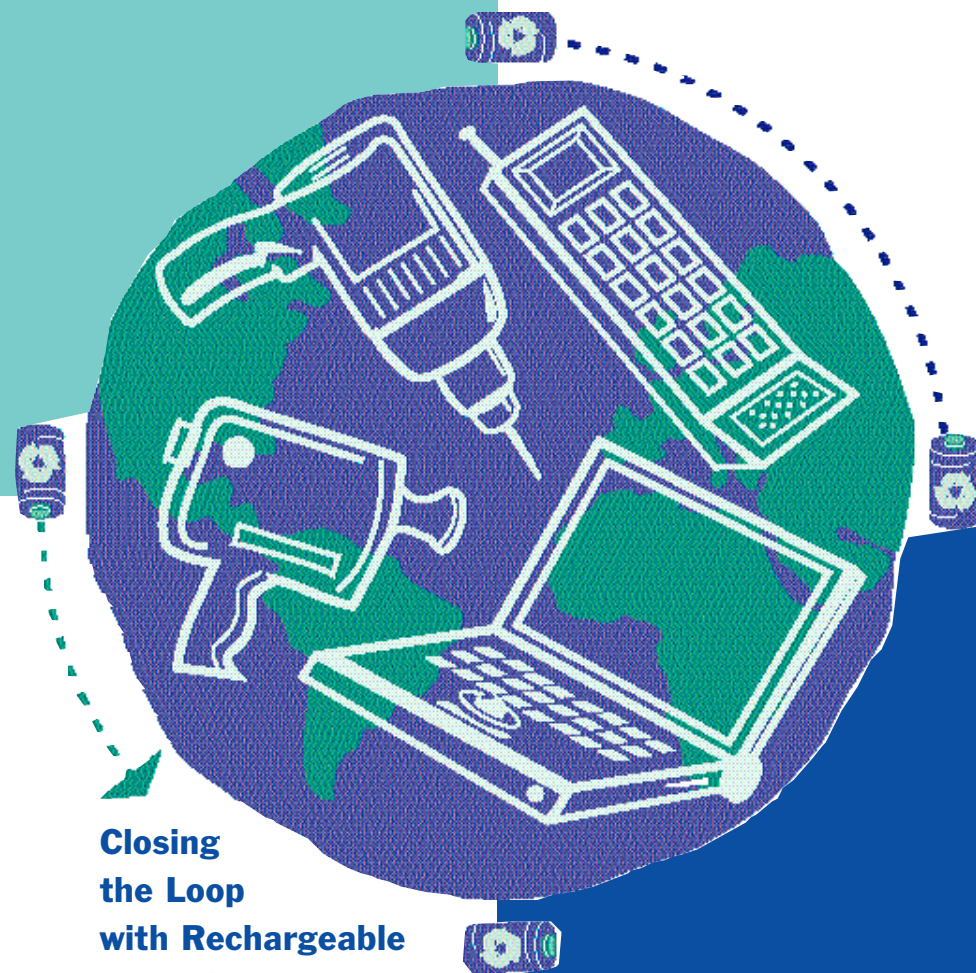




Implementation of the Mercury-Containing and Rechargeable Battery Management Act



**Closing
the Loop
with Rechargeable
Batteries**



United States Environmental Protection Agency
401 M Street, SW, (5305W)
Washington, DC 20460

Official Business
Penalty for Private Use
\$300

Introduction

Whether at work or at home, more and more Americans are enjoying the convenience of rechargeable batteries. They're being used in cellular phones, laptop computers, cordless power tools, and video cameras. In fact, more than 350 million rechargeable batteries are purchased annually in the United States. When thrown away, these batteries can contribute to the toxicity levels of landfills and incinerator ash, as many of them contain heavy metals. Recycling rechargeable batteries not only gives new life to discarded products—it helps prevent the release of hazardous constituents into the environment.

On May 13, 1996, President Clinton signed into law the Mercury-Containing and Rechargeable Battery Management Act (the Battery Act). This Act represents a major step forward in the effort to facilitate the recycling of nickel-cadmium (Ni-Cd) and certain small sealed lead-acid (SSLA) rechargeable batteries and to phase out the use of mercury in batteries.

