



Leading the charge for recycling.™



CONSUMER BATTERY RECYCLING: OPPORTUNITIES AND ISSUES

USEPA REGION 5 TRIBAL WASTE MANAGEMENT GROUP
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Presentation Objectives

1. Discuss consumer batteries and their management- recycling opportunities
2. Discuss types of batteries and their applications
3. Introduce the Call2Recycle® program, our stewardship mission and program services.
4. Outline strategies for starting a consumer battery recycling program
5. Safety and shipping guidelines
6. Address questions relevant to Tribal SW Group members



Marketplace Growth of Consumer Batteries

1. 3 billion batteries sold annually in the US (USEPA)
2. 80% single use (primary) 20% are rechargeable
3. Rechargeable Lithium Ion has replaced NiCad, and to a lesser extent, Ni-MH, SSLA
4. Larger, more powerful Li-Ion batteries are becoming more common (40V- 60V) with higher watt hour ratings
5. Both rechargeable and single-use batteries are recyclable:
 - Rechargeable recoverable metals: lead, cadmium, nickel, lithium, copper, cobalt, iron/steel
 - Single Use: zinc, manganese, steel, lithium, copper



Batteries: What's changing and Why?



- Landslide move by consumers to products that are mobile/cordless- powered by rechargeable batteries
- Examples: Smart phones, cordless phones, tablets and laptops, power tools, landscape maintenance tools
- Batteries for these devices are lighter, smaller, contain more energy/power, charge faster and hold longer charges, and are more environmentally friendly

Lithium Batteries are the Most Popular Battery Today

- They come in many shapes and sizes.
- They can be hard to identify.
- They are regulated as a universal waste (unless shipped > 66 lbs Class 9 haz waste)
- Sales are increasing by double digits every year.



Rechargeable Lithium Ion batteries

- Typically Marked “Rechargeable”
- Typically lists Battery Chemistry Name (Lithium Ion) or (LI-ION, Li-ion, LiPo (lithium polymer)
- Typically has the RBRC/Call2Recycle Battery Seal
- Some imported batteries do not license the Recycling Seal and may not have recycling messaging



Li-ion



Single use Lithium-Based PRIMARY Battery?

- How they are sold in the consumer marketplace: 9v, AA, AAA, C, D, Coin/Button cell
- Typically marked: 'Lithium' or 'Lithium cells'; marked as (CR####)
- Uses: car remotes, watches, cameras, “talking” greeting cards, medical devices, utility meters
- Replacing Alkaline for AA, AAA, 9V etc.



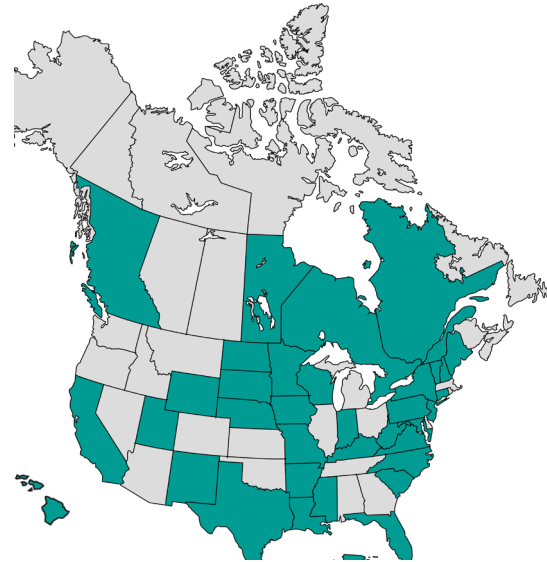
Overview of Call2Recycle

- *501c4 Non-profit battery recycling stewardship organization* voluntarily founded by battery manufacturers (including Sony, Sanyo, Panasonic, Duracell, Energizer) in 1994 to deal with emerging state and federal regulation.
- RBRC = Call2Recycle, Inc.
- We provide a battery recycling infrastructure across the US and Canada. Since 1996 (144 million pounds recycled) from retail, business and municipal sites via both a box and bulk program.
- The first “**Product Stewardship** ” program in North America.
- Increased battery collections 19 of 20 consecutive years. Added program for single use batteries in 2017 (fee based).



