Final Resting Place

Where do your batteries go when you're done using them?

INSIDE: Learn the **FOUR** easy steps that will get your batteries to the right place and make sure they don't catch fire or explode!

A Special Advertising Supplement

Workers like Teresa Montgomery's crew at Blue Line Transfer Inc. in South San Francisco are at risk when batteries end up loose in a recycling or trash cart. That's why residents should use a clear plastic zip-top bag, or one given to them by their recycling hauler, to collect their batteries.
PHOTO BY GEORGE E. BAKER JR.

Why Batteries are Dangerous

Proper recycling protects recycling workers and the environment

BY MATT JOCKS

Someone would never drop a lit match inside their trash or recycling cart when taking them to the curb each week for collection. However, that is exactly what many San Mateo County residents may unknowingly be doing when they toss loose batteries into their trash or recycling cart alongside other items. This is why it's important to properly recycle batteries, by collecting them in a clear plastic zip-top bag and placing that bag on top of the correct curbside cart for collection.

Batteries power most of the items that keep us moving and connected, becoming smaller and more powerful with each new device that's released. Batteries are bought and replaced all the time, but if residents carelessly place their old batteries or items with batteries inside them, inside one of the curbside carts, those batteries become a fire hazard that poses a major physical and financial threat.

That threat became reality for many local workers in 2016, when a fire at the Shoreway Environmental Center in San Carlos caused $8.5 million in damages. The culprit? A lithium-ion battery that was placed inside a curbside cart. Though it may have been the largest recycling fire in California, it's not the only one.

"Lithium-ion batteries, including the small button variety, are the most problematic," said Doug Button, President of the South San Francisco Scavenger Company and Blue Line Transfer, Inc. "They're small, but can generate a lot of heat if they have any remaining charge and their terminals aren't taped."

> **"WE CAN FIX OR REPLACE A TRUCK ... YOU CAN'T REPLACE A LIFE."**
>
> **Teresa Montgomery**
> Sustainability Manager, Blue Line Transfer Inc.

Those batteries become combustible when they come into contact with one another in recycling or collection trucks. They become even more of a hazard if the batteries make it to any recycling or trash processing facilities, where the pressure of sorting belts and equipment can ignite them as this machinery was not made to process batteries.

So far, battery fires have only done significant damage to equipment, but those in the industry are always worried a fire will go one step further.

"I dread to think about a worker losing their life," said Teresa Montgomery, Sustainability Manager at the Blue Line Transfer Inc. "We can fix or replace a truck or equipment. You can't replace a life."

The costs created by battery fires — in damages, stopped facility processing lines, and increased spending on insurance and infrastructure — come at a time when prices for recyclables have already dropped. Those economic pressures will eventually be felt by jurisdictions and ratepayers if proper recycling methods don't improve.

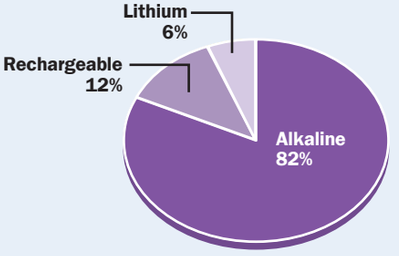
Thankfully, proper battery recycling is easy throughout San Mateo County: Safely collect your batteries, tape the terminals, secure in a clear zip-top bag and place on TOP of the right curbside cart on collection day.

"If residents help by properly recycling batteries, we'll be in good shape," said Button.

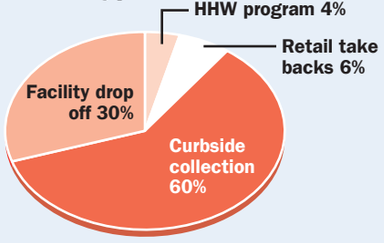
BATTERIES: BY THE NUMBERS

240,000 pounds of batteries were collected in San Mateo County in 2018 through the County's Household Hazardous Waste (HHW) Program, RethinkWaste, GreenWaste and South San Francisco Scavenger (SSFS) alone. Here's how those numbers break down:

By battery type



By collection type



All data is based on partial collections of four haulers and collectors in San Mateo County, and their projections for total collection numbers in 2018.

Batteries 101

BY CAROLINE HARVEY

Batteries power our lives. It can be easy to forget that the same everyday items that wake us up, stream our favorite show or make sure we're prepared for that big meeting all have batteries inside of them. However nearly every electronic device we own has a battery that requires proper handling and recycling. From single-use to lithium-ion, follow along with these commonly used batteries to see if you know where to find them in your home.

