



Mid-Format Batteries Working Session: Consumers Information Needs and Safety Concerns

October 30, 2024

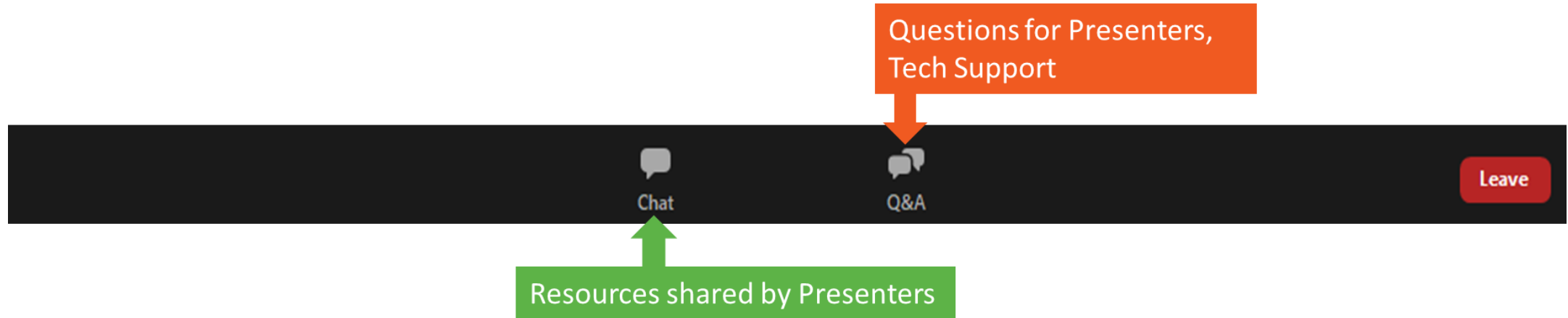
U.S. Environmental Protection Agency (EPA)



Logistics and Agenda Review

Pat Tallarico, ERG Team

Webinar Logistics



- **To ask a question:** Type your questions for presenters in the Q&A box. We will answer questions at the end of each presentation.
- **Technical difficulties:** If you are having technical difficulties, please send a message through the Q&A box or email hannah.rosenberg@erg.com



Agenda Overview

1. Opening Remarks, Logistics, Agenda Review, and Background
2. Battery and Black Mass Imports and Exports
 - **Jana' Deming**, U.S. Environmental Protection Agency (EPA)
3. CPSC Safety and Labeling Standards
 - **Jay Kadiwala**, U.S. Consumer Product Safety Commission (CPSC)
4. FDNY Micromobility Safety Initiatives and Take Back Program
 - **John Orlando**, retired, New York City Fire Department (FDNY)
5. Lead-Acid Battery Collection and Consumer Education
 - **Roger Miksad**, Battery Council International (BCI)
6. Wrap-up and Next Steps



Background

Ellen Meyer, U.S. Environmental Protection Agency (EPA)

EPA's Ongoing Battery-Related Projects

Separate but complementary requirements in the Bipartisan Infrastructure Law (BIL):

- **Battery Collection Best Practices** to identify and increase accessibility to battery collection locations, promote consumer education, and reduce hazards from improper disposal [Sec. 70401(b)]
- **Voluntary Battery Labeling Guidelines** to improve battery collection and reduce battery waste by promoting consumer education and reducing safety concerns related to improper disposal. [Sec. 70401(c)]



Vision for EPA's Resources & Guidance

Battery Collection Best Practices

- EPA will develop best practices for state, tribal, and local governments to recycle batteries in a manner that is:
 - Technically and economically feasible
 - Environmentally sound and safe
 - Optimizing value and use of materials, including critical minerals
- Anticipated resources for publication in 2025 and 2026
 - Best practices guidelines
 - Tailored outreach materials
 - Case studies



Vision for EPA's Resources & Guidance

Voluntary Battery Labeling Guidelines

- EPA aims to develop guidelines for labels that will:
 - Identify battery collection locations
 - Educate consumers about recycling opportunities
 - Reduce safety concerns from improper disposal
- Anticipated resources for publication in 2025 and 2026
 - Sets of written guidelines for various battery categories
 - Guidance will build on existing standards; emphasize good ideas; and address inconsistencies.



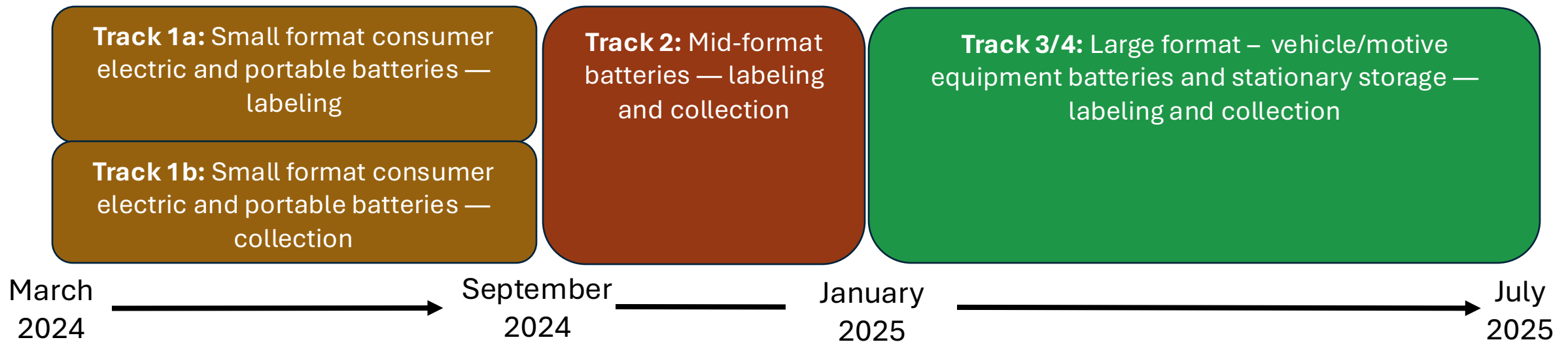
Scope of Batteries

Category	Small format consumer electric and portable batteries		Mid-format batteries	Large format vehicle and motive equipment batteries	Large format stationary storage batteries
Type	Single use (Primary)	Rechargeable (Secondary)	Rechargeable	Rechargeable	Rechargeable
Use	Removable or embedded in electronics and electric devices, such as watches, hearing aids, cameras, key fobs, toys, portable radios, flashlights.	Removable or embedded in electronics and electric devices, such as phones, computers, appliances, small uninterruptable power supplies (UPS), power tools, power banks.	E-mobility including e-bikes, e-scooters. Outdoor power equipment. Portable power stations.	All scales of automotive starting and motive vehicle batteries. Materials handling equipment (forklift, crane, etc.) Recreational (golf carts, marine equipment, recreational vehicles, etc.)	Residential, including power wall, backup generators. Grid, including utility, solar, wind. Off grid and microgrid. Commercial, including building systems, data centers, server rooms, medical and hospital equipment, retail backup power.



Conversation Timeline

- A sequenced approach to conversations
- Leveraging existing, in-person industry meetings to test ideas and share updates



Highlights from Work to Date

Pat Tallarico, ERG Team

Key Themes: Collection Best Practices

- Convenient and well-marked collection locations
- Consistent and diverse outreach
 - Drivers – preventing fires and keeping batteries out of landfills
 - Clear call to action
- Train employees at collection sites and be prepared to respond
- Ensure that materials are properly labeled and packaged for shipment
- Partnerships for program implementation
- Hub and spoke models for rural/remote communities



Key Themes: Labeling

- Label and collateral information should:
 - Help consumers:
 - Recognize a battery and products with batteries
 - Know what to do and not do with a battery at end of life
 - Help make collection sites aware of the type and state/condition of batteries
- Labels may help keep batteries out of the recycling stream, but other technologies may be more helpful for identifying batteries/battery containing products if they get through
 - Can't eliminate all hazards—be prepared for fires



Key Themes: Labeling

- Space is limited/Lots of required information already.
 - Labels should direct consumers to a website for more information.
- Modifying existing labels takes time.
- Use of "chasing arrows" recycling symbol can be confusing without more information.
- Color has had/may have limited utility.



Transitioning to Mid-Format

- Trend is to more electrification of equipment in the mid-format range (e.g., power tools, outdoor equipment, e-mobility).
- More power in smaller packages – longer battery life.
- Mid-format may be less likely to end up in landfills because of size of products.
- Transportation can get more complicated.
- Growing level of interest in regulating at the state level.
- Designating drop-off bins as "rechargeable" may get confusing to distinguish between small and mid-format.



Batteries and Black Mass Imports and Exports

Jana' Deming, U.S. Environmental Protection Agency (EPA)

US EPA Importing/Exporting Notification Process for Batteries and Black Mass

Mid-Format Batteries:

Consumers Information Needs and Safety Concerns Webinar

October 30, 2024

Janā Deming

U.S. EPA, Office of Resource Conservation and
Recovery

US EPA and Transboundary Movements of Hazardous Waste

- ▶ The Resource Conservation and Recovery Act (RCRA) is the law that gives US EPA the authority to control the transboundary movement of hazardous waste
 - ▶ Manifested hazardous waste
 - ▶ Universal wastes managed under 40 CFR Part 273
 - ▶ Specific hazardous wastes managed under 40 CFR Part 266 (e.g., SLABs)
- ▶ RCRA hazardous waste notifications are subject to Prior Informed Consent (PIC)
- ▶ US EPA international agreements for the importing and exporting of hazardous waste:
 - ▶ the OECD multilateral agreement
 - ▶ Bilateral agreements
- ▶ US EPA's Office of Land and Emergency Management (OLEM also commonly referred to as US EPA's Waste office) oversees processing of import/export notices, commonly 2,000+ / year
- ▶ The Waste Import Export Tracking System (WIETS) is the data system managing the workflow of import/export notices

US Import Notice Process

- ▶ EPA receives a US Import Notice
 - ▶ From the country of export when the waste is hazardous in that country
 - ▶ From the US importer when the waste is not hazardous waste in country of export but is RCRA hazardous waste in the US
 - ▶ If importer submitted notice, US EPA will confirm status of waste with the country of export
- ▶ After EPA completes review, responds back to the country of export and/or the US importer with determination (Consent, Objection, Neither Consent-Nor Object)
- ▶ All import notices submitted to US EPA are reviewed and will receive a response
- ▶ Hazardous waste importers must have an EPA ID# and are RCRA generators since they cause HW to become subject to RCRA

