

## Battery Project

### How it all began – the problem

Batteries make up 20% of the household hazardous materials in American landfills. As the battery casing corrodes, chemicals leach into the soil and make their way into our water supply. Eventually they reach the ocean and harm our marine wildlife too. In fact, they adversely affect our entire ecosystem.

Batteries that make their way into our environment cause air, water, and soil pollution. Air pollution arrives in the form of greenhouse gas emissions when batteries undergo a photochemical reaction as they decompose in landfills. When harmful chemicals (including metals such as lead, manganese, nickel, mercury, and lithium) and acids from batteries find their way into the water supply, the animals and plants that thrive there get killed. Animals including humans that consume battery contaminated water and fish are jeopardizing their health and get fatal diseases like cancer. When these substances reach the soil, all detrimental effects relating to heavy metals are seen.

I noticed a big waste of batteries. Certain sensitive instruments only run on fresh batteries. For example at my doctors office, they would throw away batteries after only 4 hours of use. They said that the batteries were perfectly safe but dropped the efficiency of the life saving machines they were using. So, after a while they had to be changed.

### Action

I made and decorated battery collection bins and left them in offices which used a lot of batteries. I went back every 2-3 weeks to collect the batteries. I would take this opportunity to educate the staff about harmful effects of batteries and suggest alternatives like solar powered rechargeable batteries.

The collected batteries were then weighed, sorted batteries by size and company. I made sure they were in working condition. Then I recruited my younger brother and his friends to find some pre-used envelopes, decorate them to hide previous marks and writings. We attached a message about reusing batteries and how to dispose of them responsibly. We included our website url for more information on how batteries can harm our environment and our project. Then we filled them with batteries and sealed the envelopes.

I gave them away at school, summer camps, Staten Island Zoo, Ocean Breeze Athletic Complex, Indoor horse riding centers, the American Natural History Museum, Ranger stations, to our friends and neighbors and anyone who cared about the environment. I did a table event at the Fresh Kills Park where I was able to reach out to 800 people in a single day. Since 2020 I have distributed 3000 batteries to front line workers.

Every battery pack gave me an opportunity to discuss how hazardous these batteries are to our environment. Most people don't know that batteries have corrosive materials, which leach into the soil once the battery is thrown away. These toxic materials make their way to the water. They pollute the water and harm plants and animals.

I love to involve kids younger than me, so I made a team of kids and taught them about my project. We would distribute batteries together. When we give away batteries, it gives us a chance to tell people about the harmful effects of batteries. We can help save our soil, our marine life and even ourselves by the simple act of reusing and recycling. It also gives us an opportunity to talk about other sources of energy like solar and wind power.

### Impact

Till date, my team and I have saved 1430 pounds of batteries from going into the landfills. By distributing 4710 packets of batteries, we successfully reused 28260 batteries so far. Not to mention reusing 4710 envelopes by making them into battery packs.

In 2016 I collected over 30 lbs of batteries. After setting up bins, donating rechargeable batteries and talking to the staff about chemicals leaching into soil, the number dropped a little every year.

In 2018 I collected less batteries and noted a 30% drop in battery usage in 2 years.

In 2020, I noted a 40% drop in the battery usage in 4 years.

The biggest impact was introducing young minds to the concept of reusing and recycling

Future Plans - We have recruited a few more volunteers and have set up used battery collection bins across the Goethals Bridge in Elizabeth and in Union, NJ. I have set up a team of middle school kids in Michigan. We plan to set up collection bins on 5th Avenue in NYC and in Maplewood NJ.

Other environmental interests

I have been working at the Staten Island Zoo for the past 4 years. Being a Junior Docent at the Staten Island Zoo has allowed me to see the importance of habitat protection and environmental conservation

I went on a medical mission to Haiti and then the Philippines in 2020. There I worked on saving the habitat of the scarlet collared flower pecker. This beautiful but tiny bird (it's only 10cm long) is endemic to the Philippines and is found only in Mindoro. Its small population is rapidly declining. It has been classified as Vulnerable by the International Union for Conservation of Nature (IUCN). Red List of Threatened Species due to habitat loss. Eruption of Volcano Taal in 2020 has made conditions worse for this beautiful bird.