

Mid-Format Batteries Working Session: Current Policies, Practices, and Trends

September 12, 2024 U.S. Environmental Protection Agency (EPA)



Webinar Logistics



- To ask a question: Type your questions for presenters in the <u>Q&A</u> box. We will answer questions at the end of each presentation.
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Welcome

Pat Tallarico, ERG Team and Ellen Meyer, EPA



Agenda Overview

- 1. Opening remarks, logistics, agenda review, and relevant lessons learned from small format sessions
- 2. Universal waste: batteries• Kathy Lett, U.S. EPA
- 3. State regulatory landscape and industry trends for midformat batteries
 - Marc Boolish, PRBA The Rechargeable Battery Association
- 4. Battery collection growth in Illinois
 - James Jennings, Illinois Environmental Protection Agency
- 5. Wrap-up/next steps





Collection Best Practices and Labeling Guidelines

Best practices and labeling guidelines will focus on:

- Identifying and increasing accessibility to battery collection locations
- Promoting consumer education
- Reducing safety hazards from improper disposal (fires)

Best practices will be:

- Technically and economically feasible
- Environmentally sound and safe for workers
- Beneficial to increasing the recovery of critical minerals

Vision for resources:

- Best practices guidelines
- Outreach materials
- Case studies





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
Туре	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.





Planned Conversation Timeline







Lessons Learned on Small Format Battery Collection Practices from the Working Sessions





Safe Collection, Storage, and Transportation for Small Format Batteries

• Employee training and on-going education is critical

- Require employee training for all collection site workers, battery handlers, and recyclers.
- Partner with Call2Recycle and receive collection boxes with a fire-retardant liner.

Safety supplies should be present at all collection sites and transportation vehicles

- Do not rely on water as a sufficient tool to keep fires from growing and spreading.
- Use fire suppressants and/or specific buckets to isolate battery fires.
- Ask consumers to put each battery in an individual plastic bag.
- Host collection sites at accessible and commonly visited locations for residents.
- Coordinate with local fire departments first responders.
- DDR batteries: check for leakage/physical damage; use a heat detecting gun; isolate batteries with noncombustible and absorbent cushioning; obtain special shipping permit.

Batteries must be properly prepared for shipping

- When shipping lithium batteries, use packaging that prevents battery damage, short circuits, and release
 of contents; tape terminals with heavy-duty tape
- Partner with a battery collector/recycler to receive collection boxes appropriate for shipping





Education and Outreach for Small Format Batteries

- Lessons learned from campaigns in Cook County, IL; South Carolina; and Onondaga County, NY
 - The most common drivers for developing outreach campaigns:
 - Reducing fires
 - Keeping batteries out of landfills
 - Have a clear "call to action" for residents.
 - Have drop-off locations that accept different battery types.
 - Conduct continuous, direct, and diverse outreach tailoring to community needs.
 - Partner with nonprofits and industry groups to amplify campaign messages.







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Downloads & Links

Safety

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Be Battery Smart - Recycle Right and Safely

Be Battery Smart - Button and Coin Battery

Be Battery Smart - Battery Identification

Be Battery Smart - Lithium-Ion Batteries

Be Battery Smart - Resources

Be Battery Smart - Be Safe at Home

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Be Battery Smart



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Be Battery Smart

Batteries are everyday essentials.

Often overlooked, however, is the simple fact that batteries can be a hidden household hazard.

If improperly installed, charged, stored, used, damaged, or disposed of, some batteries can catch fire or explode, putting your family and others at risk. If swallowed, button and coin batteries can cause injuries and death.

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Be Battery Smart - Be Safe at Home



All batteries – both single-use and rechargeable – can be dangerous to your health and home if the manufacturer's instructions are not followed.

The recommendations below, however, focus on rechargeable batteries. Follow these steps to help reduce the risks associated with batteries. Additional safety information for lithium-ion batteries is available here as well as button or coin batteries here.