US Export Notice Process

- ▶ EPA receives a RCRA hazardous waste export notice from a US exporter through our electronic database system, WIETS
 - ▶ WIETS requires exporters to select the category of regulated RCRA hazardous waste to be shipped
- ▶ After EPA completes review (and if there are no issues), sends it to the Competent Authority of the destination country and any transit countries
- ▶ Once EPA receives a final determination from those countries, EPA relays that through WIETS and the exporter receives EPA's response letter via email

US Export Notice Process Cont'd

- ▶ Process for US export of waste hazardous in the country of import, but non RCRA Hazardous waste in USA
 - ▶ OECD's Mutatis Mutandis Principle
 - ▶ If the US does not consider a material to be hazardous waste under RCRA, the recovery facility or the importer submits notice to country of import's Competent Authority (CA)
 - ▶ In practice, the exporter oftentimes submits the notice to the country of import's CA

Exports and Imports of Spent Lead Acid Batteries and Universal Waste

- ▶ RCRA manifests are not required federally for Universal Waste or SLABs
- ▶ Export or import must comply with 40 CFR Part 262 Subpart H
 - ▶ Notification/AOC letter
 - ▶ Predeparture Automated Export System (AES) filing for exports
 - ▶ International movement document
 - ▶ Confirmation of receipt and completion of recycling or disposal
 - ▶ Exception reporting required if shipment rejected or returned
- ▶ Exporter must file annual report with EPA by March 1

Exports and Imports of Black Mass

- ▶ Black mass is not a universal waste and is no longer a battery. It is a solid waste.
- ▶ The constituents and properties of black mass will depend on the inputs to the shredding process as well as the specifics of the shredding process itself.
- ▶ Black mass could exhibit one or more characteristics of hazardous waste.
 - ▶ Until the recycling process is complete, it would remain a solid waste that may be regulated under state and local solid waste requirements.
- ▶ Though the most common metals used in lithium batteries do not appear on the list of contaminants that can make a waste exhibit the toxicity characteristic found in 40 CFR 261.24, contamination from other chemistries of batteries could result in black mass exhibiting the toxicity characteristic for a hazardous constituent such as cadmium.
 - ▶ EPA recommends careful sorting of battery chemistries to avoid contamination. In addition, the composition of the electrolytes, binders, and other additives to batteries could make the waste exhibit a hazardous characteristic.
- ▶ If the black mass exhibits a hazardous characteristic, export or import must comply with 40 CFR Part 262 subpart H.

Web Resources

▶ Hazardous waste import requirements:

- ▶ https://www.epa.gov/sites/production/files/2016-11/documents/final_20161104_flowchart_for_subpart_h_imports.pdf
- ▶ <https://www.epa.gov/hwgenerators/information-importers-and-receiving-facilities-resource-conservation-and-recovery-act>

▶ Hazardous waste export requirements:

- ▶ https://www.epa.gov/sites/production/files/2016-11/documents/final_20161104_flowchart_for_subpart_h_exports.pdf
- ▶ <https://www.epa.gov/hwgenerators/information-exporters-resource-conservation-and-recovery-act-rcra-hazardous-waste>

▶ Export/import of universal wastes and SLABs:

- ▶ <https://www.epa.gov/hwgenerators/requirements-transboundary-shipments-specific-wastes>

▶ Lithium Battery recycling:

- ▶ <https://www.epa.gov/hw/lithium-ion-battery-recycling>
- ▶ 2023 EPA memo on lithium battery recycling under RCRA (includes FAQs re black mass) <https://rcrapublic.epa.gov/files/14957.pdf>

Questions?

Export/Import requirements

Janā Deming

U.S. Environmental Protection Agency

Office of Resource Conservation and Recovery

RCRANotifications@epa.gov

Lithium battery/black mass/hazardous characteristics

batteries@epa.gov

CPSC Safety and Labeling Standards

Jay Kadiwala, U.S. Consumer Product Safety Commission (CPSC)



CPSC's Efforts on the Safety of Lithium-Ion Batteries in Micromobility Devices

October 2024

Presented By: Jay Kadiwala, Esq.
Electrical Engineer
Division of Electrical Engineer & Fire Sciences

***Disclaimer:** This presentation was prepared by CPSC staff. It has not been reviewed or approved by, and may not reflect the views of the Commission.*



Overview

- Electrical Product Safety
 - Fire and Shock Data
- Hazard Mitigation Strategies
 - Industry Consensus Standards
 - Technical Regulations
 - ASTM F963
 - Complying with Industry Consensus Standards
 - CPSC Data Systems
 - High-Energy Density Batteries Project
- Micromobility Product Safety
- CPSC Education & Outreach Activities

Electrical Product Safety

- Electricity is a powerful, useful energy source that is potentially hazardous.
- Electrical product failures or misuse can cause hazards, such as:
 - Fires
 - Electric shock
 - Thermal burns (from exposure to hot surfaces)
 - Chemical burns (from batteries),
 - Injuries (lacerations from moving parts) or
 - Loss of critical function (a smoke alarm not signaling a fire).
- Products that generate, distribute, or use electrical energy should be compliant with applicable regulations and standards and installed according to applicable electrical codes to help minimize safety risks to consumers from these products.

Electrical Fire Data

58,200 structure fires
from electrical equipment per year

490 deaths, 3,300 injuries
\$1.780 billion in property
losses per year

Top electrical causes of fires

1. Distribution systems, such as installed wiring
2. Cooking equipment, such as range/ovens, microwaves and small appliances
3. Heating and cooling equipment

¹ Average based on 2018-2020 data

Electric Shock Data

About 100 consumer product-related electrocutions per year



Top four involved products:

1. Fractal Wood Burning
2. Appliances
3. Electrical Outlet Boxes
4. Hot Tubs

¹ Average based on 2011 - 2020 data

Electrocutions have declined over time with increases in products incorporating double insulation, battery power, and the implementation of ground-fault circuit interrupters. There has been a recent uptick in electrocutions during the Covid-19 pandemic related to fractal wood burning.



Hazard Mitigation Strategies

Multipronged Approach

- Support improvements to industry consensus standards/codes
- Create and enforce technical regulations and bans
- Recall products with defects after identifying hazards through investigations
- Distribute safety information to consumers

Staff generally considers industry consensus standards to establish minimum levels of safety.

Hazard Mitigation Strategies

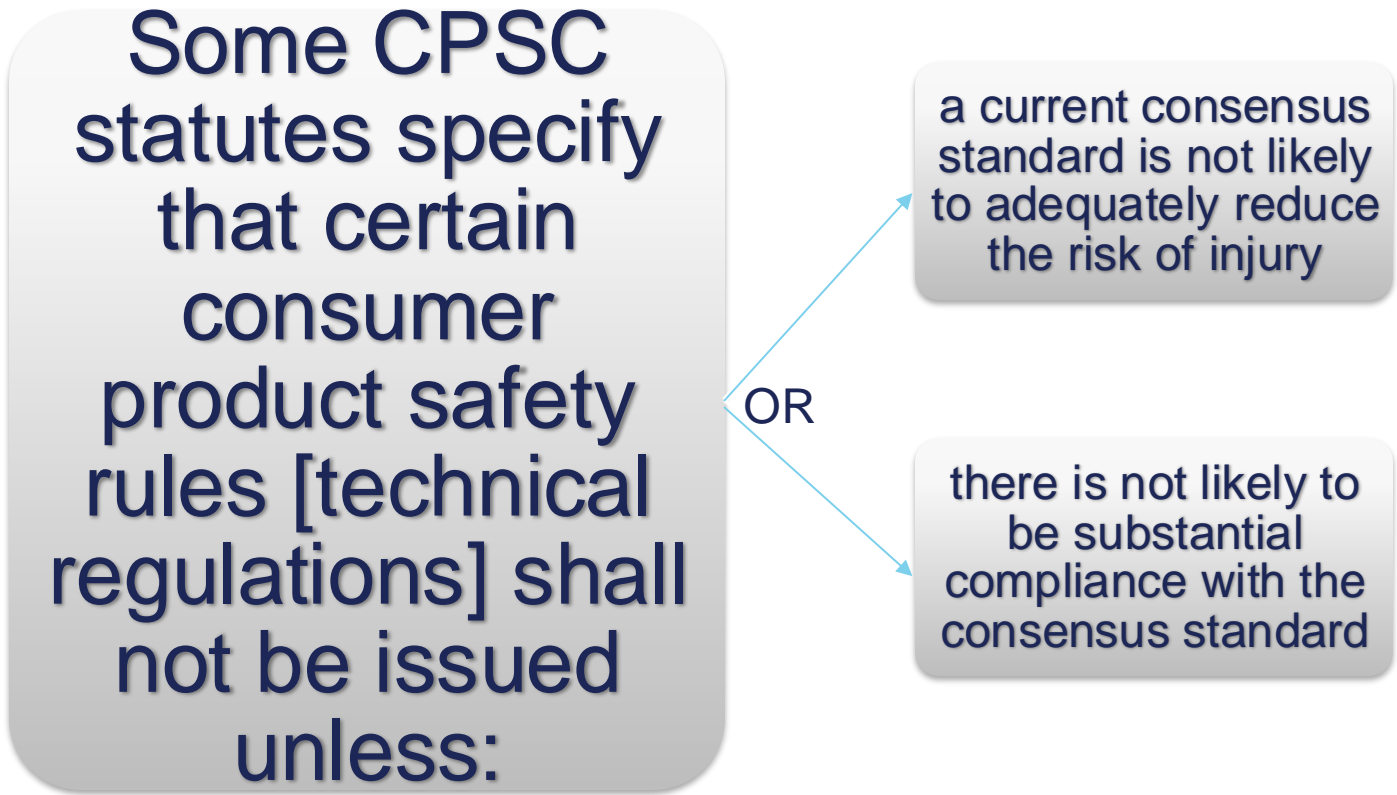
Industry Consensus Standards

Most electrical product safety standards have been developed and maintained under the auspices of UL Standards & Engagement* (ULSE). Other standards developers for electrical product safety include the Institute of Electrical and Electronics Engineers (IEEE) and the National Electrical Manufacturers Association (NEMA)

*Underwriters Laboratories (UL) prior to 2022

Hazard Mitigation Strategies

Technical Regulations



Check the CPSC statutes, regulations and website or contact CPSC staff to determine what requirements your product needs to meet:

<https://www.cpsc.gov/Business--Manufacturing>

Battery-operated toys, and electric toys are some electrical products subject to technical regulations.

