

POSITIVES AND NEGATIVES: HOUSEHOLD BATTERIES AND THE NEED TO PROPERLY DISPOSE OF THEM



By: Austin Battig

Advisors: Dr. Christopher Thoms and Dr. Derek Larson



Introduction

According to the Environmental Protection Agency, there are over three billion household batteries purchased and discarded annually in the United States. Although household batteries are often labeled as disposable, the improper disposal of household batteries negatively affects the environment. Despite people having the ability to recycle, many still decide not to. That leads to the question of why people do not recycle their spent batteries. After I examine the environmental impacts of disposable and rechargeable batteries, I study the psychology of recycling to see when and why people decide to recycle their waste. The recycling of household batteries isn't well known, but there are places to properly dispose them. Since many of them are labeled as disposable, household batteries are most often thrown away. The need to begin recycling batteries is high so that we do not continue introducing these large amounts of e-waste into the environment.

Methods

To answer my research question, I examine the differences between disposable and rechargeable batteries. After examining rechargeable and non-rechargeable household batteries, I move into analyzing the three methods of spent battery disposal and their consequences. The three methods of disposal that I include are: landfill, incineration, and recycling. After reviewing all three methods, I further examine household battery recycling and tie it into the environmental psychology of recycling and consumption to explain the issue of why household batteries are improperly disposed. With many household batteries being labeled as disposable, I also attempt to answer the question, "Is it actually okay to throw away disposable batteries" and use this to close my paper.

Figure 2: A sample of battery types found in a Hennepin County battery collection program from 2012. A total of 438 lbs. of household batteries were sampled, with Alkaline batteries making up the majority.

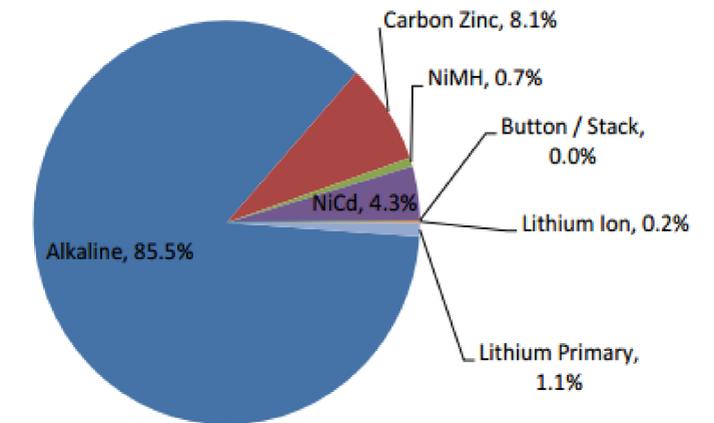


Figure 1: Locations where different household batteries can be returned to be recycled with distances from Collegeville, MN.

Local Battery Recycling Guide

Name of Business	Batteries Accepted	Location/Distance from Collegeville, MN
Home Depot	Lead-acid, Lithium-ion, Nickel-cadmium, Cell Phone	Waite Park, MN (6.6 miles)
Best Buy	Lead-acid, Lithium-ion, Nickel-cadmium, Nickel-metal Hydride	Saint Cloud, MN (6.9 miles)
RadioShack	Lithium-ion, Nickel-cadmium	Albany, MN (11.2 miles)
Big Green Box	Alkaline, Lead-acid, Lithium-ion, Nickel-cadmium, Nickel-metal Hydride	Lancaster, OH **Mail-in Program for all household battery types

<http://recyclebattery.org/wp-content/uploads/2012/09/Hennepin-Audit-Report.pdf>



Image 1: Assortment of Household Batteries. Includes: AA, AAA, C, D, and 9V.

<https://wrappartners-production.s3.amazonaws.com/preview-images/b6/c79ffe7cd54035.jpg>

Background

- Household batteries are those that are most commonly used in devices found in the home such as: flashlights, watches, cell phones, toys, television remotes, etc.
- The components of batteries vary by type but could include: nickel, lithium, copper, zinc, mercury, lead, and cadmium.
- There are several types of batteries that include: zinc-carbon, alkaline, lithium-ion, mercury lead-acid, and nickel-cadmium cell batteries.

Recycling Psychology

- Jackson's Return Potential Model: A theoretical model for thinking about the "normativeness" of recycling and other pro-environmental behaviors. When applied to recycling, found that almost half of Americans recycle sometimes or just enough to avoid disapproval from others.
- These partial recycling habits could be driven by pro-convenience attitudes rather than pro-recycling attitudes.
- It has been found that these attitudes and recycling habits are influenced by a person's ecological mindset as well as social acceptance/rejection from peers.

Conclusion

Household batteries cause negative environmental impacts and proper disposal needs to be promoted. Most household batteries are labeled as disposable and aren't recycled. Due to the size of household batteries, they are not considered a hazardous waste. In the U.S. per-capita growth in consumption is expanding eight to twelve times faster than population growth. This high rate of consumption is causing batteries to build up in landfills at an alarming rate. The recycling of batteries needs to become as normal as recycling paper and plastic. The big issue is that it is more convenient to throw them away instead of recycling. If this practice became a social norm, then there would be a stronger influence to avoid disapproval from peers and to recycle batteries. The need to begin recycling batteries is high so that we do not continue introducing these large amounts of e-waste into the environment.