

Small Lithium-Ion Battery Fires on Ships: Hidden Sparks, Big Risks

Published: 6 January 2026 7 min read

Article Loss Prevention Safety Ships

This article will examine the hazards posed by small lithium-ion batteries and how they can be devastating in confined shipboard environments.

From handheld radios, cell phones, and power banks to vapors and flashlights, lithium-ion batteries are everywhere onboard vessels. Compact and powerful, they're essential, but when mishandled, they can turn into ticking time bombs.

Compact and powerful, they're essential, but when mishandled, they can turn into ticking time bombs.

While the maritime industry has rightly focused on the dangers of lithium-ion battery fires on car carriers and container vessels, the hazards posed by small lithium-ion batteries are often overlooked and can be just as devastating in confined shipboard environments.



What Makes Them Dangerous?

The biggest threat is thermal runaway, a chain reaction triggered by overheating, damage, or internal faults. Once it starts, it's nearly impossible to stop. These fires burn hot, release toxic gases, and can explode with force, especially dangerous in confined spaces like crew cabins, the bridge, or storage lockers.



Real Fires, Real Lessons

- **Bridge Blaze on Tanker:** A handheld radio battery overheated and ignited, burning down the bridge navigation and communication equipment causing US\$3 million in damage.
- **Cabin Combustion:** Rechargeable power bank, vapes, and cell phones left charging overnight have sparked fires in crew quarters often due to unsupervised charging or poor storage.
- **Power Bank Peril:** A crew member's power bank exploded during charging in a locker, igniting nearby clothing and causing smoke inhalation injuries.

These aren't rare events, they're warnings to all of us.



Smart Safety Practices for Small Li- Ion Batteries Onboard

Responsible Purchase (Vessel & Personal Use)

Responsible purchase is the first line of defence against lithium-ion battery incidents onboard. Batteries should be sourced from reputable manufacturers with proven safety records. It is essential to verify certifications such as UL, CE, or IEC standards to ensure compliance with international safety benchmarks. Bulk purchases from unknown or unverified suppliers should be avoided, as they may introduce substandard or counterfeit products. Compatibility between batteries, devices, and chargers must be confirmed to prevent electrical mismatches that could lead to overheating or failure. For vessel use, purchasing procurement should be documented in inventory logs to maintain traceability and accountability.

Storage & Handling

Proper storage and handling of lithium-ion batteries is critical to minimizing fire risks. Batteries should be kept in cool, dry, and well-ventilated spaces. Fireproof containers are recommended. Batteries should never be casually stored in drawers or near flammable materials. Stacking batteries or placing them near metal objects should be avoided to prevent accidental short circuits. For long-term storage, maintaining a charge level between 30–50% helps reduce chemical stress and prolong battery life. Personal devices and power banks should be stored separately from flammable materials to further reduce risk.

Charging

Charging practices must be strictly controlled. Only approved chargers should be used, and personal devices must never be charged unattended, especially overnight. Overcharging and deep discharging should be avoided, as both can accelerate battery degradation and increase the risk of thermal runaway.