This booklet explains what this important law means to you. It equips readers with the “basics” on the Battery Act and provides information on successful recycling programs for rechargeable batteries. In this booklet, you will find:

- A summary of state and federal requirements affecting battery recycling prior to passage of the Battery Act
- A summary of the Act's requirements
- Why proper disposal or recycling is necessary for Ni-Cd and SSLA batteries
- State, local, and private-sector initiatives to recycle used rechargeable batteries

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Acknowledging the steady increase in the use of rechargeable batteries, as well as potential environmental impacts resulting from their improper disposal, Congress passed the Battery Act to facilitate the increased collection and recycling of Ni-Cd and certain SSLA rechargeable batteries. The Act targets battery and product manufacturers and battery waste handlers—not consumers. Different sections of the Act apply to different types of batteries. Specifically, the Act:

- Establishes national, uniform labeling requirements for Ni-Cd and certain SSLA rechargeable batteries.
- Mandates that Ni-Cd and certain SSLA rechargeable batteries be “easily removable” from consumer products. A battery can be easily removed if it is detachable or removable from the product with the use of common household tools.
- Makes the Universal Waste Rule (see page 4) effective immediately in all 50 states for the collection, storage, and transportation of batteries covered by the Battery Act. (For a list of covered batteries, see EPA’s codification rule, expected to be promulgated in late 1997. That rule will codify the requirements of Section 104 of the Battery Act into Title 40 of the Code of Federal Regulations.)
- Requires EPA to establish a public education program on battery recycling and the proper handling and disposal of used batteries. EPA is required to consult with manufacturers and retailers to carry out this initiative.
- Prohibits, or otherwise conditions, the sale of certain types of mercury-containing batteries (i.e., alkaline-manganese, zinc-carbon, button cell mercuric-oxide, and other mercuric-oxide batteries) in the United States.

State and Federal Requirements Affecting Battery Recycling Prior to the Battery Act

Prior to the Battery Act, 13 states took the lead by passing laws to facilitate the collection and recycling of used rechargeable batteries. These laws required that rechargeable dry cell batteries be labeled as recyclable and be easily removable from consumer products. The 13 states are California, Connecticut, Florida, Iowa, Maine, Maryland, Minnesota, New Hampshire, New Jersey, New York, Oregon, Rhode Island, and Vermont. All of these states except California, New Hampshire, New York, and Oregon also established battery collection and recycling programs.

Although somewhat similar, there were slight differences in the laws enacted by the states. The laws differed in whether the battery labels were required to include the three chasing arrows or some other recycling symbol, the manufacturer's name, or a toll-free telephone number. There were also differences regarding whether the text must appear on the product or the packaging, in the instruction manual, or on the battery itself.



On the federal level, the Resource Conservation and Recovery Act (RCRA) regulates hazardous wastes and establishes comprehensive reporting, handling, and transportation requirements for hazardous wastes. Since batteries often contain hazardous or potentially hazardous constituents, many batteries, including Ni-Cd and SSLA rechargeable batteries, may be regulated under RCRA. The law does exempt household waste, which often includes some batteries. In addition, certain small businesses (i.e., conditionally exempt small quantity generators) may be exempt from some RCRA regulations under certain circumstances. Other businesses and institutions that handle batteries that are hazardous waste may be subject to the full array of hazardous waste regulations.



What Is the Universal Waste Rule?

In May 1995, the U.S. Environmental Protection Agency (EPA) promulgated the Universal Waste Rule to reduce the amount of hazardous wastes entering the municipal solid waste stream, encourage the recycling and proper disposal of certain common hazardous wastes, and reduce the regulatory burden on businesses

that generate these wastes by simplifying the applicable regulations and making them easier to comply with. This rule recognizes that some common hazardous wastes—such as used Ni-Cd rechargeable batteries—do not require the full array of hazardous waste regulatory requirements. It also eases the regulatory burden on battery handlers and transporters by streamlining a number of RCRA's hazardous waste collection and management requirements, including those related to notification, labeling/marketing, accumulation time limits, employee training, and offsite shipment, among others. For example, the Universal Waste Rule extends the amount of time

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that certain businesses can accumulate used rechargeable batteries on site. It also allows certain companies to transport them with a common carrier, instead of a hazardous waste transporter.

