

## TAILGATE TALK: LITHIUM BATTERY SAFETY

Lithium batteries power many of the tools and devices used in public works, including leaf blowers, hedge trimmers, cordless drills, inspection cameras, tablets, string trimmers, pole saws, and chainsaws. In the shop, they are found in handheld vacuums, portable air compressors, lithium jump starters, diagnostic scanners, and other equipment. They also power e-bikes, scooters, and many personal devices. These batteries are compact and efficient, but they must be handled correctly. Improper storage, damage, water exposure, or mismatched chargers can increase the chance of overheating, fire, or failure. The following guidance outlines practical steps to reduce risks in the field, shop, and at home.



### Storage Safety

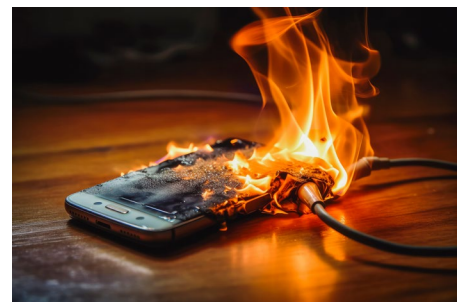
Store lithium batteries in a cool, dry area away from direct sunlight or temperature extremes. Use non-conductive racks or cabinets when available, and keep loose batteries away from metal objects that could cause short circuits, such as keys, coins, or zippers. Cover terminals with non-conductive tape or use plastic cases and secure batteries so they cannot slide, be crushed, or be punctured. Avoid leaving batteries inside parked vehicles or enclosed spaces that may heat up; prolonged heat exposure can degrade them or contribute to thermal runaway, which occurs when a battery generates heat faster than it can dissipate, potentially leading to gas venting, fire, or explosion.

### Collecting Spent Batteries

Only intact, undamaged lithium batteries should be stored indoors for recycling; do not allow accumulation of batteries for recycling. Place them in a non-metal, fire-resistant container with a loose-fitting lid, and prevent terminals from contacting other objects by taping or bagging each battery. Keep the container away from heat sources, combustible materials, and sunlight, and empty it regularly through an approved recycling or take-back program. Do not bring damaged, swollen, leaking, burned, or hot batteries into a building or place them in an indoor container.

### Charging Practices

Lithium batteries must be charged only with the charger designed for that specific battery type and brand, and following the manufacturer's instructions. Off-brand or mismatched chargers may provide incorrect voltage or lack safety controls. Never modify charging equipment or use chargers with frayed cords or missing components. Charge batteries on a hard, dry, non-combustible surface; never on soft or combustible surfaces such as a bed or sofa. Follow manufacturer temperature limits—do not charge below 32°F (0°C) or above 105°F (40°C). Do not charge batteries during active flood watches or warnings, or after any water exposure; flood-exposed batteries must be evaluated by qualified personnel before use. Disconnect chargers once the battery is fully charged.



### Extension Cords

Using extension cords with lithium battery chargers adds heat and failure points. Underrated cords may overheat under continuous load; coiled cords trap heat; cord insulation could melt and result in arcing; worn plugs can arc; daisy-chained cords increase resistance; and long cords can cause voltage drop that affects charging. The safest practice is to plug chargers directly into a grounded wall outlet. If a cord must be

used, it should be heavy-duty, grounded, outdoor-rated, uncoiled, and as short as possible. Never leave a battery charging unattended when plugged into an extension cord, and do not use extension cords for large battery chargers (e-bikes, chainsaws) or in wet or dusty areas.

## Inspections

Inspect batteries and chargers before each use. Look for cracks, swelling, dents, leaks, unusual odors, frayed wires, damaged plugs, or loose or warped charger contacts. High-use batteries should receive more detailed inspections monthly. Early identification of heat, swelling, or physical distortion can prevent more serious problems.

## Fire and Explosion Risks

Lithium batteries may pose a fire hazard if crushed, punctured, overheated, overcharged, defective, dropped, or exposed to water, flooding, or high humidity. Warning signs of thermal runaway include swelling, smoke or vapor, unusual heat, odors, or hissing or popping noises. If any of these signs appear, do not touch or move the battery. Evacuate the area immediately, call 911, and keep others back until responders arrive.