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Be Battery Smart

Be Battery Smart - Recycle Right and Safely

Be Battery Smart - Button and Coin Battery

Safety

Be Battery Smart - Battery Identification

Be Battery Smart - Lithium-Ion Batteries





Themes from Small Format Battery Labeling Working Sessions





Key Themes: Labeling

- Consumers need to:
 - Be able to recognize a battery and products with batteries
 - Know what to do and not do with a battery at end of life
- Collection facilities need to:
 - Know battery types and state/condition
 - Train employees
 - Make it easy for consumers to drop off batteries
- Material recovery facilities/sorters
 - Care about size and shape for optical sorting
 - New technologies may aid in identifying batteries/battery containing products
 - Can't eliminate all hazards—be prepared for fires



Manufacturer's Perspective

- Labels should direct consumers to a website for more information.
 - QR code on the battery, device, or packaging.
- Modifying existing labels takes time.
 - This is a lengthy process involving domestic and international business sectors.
- Products have limited real estate.
 - As consumer products get smaller, there is less space for labels.
 - Manufacturers must comply with existing requirements while ensuring space is left for future requirements or standards.





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What organization and/or part of the battery life cycle do you represent?

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Universal Waste: Batteries

Kathy Lett, U.S. EPA



Battery Waste Regulation

- Many batteries are likely to be hazardous waste when discarded
 - Lead-acid batteries contain toxic lead and corrosive acid
 - Lithium-ion batteries are likely reactive and ignitable
- Non-hazardous batteries would be subject to state's solid waste regulation
 - States and tribes play a key role in implementing solid waste regulations
 - States may set more stringent requirements as well as having specific solid waste and recycling requirements or bans (e.g., state lead-acid battery landfill bans)
- All batteries can be managed as universal waste, regardless of whether they are actually hazardous





Universal Waste Basics

- Universal waste regulations are streamlined management standards for specific, relatively low-risk hazardous wastes that are commonly generated by a wide variety of establishments
 - Currently, there are five federal categories of universal wastes, including batteries
 - All states have a universal waste program for batteries
 - States may establish state-specific universal waste categories, such as electronics
- The participants in universal waste are:
 - Handlers
 - Small quantity handlers accumulate <5,000 kg of universal waste at one time
 - Large quantity handlers accumulate >5,000 kg of universal waste at one time
 - Transporters
 - Destination Facilities





Universal Waste Collection

- Universal waste handlers:
 - Can accumulate universal waste for one year
 - Must use proper packaging (prevent releases to the environment) and labeling (e.g., "Universal Waste – batteries")
 - Must complete performance-based employee training (more stringent requirements for large quantity handlers)
 - Must obtain an EPA ID number (large quantity handlers only)
- Universal waste can be shipped from one handler to another, allowing consolidation
- In general, universal waste promotes collection (and therefore recycling) by streamlining hazardous waste management requirements





Universal Waste Battery Management St<u>andar</u>ds

- Must be managed to prevent releases to the environment
- Must contain any universal waste battery showing signs of leakage or potential leakage
- Allowed handler activities:
 - 1. Sorting batteries by type
 - 2. Mixing battery types in one container
 - 3. Discharging batteries to remove the electric charge
 - 4. Regenerating used batteries
 - 5. Disassembling batteries or battery packs into individual batteries or cells
 - 6. Removing batteries from consumer products
 - 7. Removing electrolyte from batteries



Universal Waste Labeling

- Universal waste handlers:
 - Must label accumulation containers (applies to the container and not necessarily the battery or device itself)
 - Must fulfill basic labeling requirements for accumulation containers (e.g., "Universal waste—batteries" or "Used batteries")
- Universal waste applies to wastes and therefore does not mandate labeling of batteries as products (i.e., before they are waste)
- Universal waste requirements do not conflict with other labeling requirements, such as Department of Transportation requirements





Universal Waste Transportation

- Universal waste handlers:
 - May ship universal waste to and receive universal waste from other handlers
 - Must track their universal waste (large quantity handlers only)
 - Must follow applicable hazardous waste export requirements
- Universal waste transporters:
 - Are not required to use a hazardous waste manifest
 - Can only ship to a universal waste handler, a destination facility (permitted TSDF or hazardous waste recycler that does not store), or a foreign destination
 - Must comply with relevant Department of Transportation regulations for transporting hazardous material, if appropriate





Universal Waste Recycling (or Disposal)

