Developing a Curriculum Related to Emergency Response to Electric Vehicle and Other Lithium-Ion Battery Incidents

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After Hurricane Helene in Florida...



Pinellas County Government Facebook page, September 28, 2024

Just last week in Brooklyn...



NY Daily News, October 16, 2024

More than just residences and vehicles...



https://www.ctif.org/news/despite-fire-hazards-lithium-ion-battery-energy-storage-systems-are-getting-larger-and-larger

Lithium-Ion Batteries & Renewable Energy

- Lithium-ion batteries are integral to renewable energy use
 - Electronics
 - ➤ Tools
 - Vehicles
 - Energy storage systems
- Battery energy storage systems (BESSs) enable storage of energy from solar, wind, and other sources for use during low production periods
 - > At end of 2022, about 450 BESSs in operation in US
 - > 108 of BESSs went into operation in 2022
 - ➤ 40 GW capacity expected by end of 2025
 - About 3% of U.S. energy production capacity

Anatomy of a BESS



https://www.innoliaenergy.com/products/energy-storage-systems/

Midwest Consortium Training Plans

- MWC External Advisory Board emphasized need for training related to electric vehicles and lithium-ion batteries
- Spent >2 years figuring out what training makes sense and for guidance to stabilize
- Target populations
 - Community members: Awareness
 - Vehicle emergency response: Awareness, Operations, Technician
 - Structural emergency response: Awareness, Technician
 - General industry: Awareness, Operations

Lithium Battery Safety Exercise/Module

Objectives

- Identify devices that use lithium batteries
- > Describe potential risks of lithium batteries
- > Identify safe practices for lithium batteries, including use, charging, storage, and disposal
- Identify action steps in case of a lithium battery emergency
- Multiple uses
 - > 3-hour HAZWOPER Awareness community program
 - Awareness-level refresher module for workers in 8-hour site worker or emergency response modular refresher programs
- Curriculum materials include Facilitator Guide and PowerPoint presentation
- Available at <u>https://mwc.umn.edu/catalog/product/lithium-battery-safety/</u>

Curricula Under Development



Vehicle Response Training

• Topics

- > Types, uses of lithium-ion batteries
- Potential hazards
- Proper methods for using, charging, storing, disposing of batteries
- Guidance for minor incidents
- Electric vehicle identification
- Using manufacturer's Emergency Response Guides
- Scene size up
- Vehicle immobilization and disablement
- Occupant rescue/extrication
- Tactics
- Extinguishment
- Termination

Activities

- Finding vehicle information
- Use of monitoring tools
- Personal protective equipment
- Emergency plugs
- Fire blankets
- Practice responses to incidents in different scenarios
- Practice using electric vehicles

Structural Response Training

Topics

- > Types, uses of lithium-ion batteries
- Potential hazards
- Proper methods for using, charging, storing, disposing of batteries
- Guidance for minor incidents
- Fire behavior
- > Attack
- Suppression
- Overhaul
- > De-energizing

Activities

- Use of monitoring tools
- Personal protective equipment
- Cutting tools
- Overpacking
- Practice responses to incidents in different scenarios
- Practice using objects powered by lithium-ion batteries

General Industry Training

Topics

- > Types, uses of lithium-ion batteries
- Potential hazards
- Proper methods for using, charging, storing, disposing of batteries
- Guidance for minor incidents
- Emergency Response Plans
- Communications
- Evacuation
- Mitigation prior to arrival of emergency responders

Activities

- Fire suppression equipment
- Practice responses to incidents in different scenarios
- Practice using lithium-ion batteries and objects powered by lithium-ion batteries

TBD: Training on BESSs



https://powercontinuity.co.uk/knowledge-base/energy-storage-systems-bess-triad