The Universal Waste Rule, however, does not automatically apply in each state. In states authorized by EPA to implement the Federal hazardous waste program, the rule is not applicable until those states revise their programs to adopt equivalent requirements under state law and receive authorization from EPA.

Hence, prior to passage of the Battery Act, a battery recycling program spanning across several states had to comply with varying, and sometimes conflicting, state labeling and waste management regulations. In some states, the rechargeable batteries were subject to the full array of hazardous waste requirements, while in other states the rechargeable batteries were subject to the reduced Universal Waste Rule requirements.



What Are Rechargeable Batteries?

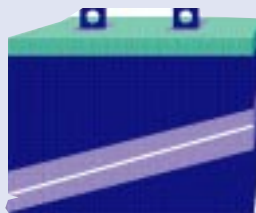


Unlike single-use batteries, which must be replaced once their charge is used up, rechargeable batteries are designed for the long haul. Depending on the application, some rechargeable batteries can recharge up to 1,000 times! Recharging the battery simply reverses the chemical reaction inside it. This changes the battery's components nearly back to their original state and allows them to be reused.

About 80 percent of rechargeable batteries are currently composed of nickel and cadmium (known as "Ni-Cd"). Ni-Cd rechargeable batteries are commonly found in cellular and cordless telephones, video cameras, portable power tools, and laptop computers. The use of these batteries continues to grow. It has been estimated that one-half billion Ni-Cd batteries will be sold in the year 2000.



Small sealed lead acid batteries (SSLA) are used in emergency lighting, security and alarm systems, computer backup devices, and hospital equipment. They are also used in cellular phones, laptop computers, and power tools.



Rechargeable batteries may initially be more expensive than single-use batteries, and they sometimes require the purchase of a recharger, but the upfront costs are often outweighed by the long-term cost savings and environmental benefits of rechargeables. Each rechargeable battery may substitute for hundreds of single-use batteries over its useful life. (See Section 3 of the Act for the specific definition of "rechargeable battery" as it applies to the Act.)

Requirements of the Battery Act



There are two major sections of the Battery Act. The first section, or Title I, facilitates the efficient recycling of Ni-Cd, certain SSLA, and other rechargeable batteries. The second section, or Title II, phases out the use of batteries that contain mercury.

Title I: Rechargeable Batteries

The Battery Act changed the regulatory framework governing rechargeable batteries. It streamlined the framework in an effort to remove the regulatory barriers to increased recycling of rechargeable batteries. Below is a summary of Title I's major provisions and requirements.

Section 103: Easy Removability and Labeling Requirements for Rechargeable Batteries and Products

The Act establishes national, uniform labeling requirements for regulated batteries and rechargeable consumer products and mandates that regulated batteries manufactured after May 13, 1997 be "easily removable" from consumer products. A battery can be "easily removed" if it is detachable or removable from the product with the use of common household tools. The term "regulated battery" refers to Ni-Cd, certain SSLA, and, in the future, other rechargeable batteries and battery packs if EPA decides to add them to the list. (See Section 3 of the Act for the specific definitions of "easily removable," "regulated battery," "rechargeable battery," "rechargeable consumer product," and other important terms as they apply to the Act. See in particular Section 3(5)(C) for an understanding of which types of lead-acid batteries are subject to Section 103.)

The requirements of Section 103 include:

- Regulated batteries must bear the 3 chasing arrows or a comparable recycling symbol.
- Nickel-cadmium batteries must be labeled "nickel-cadmium" or "Ni-Cd," with the phrase "BATTERY MUST BE RECYCLED OR DISPOSED OF PROPERLY."

