

| PHOENIX REGIONAL STANDARD OPERATING PROCEDURES | |
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| Policy Name: PERSONAL MOBILITY DEVICES AND LITHIUM-ION BATTERIES | Policy Number: M.P. 202.20C |
| This policy is for internal use only and does not expand an employee's legal duty or civil liability in any way. This policy should not be construed as creating a duty to act or a higher duty of care, with respect to third party civil claims against employees or the Phoenix Fire Department (PFD). Remedies for violations of this policy, if proven, are limited to administrative disciplinary action against PFD employees. | |
| Related Policies: 205.20, 205.20A, 202.19, 202.19A | |
| Other Reference: | |
| Date Implemented: 07/2023-R | Review Date: 07/2028 |

Lithium-Ion Batteries are found in many consumer products today. Examples of where they are found is cell phones, electric scooters and bicycles, even residential garage door openers often have a Lithium-Ion battery backup built in. This policy/procedure is intended to provide direction on handling these devices when they have been impacted either through radiated heat, direct flame contact, or physical damage.

The hazards of Lithium-Ion batteries are well documented, they represent an increased risk to building occupants and firefighters when they have failed, gone into thermal runaway or when they have been damaged. Some of the hazards are toxic and flammable gases, height heat release rates, the potential for projectiles and the threat of delayed ignition which can cause a secondary ignition.

Fire hazards are relevant in the following two areas of response:

1. Initial Fire Attack, the involvement of Lithium-Ion batteries has the potential to dramatically impact fire growth rates.
2. Heat impacted Lithium-Ion batteries can have a delayed failure that represents a secondary ignition source.

PERSONAL MOBILITY LITHIUM-ION FIRE SOG

RESPONSE/MITIGATION

Develop an Incident Action Plan (IAP) to complete the Tactical Objectives.

- The primary fire attack with minimum 1 ¾" fire hose with water.
- Full PPE with facepiece. Consider a water supply if the batteries are continuing to propagate into thermal runaway.
- Upgrade to a 3-1 Hazmat.

- Extinguishment with Foam or ABC extinguishers is contraindicated.
- The batteries can be submerged in a bathtub or bucket of water to cool them and limit the products of combustion and allow to develop a more detailed IAP coordinated with HAZMAT.
- Even after extinguishment or submersion the batteries can still off gas and ignite.

ISOLATION

After extinguishment a thorough search of the area for exposed, damaged, burned batteries must be performed prior to any overhaul. Batteries could have ruptured dispersing many smaller cells throughout the room or area. It is important to locate and remove all batteries to prevent a secondary fire. This is easiest done prior to burying them in overhaul debris.

- Full PPE will be worn with face piece and a charged hose line in place.
- Scan the fire affected area to identify any heat impacted Lithium-Ion batteries.
- Remove these batteries using buckets or containers.
- Consider submerging in water, or overpacking.

Note: The investigation of fires and the determination of their cause is a responsibility of the Phoenix Fire Department (or automatic aid partner authority having jurisdiction). The primary reason for the investigation of fires is for the collection of information regarding the origin and cause. The origin and cause of a fire is determined to prevent similar occurrences in the future. If the origin and cause investigation indicate that the fire may have been intentionally set, the investigation is expanded to collect evidence related to a crime.

When possible, overhaul operations should be appropriately coordinated to prevent the destruction of evidence necessary for the determination of the origin and cause of the fire.

Please continue to remain dedicated to scene preservation to prevent the destruction of critical evidence at the fire scene. In most cases, this is as simple as remaining cognizant of scene preservation during overhaul operations.

Some of the observations that we make at fire incidents may lead us to consider contacting a fire investigator. If you have any reason to believe the cause of any fire to be suspicious, please contact the Fire Investigations Section as soon as possible through the Alarm Room.

REMOVAL OF BATTERIES

Ongoing thermal runaway and electrocution hazards due to stranded energy should always be considered. Whenever handling or near the batteries full PPE must be worn with a charged hose line in place.

- Avoid hand carrying the batteries. Utilize buckets, shovels, tarps, and nonconductive tools.
- If the occupancy is on upper floors, consider using a Fire Department aerial device to lower the batteries to the ground.

- **The use of elevators or enclosed stairwells should be avoided.**
- Some personal mobility devices can be larger (Electric Wheelchair). The use of a thermal blanket should be considered if forced to remove the batteries through interior areas.

OVERPACKING

Depending on the size of the mobility device the batteries may need to be removed or cut away from the E bike, scooter, hoverboard, etc. The use of extrication tools or saws may be employed. This tactic must be coordinated with the IC, Safety and Hazmat and should be done outside with a charged hose line, and full PPE. When possible, Lithium-Ion batteries should be placed in a metal vented container, to prevent the buildup of pressure. The metal container should be rated for the Watts the battery produces (Volts X Amps = Watts).

- Place a small amount of Cellblock, dirt, or other thermal regulating material in the bottom of the container then cover it with more of the same material.
- This should be done by Hazmat Techs or clean up contractors.

TERMINATION OF THE EVENT

The potential for a secondary fire due to stranded energy should always be considered. Command Officers should:

- Time stamp through alarm that the owner/manager has been made aware of the requirement to use a proper Hazmat disposal contractor.
- Consider the need to keep a crew on scene through the investigation phase.
- Consider having the Fire Department coordinate the removal of batteries from high risk/high density occupancies.
- Only certified/permitted disposal companies can transport damaged Lithium-Ion batteries.