

Inspection Checklist: Lithium-Ion Battery Safety

This checklist is designed to help workplaces identify and control health and safety risks associated with the storage, charging, use, handling, and disposal of lithium-ion batteries and battery-powered equipment. These batteries are common in our workplaces and can cause serious fire, explosion, and chemical hazards if not properly managed.

The checklist can be used during routine inspections, risk assessments, incident follow-ups, or when introducing new battery-powered equipment or changing storage or charging practices. It serves as a practical guide to help ensure compliance with legislation, manufacturer instructions, and fire safety standards, and to support employers, supervisors, and joint health and safety committees in actively identifying hazards and implementing controls.

Inventory and Use

Up-to-date inventory of lithium-ion batteries and battery-powered equipment

Only certified batteries and equipment are in use (e.g., CSA/UL where applicable)

Battery types identified (e.g., individual battery, removable battery packs - *designed for charging outside of the device*, or embedded in tools/equipment - *charging occurs through the device charging port*)

Battery inventory levels are limited to operational needs (no excessive accumulation)

Manufacturer instructions for use are available

Batteries are not modified, rebuilt, or altered

Batteries used only for their intended purpose

No evidence of unauthorized or incompatible chargers/batteries

Damaged, recalled, or counterfeit batteries are not in use

Risk Assessment

Battery hazards are identified for all areas where lithium-ion batteries are stored, charged, or used

The risk assessment covers all stages of the battery lifecycle (receiving, storage, charging, use, shipping, disposal)

High-risk activities and locations are identified (e.g., bulk storage, charging areas, damaged batteries)

A documented risk assessment exists for lithium-ion battery activities

The risk assessment is reviewed periodically

The risk assessment is updated when conditions change (new battery types, quantities, equipment, incidents, or near-misses)

Storage Conditions

Quantity limits established for batteries stored in non-dedicated areas

Large-format batteries (e-bikes, scooters, floor equipment) stored separately from small consumer cells

Higher-risk locations identified (e.g., confined or unconditioned spaces, bulk storage areas, limited ventilation, minimal or no fire protection)

Batteries stored in a cool, dry, well-ventilated area

Storage area away from heat sources, sparks, or open flames

Batteries stored on pallets or in piles are maintained at a safe distance from combustible materials

Batteries protected from physical damage (crushing, puncture, stacking)

No loose batteries stored in pockets, drawers, or toolboxes without protection

Terminals protected (original packaging, terminal covers, or non-conductive tape)

Storage cabinets/containers are non-combustible where required

Batteries stored at manufacturer-recommended state of charge where applicable (e.g., not fully charged for long-term storage)

Damaged or suspect batteries clearly labelled "Do Not Use."

Fire-resistance rating of storage cabinets verified where lithium-ion quantities are significant

Battery storage does not obstruct exits or egress routes

Outdoor storage areas protected from temperature extremes and moisture

Charging Practices

Charging stations clearly designated and labelled

Chargers are manufacturer-approved and in good condition

Charging is conducted in an area with adequate ventilation

No signs of overheating during charging (hot surfaces, odour, discoloration)

Charging not conducted on combustible surfaces

Batteries are not left charging unattended unless designed for it

Adequate spacing between batteries during charging

Charging equipment plugged directly into wall outlets (no extension cords or power bars unless approved)

Electrical circuits supporting charging stations assessed for load capacity

Charging areas inspected for trip hazards from cords or battery placement

Written rules posted at charging stations (no overnight charging, no damaged batteries, etc.)

Physical Condition of Batteries and Storage System

No swollen, leaking, cracked, or deformed batteries observed

No corrosion or residue on battery terminals

Battery casings intact and undamaged

Any battery showing signs of damage is removed from service immediately

Defective batteries are isolated in a fire-resistant container

No physical damage to storage areas, racking, packaging, pallets, or enclosures

Fire Prevention and Emergency Preparedness

Fire detection and suppression systems appropriate for the area

Fire extinguishers accessible and suitable for lithium-ion battery fires (e.g., class L)

Spill kits or thermal runaway containment materials available if required

Emergency procedures include lithium-ion battery incidents

Clear access to emergency exits around battery storage and charging areas

Workers instructed not to move overheating or smoking batteries unless trained to do so

Procedures include isolation distance for thermal runaway events

Fire department notification procedures reviewed with local responders where required

Evacuation guidance specific to battery fires communicated

Disposal and Recycling

Damaged or end-of-life batteries clearly identified

Batteries disposed of through an approved recycling program

No lithium-ion batteries disposed of in regular garbage

Disposal containers are non-combustible, labelled, and have a tight-fitting lid

Records kept for battery disposal where required

Disposal containers placed outside the building are maintained at a safe distance from combustible materials and exits

Shipping and Receiving - (Transportation of Dangerous Goods)

Incoming lithium battery shipments are inspected immediately upon receipt for damage, swelling, leakage, or signs of overheating

Thermal imaging cameras are available for inspection of bulk battery packages upon receipt and before shipping, as required

Shipping documents accurately identify lithium-ion or lithium-metal batteries (e.g., UN number, proper shipping name)

Batteries are classified, documented, and handled in accordance with the federal Transportation of Dangerous Goods (TDG) Act and Regulations

Only lithium batteries that have passed the UN Manual of Tests and Criteria, Part III, subsection 38.3, are shipped or received

Damaged, defective, or recalled (DDR) batteries are immediately segregated and not moved into general storage

Required TDG lithium battery marks, UN numbers, and hazard labels are present and legible

Safety Data Sheets (SDS), where applicable, are available to workers

Batteries staged in shipping/receiving areas are separated from combustible materials

Training and Awareness

Workers who handle, charge, store, or ship lithium-ion batteries have received training on associated hazards

Safe charging and storage practices communicated and followed

Supervisors are aware of reporting requirements for battery incidents

Procedures for damaged, defective, or recalled (DDR) batteries are included in training

Training is provided when new battery types, equipment, or processes are introduced

Training is refreshed periodically, as required by the employer

Training records are maintained and available for review

Documentation and Follow-Up

Inspection findings documented and reviewed by the JHSC

Hazards reported and corrective actions assigned

Timelines established for corrective actions

Follow-up on previously identified battery-related issues

Trends, such as repeat damage, overheating incidents, and near misses, are reviewed on a monthly and annual basis

All battery overheating, smoke, odour, or minor fire events reported and investigated

Near misses (e.g., hot batteries, charger failures) documented

Corrective actions shared with workers and JHSC

Procedures include isolation distance for thermal runaway events

Fire department notification procedures reviewed with local responders where required

Evacuation guidance specific to battery fires communicated

Legislation References

- [Occupational Health and Safety Act, R.S.O. 1990, c. O.1 | ontario.ca](#)
- [R.R.O. 1990, Reg. 851 INDUSTRIAL ESTABLISHMENTS | ontario.ca](#)
- [R.R.O. 1990, Reg. 860 WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM \(WHMIS\) | ontario.ca](#)
- [Transportation of Dangerous Goods Act, 1992](#)
- [Transporting batteries](#)
- [Fire Protection and Prevention Act, 1997, S.O. 1997, c. 4 | ontario.ca](#)
- [O. Reg. 213/07 FIRE CODE | ontario.ca](#)
- [Resource Recovery and Circular Economy Act, 2016, S.O. 2016, c. 12, Sched. 1 | ontario.ca](#)
- [O. Reg. 522/20 ELECTRICAL AND ELECTRONIC EQUIPMENT | ontario.ca](#)
- [O. Reg. 30/20 BATTERIES | ontario.ca](#)