OVERVIEW: the Call2Recycle® Program

- In the U.S., funded primarily by rechargeable battery stewards and, more recently, fee-based services.
- In the U.S., we're primarily a voluntary program except in certain states (e.g., Vermont, Minnesota, New York) where collections of some (but not always all) chemistries are mandated.
- Rechargeable batteries (NiCad, Small Sealed Lead Acid-SSLA, Li-Ion, and Ni-MH) are regulated as a Universal Waste at a Federal Level and by the States.
- California bans disposal of all consumer batteries



Call2Recycle Assists Local Governments in battery collections and recycling



For your residents:

- **No cost rechargeable battery recycling-boxes or bulk (NiCad, Ni-MH, Li-Ion and SSLA, eleven lbs. or less/battery)**



- Fee Based:
 - Flat rate all battery boxes for single use/primary batteries
 - or bulk shipping of sorted batteries (flat rate plus freight)
- More info:



www.Call2Recycle.org/start-recycling

Our Lithium Battery Experience

- We have handled approximately 5 million boxes of consumers batteries since inception and untold numbers of drums & gaylords.
- In these containers, we've collected over 144 million lbs. of consumer batteries; over 35 million lbs. have been lithium-based.
- We've collected, transported, sorted and processed lithium-based batteries from over 14,000 active collection sites across North America.
- Since the beginning of 2016, our lithium-based batteries have been transported and processed in Canada, Belgium and Korea; there are currently no US processors of lithium batteries (although there are US sites that will accept, shred or treat them).
- **Until recently, safety/fire incidents have been very isolated.**



How the Call2Recycle Program works

- Enroll public collection sites
 - Geographically accessible/convenient to residents
 - Ability to identify an employee to take on program responsibilities- accept batteries and bag each rechargeable battery prior to shipment
 - Answer basic program questions
 - Ship off full boxes
 - Promote the program at local or county level with residents
 - Be able to ship off two full boxes annually per enrolled site



Battery Terminals Must Be Protected

Here's Why



Many batteries hold a residual charge even when they appear dead. When this battery comes into contact with other batteries or metal, a spark or excessive heat can occur.

Unprotected battery terminals are dangerous.



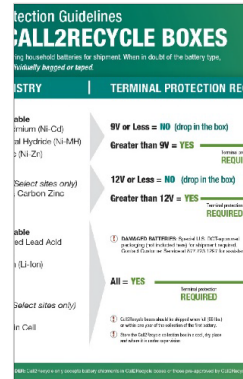
- **Individually bag or tape all batteries!**
- Collection sites that ship batteries with positive terminals that are not protected according to U.S. DOT requirements may face suspension/termination.
- Batteries considered to be damaged, defective or recalled must be shipped separately in U.S. DOT-approved packaging.
- Boxes should be shipped when they are full (up to 66 lbs./30 kgs) or within one year of the first battery being collected.

Why Are Safety Incidents Increasing?



- Battery chemistries can be **challenging to identify** making it difficult to know which may present a safety hazardous.
- As the **power** of batteries increases and sizes shrink (energy density), damaged or defective batteries release more energy.
- Defective products/poorly engineered batteries (imported).
- Misuse by consumers- improper charging, short circuit with metal objects, excessive heat exposure, physical damage to battery or device
- **Damage in transit/processing/disposal: run over by equipment, compacted or otherwise damaged causes fire risk**

Charge Up Safety™: Operational Changes



- Safety training module for all existing and all new customers (Power Point Presentation)
- Flame Retardant Box.
- Terminal Protection Guidelines.
- Box Anomaly Reports (BAR) Checking for unprotected battery terminals- proactive follow-up and education with our customers

Resources

Visit the new Call2Recycle Safety Portal:

www.Call2Recycle.org/safety



- Safety presentation for training your staff
- Downloadable Safety training video
- YouTube battery safety 101 video
- FAQs
- Other links/technical assistance resources

THE SECRET LIFE OF BATTERIES

call2recycle

IT STARTS WITH COLLECTIONS

With tens of thousands of drop-off locations in the U.S. and Canada, it's easy to find a place to recycle used batteries.