Hazard Mitigation Strategies

Complying with Product Safety Requirements

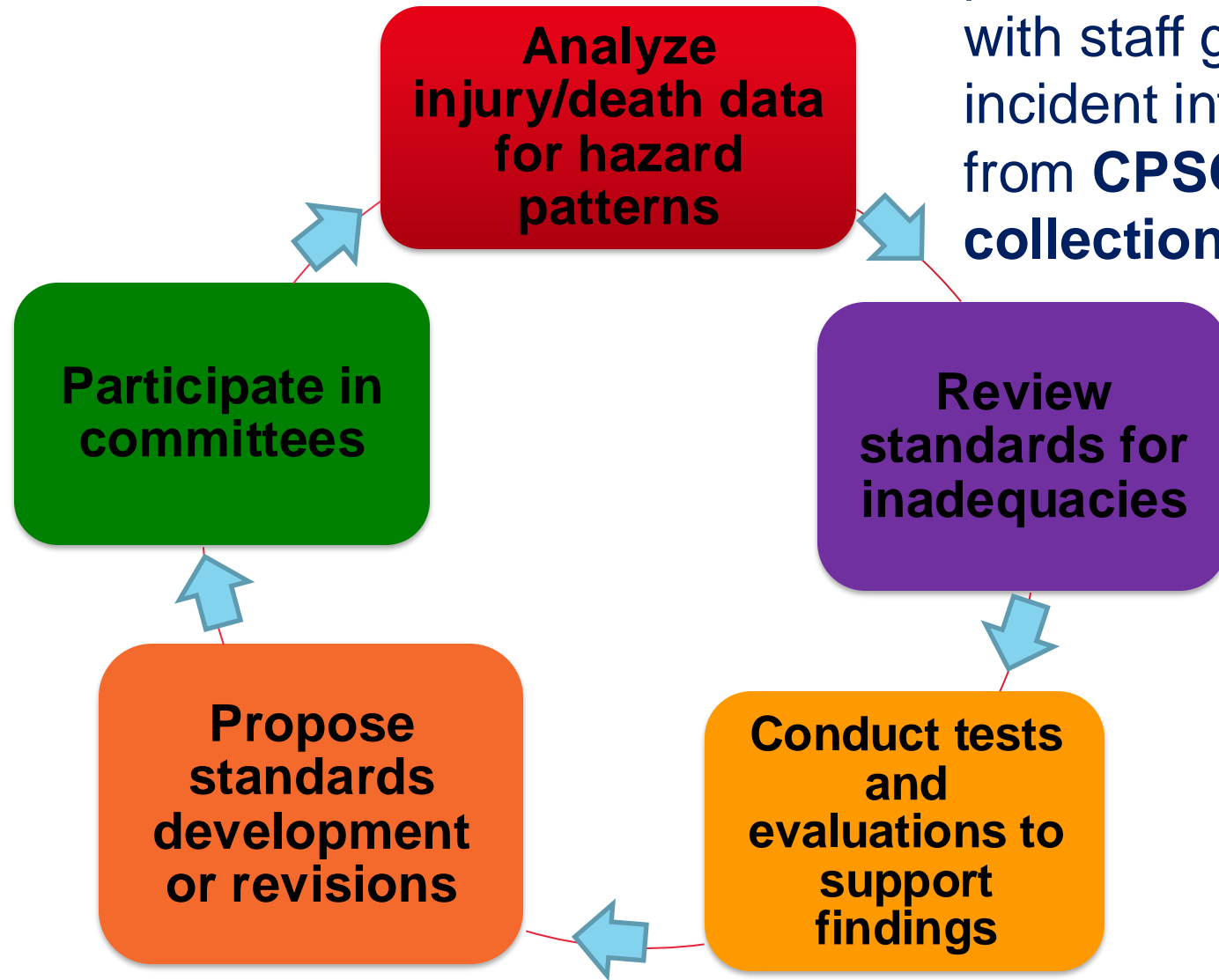
- Compliance with applicable regulations, standards, and the *NEC* are highly effective ways to mitigate hazards from equipment that generates, distributes, or uses electrical energy.
- CPSC statutes assign the responsibility for safe products to all parts of the supply chain.



- Importers, although reliant on foreign producers, are responsible for the safety of products they bring into the United States.

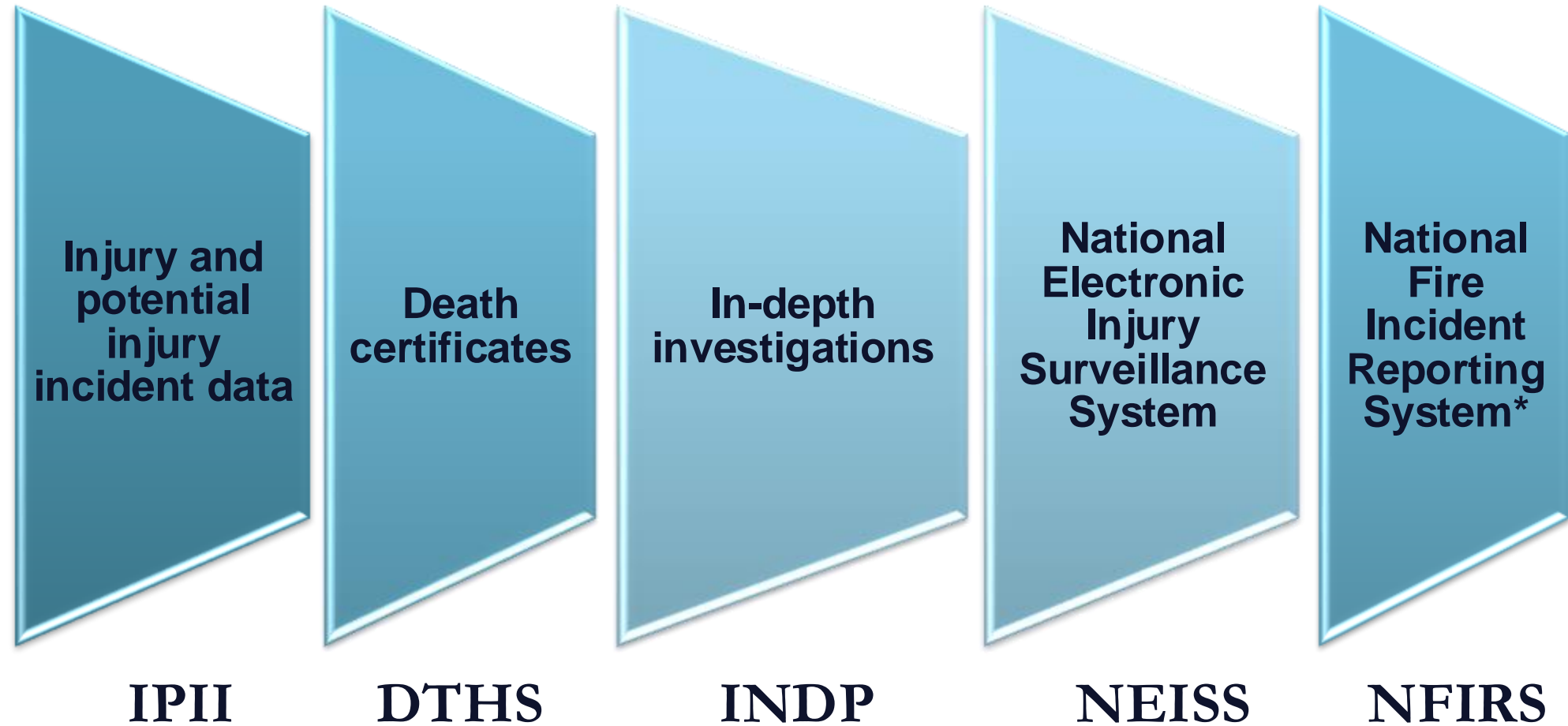
CPSC Staff Participation

CPSC Staff actively collaborates, through development and proposal of new or modified requirements, with standards developing organizations to maintain adequacy of safety standards, including addressing emerging hazards.



This is an ongoing process that begins with staff gathering incident information from **CPSC's data collection systems**.

CPSC Data



*NFIRS is operated by the United States Fire Administration

CPSC Hazard Mitigation Strategies

High-Energy Density Batteries Project

Since 2016, staff has been engaged in a project to address hazards associated with high energy density batteries in consumer products.

Efforts included consensus standards work, import surveillance and compliance, and industry, interagency, and intergovernmental cooperation. Staff issued two status reports on the project:

Status Report on High-Energy Density Batteries Project

February 12, 2018 - https://www.cpsc.gov/s3fs-public/High_Energy_Density_Batteries_Status_Report_2_12_18.pdf?UksG80UJqGY0q4pfVBkbCuUQ5sNHqtwO

FY 2020 Status Report and Action Plan for the High-Energy

Density Batteries Project March 2020 - https://www.cpsc.gov/s3fs-public/High%20Energy%20Density%20Batteries_Status%20Memo_FY20_1-6bCleared-04012020.pdf?Qj4t_otWKfBZYLpvu4l6sUvx9ZJfFc4f

CPSC Hazard Mitigation Strategies

High-Energy Density Batteries Project

CPSC sponsored the Naval Surface Warfare Center Carderock Division to conduct a study on lithium battery technology and an evaluation of mitigation techniques for multi-cell battery pack failures, issuing the following reports:

Emerging Energy Storage Technologies October 2020 -

https://www.cpsc.gov/s3fs-public/NSWCCD-63-TR-2020-39_Emerging-Energy-Storage-Technologies_DIS_A_VERSION_ForPostingVersion12012020.pdf?wYqrWGA rQLL53BlqSYr8RfCwb2eiznIT

Evaluation of Cell-to-Cell Propagation in Lithium-Ion Batteries Containing 18650 Sized Cells January 2020 -

https://www.cpsc.gov/s3fs-public/Consumer%20Product%20Safety%20Commission%20%28CPSC%29%20Staff's%20Statement%20on%20Naval%20Surface%20Warfare%20Center%2C%20Carderock%20Division's%20%28NSWCCD%29%20Report%20on%20%Evaluation%20of%20Cell-to-Cell%20Propagation%20in%20Lithium-Ion%20Batteries%20Containing%2018650%20Sized%20Cells%.pdf?KKybsoSCNBqeX46SxJbUq2NqkkzZk_Wd

Staff is continuing to evaluate means of mitigating multicell battery pack failures and is participating in a cooperative effort with Canadian and Mexican governments to evaluate power banks.

