



Electrical incident emergency response exercises ensure your company is prepared if an electrical incident ever occurs.

Safety Measures ^{ELECTRICAL}

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

Electrical Safety Emergency Response

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

Occupational health and safety regulations (OHSRs) require employers to develop occupational health and safety management systems (OHSMSs) when more than twenty (20) employees work at the worksite.

Worker’s Compensation Acts also advise the employer of the requirement to report work site incidents. There is also a separate incident reporting requirement related to electrical incidents to the Jurisdiction Having Authority for the CE Code Part I.

The OHSRs will also provide specific requirements for the content they expect employers to include in their occupational

health and safety management system. One of the key elements is an “emergency response plan” and “incident investigation and reporting.”

The CSA Z462 Workplace electrical safety Standard requires that an employer’s Electrical Safety Program include both emergency response and electrical incident elements. In CSA Z462 Clause 4.1.8.3 Emergency procedure training and Clause 4.1.7.10 Incident investigations outline specific requirements.

As noted in CSA Z462 Annex A “Aligning implementation of this Standard with CSA Z45001, Table A.1 Correspondences between this Standard and CSA Z45001” cross references are

provided. CSA Z45001 Clause 8.2 Emergency preparedness and response is identified with correlation to CSA Z462 Clause 4.1.8.3 Emergency procedure training.

Therefore an employer’s Electrical Safety Program should include appropriate electrical hazard specific emergency response and electrical incident investigation requirements.

If an electrical incident occurs an employer’s Emergency Response Program requirements will be followed. “Calling the Alert” is the first requirement, call 911! The following electrical incident emergency response procedure is recommended:

1. Evacuate away from the area where the electrical incident occurred.
2. Call for help, call 911 and then notify the Supervisor. Sound the alarm, alert other personnel.
3. Assess the situation and ensure there are no continuing hazards to yourself or others. Don’t rush in to initiate rescue. Only complete an electrical incident rescue if you are authorized and competent to complete the rescue safely.
4. Secure the area, treat all electrical equipment as energized. If you are authorized to do so turn off the electrical power supply (e.g. for high voltage power distribution equipment $\geq 1001V$ you may not be authorized and/or competent to operate the isolation device), isolate the electrical source following established electrical safe work procedures. If you cannot turn the power off then assess if you can safely rescue using a hot stick? If a hot stick is not available, are rubber insulating gloves available?
5. Initiate rescue, when it is confirmed safe to do so, rescue the injured worker.
6. When the injured worker has been removed to a safe area begin first aid if properly trained. If the injured worker is unconscious or breathing is erratic monitor closely. If breathing stops apply artificial respiration immediately.
7. Don’t leave the injured worker unattended.
8. If the injured worker is burned do not touch the injured worker’s affected area or apply any lotions or gauzes.
9. Confirm emergency services have been dispatched.
10. The Supervisor or HSE will follow up, ensuring government/regulatory agencies have been notified as required.

Following the implementation of emergency response an incident investigation and report would be required for the electrical hazard specific incident.

The employer’s existing OHSMS will most likely not include specific direction on electrical incident information that should be recorded. It is recommended that specific electrical data related to the electrical incident as follows be documented:

1. Voltage of exposure for shock or arc flash and AC or DC?
2. For electrical shock:
 - a. Path of electric current through the body. Entry and exit points on the body (e.g. hand to hand, hand to foot, foot to foot).
 - b. Was the skin wet or dry?
 - c. Was the skin intact?
 - d. Was there contact with water?
 - e. Estimated duration of the current flow through the body.
 - f. Was the worker involved in the incident conscious?

3. What arc flash or shock PPE was worn, tools used or test instruments used?
4. Ensure adequate digital pictures are taken of the incident area, electrical equipment, arc flash and shock PPE, tools used and test instruments. DO NOT discard any of these items.
5. Ensure adequate pictures are taken as soon as possible of the wounds on the victim and especially for electrical shock, entry and exit wound locations.
6. Did the electrical incident occur in a confined space or restricted egress?

Given the fact that electrical hazard specific incidents have historically not been reported there will be no experience with Management, Safety, Supervisors and Qualified Electrical Workers. It is recommended that a “mock electrical incident” be scheduled and a formal review of how emergency response would be implemented by operations and maintenance staff with a continuous improvement philosophy.



Electrical specific emergency response needs to be included in an employer’s Electrical Safety Program. Besides meeting the requirements of OHSRs it is important for the worker involved in an electrical incident to seek medical treatment and that a Worker’s Compensation Act report be submitted. This ensures that worker’s compensation insurance if required is provided for both the short and long term effects of electrical incidents (e.g. reference Electrical Line Magazine, Electrical Safety Measures May/June 2020 *Surviving Long-Term Sequelae Effects of Electrical Shock Hazard Exposure*).



Terry Becker, P.Eng, CEM, 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.