- Destination facilities
 - Can be RCRA permitted treatment, storage, or disposal facilities (TSDFs) subject to all applicable regulations and permitting requirements
 - Can be a recycler that does not store prior to recycling and therefore does not need a TSDF permit
 - Some battery recyclers currently operate without on-site storage
 - Must keep a record of each shipment of universal waste that they receive





Universal Waste and Battery Best Practices

- The universal waste and battery best practices programs share the goal of promoting safe, efficient battery recycling
- The programs have a few key differences
 - Best practices can apply anywhere in the battery lifecycle, whereas universal waste is specific to end of life
 - Universal waste is regulatory (mandatory) while best practices are voluntary
- Future work on collection and labeling best practices will keep the universal waste battery standards in mind and vice versa
 - Best practices will be informed by and likely more stringent than the minimum universal waste requirements
 - Lithium battery universal waste rulemaking project started recently





Universal Waste Update for Lithium Batteries

- EPA has announced a future rulemaking to tailor universal waste standards to lithium-based batteries
 - Intended to address the safety concerns associated with managing waste lithium batteries while still promoting their recycling
 - Regulations for the new lithium battery category will be different from the existing universal waste batteries standards discussed here
- Proposed rule expected summer 2025
 - Public comment period will open upon proposal's publication
 - This will be your chance to let EPA know what you think about the proposed new standards





Questions?

Resources

- EPA Universal Waste webpage
- <u>40 CFR 273 Universal Waste regulations</u>
- Key universal waste batteries contacts at EPA
 - Kathy Lett: Batteries subject matter expert, Recycling and Generators Branch <u>lett.kathy@epa.gov</u>
 - Patrick Wise: Universal waste batteries team, Recycling and Generators Branch wise.patrick@epa.gov





Questions/comments

Pat Tallarico, ERG Team



State Regulatory Landscape and Industry Trends for Mid-Format Batteries

Marc Boolish, PRBA — The Rechargeable Battery Association







Medium Format Battery Labeling and Collection

Virtual Working Session September 12, 2024 2:00 – 4:00 PM EDT

PRBA – The Rechargeable Battery Association

2050 M Street, NW

Washington, DC 20036

Marc Boolish mboolish@wiley.law +1-202-719-7170



Agenda



Time	Session Topic	Speakers
2:00–2:30 pm	Opening remarks, logistics, and agenda review Relevant lessons learned from small format sessions *This session will include poll questions	Ellen Meyer, U.S. EPA Pat Tallarico, ERG Team
2:30–2:55 pm	Universal waste: batteries *Q&A will follow this session	Kathy Lett, U.S. EPA
2:55–3:20 pm	State regulatory landscape and industry trends for mid- format batteries *Q&A and Slido poll will follow this session	Marc Boolish, PRBA - The Rechargeable Battery Association
3:20–3:45 pm	Battery collection growth in Illinois *Q&A and Slido poll will follow this session	James Jennings, Illinois Environmental Protection Agency
3:45–4:00 pm	Wrap-up/next steps	Ellen Meyer, U.S. EPA Pat Tallarico, ERG Team



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Medium Format Battery EPR and Legislative Outlook – 2024 / 2025

Updated August 12, 2024



THE RECHARGEABLE RECHARGEABLE BATTERY ASSOCIATION

Existing laws or recently enacted legislation*

2024 active legislation

Considering legislation for 2025*

Voluntary rechargeable battery collections

Note: Iowa, Florida, Maryland, New Jersey, Maine, New Hampshire, and Connecticut enacted laws in the 1990s mandating collection of portable nickel cadmium and small sealed lead acid batteries.

* Minnesota and New York currently require the collection of portable rechargeable batteries.



Medium Format Rechargeable Batteries



Size

301 − 2,000 Wh and 11.1 − 25 lbs.

