

The Story of Why We Need Safe Battery Management Stewardship Fact Sheet

Issues with the Current State of Battery Collection in California

California classifies batteries as hazardous waste due to the presence of heavy metals and corrosive materials that batteries contain. Due to this classification, batteries are required by law to be safely disposed at specific collection centers instead of being included with regular solid waste sent to landfills. But batteries continue to end up at waste management facilities (landfills and material recovery facilities) posing fire, health, and safety hazards. Unfortunately, most batteries and battery-embedded products lack a convenient and efficient collection and recycling mechanism in California, increasing the potential of mismanagement ⁽¹⁾.

Rising Threat of Fires Caused by Batteries in Waste Facilities

Batteries pose a serious fire hazard; they destroy around one facility per month throughout the country ⁽¹⁾. In a study by the California Product Stewardship Council (CPSC) in 2018, of the 26 waste facilities throughout California that responded to the poll:

- 83% of respondents had had a fire in the prior two years ⁽¹⁾⁽²⁾.
- Batteries accounted for 65% of the recorded fires ⁽¹⁾⁽²⁾.
- Lithium-Ion batteries were of particular concern, causing 40% of those fires ⁽¹⁾⁽²⁾.



Picture: Fire started by battery improperly disposed in recycling at Shoreway Environmental Center Materials Recovery Facility costing the facility \$6.8 million in



Picture: Demonstration of how easily a fire can be started by being run over by a forklift at a waste facility (Source: ReThinkWaste)

As new battery varieties and battery-embedded items enter the waste stream, waste management facilities and collection vehicles around the U.S. have seen an upsurge in fires, mainly caused by batteries. Simply being jostled incorrectly as it makes its way down the sorters and conveyor belts is enough for a battery to get punctured and spark a spontaneous eruption ⁽³⁾. However, many fires at in hauling vehicles, or at waste management and processing facilities may not be reported to fire departments and insurance companies ⁽¹⁾. Fire Rover reported that 317 fires were recorded in the U.S. and Canada at waste and

recycling facilities in just 2020 alone, but they estimate the actual number of fires to be over 1,800. These fires were catastrophic, causing 23 injuries and 3 deaths ⁽⁴⁾.

1. California Product Stewardship Council. 2021. Battery Fire Report 2021. https://www.calpsc.org/files/ugd/ad724e_a657ac2415bc425ea7d962cba46bbb6c.pdf
2. California Product Stewardship Council. 2018. Fire Incident Survey Results 4/9/18. https://www.calpsc.org/files/ugd/ad724e_312a645a03374a038119f5e7790dc79a.pdf
3. Carleston, Audrey. 2022. Lithium Battery Fires Are Threatening Recycling as We Know It. Vice. <https://www.vice.com/en/article/xgdvpk/lithium-battery-fires-are-threatening-recycling-as-we-know-it>
4. Fire Rover. 2021. 4th Annual Reported Waste & Recycling Facility Fires US/CAN. https://www.calpsc.org/files/ugd/ad724e_18c3f921cac2447cb47a6188d2d15ab0.pdf
5. EPA. 2021. An Analysis of Lithium-ion Battery Fires in Waste Management and Recycling. https://www.calpsc.org/files/ugd/ad724e_3146ff0cd722499b98e973b0188deca9.pdf

Rise in Battery-Embedded Products in the Market

Lithium-ion batteries (Li-ion) are high-capacity, low-cost, and lightweight energy sources that power a wide range of devices and portable equipment ⁽⁵⁾⁽⁶⁾. By 2025, it is expected that the Li-ion market will reach \$98 billion ⁽¹⁾. However, these batteries are often embedded and irremovable from products leading to an estimated 75-92% of Li-ions being improperly disposed ⁽⁶⁾⁽⁷⁾. Li-ion batteries are often tossed in the blue recycling bins, with more than 26 tons ending up in RethinkWaste’s region alone each year ⁽³⁾. In an analysis of lithium-ion battery fires in waste management and recycling by the EPA and Fire Rover respectively:

- 245 fires across 64 waste facilities occurred between 2013-2020 started specifically by Li-ion batteries ⁽⁵⁾.
- Fire Rover estimates the damage occurred by lithium-ion batteries to be over \$1.2 billion annually just in the U.S. and Canada ⁽⁴⁾.

As demand continues to increase for Li-ions for electric vehicles, energy storage systems, and portable electronics, we are likely to see a drastic increase in Li-ions in the waste stream ⁽⁵⁾.



Picture: Burnt batteries from a fire caused by batteries in the recycling stream at the Burbank Recycling Center (Source: City of Burbank)

Growing Costs Are Unsustainable for Public Agencies

An emerging source of battery waste is e-cigarettes which often contain lithium-ion batteries ⁽⁸⁾. While small, e-cigarettes are much more quickly consumed and discarded, even more rapidly than other electronic devices, leading them to become an increasing concern for waste managers. In a study by the CDC on e-cigarettes, between 2014-2020, e-cigarette sales increased by 122% leading to 17.1 million units being sold every 4 weeks by 2020 ⁽⁹⁾.



Picture: Tobacco product waste containing lithium batteries collected from the parking lot of a local high school in California (Source: Dr. Jeremiah Mock)

Battery EPR in Canada Can Be Replicated in California

The Canadian Government first proposed extended producer responsibility (EPR) for batteries in 2019 under the Resource Recovery and Circular Economy Act and finalized regulations in early 2020 with specifics on how the EPR was to work. It put in place a new framework that made individual battery producers responsible for the collection and end-of-life management of batteries. Battery producers are required to establish a free collection network for consumers, promote management requirements through reduction, reuse, and/or recycling activities, and provide promotion and educational materials to increase consumer awareness. In addition, beginning in 2023, battery processors must have an average recycling efficiency rate of at least 70% for rechargeable batteries, and at least 80% for primary (non-rechargeable) batteries ⁽¹⁰⁾.

If battery EPR can work in Canada, why not here in California?

6. SB 289 (Newman): Better Battery Recycling and Fire Risk Reduction. 2021. https://www.calpsc.org/files/ugd/ad724e_675765c6695240b4ae338a08030e7c18.pdf
7. CPSC Coalition Letter of Support. 2021. https://www.calpsc.org/files/ugd/ad724e_18d6aa5fb8c24a3b8b7ecb9d68d0e94a.pdf
8. Mock, J., & Hendlin, Y.H. (2019). Environmental Contamination from E-cigarette, Cigarette, Cigar, and Cannabis Products at 12 High Schools — San Francisco Bay Area, 2018–2019. *Morbidity and Mortality Weekly Report*, 68, 897 - 899.
9. CDC. 2020. E-cigarette Unit Sales, by Product and Flavor Type — United States, 2014–2020. *Weekly*. 69(37):1313–1318
10. Recycling Council of Ontario. 2021. Extended Producer Responsibility for Batteries. <https://rco.on.ca/extended-producer-responsibility-for-batteries/>