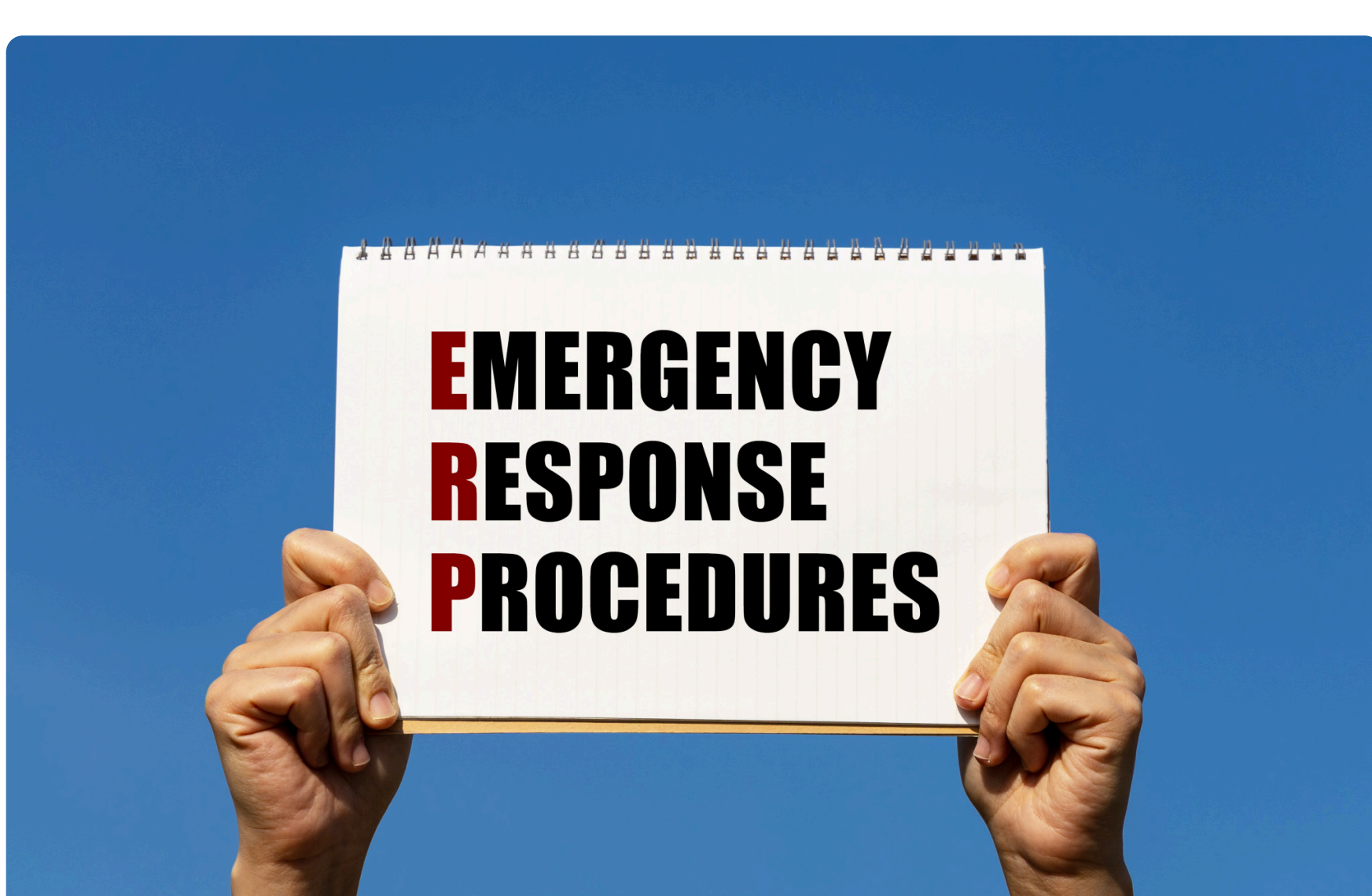


Inspection & Maintenance

Routine inspection and maintenance are essential for identifying early signs of battery failure. Batteries should be checked regularly for swelling, leaks, or corrosion. Damaged batteries must be isolated and reported immediately. A Battery Management System (BMS) should be used to document compliance and ensure safety standards are met. Personal devices and accessories should be inspected periodically to detect wear or damage that could compromise safety.

Emergency Preparedness

Emergency preparedness is vital. Areas where batteries are stored or charged should be equipped with Class D fire extinguishers, fire blankets, and appropriate personal protective equipment (PPE). Crew members must be trained to respond to thermal runaway incidents, and battery fire scenarios should be included in regular drills and Safety Management System (SMS) procedures.