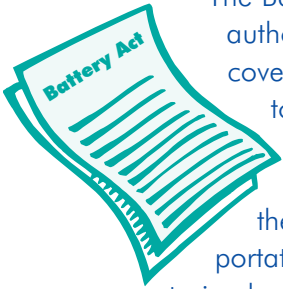


- Regulated lead-acid batteries must be labeled “Pb” or with the words “LEAD,” “RETURN,” and “RECYCLE” and, if the regulated batteries are sealed, the phrase “BATTERY MUST BE RECYCLED.”
- Rechargeable consumer products containing nonremovable Ni-Cd batteries must be labeled with the phrase “CONTAINS NICKEL-CADMIUM BATTERY. BATTERY MUST BE RECYCLED OR DISPOSED OF PROPERLY.”
- Rechargeable consumer products containing nonremovable regulated lead-acid batteries must be labeled with the phrase “CONTAINS SEALED LEAD BATTERY. BATTERY MUST BE RECYCLED.”
- The required labeling also must be carried on the packaging of rechargeable consumer products containing regulated batteries that are not easily removable, and on the packaging of regulated batteries that are sold separately from such products, if the labeling on the product or battery is not visible through the packaging.
- Battery and product manufacturers may use a different label if it conveys the same information as described above or it conforms with a recognized international standard that is consistent with the intent of the Battery Act. The manufacturers, however, must apply for EPA certification. (Until May 13, 1998, no certification is needed if the label is in “substantial compliance” with Section 103.)
- No municipality, state, or federal agency may enforce any easy removability or labeling requirement for a rechargeable battery or product that is not identical to that described in Section 103 of the Battery Act.
- Rechargeable consumer product manufacturers may petition EPA for an exemption from the easy removability requirement by showing that a product with easily removable batteries and with equivalent performance could not be made without posing a threat to human health, safety, or the environment, or without violating other public or private standards.



Section 104: Battery Waste Management and the Universal Waste Rule

The other major provision of Title I involves the federal Universal Waste Rule. To prevent states from having different regulations for managing batteries covered by the Battery Act, the Act made the Universal Waste Rule for covered batteries effective in all 50 states since May 13, 1996. This provides national uniformity in the collection, storage, and transportation of used Ni-Cd and certain other rechargeable batteries and certain mercury-containing batteries. (For a list of batteries covered by Section 104 of the Act, see EPA's codification rule, expected to be promulgated in late 1997.)



The Battery Act also preempts state legislative and regulatory authority for the collection, storage, and transportation of covered batteries. Normally, under RCRA, states can choose to be more stringent than the federal government. The Battery Act, however, does not give states the option of establishing more stringent regulations than specified in the Act, in regard to the collection, storage, and transportation of covered batteries. States may seek EPA approval to implement and enforce requirements identical to those found in Section 104(a) (i.e., the federal Universal Waste Rule).

Title II: Mercury Batteries

The purpose of Title II is to phase out the use of batteries that contain mercury. Title II specifically prohibits the sale of any alkaline-manganese (except for button cells containing up to 25mg mercury) and zinc-carbon batteries that contain mercury that was intentionally introduced (as distinguished from mercury that may be incidentally present in other materials used to produce these batteries). Also prohibited is the sale of button cell mercuric-oxide batteries. Other mercuric-oxide batteries are prohibited from being sold unless the manufacturer (1) identifies a collection site in the United States where mercuric-oxide batteries can be sent for recycling or proper disposal, (2) informs each of its purchasers of the collection site, and (3) provides each of its purchasers with a telephone number that the purchaser may call to get information about sending mercuric-oxide batteries for recycling or proper disposal. Finally, EPA may exempt from the Title II sales prohibitions a



new product or use for a Title II battery, if there exist reasonable safeguards against disposal of the battery in an incinerator, composting facility, or landfill (other than a facility regulated under the hazardous waste requirements of RCRA).

State Authority

As described under Section 7 of the Act, states can implement and enforce any requirement that is *identical* to (and hence not more or less stringent than) that in the Battery Act with respect to the labeling and easy removability of rechargeable batteries, and the collection, storage, and transportation of covered batteries. States can, however, adopt more stringent requirements for any *other* Battery Act provision, such as those in Title II. Finally, the Battery Act does not govern the recycling and disposal of covered batteries. States can, therefore, continue to adopt and enforce standards for the recycling and disposal of covered batteries that are more stringent than existing federal standards under RCRA.

Enforcement

The enforcement provisions that are described in Section 5 of the Battery Act are fairly straightforward.

- EPA may require compliance and/or assess a civil penalty of up to \$10,000 for each violation of the labeling, easy removability, and Title II requirements of the Act. Under an exemption to the Act's enforcement provisions, EPA cannot take enforcement action against retailers for selling a battery or product that does not meet the labeling or easy removability requirements of the Act. This may encourage retailers' voluntary participation in battery recycling by protecting retailers from prosecution for the sale of batteries that they purchase from a person, such as a manufacturer, who violates the Act. However, importers are not exempt from liability, and a retailer can be held liable by EPA if it has knowledge that the chemical contents of a battery are in violation of Title II of the Act.
- Violations of the requirements of Section 104 and the Universal Waste Rule are enforced separately by EPA under the Solid



Waste Disposal Act. These requirements involve the collection, storage, and transportation of used Ni-Cd and certain other rechargeable batteries and certain mercury-containing batteries. Violations of these requirements are subject to the stringent penalties and broad remedies available under RCRA.