SINGLE-USE

Common, non-rechargeable batteries typically found in small items around the home.

The types:

- **Alkaline:** Basic AA, AAA, C, D and 9-volt batteries
- **Button cell:** Used in small items when long, continuous service is required

Where are they found?

- Hearing aids
- Remotes
- Toys
- Watches

RECHARGEABLE

Common batteries that can be recharged and reused up to 1,000 times.

The types:

- **NiCd (Nickel-cadmium):** Least expensive rechargeable battery
- **Ni-MH (Nickel-metal hydride):** Used to power high-drain devices
- **SSLA/Pb (Small Sealed Lead Acid):** Hold a charge for a very long time

Where are they found?

- Cordless phones
- Cordless power drills
- Digital cameras
- Security systems

LITHIUM PRIMARY

Single use, can last a long time but must remain manufacturer sealed.

The types:

There are many varieties, but may be called lithium or lithium-metal batteries. If not easily removable from its device, leave the battery where it is and take the device to your local electronics collection center for recycling.

Where are they found?

- House alarms
- Pacemakers
- Remote car locks
- Watches

LITHIUM-ION

Rechargeable, liable to overheat and explode if they short-circuit or become damaged.

The types:

There are many varieties, but may be called Li-ion or LIB. If not easily removable from its device, leave the battery where it is and take the device to your local electronics collection center for recycling.

Where are they found?

- Cell phones
- Digital cameras
- Laptops
- Power tools

WATCH OUT FOR LITHIUM!

Lithium-ion batteries pose the most danger to the waste and recycling streams. Here's why:

80% of its original charge can still be contained in a used lithium-ion battery, which means a "dead" battery could still be dangerous.

Explosion or fire is likely if a lithium-ion battery becomes damaged.

11 lithium-ion batteries per hour are found loose at the Shoreway Environmental Center's Recycling Facility in San Carlos, a 97 percent increase since 2017.

Most fires in recycling facilities are caused by lithium-ion batteries according to a National MRF Survey.

Over 3 billion batteries are dumped into the waste stream annually, including lithium-ions.

Source: RethinkWaste

Where Batteries Go

BY CAROLINE HARVEY

Recycling batteries is easy in San Mateo County! Simply collect, tape, zip and place (see below for directions). But which curbside cart do your batteries go on top of? Use the map to find which hauler services your area and which receptacle you should place your bagged batteries on top of for collection and disposal.

REPUBLIC SERVICES OF DALY CITY

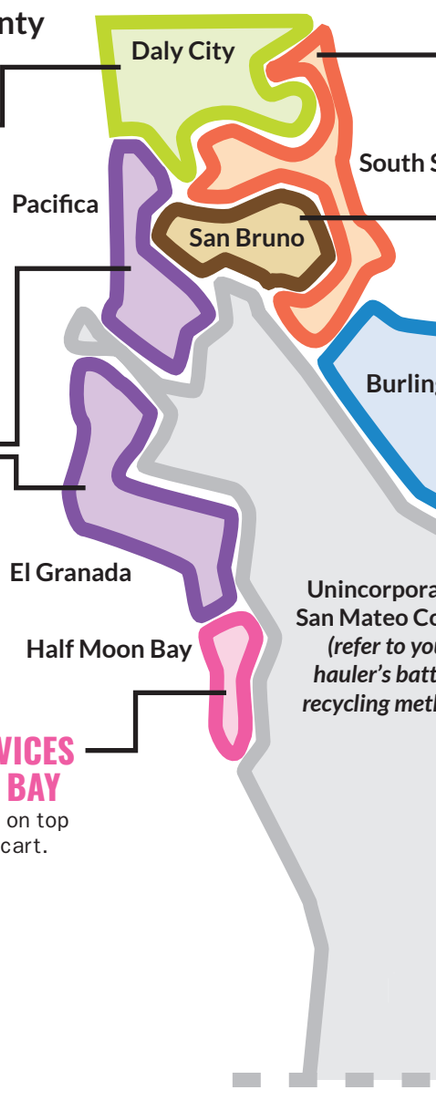
Put bagged batteries on top of the **gray garbage** cart.

RECOLOGY OF THE COAST

Put bagged batteries on top of the **blue recycling** cart.

REPUBLIC SERVICES OF HALF MOON BAY

Put bagged batteries on top of the **gray garbage** cart.



HOW TO RECYCLE YOUR BATTERIES

Follow these four easy steps to make sure that all your household batteries are recycled safely, and do your part to protect San Mateo County!

1. COLLECT

Put all of your **household batteries** that you are done using in a clear plastic zip-top bag.

