

Lithium-Ion Battery Industrial Fire

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Due to ongoing investigations and litigations, the full presentation is not available.

Lessons Learned

- National Response Center
800-424-8802
- Cell Data Service
- “Staying in Your Own Lane”
- Get an Assistant
- Right People in the Right Places
- Incident Management System (Law Enforcement)



Following the incident, the City of Morris and fire district has adopted NFPA 855 ahead of the 2024 IFC the following ordinance.

City of Morris Lithium Battery Ordinance

Add additional fire code sections as follows:

Storage of lithium metal or lithium-ion Batteries.

Areas associated with the collection or storage of lithium metal or lithium-ion batteries shall comply with this chapter.

Exceptions: The following areas shall be exempt from the requirements of this chapter:

1. Areas within a facility that are operated in accordance with procedures that provide for the state of charge of the lithium metal or lithium-ion batteries to be 30 percent or less. Procedures and test reports documenting how the 30 percent or less state of charge is established and how fire protection levels are determined shall be provided to the fire code official for review and approval.

2. Areas where fire and fault condition testing conducted or witnessed and reported by an approved testing laboratory is provided showing that a fire involving the batteries in storage will be limited to the design area of an automatic sprinkler system installed in accordance with NFPA 13 and will not adversely impact occupant egress from the building or adversely impact adjacent stored materials or the building structure.

3. Batteries in original retail packaging that are rated at 300 watt-hours or less for lithium-ion batteries or contain 25 grams or less of lithium metal for lithium metal batteries.

315.8.1 Collection. All areas located indoors in any occupancy where used lithium metal or lithium-ion batteries are collected from employees or the public shall be provided with open-top noncombustible containers or containers designed to preclude the release of contents resulting from battery thermal runaway or containers approved for battery collection activities.

1. Containers shall not exceed 1 cubic foot (or 55 gallons) in size.

2. Containers shall have a minimum of 3 feet of open space from other battery collection containers and combustible materials and shall be located a minimum of 5 feet from exits from the room, space, or building.

3. Where combustible materials are located within the space between collection containers, the containers shall be spaced a minimum 10 feet apart.

315.8.2 Collection and Storage Locations.

Batteries collected or stored other than those in collection containers complying with Section 315.8.1 shall be stored in accordance with one or more of the following methods provided for in accordance with one or more of the following methods. Battery terminals shall be protected either through battery design methods or a protective packaging method to prevent short circuit of the battery.

1. In rooms or spaces separated from the remainder of the building areas by fire barriers with a 3-hour fire resistance rating and with horizontal assemblies with a 3-hour fire resistance rating constructed in accordance with the local building code. The room or space shall be protected by a radiant energy detection system installed in accordance with NFPA 72 and shall be protected by an automatic sprinkler system designed and installed in accordance with NFPA 13.

2. Batteries shall be permitted to be stored in approved prefabricated portable buildings or containers that are constructed with 3-hour fire resistance ratings and provided with radiant-energy detection system installed in accordance with NFPA 72 and an approved automatic fire suppression system installed in accordance with NFPA 13.

3. In metal drums storage containers with batteries separated from each other by vermiculite or other approved material packaged to prevent damage that could lead to a thermal event or in containers approved for battery collection and storage activities.

- 3.1. Each area containing such metal drums or approved containers shall not exceed 900 square feet in area and shall be separated from other battery storage areas by a minimum of 10 feet.

3.2. The collection and storage area shall be protected by a radiant-energy detection system installed in accordance with NFPA 72 and an approved automatic fire suppression system installed in accordance with NFPA 13.

4. In containers approved for use in transportation or approved by the *fire code official* that will prevent an event from propagating beyond the container.

4.1. Each area containing the approved transportation containers shall not exceed 900 square feet in area and shall be separated from other battery storage areas by a minimum of 10 ft.

4.2. The storage area shall be protected by a radiant energy detection system installed in accordance with NFPA 72 and an approved automatic fire suppression system installed in accordance with NFPA 13.

315.8.3 Prevention and Mitigation A plan that provides for the prevention of fire incidents and includes early detection mitigation measures shall be provided to the *fire code official* for review and approval. The owner is required to file the plan annually.

315.8.4 Explosion Control.

The potential for a deflagration involving the off gassing of flammable gases during a thermal runaway shall be analyzed and explosion protection shall be installed in accordance with IFC Section 911 if the potential exists. A written hazard analysis prepared by a fire protection engineer shall be submitted to the *fire code official* for review and approval.

315.8.5 Outdoor Storage Location.

Outdoor storage locations for lithium metal or lithium-ion batteries shall comply with the following:

1. Individual pile sizes shall be limited to 900 square feet in areas separated from other piles by at least 10 feet.
2. Batteries shall be stored in non-combustible containers or approved containers designed for storage of the batteries.
3. Piles located outdoors shall be separated by a minimum 20 feet from the following exposures:
 - 3.1. Lot lines
 - 3.2. Public ways
 - 3.3. Buildings
 - 3.4. Other storage
 - 3.5. Hazardous materials
 - 3.6. Other exposure hazards

Exception: Clearances shall be permitted to be reduced to 3 feet when a 3-hour freestanding fire barrier, suitable for exterior use, and extending 15 feet above and extending 15 feet beyond the physical boundary of the pile is provided to protect the exposure.

315.8.5.1 Weather protection.

Where weather protection is provided for sheltering outdoor battery storage areas, such areas shall be considered outdoor storage where the weather protection structure complies with 1 through 3.

1. Walls shall not obstruct more than one side of the structure.

Exception: Walls shall be permitted to obstruct portions of multiple sides of the structure, provided that the obstructed area is not greater than 25 percent of the structure's perimeter.

2. The distance from the structure to buildings, lot lines, public ways or means of egress to a public way shall be not less than the distance required for an outside hazardous material storage or use area without weather protection.

3. The overhead structure shall be of approved noncombustible construction with a maximum area of 1,600 square feet.