

ISSUE NUMBER

23-042-HAZ

ISSUE NAME

Hazards of Lithium Battery Vehicles

STATUS

Closed

Hazardous Materials Committee

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Some providers of electric vehicles (including e-trucks) with Lithium battery (LiB) systems rushed their EV prototypes to the market without sufficient safety measures in design, and in operations (including charging and maintenance). As a result, LiB/EV could catch fire spontaneously when LiB cells are severely degraded due to unsafe design and improper operating conditions, and EV system level control malfunctions. The fires can break out without warning and lead to explosion, with significant damage to lives and properties. Many fires happened when the EV is in parking or in charging. This had created serious safety issues. To first responders and law enforcement officers, this is very dangerous - since they may have to engage the EVs in close range under various circumstances, without knowing the condition of the LiB onboard the EV. There were serious accidents and lessons learned regarding EV /LiB fire hazards

JUSTIFICATION OR NEED

EV/LiB fires have catastrophic hazard potential. For heavy-duty e-trucks with huge LiB capacity (~500 kWh) it is particularly dangerous in the case of LiB fire and explosion with toxic gas release. So far, there have not been sufficient efforts in bringing up safety awareness and improving education on EV system safety. The lack of safety efforts in EV/LiB safety has left safety gaps - and that the industry must address the gaps in order to protect lives, esp. first responders and law enforcement from potential harm of EV fires

REQUEST FOR ACTION

General discussion and safety topic presentations by industry SMEs on (not limited to):

- Practical EV/LiB safety issues on the road, and in vehicle life cycle use (including off-road)
- Basic LiB safety topics and protection against potential EV fires with safety uncertainties
- Safety cautions, measurement/ diagnostics regarding situation involving EV/ LiB fires or potential fires
- Why holistic EV system level design, control, and operation strategies are important for safety
- What should be the important safety requirements for EV/ LiB providers
- How the CV community could collaborate to improve EV safety

ACTION TAKEN BY COMMITTEE

The HM Committee discussed this issue at the 2023 Fall Conference in Grapevine, TX and the 2024 Spring Workshop in Louisville, KY. Lithium batteries are a major concern of CVSA and PHMSA, and will continue to be addressed in future trainings.