Call2Recycle collects and recycles:
 Nickel Metal Hydride (NiMH)
 Nickel Metal Hydride (NiMH)
 Nickel Zinc (NiZn)
 Alkaline (all sizes)
 Small Sealed Lead Acid (SSLA)
 Single Use/Wettable
 Lithium-Ion
 Cellphones

Collections are then sorted by type and chemistry

Sorting **Sorting**

RECHARGEABLE BATTERIES	SINGLE-USE BATTERIES	CELLPHONES
Collected batteries and cellphones are recycled into new products.		
<p>Nickel (Ni) Used Ni-Cd, Ni-MH and Ni-Zn batteries are recycled into other products such as automotive, tools, golf clubs and new batteries.</p>	<p>Alkaline Used alkaline batteries are recycled into steel and new products such as lawnmowers and roof truss supports.</p>	<p>Refurbished Cellphones are refurbished or resold with proceeds going to fund the recycling and education program.</p>
<p>Lithium (Li) Used Li-Ion rechargeable batteries are recycled into other electronics and new batteries.</p>	<p>Lithium Primary Used Li-based primary batteries are recycled into new products such as alarmers, cameras, strobe, golf clubs and new batteries.</p>	<p>Recycled Cellphones unable to be refurbished are fully recycled and manufactured into new products.</p>
<p>Lead (SSLA/Pb) Used SSAL/Pb batteries are recycled into new Pb-based batteries.</p>	<p>Call2Recycle</p> <p>Thank you! Batteries are completely recycled. The only thing that's left is a small amount of lead, which is recycled and reused in other products.</p> <p>Visit call2recycle.org to learn how you can answer the call to recycle.</p>	

call2recycle

Help us recharge our planet. Bring your used batteries for recycling today.

call2recycle.org

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Leading the charge for recycling.

Recycle Rechargeable Batteries HERE

Make a difference by recycling used rechargeable batteries today.

ITEMS ACCEPTED FOR RECYCLING:
 Rechargeable batteries weighing 11lbs. or less each. No wet-cell, damaged or defective batteries accepted.

- Lithium Ion
- Nickel Cadmium
- Small Sealed Lead Acid
- Nickel Metal Hydride
- Nickel Zinc
- Cellphones of any make, model or age

For more information
 visit call2recycle.org or call 877.723.1297

Avoid the Spark Consumer Campaign

Solid Waste Industry, Local Government
and Battery Industry Stakeholders
Collaboration- San Francisco Bay Area

Campaign launched in California in May

Message Points: Don't dispose of lithium
Ion or Lithium Primary batteries in the trash

Utilize drop off centers and drop off collections

Media campaign got national coverage by USA Today on May 18th



Nielsen Poll of American Consumers

AVOID
THE SPARK™
Be battery safety smart.



- 60% admit to throwing away some or all single use batteries
- 15% admit to throwing away rechargeable batteries
- 24% admit to hoarding batteries for up to a year, feeling compelled not to throw them away, but not really knowing how or where to recycle them

Accessibility= Convenience for residents

- Listing for all local government battery drop off sites (HHW, recycling ctrs) and retail sites using the Call2Recycle program
- 86% accessibility rate nationwide (10 mile radius)

- www.call2recycle.org/locator

- Zip code based, Google map based system lists hours and days of operation for public drop off sites and retail locations

- Promote the Call2Recycle Dropoff Site Locator in your literature, website and with your recycling and solid waste collection services



ACE
Hardware

Recycle your
rechargeable batteries
and cell phones
at ACE!



call2recycle.org

Recharging the planet. Recycling your batteries.™

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Conclusion/Closing Thoughts:

- Batteries, especially lithium ion, will continue to grow in the marketplace as more products become cordless
- Lithium primary batteries replacing alkaline
- Messaging for consumers
 - Recycle-do not dispose of batteries in the trash
 - Recycle at drop off locations
- Call2Recycle can assist:
 - Safety communications/training
 - Free rechargeable battery collection and all battery box and bulk collections
 - Site locator to provide convenient drop off for your residents www.call2recycle.org/locator



Leading the charge for recycling.™

thank you!

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