CIRSA HAZARD ALERT

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Hazard Alert - Small Electric Vehicle Use

This is the fourth in a series of articles intended to bring attention to potential hazards and risk management strategies related to electric vehicles This article concerns municipal use of small electric vehicles, including electric bicycles (e-bikes), scooters (e-scooters), and golf carts. However, much of the information in this article is generally applicable to items of equipment containing lithium-ion batteries, like drones and landscaping equipment.

E-bikes and e-scooters have become commonplace. The various products on the market range from high-quality products often produced by well-known bicycle manufacturers, to bargain products often produced by unknown or emerging manufacturers.

Small electric vehicle and equipment use is on the rise within municipal organizations. It is common for employees to use e-bikes and e-scooters to commute to and from work and to get around large facilities such as water treatment plants and public works campuses.

While great for getting around, increased use of small electric vehicles presents risk. Lithium-ion batteries contain a flammable electrolyte that can cause a damaged, defective, or overheated battery to catch fire or explode. Burning batteries produce toxic or irritating gases and can ignite other batteries nearby. Batteries exposed to water may generate flammable hydrogen gas and toxic and corrosive hydrogen fluoride.

To minimize these risks, your entity will want to consider the following controls:

- Designate a storage area outside of the building, out of direct sunlight, and away from exit doors and combustibles.
- Encourage employees to charge personal vehicles at home.
- Limit the number of e-bikes or e-scooters allowed within the facility.
- Use only the battery and charger that came with the device.
- Disconnect the charger as soon as the battery is charged.

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Small Electric Vehicle Use (cont.)

Extinguishing Fires

Most lithium-ion battery fires may be extinguished by use of a standard dry chemical (Class A-B-C) extinguisher, as lithium-ion batteries typically do not contain lithium metal—which requires use of a sodium chloride (Class D) extinguisher when ignited. However, it is important to review the manufacturer's information about the specific product to ensure the correct type of fire extinguisher is used.

Golf Carts

In addition to the common lead-acid battery powered golf carts, manufacturers are now offering carts powered by lithium-ion batteries. Many golf courses store their carts in covered parking garages, protected by an automatic fire sprinkler system. If your golf course is considering offering lithium-ion powered carts, contact your fire marshal or building official to ensure the sprinkler system can adequately protect the building from a fire caused by one or more of these devices.

Landscaping Equipment and other Small Vehicles

Gasoline powered landscaping equipment is being phased out and replaced by battery-powered models in many places. Since these devices are used in all environments and put to heavy use, it is especially important to have an effective inspection, storage, and charging plan in place. Battery packs should be inspected before and after each use to identify cracks, bulges, or other damage. There should be one or more designated charging and storage areas for the battery packs which are free of combustibles to minimize the spread of fire. Always follow the manufacturer's instructions on charging times and other risk control measures.

Resources:

Nfpa.org/ebikes

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