



Safety Measures ^{ELECTRICAL}

“Elimination is the first priority!
Ensure a risk assessment is completed before energized work tasks are completed.”

Electrical Safety Program: Management Of Change

By Terry Becker, P.Eng., CEMCP, IEEE Senior Member

I have been involved for over 13 years in supporting industry in understanding what needs to be done with respect to arc flash and shock hazards to ensure worker safety and effective defensible due diligence is established with evidence available related to occupational health & safety regulations both Provincial, Territorial or Federally.

I continue to identify that buying arc flash PPE, sending your Qualified Electrical Workers on “arc flash training” or “arc flash awareness” training and having an arc flash hazard incident energy analysis study completed and applying arc flash & shock equipment labels to electrical equipment is not adequate due diligence. I call this “bottom up hierarchy or risk control

methods.” Starting with the least effective risk control, PPE.

In January of 2021 the 5th Edition of the CSA Z462 Workplace electrical safety Standard will publish. In the Electrical Safety Measures, July/August issue I highlighted the anticipated changes based on the public review draft that was open for comment. Within CSA Z462 in Clause 4.1 General requirements for electrical-safety related work practices and procedures – Clause 4.1.7.12.1 Electrical safety program audit – it reads:

The electrical safety program shall be audited to verify that the principles and procedures of the electrical safety program are

in compliance with this Standard. Audits shall be performed at intervals not to exceed 3 years.

It is my experience that most employers that have what they believe are compliant electrical safety programs developed and implemented have never completed a formal Internal Electrical Safety Audit or External Electrical Safety Audit. Unfortunately this is a systemic problem across all industry sectors and contractors (e.g. electrical, HVAC, elevators, overhead doors and cranes, and cathodic protection) not only in Canada, but also in the USA.

Management of Change is defined as:

Management of Change, or MOC, is a best practice used to ensure that safety, health and environmental risks are controlled when a company makes changes in their facilities, documentation, personnel, or operations.

MOC is a process for preventing or mitigating business losses including degradation of safety, health, or environment as the result of changes made to how you construct, operate, manage or repair your facility or your processes.

The CSA Z462 Workplace electrical safety Standard first published in January 2009 as the 2008 Edition, the second Edition in 2012, then 2015, 2018 and now the 2021 Edition in January. As noted above, industry unfortunately implemented “bottom up hierarchy or risk control methods” and, based on my experience, has not audited and updated existing electrical safety related documentation. Many employers still do not have formal compliant Electrical Safety Programs developed and implemented. Electrical contractors and other service based employers are less likely to have Electrical Safety Programs or any specific formal electrical safety documentation than industrial, commercial and institutional employers.

A component of effective management of change would also involve ensuring that information received in *compliant arc flash and shock training* or the information communicated to an industrial, commercial or institutional employer in a delivered P.Eng. stamped arc flash hazard incident energy analysis studies is validated and implemented.

Arc flash and shock training communicates policies, practices and procedural requirements to the students based on generic requirements of the CSA Z462 Workplace electrical safety Standard. They in turn should return to the workplace and advise their supervisor of the information they learned and what they need to do before they work energized. Management of change should have been initiated when the workers returned from the training and advised their supervisor that:

1. Their company needed an Electrical Safety Program that worked complementary to their company’s overall occupational health & safety management system.
2. That an Electrical Safety Policy should be documented in the company’s Electrical Safety Program.
3. That Jobs that include energized electrical work tasks require a formal Risk Assessment Procedure to be completed.
4. That the Qualified Electrical Worker or Task Qualified

- Worker needs to document an Energized Electrical Job Safety Plan before proceeding with executing authorized energized electrical work task(s) related to a Job assigned to them.
5. That the employer’s Lockout Program needs to be documented, implemented and audited related to “Establishing an Electrically Safe Work Condition.”
6. That energized electrical equipment shall be de-energized and absence of voltage measured when “Establishing an Electrically Safe Work Condition.”
7. That energized electrical work tasks must be justified and in some cases an Energized Electrical Work Permit (EEWP) may be required.
8. That a work task’s shock risk assessment and arc flash risk assessment need to be documented in the Energized Electrical Job Safety planning form.
9. That they will require arc flash & shock PPE, tools & other equipment and that rubber insulating gloves shall be dielectrically tested every 6 months.
10. That the Electrical Safety Program shall be audited.

As a manager, supervisor or safety professional reading this article you carry specific occupational health and safety legal responsibilities. Managing change is a critical role and responsibility. Did you implement the items listed above when your Qualified Electrical Workers or Task Qualified Workers returned to the workplace following receiving arc flash & shock training?

There continues to be an array of myths and misinformation specifically related to arcing fault probability and an arc flash occurring on energized electrical equipment.

The best way for an employer to eradicate these is to implement a formal management of change process related to developing, implementing and auditing a compliant Electrical Safety Program. The implemented Electrical Safety Program is the tool to use to ensure myths and misinformation are managed and dealt with.

Legal obligations require the implementation of a formal Management of Change (MOC) process. Management, supervision and safety professionals working for an employer can use MOC in an occupational health and safety management system process: Plan, Do, Check, Act to ensure that Qualified Electrical Workers and Task Qualified Workers are NOT exposed to the electrical hazards of arc flash and shock and if energized electrical work is justified that effective due diligence to applicable occupational health and safety regulations is established, measured and sustained.

Terry Becker, P.Eng, CEM, CESP, IEEE Senior Member is the first past Vice-Chair of the CSA Z462 Workplace electrical safety Standard Technical Committee and currently a Voting Member and Working Group Leader for Clause 4.1 and the Annexes. Terry is also a Voting Member on the CSA Z463 Maintenance of electrical systems Standard and a Voting Member of the IEEE 1584 Guide for Performing Arc-Flash Hazard Calculations. Terry has presented at Conferences and Workshops on electrical safety in Canada, the USA, India and Australia. Terry is a Professional Engineer in the Provinces of BC, AB, SK, MN and ON. Terry is an Electrical Safety Specialist, Management Consultant, and can be reached at 587.433.3777 or by email terry.becker@twbesc.ca.