Promotion of Recycling of Rechargeable Batteries

Public education and participation are keys to the success of any recycling program—and are particularly important with materials like batteries that have not been commonly recycled. A public education program can heighten awareness of the recycling program, involve more individuals and businesses, and increase the number of batteries collected. With this in mind, Section 4 of the Act requires EPA to consult with rechargeable battery manufacturers, rechargeable consumer product manufacturers, and retailers to establish a public education program on battery recycling and the proper handling and disposal of used Ni-Cd and certain SSLA batteries.



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Why is Proper Disposal or Recycling Necessary for Ni-Cd and SSLA Batteries?

The toxic heavy metals, such as cadmium and lead, found in rechargeable Ni-Cd and SSLA batteries perform critical functions within the battery. Heavy metals are contained within the battery's casing and pose no real risks while the battery is in use. But they can be of concern when discarded with ordinary municipal solid waste, as most batteries are. Ni-Cd rechargeable batteries were estimated to represent approximately 75 percent of the cadmium found in municipal solid waste in 1995. EPA projected that lead-acid rechargeable batteries, of which SSLAs are a small percentage, would represent approximately 65 percent of the lead found in municipal solid waste in 1995.

At present, approximately 73 percent of municipal solid waste is either landfilled or incinerated. Neither of these methods is ideally suited for batteries that contain heavy metals. In landfills, especially those without liners and controls, heavy metals have the potential to leach slowly into soil, ground water, and surface water. When incinerated, metals such as cadmium and lead can concentrate in the ash produced by combustion and enter the atmosphere through incinerator smokestack emissions. When disposed of, the metals in the incinerator ash can leach into the environment. In the environment, certain types of heavy metals can also concentrate in the tissues of organisms and make their way up the food chain. Several metals, such as cadmium, are known carcinogens. The possible health effects associated with ingestion or inhalation of water, food, or air that has been contaminated with high levels of heavy metals range from headaches and abdominal discomfort to seizures, cancer, comas, and even death. The severity of the health effects are usually dependent on the total concentration of the metals to which one is exposed over time.

Recycling programs for Ni-Cd and SSLA rechargeable batteries can address the potential risks posed by landfilling or incinerating



these batteries by diverting them from the waste stream. In the case of battery recycling, metals are recovered from the used batteries, and the remainder of the product is recycled or discarded.

How State and Local Governments Can Promote Ni-Cd and SSLA Battery Recycling

State and local governments play an important role in developing and implementing a successful battery recycling program. Public education efforts are essential to the success of a battery collection program. A public education program developed by a state or local government can heighten a community's awareness of the need to reduce heavy metals in the waste stream, involve more residents and businesses in battery collection, and increase the number of batteries collected. (See "Options" section for information on industry trade associations which have developed outreach materials that could be used by state and local governments.)

To implement an effective local education program, governments can:

- Identify the major users of Ni-Cd and SSLA batteries in their areas.
- Create an education committee to work with recycling staff or volunteers. Committee members can include state and local recycling coordinators, battery manufacturing industries, battery retailers, battery recycling associations, and the public. The committee can devise a comprehensive local education strategy and be responsible for educating other members of their respective interest groups. Some members, such as businesses and trade associations, can also contribute money or in-kind services and resources to defray the costs and increase the effectiveness of the program.



- Develop a plan to educate businesses and industries on the importance of recycling their Ni-Cd and SSLA batteries. One method that has been proven to facilitate information sharing is to create workshops of industry and government officials. During these workshops, governments can provide industry managers with information about state and local legislation, schedules for collecting the used batteries, and any incentives for participating in the recycling program, such as providing containers for collecting their used batteries.
- Work with retailers serving as collection points to develop and distribute educational materials. Materials can include posters, brochures, stickers, flyers, and newsletters. In addition, governments can send press releases promoting the program to local newspapers, radio, and cable television stations. A variety of other creative channels, including distributing flyers through community schools or utility bill inserts, can also help promote the program.

