



# Safety Measures <sup>ELECTRICAL</sup>

*“All electrical incidents are preventable!  
Keep employees safe with an up to date  
Electrical Safety Program and appropriate training.”*

## CSA Z462-2015: Annex U – Human Performance & Workplace Electrical Safety

**By Terry Becker, P.Eng.**

Human performance behaviour is a critical element of the Risk Level of an assigned energized electrical work task. A Qualified Electrical Worker will have qualification training, and should be competent for an assigned work task. This is the first priority in ensuring the “Likelihood of Occurrence” related to the probability of an arcing fault and arc

flash or shock exposure to a worker are negligible.

If you recall from previous Articles we discussed the CSA Z462-2015, Clause 4.1.5.7 Risk Assessment Procedure. There were three steps that were to be followed and the process must be documented:

1. Identify whether the Qualified Electrical

Worker is exposed to an arcing fault and arc flash and/or a shock hazard related to an assigned energized electrical work task;

2. Assess the Risk Level for the energized electrical work task;
3. Apply the “Hierarchy of Controls” to reduce the Risk Level to as low as reasonably practicable.

The Risk Level for an energized electrical work task considers both the “Consequence or Severity of Harm/Injury” and the “Likelihood of Occurrence.” An analytical process is used to determine the Inherent or Initial Risk Level for an energized work task and then the Residual Risk Level is determined by applying the Hierarchy of Controls. This risk assessment can be completed by an individual Qualified Electrical Worker or an Electrical Safety Steering Committee (ESSC) using the generic list of work tasks in CSA Z462-2015 Table 4A as a starting point for an inventory of work tasks to use for your workplace. Remove work tasks from the Table for your specific workplace. When completing the risk assessment assumptions are made and documented and the Residual Risk Level determined.

In the field the Qualified Electrical Workers need to validate the assumptions made in real time just before they are about to execute the energized electrical work task to confirm the Residual Risk Level.

One of the parameters of “Likelihood of Occurrence” that needs to be validated in real time by the Supervisor and the Qualified Electrical Worker is the worker’s human performance behaviour. This parameter of probability is recommended to be the second parameter considered after a worker’s qualifications and competency and that needs to be considered/assessed after the Supervisor assigns the work task to a worker. Human performance behaviour is a significant factor in a human error occurring that will lead to an arcing fault being created by the worker resulting in an arc flash or a worker making a wrong decision or mistake and receiving an electric shock.

In CSA Z462-2015 Annex U – Human Performance and Workplace Electrical Safety the extensive review, study and experience of critical industries in high risk areas is highlighted. The information provided with respect to human performance behaviour covers:

- A. Principles of Human Performance
- B. Information Processing and Attention
- C. Human Performance Modes and Associated Errors
- D. Error Precursors
- E. Human Performance Tools

- F. Human Performance Warning Flags
- G. Workplace Culture

Historically there may not have been a focus on human performance in the workplace. As occupational health & safety has evolved and has been studied it has become quite apparent that this topic is extremely important.

CSA Z462-2015’s Risk Assessment Procedure places specific emphasis on the fact that this needs to be considered and more effective management performed by supervisors and workers. A sneak peak on CSA Z462-2018 will see a specific clause added to Clause 4.1.5.7 Risk Assessment Procedure “The risk assessment procedure shall address the potential for human error and its negative consequences on people, processes, the work environment and equipment. Note: The potential for human error varies with factors such as tasks and the work environment. For

more information regarding human error see Annex U.”

Please submit any questions or comments you may have to Kevin Buhr and myself at kevinb@electricalline.com and terry.becker@esps.ca.

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