2. TAPE IT UP!

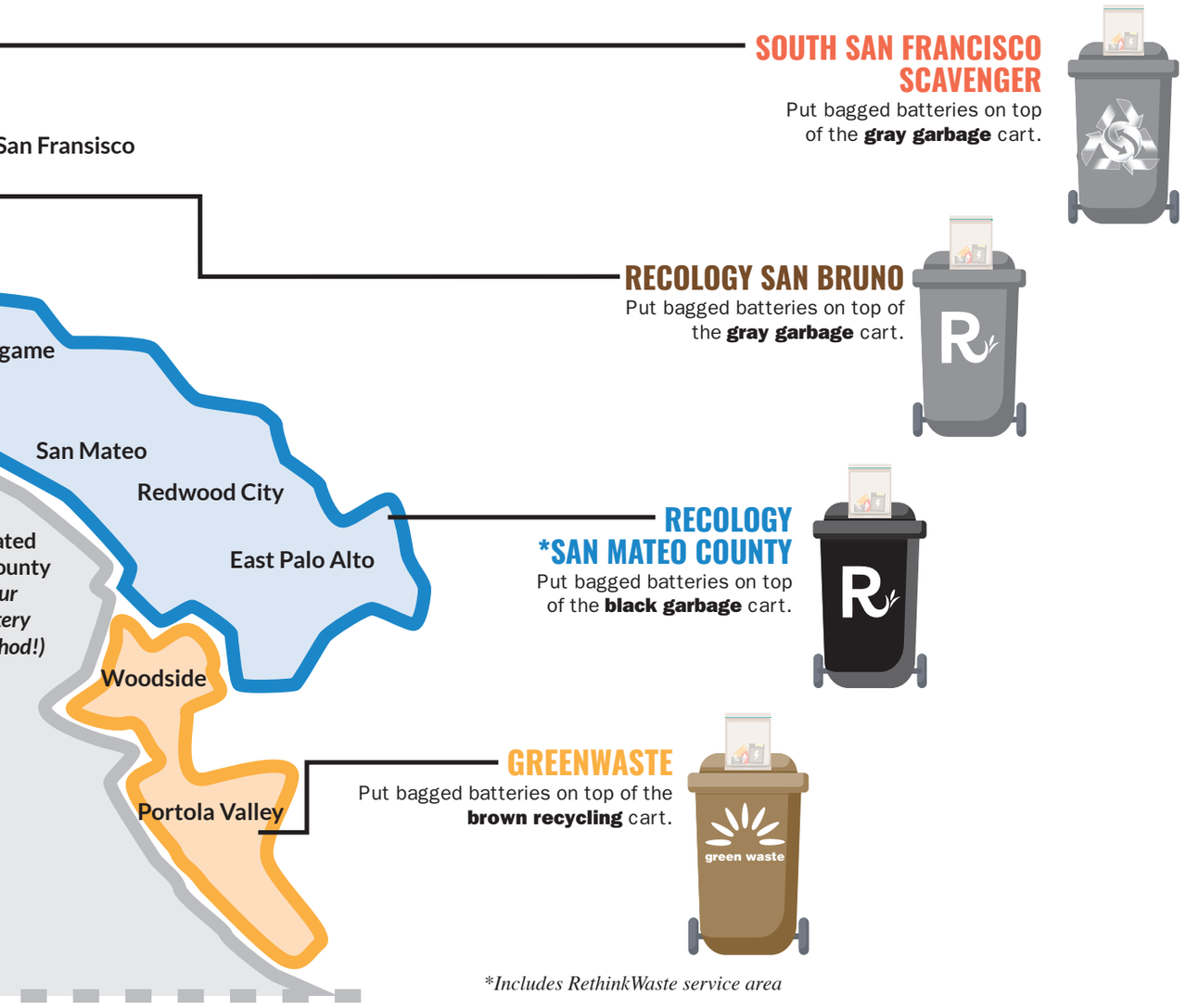
Properly tape the terminals and contacts on your **lithium-ion and 9-volt batteries** so they do not spark (see instructions to the right).

3. ZIP

Seal the **clear plastic zip-top bag** when it is at least halfway full and ready for collection.

4. PLACE

Check the map above to see which cart you should put your bag of batteries on top of, according to which hauler services your area.



SOUTH SAN FRANCISCO SCAVENGER
Put bagged batteries on top of the **gray garbage** cart.

RECOLOGY SAN BRUNO
Put bagged batteries on top of the **gray garbage** cart.

RECOLOGY *SAN MATEO COUNTY
Put bagged batteries on top of the **black garbage** cart.