### If a Fire Occurs

If you are trained and the fire is very small (incipient stage), you may use a **Class ABC dry-chemical extinguisher** from a safe distance. Never try to smother a battery fire or cover it with rags or blankets—it must be cooled, not confined.

### Do not use water yourself.

Firefighters may apply large amounts of water to cool lithium-ion batteries, but this is a professional tactic requiring PPE and

ventilation. For employees, **evacuation and calling 911 are the correct actions.**

Once extinguished, batteries can re-ignite hours later; let firefighters monitor for rekindling.

## Damaged or Flood-Exposed Batteries

All flood-exposed batteries should be treated as potentially unsafe until inspected by a trained professional; floodwater can leave conductive residues inside cells, creating delayed short circuits from which batteries could ignite suddenly, even if not in use or charging. Particularly a battery that is swollen, leaking, hot, hissing, popping, smoking, or emitting odor may be unstable and can ignite unexpectedly; do not touch or attempt to cool the battery. Evacuate and call 911. If a battery is damaged or flood-exposed but currently stable (cool to the touch, no smoke, no odor) do not use, charge, reconnect, dry, or clean it. Notify a supervisor, safety officer, or other trained personnel who may move a stable, damaged battery for temporary isolation. Isolation involves placing the battery in a non-combustible, covered container (such as a metal pail with sand or a specialized battery box) outdoors on concrete, asphalt, or gravel, away from buildings and combustibles. The container must be labeled clearly and prompt removal through the manufacturer, recycler, or a qualified hazardous-materials handler should be arranged promptly. Do not attempt repairs, discharge, jump-starting, opening, drying, or cleaning, as internal damage may not be visible. E-bikes, scooters, and large battery packs follow the same precautions and should remain outdoors after any

damage or flood exposure. During flood conditions, do not charge batteries; unplug chargers and move batteries to higher ground.

### **Disposal Requirements (NH Law Effective July 1, 2025)**

As of July 1, 2025, it is illegal in New Hampshire to dispose of rechargeable lithium-ion batteries in household trash, curbside recycling, landfills, or incinerators. This includes tool batteries, e-bike and scooter batteries, jump starters, portable power packs, tablets, flashlights, and other rechargeable devices. These batteries can ignite if crushed or punctured in waste equipment, and fires have already occurred in waste-handling facilities. Intact, undamaged spent batteries must be stored safely until they can be disposed of through an approved retail take-back program, a town transfer station, or a municipal or state hazardous-waste event. Terminals must be taped and each battery should be bagged individually and kept in a non-metal container. For additional details about the legislation or to locate approved battery disposal options, [visit the New Hampshire Department of Environmental Services website](#) and search for “Rechargeable Battery Disposal Ban.”

### **Conclusion**

Lithium batteries are common in public works operations and personal use. Correct storage, charging, inspection, and disposal reduce the likelihood of dangerous failures. If a battery begins to swell, heat up, smoke, make noise, or release odor, do not move it; back away and call 911.

---

#### **About this Resource:**

This tailgate talk provides general safety guidance and practical considerations only. It does not guarantee safety, prevent all hazards, or replace manufacturer instructions, industry standards, or professional evaluation. Lithium batteries involve risks that can vary based on equipment type, condition, and use. Crews and supervisors should follow all applicable workplace policies, OSHA requirements, manufacturer recommendations, and fire-safety guidance. When questions arise about damaged batteries, charging systems, storage conditions, or abnormal behavior, seek assistance from qualified technicians, safety professionals, or the equipment manufacturer.

UNH T2 is pleased to provide free and customized Technical Assistance to local road agencies on a variety of road maintenance and transportation infrastructure-related topics, including bridge preservation and maintenance activities. Please reach out to [t2.center@unh.edu](mailto:t2.center@unh.edu) for additional resources, support, or technical assistance.

#### **UNH T2 Center**

35 Colovos Rd.

Durham, NH 03824

603.862.1362

Visit our website at [t2.unh.edu](https://t2.unh.edu)