Micromobility Product Safety

What Is Micromobility?

“Personal Transportation”



“Convenient”



“Accessible”

“Last Mile Commuting Solution”

“Low Speed”



“Small Form Factor”

Micromobility and Consumer Safety

- Products
 - Self-balancing Scooters (hoverboards)/E-Unicycles
 - E-skateboards
 - E-bicycles
 - E-scooters
- Electrically powered
- Consumer-owned or “ride-share” fleet
- Generally, 32 kph / 20 mph speeds or lower



Guidance: E-Bikes and Personal E-Mobility Devices

- CPSC
 - 16 CFR Part 1512 *Requirements for Bicycles*
 - General Certificate of Conformity (GCC)
 - Children's Product Certificate (CPC)
- ANSI/CAN/UL 2849:2020
 - *Standard for Safety Electrical Systems for E-Bikes*
- ANSI/CAN/UL 2272:2016
 - Electrical Systems for Personal E-Mobility Devices
- Various other industry consensus standards, depending on design
 - Example: ASTM F2711 *Standard Test Method for Bicycle Frames*



Requirements and Guidance: Replacement E-Mobility Batteries

- UL 2271 – Batteries for Light Electric Vehicles
 - Allows manufacturers to use alternate batteries in their certified light electric vehicles without having to perform all of e-mobility tests of UL 2272 or UL 2849
 - Does not result in certification of the entire light electric vehicle, only that the battery pack can be used as a replacement with electrically same or similar ratings as the original battery pack qualified in the light electric vehicle



Requirements and Guidance

- CPSC Office of Compliance issues letter in December 2022
 - CPSC calls on manufacturers and importers of micromobility devices to be sold for consumer use to design, manufacture, and third-party certify the products for compliance with the applicable consensus safety standards
- CPSC Engineering Staff requests UL Standards & Engagement assemble working group to review UL 2272 and UL 2849 requirements for gaps



December 19, 2022

Dear Manufacturers, Importers, Distributors, and Retailers of Micromobility Devices for Consumer Use:

The U.S. Consumer Product Safety Commission (CPSC) is an independent federal regulatory agency responsible for protecting consumers from unreasonable risks of injury and death from consumer products.

As you may be aware, in recent years there has been a rise in fires and other thermal events involving micromobility products—including e-scooters, self-balancing scooters (often referred to as hoverboards), e-bicycles, and e-unicycles. From January 1, 2021, through November 26, 2022, CPSC received reports from 39 states of at least 208 micromobility fire or overheating incidents. These incidents resulted in at least 19 fatalities, including 5 deaths associated with e-scooters, 11 with hoverboards, and 3 with e-bikes. CPSC also received reports of at least 22 injuries that resulted in emergency department visits, with 12 of the injuries involving e-scooters and 10 of them involving e-bikes.

I am writing to urge you to ensure that the micromobility devices for consumer use that you manufacture, import, distribute, or sell in the United States have been designed, manufactured, and certified for compliance with the applicable consensus safety standards.¹ These safety standards include ANSI/CAN/UL 2272 – Standard for Electrical Systems for Personal E-Mobility Devices dated February 26, 2019, and ANSI/CAN/UL 2849 – Standard for Safety for Electrical Systems for eBikes dated June 17, 2022, and standards they incorporate by reference. The UL standards, which can be viewed for free and purchased from the UL Standards Sales Site,² were designed to reduce the serious risk of dangerous fires in these products. Compliance with the standards should be demonstrated by certification from an accredited testing laboratory.

Manufacturing these products in compliance with the applicable UL standards significantly reduces the risk of injuries and deaths from micromobility device fires. Consumers face an unreasonable risk of fire and risk serious injury or death if their micromobility devices do not meet the level of safety provided by the relevant UL standards. Accordingly, products that do not meet these standards could present a substantial product hazard under Section 15(a) of the CPSA, 15 U.S.C. § 2054(a), and, should CPSC's Office of Compliance and

¹ This letter supersedes the letter from Robert S. Kaye dated February 22, 2018, to Manufacturers, Importers, and Retailers of Self-Balancing Scooters.

² <https://www.ul.com/ProductDetail.aspx?productid=504272> (UL 2272); <https://www.ul.com/ProductDetail.aspx?productid=504289> (UL 2849).

U.S. Consumer Product
Safety Commission
4330 East-West Highway
Bethesda, MD 20814
cpsc.gov

National Product Testing
& Evaluation Center
9 Research Place
Rockville, MD 20850



February 10, 2023

Mrs. Diana P. Jordan
Chair, STP 2272 & STP 2849
UL Standards and Engagement
330 Pfingsten Road
Northbrook, IL 60062

Dear Mrs. Jordan:

The U.S. Consumer Product Safety Commission (CPSC) technical staff is requesting the formation of a joint working group under Standards Technical Panel (STP) 2272 - Electrical Systems for Personal E-Mobility Devices and STP 2849 - Electrical Systems for eBikes to identify potential improvements to ANSI/CAN/UL 2272 - Standard for Safety for Electrical Systems for Personal Micromobility Devices and ANSI/CAN/UL 2849 - Standard for Safety for Electrical Systems for eBikes to address incidents that have been occurring with e-scooters, self-balancing scooters, e-unicycles and e-bikes.

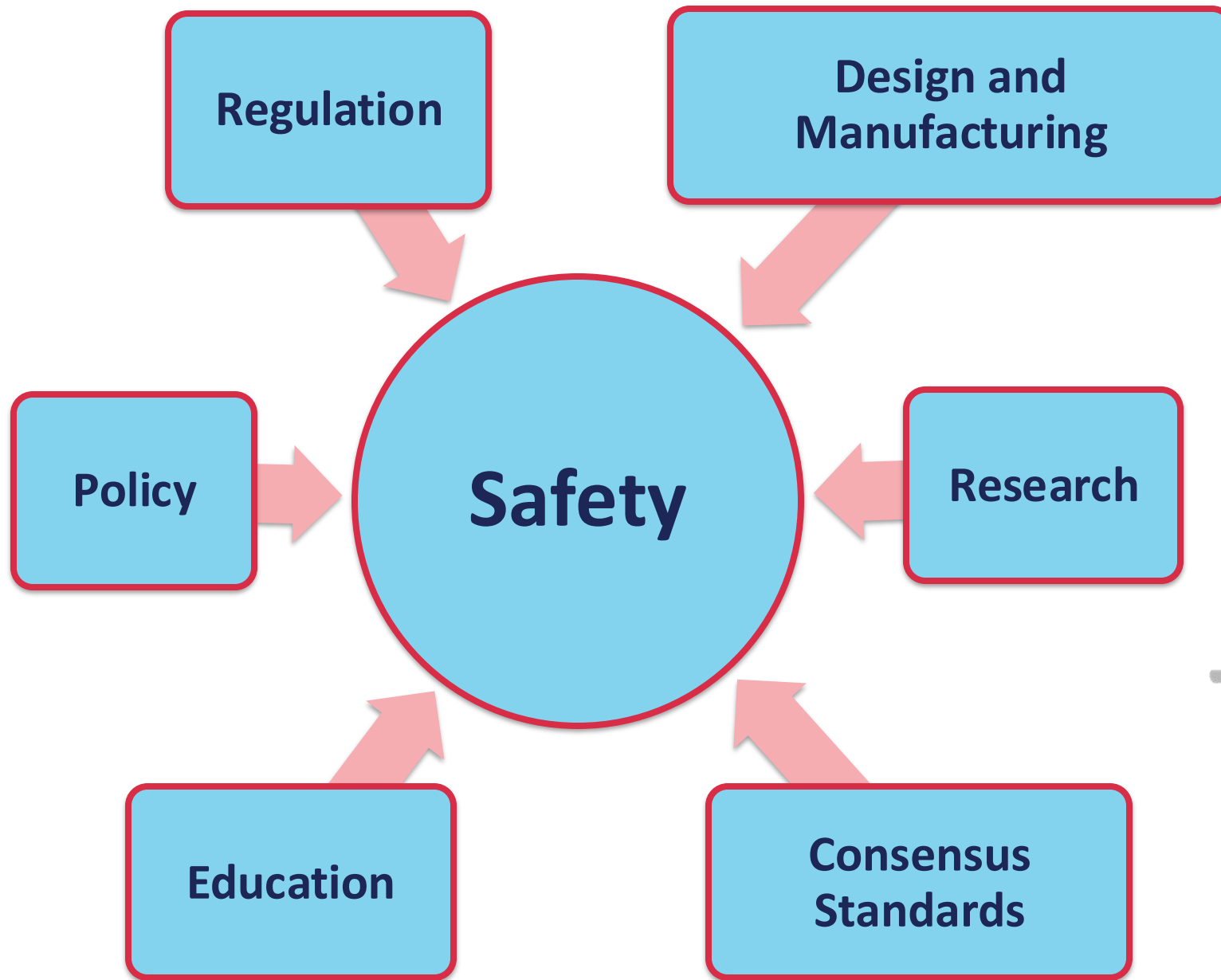
From January 1, 2021, through November 26, 2022, CPSC received reports of at least 208 hoverboard, e-scooter, and e-bike fire or overheating incidents from 39 states, resulting in at least 19 fatalities, including five associated with e-scooters, 11 with hoverboards and three with e-bikes. CPSC also received reports of at least 22 injuries treated in hospital emergency departments, with 12 involving e-scooters and 10 involving e-bikes, over that same period of time. In New York City, both the Fire Chief and City Council expressed to CPSC Chair Alexander Hoehn-Saric their support for strengthening protections against hazards from lithium-ion battery related failures in e-bikes and e-scooters (the Chair's response to the Council members is enclosed). On December 19, 2022, the CPSC Office of Compliance and Field Operations issued the enclosed letter to manufacturers, importers, distributors, and retailers of micromobility devices for consumer use to urge that their products comply with UL 2272 or UL 2849, as applicable, underscoring the CPSC's commitment to reduce fire risks of e-mobility devices.

Accordingly, the CPSC technical staff is requesting the formation of a working group to further strengthen the requirements in these standards. Following are specific topics that the technical staff recommends for inclusion in the working group discussions:

Requirements and Guidance: Children's Micromobility Products

- E-Scooters, Self-Balancing Scooters, E-Bikes (ages 12 and under)
 - Children's Product Certificate (CPC)
 - Third Party Testing by a CPSC-accepted Laboratory
 - Tracking Information
 - Lead Content Testing
 - Lead in Paint and Surface Coatings Testing
 - Small Parts Testing and Small Parts Labeling
- E-Bikes
 - 16 CFR Part 1512 *Requirements for Bicycles*





Enhancing Micromobility Safety



A bicycle, a kick scooter, and a motor scooter are shown in a faded, light blue color against a solid blue background. The bicycle is positioned in the upper center, the kick scooter is on the left, and the motor scooter is on the right.