Usage

- E-bikes
- Scooters
- Outdoor power tools
- Electric motorcycles
- Powered wheelchairs
- Vacuum cleaners









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Medium Format Non-rechargeable Batteries



- **Size** 4.5 − 25 lbs.
- Usage
 - Electric fence
 - Ignition
 - Lanterns
 - Petroleum industry
 - Railways
 - Weather stations







Industry Trends - Medium Format Batteries



- Continued electrification
- Increasing battery capacity for longer use
- Fast charging
- Aftermarket batteries
- Extra batteries
- Increasing sales

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US Industry Trends - Medium Format Batteries E-bikes / Scooters



ELECTRIC BICYCLE SALES, 2017 TO 2023 Value and number of electric bicycles sold



Percentage of Americans Who Ride a Bike That Use an E-Bike



- E-bikes #1 growth driver in the bicycle industry
- 63% growth in dollar sales all bicycles 2019 2023
- Rate slowed in 2023 but expected to increase again in 2024
- Scooter sales expected to be nearly 3X in next 10 years (\$1 to \$3 billion)

Sources: People for Bikes Grand View Research

US Industry Trends - Medium Format Batteries Cordless Power Tools / Mowers / Vacuums



- Mowers market expected to nearly triple in next 10 years (\$1 to \$3 billion)
- Global cordless vacuum market to more than double in 10 years (\$28 to over \$50 billion)
- Tool market seeing 8 9% growth per year
- Tool market expected to increase over 2.5X in next 10 years (\$15 to \$39 billion)
- Types of tools (examples):
 - Drills & saws
 - Sanders / grinders
 - Routers
 - Garden tools
 - Lasers

Source: Fact.MR / Mordor Intelligence



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PRBA – The Rechargeable Battery Association



PRBA Members

- Manufacturers of lithium ion cells/batteries, power tools, outdoor power equipment, vehicles, medical devices, military equipment, energy storage systems;
- Battery recyclers;
- Retailers;
- Test labs;
- Consultants;
- Packaging manufacturers; and
- Airlines

International Transportation Forums

- UN Sub-committee of Experts
- ICAO Dangerous Goods Panel
- IMO Sub-committee on Carriage of Cargoes and Containers

Activities and Issues

Regulatory, legislative and policy issues at local, state, national and international level: battery safety, state and federal battery recycling legislation, transportation and fire codes





Questions? Mid-Format Battery Labeling and Collection

PRBA – The Rechargeable Battery Association 2050 M Street, NW Washington, DC 20036

Marc Boolish mboolish@wiley.law + 1-202-719-7170

Questions/comments

Pat Tallarico, ERG Team





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What are other mid-format battery trends are you seeing that we should be aware of?

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Battery Collection Growth in Illinois

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James Jennings, Interim Director

Illinois EPA



- Americans consume millions of single use and rechargeable batteries annually
- Designed with a wide range of chemical components tailored to intended use
- Chemistry dictates end of life handling

Historic Collection Practices

- IEPA-supported HHW collections
- Local government-sponsored events
- Call2Reycle and other private efforts







Leading the charge for recycling.

Programmatic Evaluation Results



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Safety Concerns



Expansion Objectives







Develop a sustainable HHW collection network that is within a half hour drive of more than 90 percent of the state population Augment the HHW network with free battery collection opportunities in each county Avoid new spending

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Identify viable long-term HHW collection facility partners

Hub-and-spoke approach to selecting HHW collection events

Engage additional units of local government to serve as battery collection sites

Household Hazardous Waste Collection Facilities









Bipartisan Infrastructure Law (BIL)

Consumer Electronics Battery Recycling, Reprocessing, and Battery Collection

Goals

1 site per 10,000+ muni 1 site per county w/o 10,000+ muni 200+ sites statewide 1,200+ days of collection



Four Year Award

- Yr 1 Site Recruitment & Initial Collections
 - Outreach Materials
 - Host 3+ Listening Sessions
 - Intent to Participate Forms
 - Local Governments
 - Community Based Organizations
- Yrs 2-4 Collections & Continued Recruitment
 - Collections
 - Narrowly Tailored Site Recruitment
 - Enhanced Public Education
 - Emphasis on EJ Communities



Illinois Portable and Medium-Format Battery Stewardship Act

- Creates an extended producer responsibility program for small and medium format batteries
- Establishes consumer battery recycling goals
 - Rechargeable batteries- 60 percent
 - All other primary batteries- 70 percent
- Establishes collection network standards
 - One permanent collection site within a 15-mile radius for 95 percent of the state's population
 - At least one collection site or event for every 30,000 residents in a single county
- Program year one begins on January 1, 2028



Questions/Comments

James Jennings, Interim Director Illinois Environmental Protection Agency (217) 782-0547 james.m.Jennings@illinois.gov

Questions/comments

Pat Tallarico, ERG Team



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What type of support, research, or guidance would be helpful for state, tribal, and local governments in developing policies to support mid-format battery recycling?

