



SUBMISSION FORM

All submission forms must include the following information. Separate submission forms must be turned in for each eligible program. **Deadline: July 1, 2023.** Please include this submission form with the electronic entry. If you do not receive an email confirming receipt of your entry within 3 days of submission, please contact [Gage Harter](#).

PROGRAM INFORMATION

County: Chesterfield County Virginia

Program Title: Lithium-Ion Battery Fires

Program Category: Criminal Justice and Public Safety

CONTACT INFORMATION

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Department: Chesterfield County Fire and EMS


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SIGNATURE OF COUNTY ADMINISTRATOR OR DEPUTY/ASSISTANT COUNTY ADMINISTRATOR

Name: Joseph P. Casey, Ph.D.

Title: County Administrator

Signature: 

VACO – Fire and EMS – Lithium-Ion Batteries- 2023

ABSTRACT OF THE PROGRAM:

Lithium-Ion battery fires, and the resulting hazardous materials environment, is an emerging threat to the fire service. When considering the rapidly rising demand for battery energy storage (electric vehicles, solar panel energy storage systems, and electric bikes/ scooters) the prevalence for disaster involving lithium-ion battery fires is rising. Lithium-Ion does not behave in ways that traditional firefighting techniques will resolve. Cutting edge education as well as new firefighting strategies and tactics must be developed.

PROGRAM DESCRIPTION:

Chesterfield County Fire and Emergency Medical Services, Chesterfield Virginia, is seeking to identify, implement, and establish best practices in addressing the fire and hazardous materials threats that Lithium-Ion batteries are presenting. This includes educational curriculums, policy, and procedure development, as well as adapting cultural norms from what has been done in the past to what is needed now and into the future.

This initiative began in November 2021 when several firefighters noticed that fires involving Lithium-Ion batteries, either the EV/ Hybrid type vehicles or the electric scooters, were not behaving as traditional fires made of similar materials do. This was noted in fires observed on social media, internet videos, plus hands on/ real life experiences.

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This newly created awareness compelled staff to begin to search out an understanding the scope of the Lithium-Ion battery issue. The Energy Security Agency was contacted in June of 2022 to provide awareness and operations level education on the topic of hybrid/ EV vehicle fires. This small group of firefighters became the core group of instructors to provide this information to the department. As we gained an understanding of the problem, we realized that automobiles were only half the issue. This resulted in a fact-finding mission to New York City Fire Department in September of 2022. On this trip we investigated small devices, hoverboards, E-Bikes, scooters, and large-scale battery storage facilities.

With the newly acquired information, a department wide education program was delivered to all members. This information was presented to the general membership during the fall 2022 in-service cycle.

Our current understanding of the issue and the newly developed strategies and tactics to mitigate the hazards are expected to evolve as a greater understanding of the problem is achieved. The project team is still working on multiple other items such as residential solar, commercial solar farms, battery energy storage facilities, EV charging stations, tow company training and storage of damaged EVs in tow lots.

The direct recipients of this program are firefighters within Chesterfield County Fire and Emergency Medical Services. The indirect recipient of this program is the community we serve. This includes the 379,041 residents, their guests, as well as those traveling through Chesterfield County, Virginia.

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The Department has fully supported this effort. This translates to staff time, travel expenses for the benchmarking with other agencies, and staff time to develop a training curriculum. Ongoing problem solving continues as new strategies and tactics are being developed, tested, and retooled to best fit our needs.

PROGRAM COST:

The department engaged the Energy Security Agency to provide train-the-trainer type material for the educational effort. This cost \$15,000. In addition, the department realized the manpower costs to provide our routine in-service cycle. Each year our department provides three in-service opportunities. At each of these in-service educational experiences, all operational staff, uniformed firefighters, officers, and chief officers, are scheduled to attend. This requires 33 sessions that necessitate the costs of hiring back instructors to provide the education.

This cost would vary based upon the size and scope of each department.

PROGRAM RESULTS/SUCCESS:

The program has successfully delivered the initial awareness level training. In addition, staff has continued to collaborate to develop sound strategies and tactics necessary for the mediation of Lithium-Ion battery fires. Policy and procedures are in the process of being developed and implemented. To date the dispatch protocols

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for automobile fires has expanded to notate if a hybrid or battery powered vehicle is involved.

WORTHINESS OF AWARD:

Within the fire service, the science behind Lithium-Ion fires is new and ongoing. Much is being learned about Lithium-Ion battery fires and resulting haz-mat conditions daily. No known long standing knowledge base for Lithium-Ion fires is in existence. Without this cutting edge research and development our department would be woefully unprepared to address this dangerous and emerging issue.