CPSC Education and Outreach Activities

Outreach and Data Gathering: CPSC Micromobility Forum

- September 15, 2020
- Webinar with 200+ participants
- Topics:
 - Injury Data
 - Industry Consensus Standards
 - Best Safety Practices for Infrastructure
 - Micromobility Design and Research
 - Policy and Consumer Safety

The meeting log is located at: https://www.cpsc.gov/s3fs-public/2020-9-15%20%20Micromobility%20Forum.pdf?6UKIMounWEJXRQvhMQHi_gHakYEXQNsb



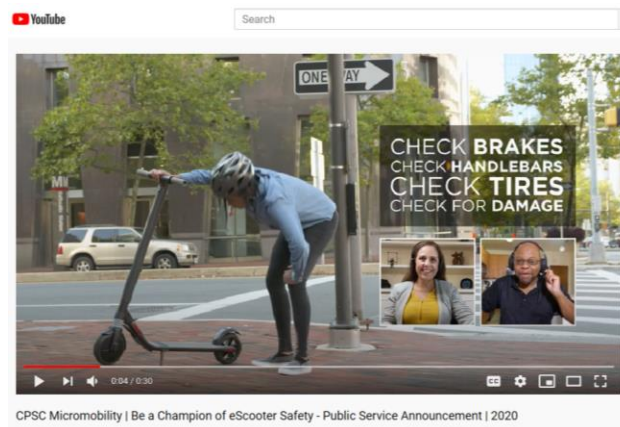
Outreach and Data Gathering: CPSC Micromobility Forum

- Recommendations from Participants
 - Continue Activity with Industry Consensus Standards
 - Work with Federal Government Partners
 - Build Relationships with Local Governments and Advocacy Groups
 - Examine Alternate and New Data Sources
 - Focus on fires in e-Bikes and other micromobility product fire risks



Consumer Outreach

- Information and Education Campaign
 - E-Scooter, E-Bike and Hoverboard Injuries and Deaths Are on the Rise; Celebrate National Fire Prevention Week with the Safe Use of Micromobility Products (October 2022)
 - Injuries Using E-Scooters, E-Bikes and Hoverboards Jump 70% During the Past Four Years (September 2021)
 - Hospital Emergency Room Treatment for Some Product-Related Injuries Rose During the Pandemic, Even as Overall ER Visits Dropped (March 2021)



https://www.youtube.com/watch?v=VGVP_4qlllI&feature=youtu.be

Notice of Proposed Rulemaking for Electrical Systems for Micromobility Consumer Products

- The Commission directed staff to prepare an NPR for FY24 to address lithium-ion battery fires associated with micromobility consumer products
- NYC passed a law, effective September 2023, requiring that personal e-mobility devices and e-bikes be certified to UL 2272 or UL 2849, and any replacement batteries sold be certified to UL 2271 (CA passed a similar law in September 2024)
- There is a separate ANPR for mechanical requirements for eBikes, published 3/15/24: [Federal Register :: Electric Bicycles; Advance Notice of Proposed Rulemaking; Request for Comments and Information](#)



CPSC Staff Reports

- “Micromobility Products-Related Deaths, Injuries, and Hazard Patterns: 2017–2023,” October 2024
- <https://www.cpsc.gov/Research--Statistics/Sports--Recreation/Micromobility-Products-Related-Deaths-Injuries-and-Hazard-Patterns-2017%E2%80%932023>
- “Safety Concerns Associated with Micromobility Products,” April 2020
- https://cpsc.gov/s3fs-public/Report-on-Micromobility-Products_FINAL-to-Commission.pdf?THHlorYXAZ.KiZnobh1o7.7.IN9nNCLo

For more information, please visit:

Agency Website: <http://www.cpsc.gov>

CPSC Information on Batteries:

<https://www.cpsc.gov/Regulations-Laws--Standards/Voluntary-Standards/Topics/Batteries/>

CPSC Public Calendar: <https://www.cpsc.gov/Newsroom/Public-Calendar>

Report Incidents : <https://www.saferproducts.gov/>

You also can join the consensus body of most if not all of the above-mentioned technical standards. Feel free to contact me or reach out to the consensus body for more information on how to join.



jkadiwala@cpsc.gov
Thank You!



FDNY Micromobility Safety Initiatives and Take Back Program

John Orlando, retired, New York City Fire Department (FDNY)

John R Orlando

President

ORLANDO SAFETY SOLUTIONS INC.

Supervising Fire Marshal

FDNY (retired)

JohnOrlandoFDNY@gmail.com

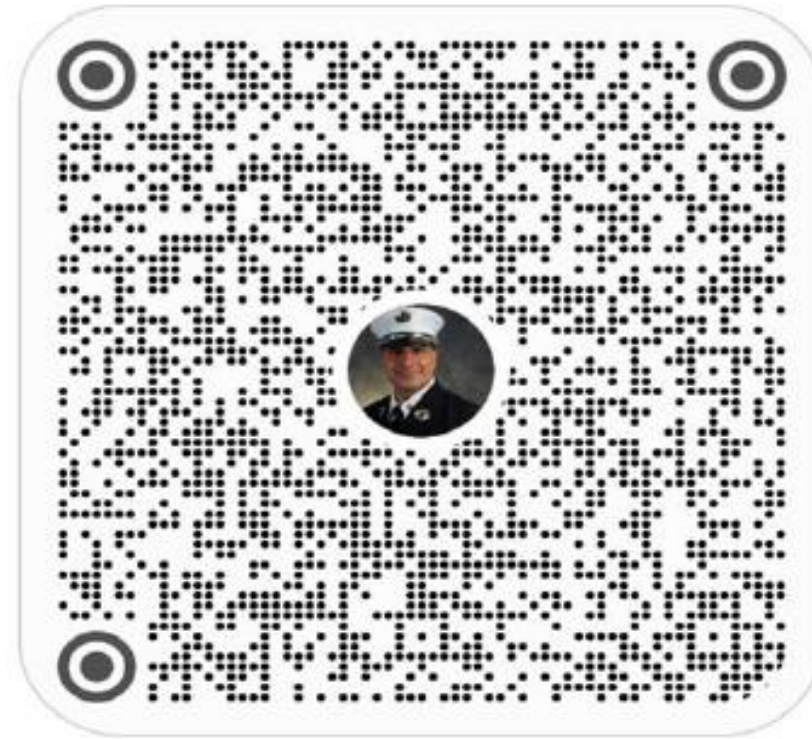


PUBLIC SAFETY RESOURCES

www.fdnysmart.org

www.youtube.com/@OfficialFDNY

John Orlando



Scan the QR code to add this contact

Lead-Acid Battery Collection and Consumer Education

Roger Miksad, Battery Council International (BCI)



Lead Battery Recycling: *A Success Story*

Roger Miksad | BCI President & Executive Director

rmiksad@battery council.org | October 30, 2024



BCI - Serving the Industry Since 1924

Members are engaged in all battery chemistries (lead, flow, lithium, sodium, etc) and include **manufacturers, recyclers, suppliers, distributors, retail, marketers, and consultants**. A focus on low-voltage vehicle; industrial; motive-power; ESS; UPS.

125+ Members

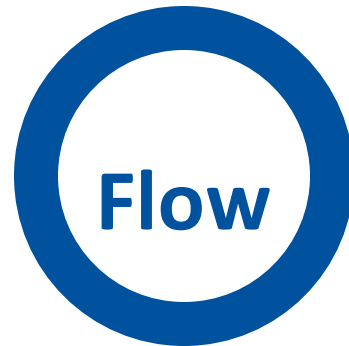
**\$33 billion+
member footprint**

Manufacturers: Battery Builders, Bulldog Battery, Bosch, Clarios, Crown, C&D/Trojan, East Penn Manufacturing, EnerSys, Enerya (Gohner), Leoch, Moura, Stryten Energy, Surrette, U.S. Battery, Yuasa, & more

Recyclers: Clarios, Corporacion Pipsa, East Penn, Ecobat, Element Resources, Gopher Technologies, M3 Resources, Sanders, Teck, Terrapure, & more



Serving America's rechargeable battery industry for 100 years



Transportation +
Power Sports



Telecom, Data Centers
+ Critical Systems



Industrial
Logistics



Power Grid + Energy
Storage

BCI Member Map

BCI members and partners operate more than 300,000 locations nationwide to distribute our products

-  Manufacturer
-  Recycler
-  Supplier
-  Distributor
-  Retailer HQ



Brief Statistics



160+ million units in 2023



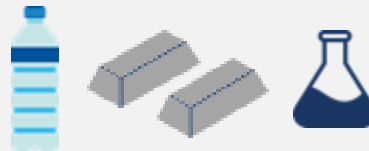
**~6.4 billion lbs of used
batteries per year**
2023 BCI Recycling Rate Study
(2.58 million metric tonnes)