GREENWASTE
Put bagged batteries on top of the **brown recycling** cart.

**Includes RethinkWaste service area*

THE BATTERY BUCKET

For residents who live in a multi-family unit and don't have curbside collection, ask your property manager to ask your area's hauler for an orange battery bucket! All household batteries can be put into this bucket for collection in a common area onsite.

TAKE 'EM BACK

Want your batteries out of the house sooner? Drop off your unwanted batteries at a local take back location!
There are over
70+ locations
in San Mateo County to drop off batteries while you're already out and about. Visit **Recyclestuff.org** to find the closest one to you.

GOT LITHIUM BATTERIES? TAPE THEM UP!

Before placing your lithium-ion batteries in a clear plastic zip-top bag, make sure to follow these steps to reduce the risk of explosion or fire:

1. IDENTIFY

Retrieve all the **lithium-ion and 9-volt** batteries from where your batteries have been safely collected.

2. PREPARE

Use **clear tape** to tape up your batteries, like the kind you use at home or to pack boxes.

3. TAPE

Make sure to cover the **positive and negative terminals** on the lithium-ion and 9-volt batteries with tape.

4. ZIP

Place all your batteries in a **clear plastic zip-top bag** and seal it. Now you're ready to place the bag on top of the correct curbside cart (see above) for collection!

Every day, Dwight Herring worries about the safety of his workers and if an improperly recycled battery will explode on the recycling sort line at the Shoreway Environmental Center in San Carlos.
PHOTO BY GEORGE E. BAKER JR.

A Little Battery, A Lot of Harm

Batteries pose an extreme risk to employees and facilities

BY ANNE STOKES

Around 8:30 p.m. on September 7, 2016, employees at the Shoreway Environmental Center's materials recovery facility (MRF) in San Carlos had just started processing materials after a meal break when they noticed something was terribly wrong.

A small fire had started in one of the automated screens that mechanically separates mixed paper from other recyclables. The fire quickly spread deeper into the facility as materials continued to be conveyed.

"Staff sprang into action and began extinguishing the fires they could access," said Dwight Herring, General Manager of South Bay Recycling who operates the RethinkWaste*-owned facility. "It was emanating thick, acrid black smoke and the supervisor at the time made the call to evacuate."

While there were thankfully no injuries, the building interior and processing equipment suffered extensive fire, smoke and water damage — damage significant enough to suspend the facility's ability to process recyclable materials. After examining the site, fire investigators strongly suspected the ignition source was likely a lithium-ion battery.

It was three months before the MRF could start processing materials again, and an entire year before the building and damaged equipment were fully restored. During this time, some employees were temporarily laid-off while repairs were made. After the repairs were finished, the facility's insurance coverage cost increased significantly, ultimately impacting user rates.

"Just because the facility shut down doesn't mean the material flow stopped. We had to make arrangements to have third party haulers come in and remove that material," Herring said.

Since the fire, the facility has increased staff fire safety training and installed additional fire suppression equipment throughout the MRF, including improved sprinkler systems and an automatic plant-wide system shutdown in the event of fire. But those safety measures can only do so much.

> "IT TAKES VERY LITTLE DAMAGE TO A LITHIUM-ION BATTERY FOR IT TO EXPLODE. YOU'RE LITERALLY PUTTING AN INCENDIARY DEVICE INTO A PILE OF PAPER."
>
> **Dwight Herring**
> General Manager, South Bay Recycling

What the Shoreway facility and all haulers in San Mateo County really need is for residents to make sure batteries don't get put into their recyclables or trash.

"When you're discarding a battery, and you're discarding it inappropriately — whether it's the black cart or the blue cart — you're basically putting a bomb in that container. It takes very little damage to a lithium-ion battery for it to explode," he said. "You're literally putting an incendiary device into a pile of paper."

**RethinkWaste is a regional solid waste and recycling agency that is made up of 12 member agencies in San Mateo County from Burlingame to East Palo Alto.*

Watch video footage of the fire at Youtube.com/user/theRethinkWaste

BATTERIES IGNITED

In California

83% of waste facilities reported a fire in the past two years, and...

65% of those fires were started by batteries, and...

40% of all battery fires were started by lithium-ion batteries.

Source: California Product Stewardship Council, 2018

In North America

366 waste facilities in the U.S. and Canada reported fires, however...

93% of waste facility fires are estimated to be unreported, and...

37% of these fires increased over the previous year.

