
Lithium batteries

OHS information for employers, supervisors and workers

This resource provides information about occupational health and safety (OHS) legislative requirements and general safety considerations relating to lithium batteries.

KEY INFORMATION

- Lithium batteries are commonly used in many types of products, devices and equipment, but can pose significant health and safety hazards.
- Employers, supervisors and workers have legislated health and safety responsibilities that apply in relation to lithium batteries, including:
 - Hazard assessment, elimination and control.
 - Emergency response planning and response.
 - Worker training.
 - Inspection and maintenance of powered mobile equipment.
 - Safe use, storage, maintenance and disposal.

What is a lithium battery?

“Lithium battery” is a general term referring to any type of battery that contains lithium. Such batteries typically have a relatively high energy density, which enables them to provide larger amounts of energy over a longer time than other battery types. As a result, lithium batteries are now common in a wide range of products, devices and equipment used by consumers and industry.

There are several types of lithium batteries, with a variety of characteristics – for example, they can be rechargeable or non-rechargeable, and they come in different physical shapes and sizes.

Hazards

Although the high energy density of lithium batteries can make them more useful than other battery types, it can also make them very dangerous if they fail. Some of the hazards of lithium batteries when they fail include:

- Exploding or bursting into flame in a thermal runaway reaction (some lithium batteries have an energy density close to that of dynamite).
- Venting of toxic vapours.
- Release of corrosive materials.

- Electric shock (particularly when used in some high-voltage applications, such as electric vehicles or large power tools).

There are many factors that can cause a lithium battery to fail, including:

- Overcharging.
- Recharging in low temperatures.
- Storing or operating at high temperatures.
- An internal or external short circuit.
- Breaching the battery’s casing (such as by crushing or puncturing it).
- Aging of the battery with use over time.

Legislated responsibilities

Although Alberta’s OHS legislation doesn’t specifically mention lithium batteries, employers, supervisors and workers still have certain legislated health and safety responsibilities that apply in relation to such batteries due to their hazardous nature. Some notable ones are described generally below. Note that this isn’t a complete or detailed list; make sure you consult Alberta’s *Occupational Health and Safety Act* (OHS Act) and Occupational Health and Safety Code (OHS Code) to ensure you are fully in compliance.

Hazard assessment, elimination and control

Under the OHS Code, employers must assess their work site and identify existing and potential hazards before work begins at the site (or before construction of a new work site). Such hazard assessments must consider any new or existing equipment or processes that involve lithium batteries and must consider all aspects of how the batteries are used, stored, handled, recharged, and disposed of.

Supervisors also must advise workers under their supervision of any known or reasonably foreseeable hazards, including hazards related to lithium batteries.

For more information on hazard assessments, see the [Hazard assessment and control handbook](#) on the OHS Resource Portal.

Emergency preparedness and response

The OHS Code specifies that employers must establish an emergency response plan for rescue and evacuation of

workers in the event of an emergency. When developing this plan, employers must consider the hazards of lithium batteries used in their equipment and work processes, especially in relation to rescue or evacuation if there is a fire or explosion.

Because fires involving lithium batteries can be different from fires involving other common materials, employers must consider the possibility of a lithium battery fire or explosion as a hazard that must be eliminated or controlled. To do this, employers must consider the special suppression, control, and isolation measures that may be required if a lithium battery incident occurs. This includes referring to documentation from manufacturers (which may include documents such as user manuals or manufacturer specification sheets).

For more information on emergency response planning, see the [Emergency response planning occupational health and safety tool kit](#) on the OHS Resource Portal.

Worker training

Under the OHS Act, employers must ensure their workers are adequately trained so that they can do their work in a healthy and safe manner. In relation to lithium batteries, this requirement includes:

- Ensuring workers have any training needed to properly use, install, maintain, and otherwise work with lithium batteries and any associated equipment or devices.
- Ensuring workers are trained on any hazard controls regarding lithium batteries at the work site.

Powered mobile equipment

Powered mobile equipment in the workplace (such as forklifts, material handling equipment and motor vehicles) increasingly uses lithium batteries. Employers must ensure that any workers involved in the inspection and maintenance of this equipment are competent.

Safe use, storage, maintenance and disposal

Because of the hazards posed by lithium batteries, the employer must ensure these batteries and any equipment powered by these batteries are properly selected, used, stored, and maintained. In addition, employers and workers must always follow the instructions and specifications provided by the manufacturer of the battery itself, and/or the manufacturer of the device or equipment containing the battery. It's also important to ensure that only manufacturer-recommended charging systems and equipment are used when recharging lithium batteries.

Workers and supervisors must report all unsafe equipment to their employer or supervisor. This requirement includes reporting any concerns related to lithium batteries (such as damaged batteries or broken charging equipment).

Suppliers of lithium battery-related products must provide manufacturer documentation. If this documentation is not provided at the time of purchase, the employer must obtain the documentation (either the manufacturer's documentation, or documentation certified by a professional engineer). For more details on employer responsibilities in following manufacturer specifications, see Part 3 of the OHS Code.

Workers or supervisors disposing of a lithium battery (or devices or equipment that contain a lithium battery) should always follow the safe disposal instructions provided by their employer and/or the applicable electronics recycling facility.

Contact us

OHS Contact Centre

Alberta toll-free

- 1-866-415-8690

Edmonton region

- 780-415-8690

Deaf or hard of hearing (TTY)

- 1-800-232-7215 (Alberta toll-free)
- 780-427-9999 (Edmonton region)

Notify OHS of health and safety concerns

alberta.ca/file-complaint-online.aspx

Call the OHS Contact Centre if you have concerns that involve immediate danger to a person on a work site.

Report a workplace incident to OHS

alberta.ca/ohs-complaints-incidents.aspx

Website

alberta.ca/ohs

Get copies of the OHS Act, Regulation and Code

Alberta King's Printer

alberta.ca/alberta-kings-printer.aspx

OHS

alberta.ca/ohs-act-regulation-code.aspx

For more information

Emergency response planning: an occupational health and safety tool kit (BP040)

ohs-pubstore.labour.alberta.ca/bp040

Hazard assessment and control: a handbook for Alberta employers and workers (BP018)

ohs-pubstore.labour.alberta.ca/al018

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