**300,000+ retail
collection partners**



9 US Recyclers
5+ partner facilities in Canada + Mexico



99% end-of-life recycling
100% recycling of collected batteries



**85% of North American lead
demand met through recycling**

Common Categories of Lead Batteries

SSLA

2 - 12+ lbs

Motorcycle

15 - 30+ lbs

Automotive
/ Golf

25 - 100+ lbs

Industrial

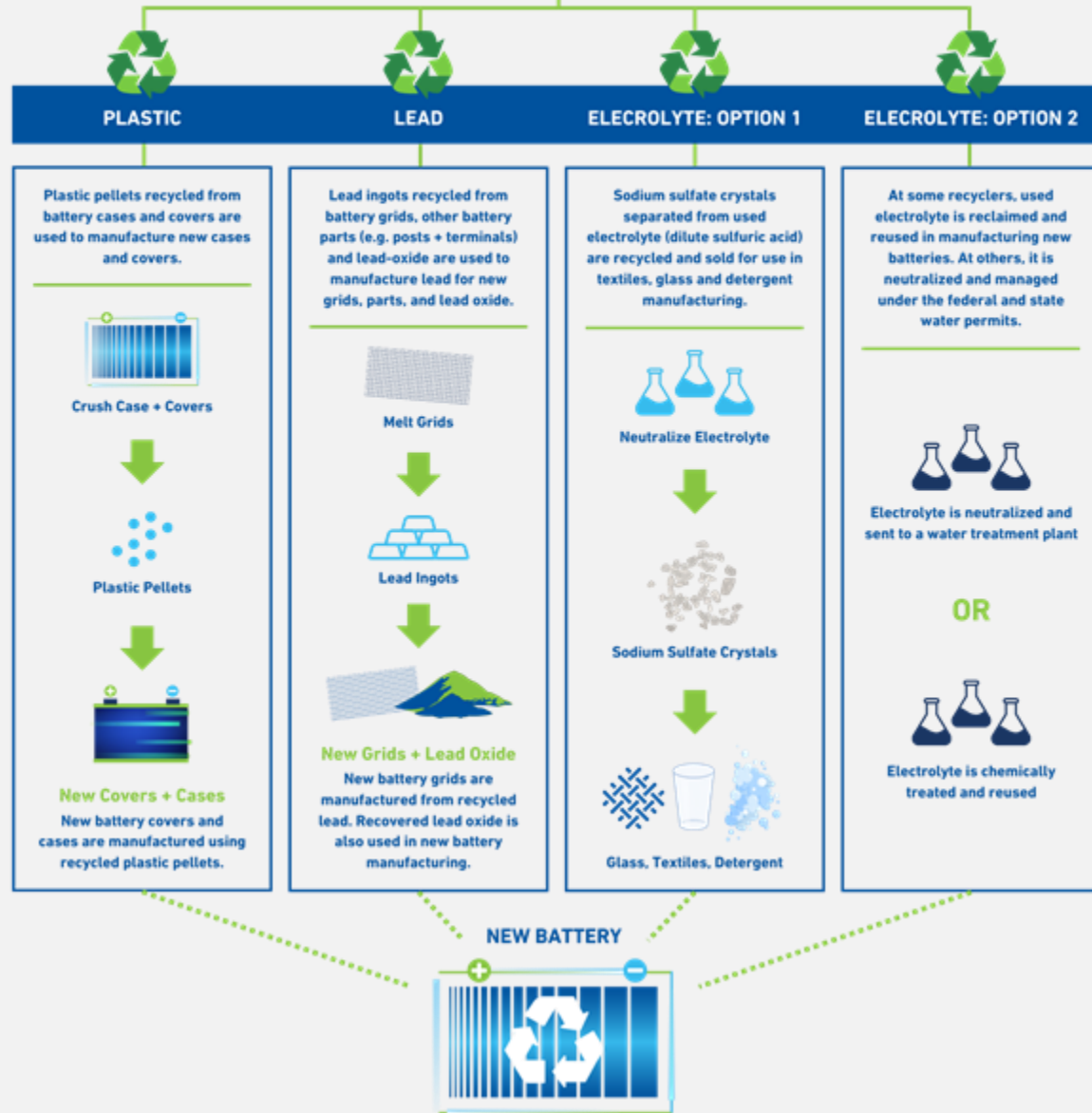
75 - 300+ lbs

Recycling for a Better Environment

TRANSPORTATION 
The same network that distributes new batteries also safely collects and returns used batteries for recycling.



At recycling facility, used batteries are broken apart and separated into components to begin recycling process.



Designed for Recycling

Lead

- Metallics (grids, posts, connectors)
- Oxides (active materials / paste)
- Recovered to Pb in secondary lead smelters
- ~95%+ used in new batteries

Plastics (float separation)

- Cases, separators, other components
- Cleaned, pelletized
- Used to make new cases

Acid

- Sulfuric Acid (~20-30% dilute)
- Option 1: Recovered to commercial chemicals
- Option 2: Reused in new batteries or neutralized

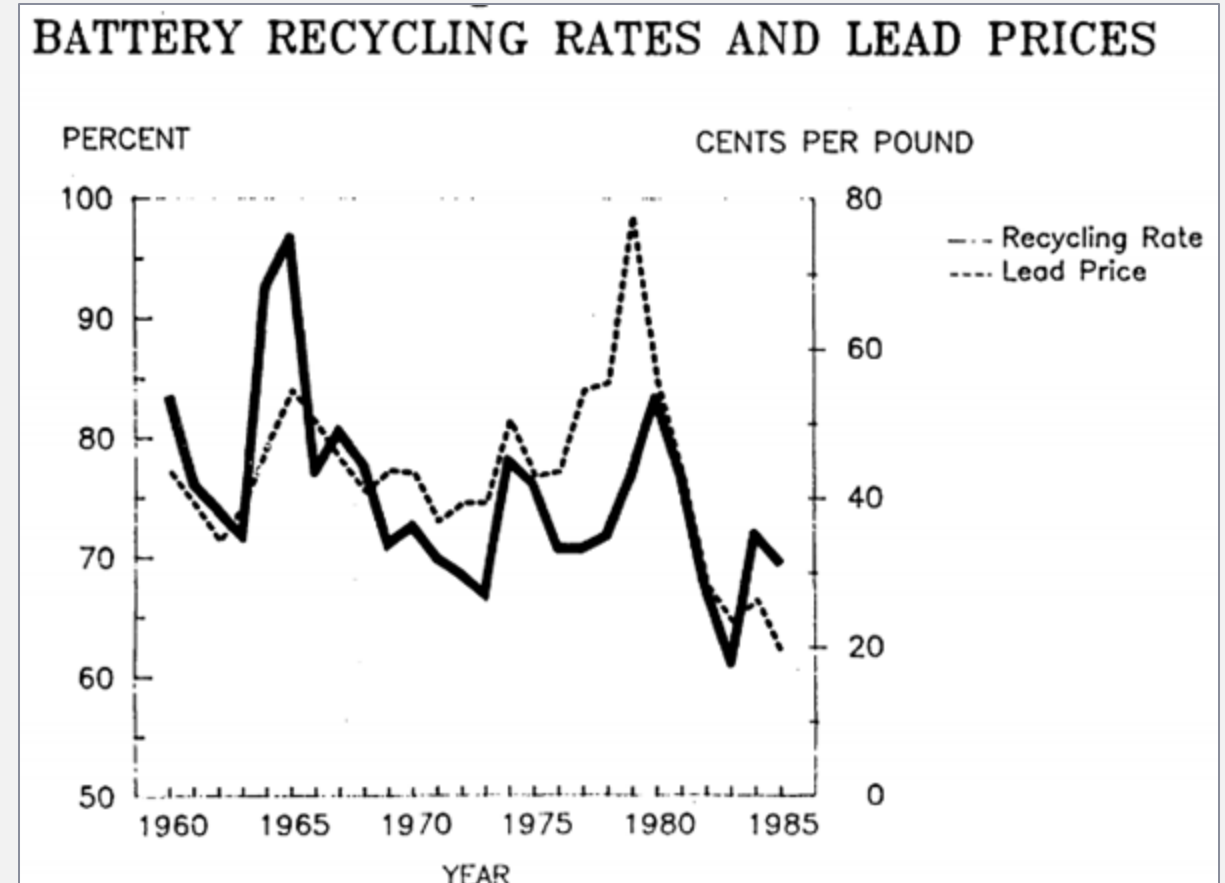
Historical Context

EPA Analysis - 1987

- Recycling linked to market price for lead metal
- HazWaste regs reduced recycling by eliminating capacity and increasing costs

BCI Consumer Survey - 1990

- 19% had a used car battery at home
- 60% knew lead batteries recyclable
- Primary reasons:
 - 33%: Saving for reuse (2nd car, hobby, boat, etc)
 - 32%: No time (e.g., convenience)
 - 15%: Tried, but can't find place
 - 5%: Saving to sell



Impacts of Lead Industry Economics and Hazardous Waste Regulations on Lead-Acid Battery Recycling (U.S. EPA, 1987)

Development and Adoption of the BCI Model Bill

BCI Developed Model Bill in late 1980s

- First battery EPR bill in the nation
- Available at www.batterycouncil.org/recycling

Consensus Bill

- Developed in cooperation with industry, state regulators, NGOs, and others

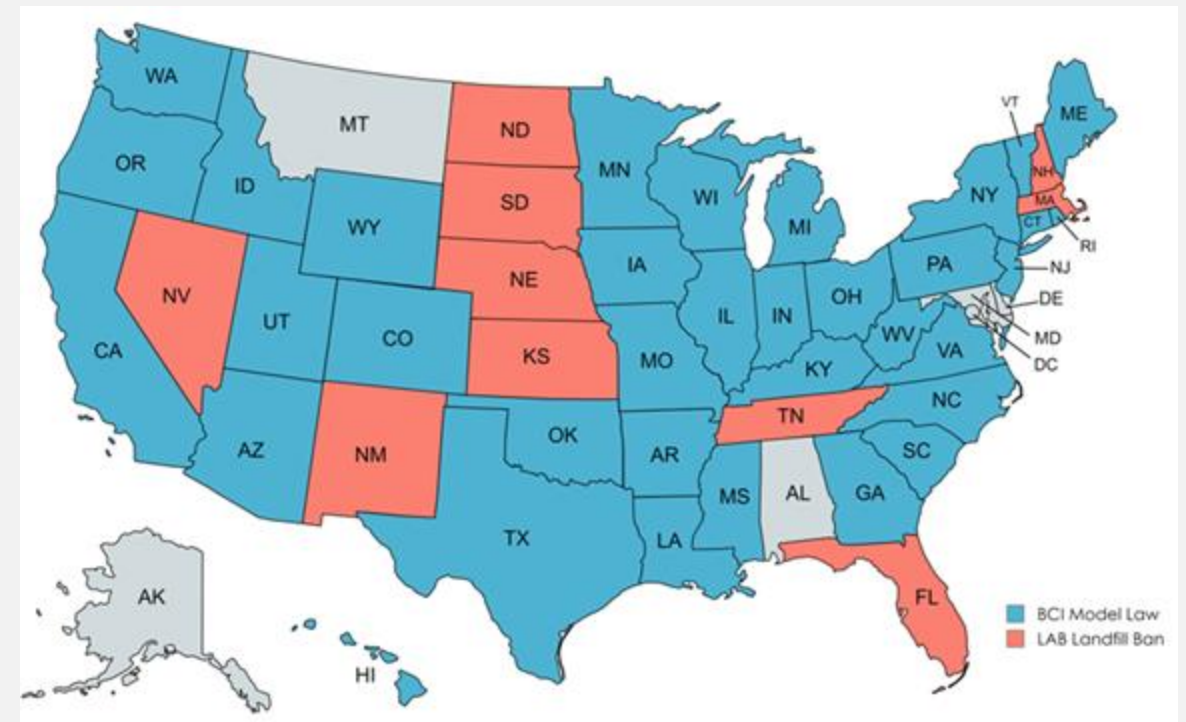
Fully industry funded

- no state subsidies
- no consumer disposal fees
- deposits fully refunded upon exchange

