Definition (Qualified vs. Unqualified Persons):** Contrast the strict legal limits of an "Unqualified Person" against a "Qualified Electrical Worker" under CSA Z462:24, identifying the forbidden scope of work for non-electrical staff (e.g., opening live panels, replacing internal fuses, altering wiring). Qualified persons are talked about but there is no clear definition. It is suggested that adding an explanation would be beneficial, but once again not necessary.



Kevin Barrett CRSP CRM 13-4856