



TECHNICAL UPDATE

Volume 28 Number 41 | October 8, 2024

THE RISING RISK OF LITHIUM-ION BATTERY FIRES

Incidents of lithium-ion (Li-ion) battery fires are rising due to increased demand for devices like laptops, phones, e-scooters, and e-bikes. Global demand for Li-ion batteries is expected to surge sevenfold by 2030, raising significant risks for insurers and businesses.

Li-ion battery fires are most common in urban areas with high usage of e-bikes and e-scooters. Risks increase due to battery damage, manufacturing defects, and improper disposal. When a battery's casing fails, thermal runaway can occur, leading to fires that are hard to extinguish. These fires release toxic gases, are self-sustaining, and are reactive to water, making them extremely dangerous.

Electric vehicles (EVs) contribute significantly to Li-ion battery fires. Though less frequent than hybrid or petrol vehicle fires, EV fires can reach up to 4,900°F.

Urban areas, including high-rises, EV charging stations, and student accommodations, face heightened risks. Firefighters are challenged by the unpredictable nature of these fires, which also pose environmental contamination risks from water and soil damage during firefighting.

New fire codes like UL 9540 and UL 9540A aim to enhance safety for energy storage systems and prevent thermal runaway. Industries using Li-ion batteries invest in early detection systems and safety measures to reduce risks.

ESSENTIAL STRATEGIES FOR COUNTIES

The risks associated with Li-ion batteries extend beyond fires and have severe implications for counties, especially in densely populated areas or public infrastructure. The unpredictability of thermal runaway, the chain reaction causing fires, poses significant dangers in public buildings such as courthouses, hospitals, and schools. Li-ion battery fires spread quickly, releasing toxic gases and producing intense heat that is difficult to extinguish, increasing the likelihood of property damage and injury. These fires can also re-ignite and are highly susceptible to electrical shock from stored energy and damaged batteries. If there are Li-ion batteries in the workplace, consider purchasing fire extinguishers designed to extinguish these types of fires.

Counties managing public transportation, including e-bikes, electric buses, and EV charging stations, face elevated risks. Improper charging or malfunctioning batteries can lead to severe fires, jeopardizing public safety and causing business interruptions. Facilities like waste and recycling centers are particularly vulnerable due to improper battery disposal, a leading cause of fires at these sites.

For counties, implementing comprehensive risk management strategies is essential. This includes establishing guidelines for storing and charging Li-ion batteries, ensuring proper disposal processes, and conducting regular safety inspections. Employees and community members should also be educated on the hazards of non-certified batteries. Investing in early detection systems and adhering to updated fire codes can further help mitigate the growing risk of lithium-ion battery-related incidents.



WHAT THIS MEANS FOR COUNTIES

Li-ion batteries play a crucial role in the transition to renewable energy, but as their use increases, so do the risks, particularly for counties managing public facilities and services. While safety improvements continue, the potential for fires and related hazards remains. Counties must proactively mitigate these risks by investing in safety controls, enforcing quality assurance measures, and increasing employee awareness about preventing Li-ion battery fires. By taking these steps, counties can better protect their infrastructure, reduce liabilities, and ensure the safety of their communities. For more information, contact CTSI at (303) 861-0507.