BCI sponsored sustained nationwide advocacy campaign

- ~30 states had adopted within the first decade

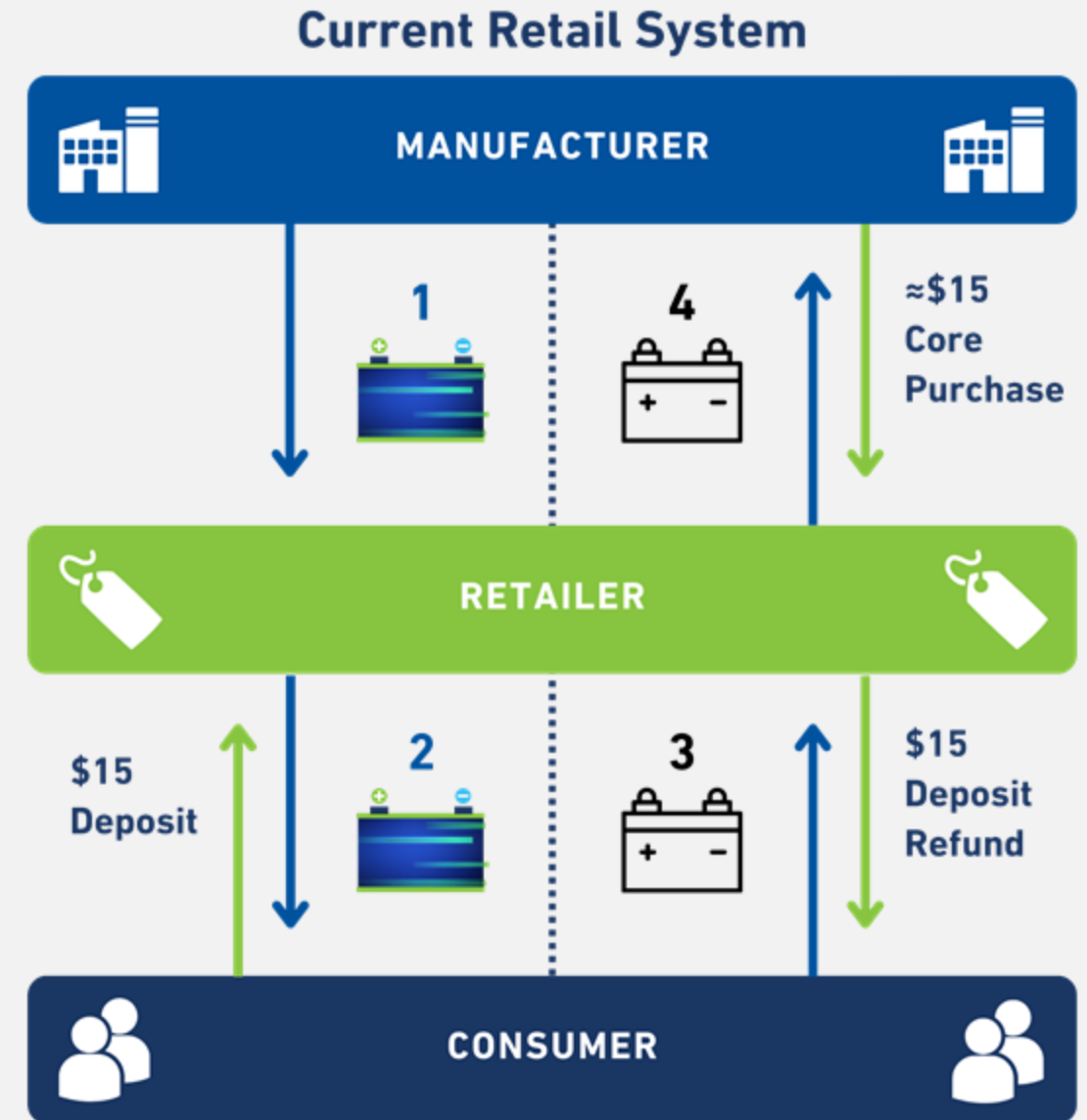
Current State Adoption



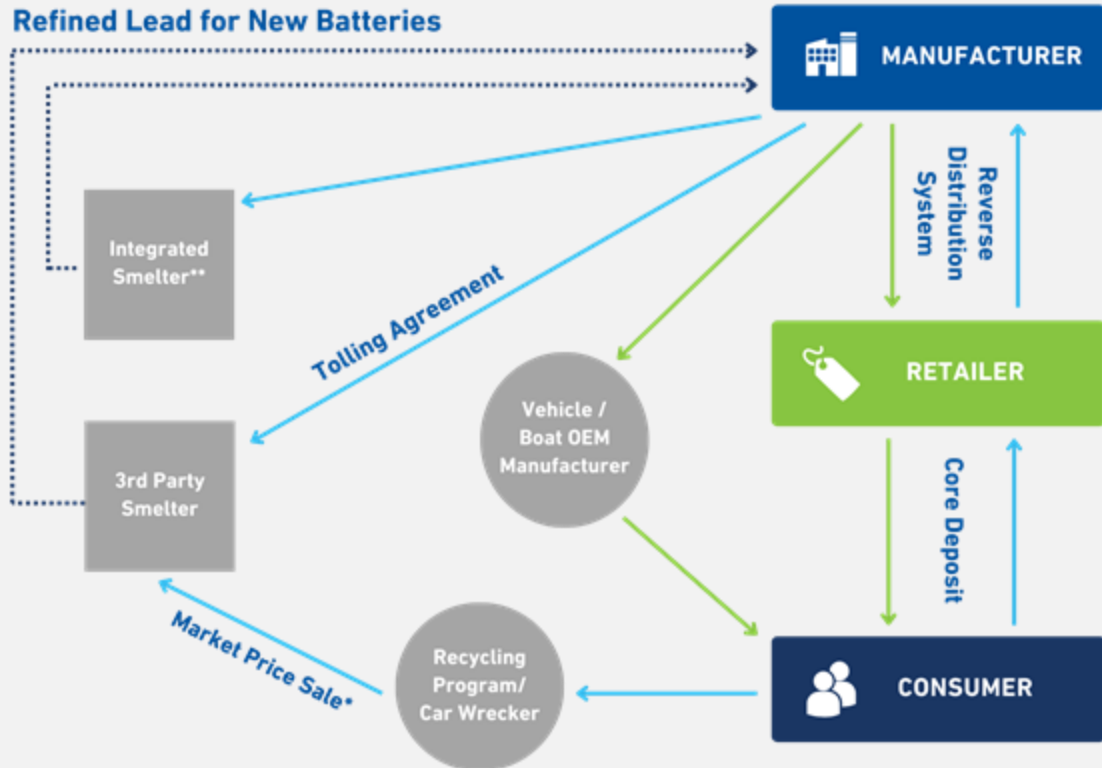
Key Elements of BCI Model Bill

- ✓ Prohibit disposal of batteries into municipal solid waste
- ✓ [Require / Allow] refundable return incentive deposit
- ✓ Require retailers to accept used batteries from consumers when new ones are purchased
- ✓ Require retailers to post notices informing consumers of State requirements
- ✓ Require battery manufacturers and distributors to accept used batteries from retailers when new ones are purchased

States' Efforts to Promote Lead-Acid Battery Recycling, (U.S. E.P.A., November 19, 1991)



Simplified SLI Lead Battery Recycling Chain



Used Battery Deliveries → New Battery Deliveries →

*Battery manufacturers and integrated smelters also may purchase Used Batteries at market prices.

**No tolling agreement if the smelter is owned by the battery manufacturer.

Lead Battery Recycling Chain

- Collects approx. **6.4 billion lbs** of used lead batteries per year nationwide
 - 3.8 billion lbs of lead
- Service **300,000+** retail collection locations
- Collect **160+ million** medium and large format batteries

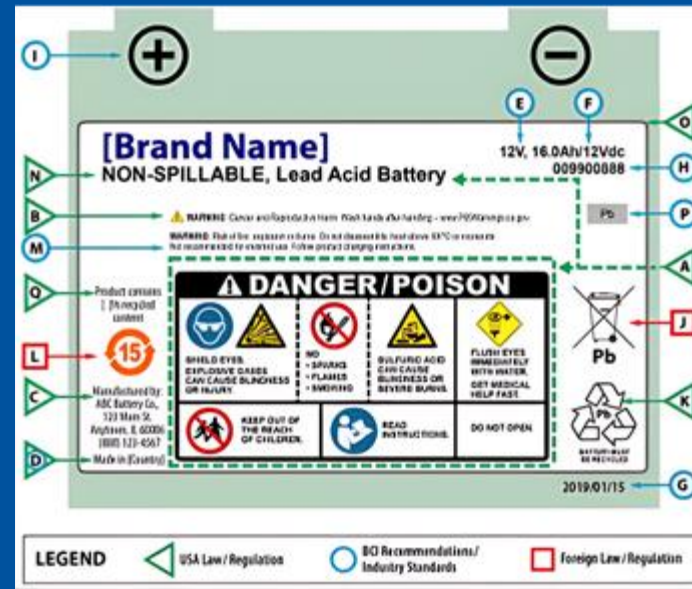
Consumer Education



BCI Battery Labeling Manual
available for purchase at
batterycouncil.org

Recycling symbol on batteries

Aligns with U.S.
Rechargeable Battery
Recycling Act



This dealer is required by law to charge a nonrefundable \$2 California battery fee and a refundable deposit for each lead-acid battery purchased.

A credit of the same amount as the refundable deposit will be issued if a used lead-acid battery is returned at the time of purchase or up to 45 days later along with this dealer's receipt.



Cal. Health & Safety Code § 25215.2(c); Cal. Code Regs., tit. 18, § 3230.

