Lesson Learned Briefing

No.: LL20-0006

Title: Thermal Runaway Event Causes Small Fire

Event: LBNL Event

Event Date: 02/20/2020

Category: ESH-Electrical - Electrical Equipment-Office Use, Electrical Equipment-Labs/Technical Spaces Use, NRTL Equipment Issues & Surveys, Batteries

Lesson Learned Statement:
On February 20th it was discovered that a small electrical fire had occurred in a laboratory space when a rechargeable battery back-up power supply with car inverter that had been plugged into a plug strip had caught fire and self-extinguished. The unit had stopped working and wouldn't re-charge using the car-charger. The unit came with an AC adapter and had been plugged into 120V AC outlet for charging on February 19th. The battery back-up supply caught on fire along with it's associated box and users manual. The battery back-up power supply was branded from a well-known manufacturer, however; wasn't NRTL listed.

Discussion:
Li-ion batteries like other battery packs can fail. Li-ion batteries are prone to thermal runaway upon failure. Some ways in which personnel can reduce the likelihood of failure is to purchase items that are NRTL listed; practice good housekeeping; and inspect for signs of impending failure. The unit not being able to be re-charged/working was the first sign of impending failure.

For small units that do not have installed ventilation fans for cooling, I ask that you do three things to prevent similar incidents:

1. Inspect the units for NRTL listing. The current list of OSHA recognized Nationally Recognized Testing Laboratories can be found here:
https://www.osha.gov/dts/otpca/nrtl/nrtllist.html

2. Ensure papers and other combustible items aren't stacked on top of charging devices or other electrical appliances.

3. Inspect your devices for signs of failure. They should NOT be hot to touch. You shouldn't smell burning, or hear abnormal noises.

Devices shouldn't bulge or show cracks. Do not operate equipment showing any signs of impending failure. Contact your supervisor, work lead, Division Safety Coordinator, ESA immediately so we can ensure they get taken out of service safely.

Attached is a poster that you may find is a helpful reminder on how to safely use Li-ion battery powered devices and the warning signs that the device needs to be taken out of service.

If you have any Electrical Safety questions or concerns please go to your Divisional Electrical Safety Contact or the Electrical Safety Group found here:
https://electricalsafety.lbl.gov/contact-us/

Lessons Learned are part of the ISM Core Function 5, Feedback and Improvement. Applicable Lessons Learned are to be considered during working planning activities and incorporated in work processes, prior to performing work.

Please contact the following subject matter experts if you have any questions regarding this briefing.

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Uploaded documents/attachments:

UL NRTL image.png
CSA NRTL Image.png
Power Inverter-Battery Charger Caught Fire.JPG
Burnt Wire Mold From Lab Space.JPG
LI-ion_safety_20180316 poster in pdf.pdf

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