State and local governments can heighten a community's awareness of the need to reduce heavy metals in the waste stream, involve more residents and businesses in battery collection, and increase the number of batteries collected.

What Options Exist for Recycling Ni-Cd and SSLA Batteries?

One national Ni-Cd rechargeable battery recycling program and several successful state government and regional Ni-Cd rechargeable battery recycling programs are currently being implemented around the country. A program for the recycling of commercial SSLA rechargeable batteries is currently being established with the support of the Portable Rechargeable Battery Association (PRBA) and the Battery Council International (BCI).



What Role Do Retailers, Businesses, and Public Agencies Play?

By recycling rechargeable batteries in the products they use, businesses and public agencies can take advantage of a convenient way to help the environment. Retailers, businesses, and public agencies can institute “take-back” programs and contribute funds for public education and battery collection. (See “Options” section for information that industry trade associations provide to retailers, businesses, and public agencies.)

Retailers of Ni-Cd and SSLA batteries can work with state and local governments to collect used batteries. Retailers can display posters or signs informing the community of the need to recycle these batteries and of the names and addresses of battery collection sites. Retailers can also provide used-battery collection containers that will be sent to an appropriate storage or recycling facility.

Businesses and public agencies, such as hospitals, computer companies, auto manufacturers, and police and fire departments, that use a large number of Ni-Cd or SSLA batteries can work on their own or with state and local governments to facilitate the collection of their used batteries. These businesses and agencies can develop their own collection programs by educating their employees about the importance of recycling these batteries and by providing containers or schedules for the collection of their used batteries. In addition, businesses and public agencies can fund or staff community collection programs and/or sponsor employee collection events that may last from one day to a week. All businesses that use cordless products—such as cellular phones, laptop computers, video recorders, and power tools—whether large Fortune 500 companies, small companies, or conditionally exempt small quantity generators, should be encouraged to participate in the collection and recycling of rechargeable batteries.

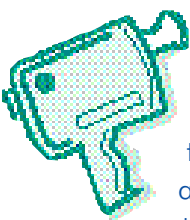
National Ni-Cd Rechargeable Battery Recycling Program

Charging Up to Recycle!

RBRC, a nonprofit organization representing many rechargeable battery manufacturers, developed the *Charge Up to Recycle!* program to help keep Ni-Cd batteries out of the solid waste stream and prevent toxins from ending up in landfills or municipal incinerators.



The *Charge Up to Recycle!* program offers various recycling plans for communities, retailers, businesses, and public agencies. For each group, RBRC pays or shares the cost of consolidating the batteries, shipping them to the processing facility, and recycling them. The program sends all Ni-Cd batteries to the International Metals Reclamation Company (INMETCO), a recently opened cadmium recovery facility in Ellwood City, Pennsylvania. At the facility, the nickel and iron are separated from the cadmium and shipped to specialty steel producers for use in stainless steel products. The recovered cadmium, at a 99.95 percent purity level, is used to produce new Ni-Cd rechargeable batteries.



For more information about the *Charge Up to Recycle!* program, or for the location of the collection site nearest you, visit the web site at <http://www.rbrc.com> or call RBRC's toll-free number at 1-800-8-BATTERY.

State Government and Regional Ni-Cd Rechargeable Battery Recycling Programs

Many state governments and regional organizations have established successful Ni-Cd rechargeable battery recycling programs. Here are descriptions of two such programs:



Massachusetts' Municipalities Recycle Used Ni-Cds

Almost one-third of municipalities in the state of Massachusetts currently collect used Ni-Cd batteries. Massachusetts worked with RBRC to establish collection points in more than 100 of the state's 351 municipalities. These municipal collection points complement retail collection locations in Massachusetts that were established under RBRC's national program.

Massachusetts' Department of Environmental Protection distributes 5-gallon plastic buckets to each of its four regional offices. These offices in turn make them available to municipal recycling coordinators who place them in centrally located, visible sites in the community. RBRC coordinates outreach efforts to residents to educate them that Ni-Cd batteries can be recycled and to inform them of where to take their batteries for recycling.

For more information about Massachusetts' battery recycling efforts, contact the Massachusetts Department of Environmental Protection Household Hazardous Waste Hot Line at 1-800-343-3420.