Signs in retail establishments

BCI and/or state
provides templates

BCI Recycling Studies (1990 - 2023)

National Recycling Rate Study



Methodology peer reviewed and cited by EPA

- Updated over time to account for changing market dynamics
- Transparent: methodology publicly available

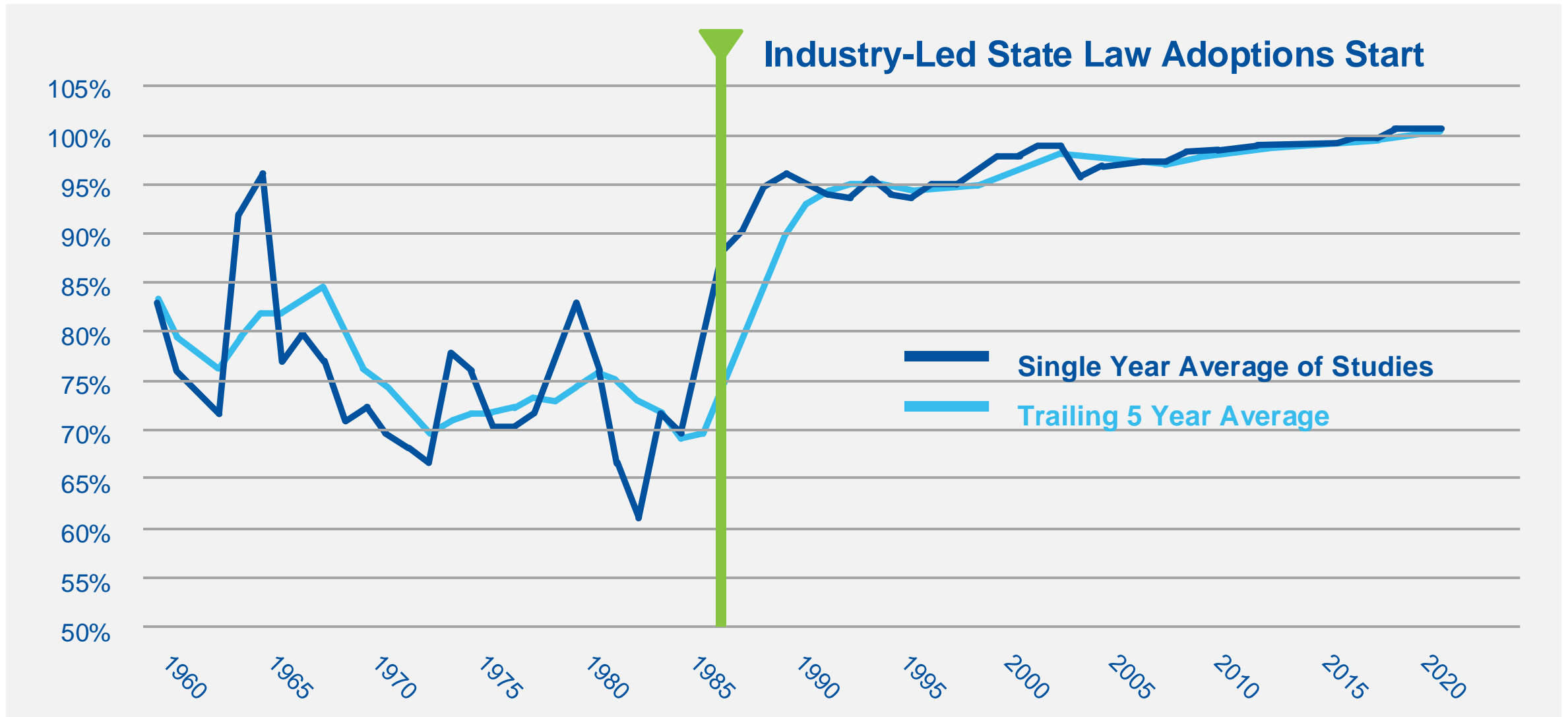
Mass Balancing Approach (Pb weight = ~66% total battery weight)

- Lbs Pb Produced at Recyclers / Available EOL Batteries
- Track sales by 200+ battery types
- Accounts for exports / imports
- 5-year moving average to account for market fluctuations

Latest Results

- 99% end-of-life collection
- 100% recycling of collection
- ~97% material recovery rate (lead, plastic, electrolyte)

Lead Battery Recycling Trends Over Time



Thank You!



Roger Miksad

President & Executive Director
Battery Council International

bc⁺i 2025
CONVENTION + POWER MART EXPO



May 4 - May 7, 2025
San Antonio, Texas



**Register
Today!**

*Sign up by Feb 1.
for the best rates.*



ESSENTIAL ENERGY EVERYDAY

Questions/Comments

Pat Tallarico, ERG Team

Wrap-up and Next Steps

Pat Tallarico, ERG Team

Ellen Meyer, U.S. Environmental Protection Agency (EPA)

Mid-Format Consumer Electric and Portable Batteries Working Sessions

Past Webinars

Mid-Format Batteries	Meeting Topic	Meeting Date	Meeting Time	Format
Labeling and Collection	Current Policies, Practices, and Trends	September 12, 2024	2:00-4:00 PM EDT	Virtual
Labeling and Collection	Role of Manufacturers and Retailers in Promoting Safer Use and Management	October 15, 2024	2:00-4:00 PM EDT	Virtual
Labeling and Collection	Consumer Information Needs and Safety Concerns	October 30, 2024	2:00-4:00 PM EDT	Virtual

Upcoming Webinars

Mid-Format Batteries	Meeting Topic	Meeting Date	Meeting Time	Format
Labeling and Collection	Expanding End-of-Life Management	November 21, 2024	2:00-4:00 PM EST	Virtual



Next Steps

- Register for the November 21 Mid-Format Battery Recycling: Ensuring Safe End-of-Life Management Working Session
- Registration Link:
https://www.zoomgov.com/webinar/register/WN_M83J4f8YQrWaaREht2Oa3A
- Email batteries@epa.gov if you have an interesting story to tell about battery collection



Questions and Answers from the Webinar

Jana' Deming, U.S. EPA

If the batteries or waste products with embedded batteries waste (e.g., electronic waste, e-scooters, etc.) that are manifested RCRA hazardous wastes were exported for recycling out of the country, must they pay to submit a RCRA manifest?

The generator of RCRA manifested hazardous waste do not have to pay to submit a RCRA manifest for an export shipment of hazardous waste – the export manifests are not required to be submitted to the manifest system yet. The recent final rule adding export manifests came out over the summer. Info about that is available at <https://www.epa.gov/e-manifest/final-rule-integrating-e-manifest-exports-and-other-manifest-related-reports-pcb>

Are there any data about fires caused by batteries at recycling facilities?

EPA hosted a workshop and published a report covering fires we were aware of in 2021 (workshop: <https://www.epa.gov/recycle/workshop-lithium-ion-batteries-waste-stream>, report: https://www.epa.gov/system/files/documents/2021-08/lithium-ion-battery-report-update-7.01_508.pdf). We are looking to update this report in the near future.



Questions and Answers from the Webinar

Jay Kadiwala, Consumer Product Safety Commission

Are you aware if any consensus standards being considered for battery collection containers (for example for public drop-off locations (retail or other))

I assume you are talking about end-of-life. Typically, under our mandate, I'm not aware of anything specific, but it's something we're always eager to explore with other government partners to see what we can work on collectively. We're open to discussing and figuring that out, but as for a standard, I'm not aware of any.

Can you elaborate a bit on how residents are to respond to a battery fire? Is that part of education/outreach? Lithium batteries you can't use water, correct?

There are best practices for using and charging these batteries, so you should refer to the instruction manual, which typically outlines how the battery should be charged and stored. Recently, there's been discussion on how to handle prolonged storage. Sometimes, if stored for a long period, batteries need to be "slow-charged." If you plug in the charger that comes with the product, it might actually charge too fast based on the prolonged storage time. Accounting for that in terms of standards is something I haven't seen in battery specifications. This is the holy grail for batteries—it will specify that if you store a battery for 3-6 months, you don't immediately charge it. Consumers aren't usually aware of this, so it's something that needs to be built into standards. We're trying to improve so that the vulnerability is removed. Generally, from incident reports, if a battery smokes at home, consumers are advised to pick it up (if safe) and throw it outside. If batteries are overwhelmed with water, it absorbs most if not all of the heat, and as soon as it's feasible, everyone should be in a safe space outside if there's enough stored energy in the pack.

Roger Miksad, Battery Council International

Regarding core charges, how are batteries in new vehicles handled?

The core charges only apply to replacement batteries.



Questions and Answers from the Webinar

John Orlando, FDNY, retired

Has FDNY found that fires related to battery management systems are associated with lithium-ion batteries only or other battery types? Is there any additional data to distinguish types of battery management system-related fires?

The batteries and products are destroyed in the fire, and FDNY is unable to determine make model. When we could determine a make and model and confirm the manufacturer, FDNY refers them to CPSC for further investigation.

Do you track whether the lithium-ion battery fires are loose batteries or embedded in products?

No. Our investigations typically noted if the battery was tampered with or repaired.

Could there be problems (fires) associated with illegal battery recycling operations?

Yes. There are fires arising from people improperly disposing of batteries and battery packs in recycling and trash bins, including mobility and non-mobility batteries.

Has the Fire Code and/or International Building Code required any necessary ventilation system for smoke from batteries in addition to the fire suppression system?

Complicated question, if talking BESS, then NFPA has guidelines on ventilation. For consumer products, I don't know of any requirements for ventilation. The new UL standard for battery charging cabinets will address ventilation in the standard.



Questions and Answers from the Webinar

John Orlando, FDNY, retired

Has FDNY done investigations to confirm whether fires in trash and recycling trucks were caused by batteries?

Yes.

In a recent fire, our fire department used water to extinguish a lithium battery fire. The water and battery material were put in a plastic drum. The waste company said that putting the batteries in water was the worst thing to do. What other options would work?

FDNY uses water to extinguish and overpacks everything in a metal drum with an absorptive material. Some departments use a brined water solution to allow the stranded energy to be expelled from the batteries. Water can be used on lithium-ion batteries. Pure lithium-metal batteries react with water.

Where can I find more information on the best storage locations for residents, especially with e-bikes or batteries in single and multifamily residences?

Check out www.fdnysmart.org.

Many waste transfer stations in small towns collect lithium-ion batteries for disposal. What safety procedures would you recommend that they use, especially if blankets are not certified yet?

Use water to address fires and overpack everything in HAZMAT rated metal drums and absorptive material. Cover but allow ventilation. If done properly, this has been successful. Saltwater can be used to help discharge the batteries.

Are Cell Block EX LIB extinguishers being used in New York?

FDNY uses CellBlock as our overpacking material, not in an extinguisher that I am aware of.