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Wrap-Up and Next Steps

Pat Tallarico, ERG Team and Ellen Meyer, U.S. EPA



Upcoming Mid Format Consumer Electric and Portable Batteries Working Sessions

Mid-Format Batteries	Meeting Topic	Meeting Date	Meeting Time	Format
Labeling and Collection	Role of Manufacturers and Retailers in Promoting Safer Collection and Recycling	October 15, 2024	2:00-4:00 PM EDT	Virtual
Labeling and Collection	Consumers Information Needs and Safety Concerns	October 30, 2024	2:00-4:00 PM EDT	Virtual
Labeling and Collection	Ensuring Safe End-of-Life Management	November 21, 2024	2:00-4:00 PM EST	Virtual





Next Steps

- Register for the October 15 Mid-Format Battery Recycling: Role of Manufacturers and Retailers in Promoting Safer Collection and Recycling Working Session
- Registration Link: <u>https://www.zoomgov.com/webinar/register/WN_XPcTCwdcR</u> <u>RuSZ_5wHpyeVw</u>
- Email <u>batteries@epa.gov</u> if you have an interesting story to tell about battery collection





Questions & Answers from Webinar

Are you focused on the type of material used for labels in the Guidelines? (e.g., recycled content, flame retardant)

This has not been a focus to date, but something EPA can consider moving forward. People with information about innovative labeling materials should send a note to <u>batteries@epa.gov</u>

Is EPA collecting more information about battery sales and causes of battery fires?

EPA continues to get more information about composition of waste streams and will be collecting more as part of the proposed rulemaking on lithium-ion batteries as Universal Waste. They have also requested additional information about battery fires from organizations that may be doing research in this area.

How does EPA plan to address the need to tell consumers where to recycle their batteries, which may vary by location?

EPA is exploring the idea of recommending the use of QR codes to link consumers to more information about their batteries and disposal options and will be trying to enhance collection at the state and local level through the development of collection best practices.



Questions & Answers from Webinar

Presentation on EPA battery-related regulations

How much time do you have to store batteries if you are a generator or processor?

For batteries considered universal waste, generators can store materials for up to 1 year. If you treat, dispose of or recycle these batteries from off-site, you must process them immediately (as defined by your state) or get a permit for storage. Labeling requirements will be part of the permit.

What is the difference between a handler and a generator when it comes to batteries?

A hazardous waste generator is subject to the requirements in 40 CFR part 262 (<u>https://www.ecfr.gov/current/title-40/chapter-l/subchapter-l/part-262</u>) and can only ship to a destination facility, but if the waste is batteries being managed as universal waste, the handler is subject to the streamlined standards in 40 CFR part 273 (<u>https://www.ecfr.gov/current/title-40/chapter-l/subchapter-l/part-273</u>) and they can ship to handlers or destination facilities.



Questions & Answers from Webinar

State of Illinois

Are there any handling fees given to the collection operators?

Not by the state. The Extended Producer Responsibility bill that passed recently may result in independent transactions handled outside the state.

How many different collection vendors will be used across the state? Will there be regional coverage?

Until manufacturers take over under the EPR law, the state has one contractor but allows for secondary and tertiary contractors.

Are collection sites all staffed and/or are consumers placing batteries into the bins themselves?

Permanent collection sites that collect things beyond batteries are staffed. The one-day collection events are staffed by contractors. Smaller collection locations have bins but are indirectly staffed because they are usually in retail locations or public buildings.

How do you calculate the collection rate?

Manufacturer data will be sent to the state to assess overall sales figures – that will be used as the denominator. The numerator will be the collection amounts. This may change as the program evolves. The calculation assumes a 1-2 year use life depending on the size.