Battery Drop Stop Program

Battery recycling may be just a phone call away! In January 1997, EPA Region 5 and Ameritech, a major manufacturer of cellular phones and pagers, teamed up to launch "Battery Drop Stop," a cellular battery recycling program intended to keep Ni-Cd batteries out of our nation's landfills. Under this program, consumers can drop off their Ni-Cd cellular batteries at any of Ameritech's more than 1,000 retail associates and authorized dealers across the Midwest for recycling. Ameritech will accept any kind of Ni-Cd cellular batteries, regardless of brand or service provider, for recycling. The Rechargeable Battery Recycling Corporation plays an active role in the program, providing special battery collection boxes and coordinating the recycling at its facility in Pennsylvania. Interested consumers can obtain a copy of their free brochure with more details on the battery recycling program and/or find the location of the nearest Ameritech "Battery Drop Stop" by calling 1-800-MOBILE (1-800-662-4531).



Commercial SSLA Recycling

To encourage the recycling of commercial SSLA batteries, the manufacturers of SSLAs and products that contain them, with support from PRBA and BCI, are establishing a collection program. Commercial SSLA batteries have four primary end uses: uninterrupted power sources, emergency lighting, alarm systems, and hospital equipment. Manufacturers are working to establish collection points for commercial SSLA



batteries in five states by the end of 1997. These states are Florida, Iowa, Maryland, Minnesota, and New Jersey. Users of products that contain the batteries are responsible for transporting them to collection centers, while manufacturers of the batteries facilitate their recycling. Commercial SSLAs are recycled with other lead-acid batteries at secondary smelters.

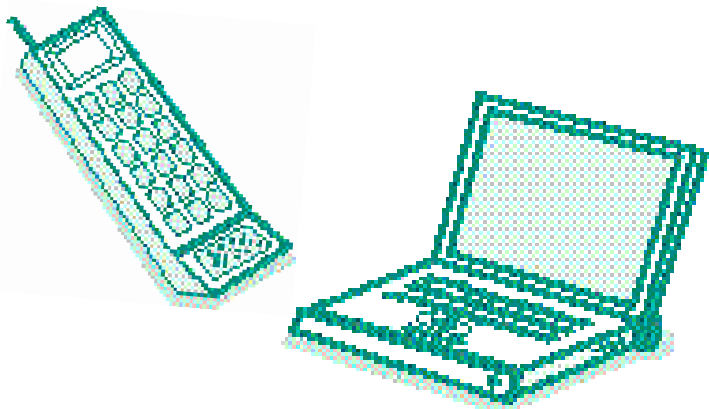
For more information about the commercial SSLA battery recycling program, contact PRBA at 770-612-8826.

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For More Information

- A copy of the Mercury-Containing and Rechargeable Battery Management Act (P.L. 104-142) can be downloaded from EPA's web site at <http://www.epa.gov/epaoswer/hazwaste/state/policy/pl104.txt>.
- For general questions about battery recycling, contact the RCRA Hotline at 800-424-9346 or TDD 800-553-7672. In Washington, DC, the number is 703-412-9810 or TDD 703-412-3323. The RCRA Hotline is open from Monday through Friday, 9 a.m. to 6 p.m. Eastern Time.
- A handbook entitled *Used Dry Cell Batteries: Is a Collection Program Right for Your Community?* is designed for local communities interested in establishing a program to collect used dry cell batteries (i.e., both single-use and rechargeable). The document contains program cost information, public education strategies, management options, and examples of community programs around the country. To request a copy, call the RCRA Hotline and reference document number EPA530-K-92-006.
- More information on EPA's Universal Waste Rule can be found on EPA's website at <http://www.epa.gov/epaoswer/hazwaste/id/univwast.htm>. The rule was published in the May 11, 1995 *Federal Register* and is found in the Code of Federal Regulations at 40 CFR Part 273, as well as at <http://www.epa.gov/docs/fedrgstr/EPA-WASTE/1995/May/Day-11/pr-223.html>.



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Rechargeable Battery Recycling Corporation. P.O. Box 141870, Gainesville, Florida 32614-1870. Phone: 352-376-6693. Fax: 352-376-6658. E-mail: rbrc@rbrc.com. Internet address: <http://www.rbrc.com>.

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