

# Top root causes of battery electric vehicle fires

Arc flash, electric shock, and thermal runaway from overheated batteries are top risks\*

As identified by workers, supervisors, and employers in the Ontario mining industry through Ministry of Labour, Immigration, Training and Skills Development-facilitated root cause analysis in partnership with Workplace Safety North.



1. Inadequate maintenance processes



7. Operator lack of training on battery electric vehicles



2. Current lack of Canadian Standards Association standard for battery electric vehicles\*\*



8. Lack of education and understanding on safe use of battery electric vehicles



3. Ineffective management of change on new equipment<sup>+</sup>



9. Misuse of new battery electric vehicle equipment (no maintenance records or standards)



4. Energy sources creating potential for electric shock



10. Rushed implementation of battery electric vehicle use



5. Ineffective company operator and maintenance procedures



11. Lack of common core training standards for battery electric vehicle use



6. Improper troubleshooting on issues with battery electric vehicle machines



12. Improper or unclear work delineation for electricians and maintenance personnel



13. Inadequate battery storage

# Overview of Joint Health and Safety Committee certification training

## Focus on workplace-specific hazards - JHSC Part 1, 2, and Refresher training

### JHSC Certification: Part 1

(Disponibile en français)

This mandatory course provides participants with an understanding of how to recognize, assess and control workplace hazards, the rights and duties of certified members, and how to conduct effective workplace inspections and incident investigations. Online self-paced e-learning also available.

### JHSC Certification: Part 2

Focusing on the concepts of recognition, assessment, and control of hazards, and evaluation of the hazard controls, participants learn how to apply these concepts to a minimum of six hazards relevant to their own workplaces. In addition, learners practise drafting action plans and recommendations for the employer.

### JHSC Refresher Training

(Disponibile en français)

Certified members of a joint health and safety committee are required to take Refresher Training within three years of becoming certified, and every three years thereafter to maintain their certification.

Failure to meet this requirement may result in revocation of a member's certification status by Ontario's Chief Prevention Officer.

This CPO-approved course reviews core elements of the Part 1 and Part 2 Certification program.

### Also available

#### WSN Training Programs for Mining Supervisor Common Core

- OHS Act and Mining Regulations
- Ground Control - Underground
- Incident Investigation
- Introduction to Safety Programs
- Manage Employees
- Mine Ventilation - Underground
- Occupational Health and Hygiene
- Planned Inspection and Observation
- Practise Effective Communication
- Prepare for Emergencies - Underground

#### Other recommended training

#### Duly Diligent Mining Supervisor

#### Supervisor Drug and Alcohol Awareness Training

#### About Workplace Safety North

Your health and safety partner

An independent not-for-profit, Workplace Safety North (WSN) is one of four sector-based health and safety associations in Ontario.

Headquartered in northern Ontario, WSN provides province-wide Ministry-approved workplace health and safety training and services for the mining and forest products industries.

\*In batteries, thermal runaway describes a chain reaction in which the battery releases energy in the form of heat, once started can be very difficult to stop. Thermal runaway begins when heat generated within a battery exceeds the amount of heat dissipated to its surroundings. When thermal runaway occurs, temperature rapidly increases, resulting in uncontrolled heat with potential of fire.

\*\*Canadian Standard Association mining standard released summer 2022: CSA M424.4

†Effective Management of Change involves the review of significant organizational changes in order to ensure an acceptable level of safety is maintained after a change has been implemented.

For more information, please contact your WSN Health and Safety Specialist or visit [workplacesafetynorth.ca](http://workplacesafetynorth.ca)



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