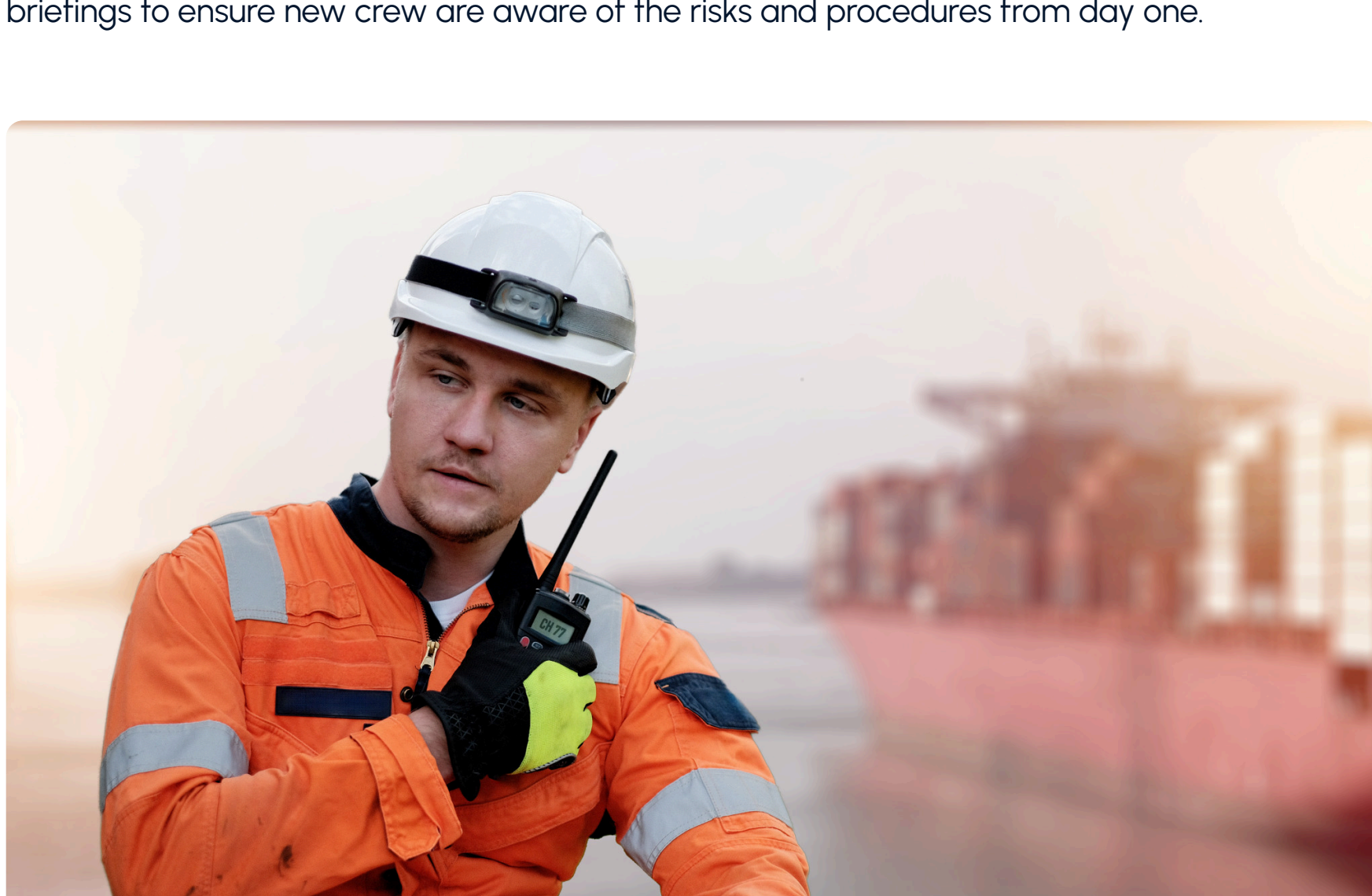


Disposal & Documentation

Lithium-ion batteries must be disposed of as hazardous waste in accordance with MARPOL Annex V. Disposal activities should be logged in the Garbage Record Book, and end-of-life batteries must be handed over to certified recyclers to ensure safe and environmentally responsible handling.

Crew Awareness & Training

Crew awareness and training is essential. Regular safety sessions should be conducted onboard, and safety posters or warnings should be displayed in crew areas and cabins. All crew members must be familiar with standard operating procedures (SOPs) and emergency response steps. Personal electronics and power banks should be included in pre-joining safety briefings to ensure new crew are aware of the risks and procedures from day one.



Industry Guidance & Alerts

- **USCG Safety Alert 14-25:** Highlights unique hazards of lithium-ion battery installations, including thermal runaway, toxic off-gassing, and fire suppression challenges. Emphasizes the need for proper design, inspection, and crew training for all lithium-ion systems onboard. [Read United States Coast Guard Safety Alert 14 - 25 here](#)
- **IMCA Safety Flash 09/22:** Documents a fire caused by a USB power bank onboard a vessel. The incident underscores the risks of consumer-grade lithium-ion devices like power banks and the importance of proper storage, charging, and procurement. <https://www.imca-int.com/resources/safety/safety-flashes/0922-usb-power-bank-lithium-battery-fire/>
- **MARPOL Annex V:** Governs proper disposal of hazardous waste, including damaged or expired batteries. Disposal must be logged in the Garbage Record Book and handled by certified recyclers.

Final Thought

Small batteries, big consequences. As their use grows onboard, from UHF radio batteries to phones and power banks, so must our vigilance. With smart handling, proper training, and strict SMS protocol on procedures and compliance, we can keep these silent sparks from becoming shipboard infernos.

Resources

- United States Coast Guard Safety Alert 14-25
- (International Marine Contractors Association (IMCA) USB power bank (Lithium battery) fire

Related topics

Article Loss Prevention Safety Ships

Authors

 **Trevor Fernandes** Senior Loss Prevention Executive

In this section +

Useful Resources

- United States Coast Guard Safety Alert 14-25
- (International Marine Contractors Association (IMCA) USB power bank (Lithium battery) fire