Source: Fire Rover/CalRecycle, October 2017-September 2018

Stopping battery explosions and keeping recycling rates low is easy, as long as residents dispose of their batteries in a clear plastic zip-top bag or one provided by their hauler, as demonstrated by Doug Button.
PHOTO BY GEORGE E. BAKER JR.

Prices on the Rise

Why ratepayers may see price hikes if batteries aren't recycled properly

BY MATT JOCKS

Flames, smoke and charred equipment are the most obvious signs of a fire started by a battery that hasn't been recycled properly, but there are other costs from these fires — costs which run even deeper and can affect haulers even when there is no fire.

Insurance companies are starting to view recycling and trash facilities as too high risk to insure and too low a return on investment due to the high price tag that comes after each facility fire. All facilities, regardless of whether or not they've had a fire at their location, are facing potential insurance rate hikes and possible loss of insurance altogether. Considering each battery in a home or electronic device can easily explode or start a fire if placed loosely into a trash or recycling cart, this issue is creating a lot of difficulties for facilities to ensure they're safely covered in the event of loss.

Doug Kobold, Executive Director of the California Product Stewardship Council, pinpointed the destructive fire at the RethinkWaste-owned Shoreway Environmental Center in 2016 as the first "shock to the system."

"That was the biggest, but these fires have been numerous," he said.

Likely started by a lithium-ion battery, the Shoreway fire alone cost $8.5 million in damages.

"RethinkWaste had to work really hard to maintain their insurance," Kobold said. "If a facility loses their insurance and can't self-insure, they may decide it's in their best interest to shut the facility down. Then you have to find some other place for that waste to go."

In fact, many facilities are finding the risk of a battery fire can be just as costly as the fire itself.

> **"IF SOMETHING IS DONE WRONG, YOU'RE LOOKING AT LOSING AN ENTIRE FACILITY."**
>
> **Doug Button**
> President, South San Francisco Scavenger and Blue Line Transfer Inc.

To maintain insurance and keep plants from closing down, Doug Button, President of the South San Francisco Scavenger Company and Blue Line Transfer, Inc., said facilities have been making costly upgrades to their operations.

"If something catches fire, you're looking at losing an entire facility," he said.

Potential upgrades range from simple solutions like improved sprinkler systems, to more expensive measures such as robotics that use infrared sensors and chemical dispersion to stop fires. The more high-tech solutions can be very costly to implement.

However, batteries can harm the recycling process even if they don't explode on the sort line or in a collection truck. That's because too many loose batteries mixed in with actual recyclable materials can cause potential buyers to turn down entire loads of recyclables for being contaminated with too many non-recyclable items. As international buyers become more stringent with the quality of materials they will accept, the industry is now struggling with a growing amount of lost sales due to these contaminated loads of recyclables.

For now, the industry has been absorbing most of these costs from lost recycling sales and facility fires. However, unless behaviors change, these costs will eventually be felt by ratepayers.

"We're hoping that a significant fee hike for consumers isn't the case, but obviously we have to protect our infrastructure," Button said.

TOXIC RISK

Batteries that are recycled incorrectly aren't just a hazard to workers, they are also poisonous to our water and soil. Here's why keeping batteries out of landfills is critical to protecting our environment:

Batteries can contain toxic metals such as **lead, cadmium and mercury.**

When landfilled or forced through the standard waste stream, batteries can release these toxins into the **soil, groundwater, surface water or air.**

These toxins can become infused in fruits, vegetables and grass can and **passed onto humans** through the food chain, creating health problems.

Putting unnecessary items into landfills also creates more methane gas, which speeds up **global warming.**

Put Batteries in Their Place

Do the right thing to protect San Mateo County

Batteries are everywhere — they get you to work, they power your phone and they even help that greeting card sing out its message. But batteries also come with a huge responsibility. If not handled properly, they are capable of causing huge fires and explosions, threatening workers, facilities and equipment, and even the environment.

Luckily, recycling batteries properly in San Mateo County is easy! Simply follow these four steps to do the right thing and protect the community you live in:

1. Collect 2. Tape 3. Zip 4. Place

QUESTIONS? CONTACT YOUR HAULER

SAN MATEO COUNTY HEALTH
ENVIRONMENTAL HEALTH SERVICES
Smchealth.org/eh
650-372-6200

REPUBLIC SERVICES
Republicservices.com
Daly City: 650-756-1130
Half Moon Bay: 650-592-2411

greenwaste
a brighter shade of green
Greenwaste.com
650-568-9900

Rethink waste
South Bayside Waste Management Authority
A Public Agency
Rethinkwaste.org
650-802-3500

Recology
of the Coast
WASTE ZERO
Recology.com
Recology of the Coast: 650-355-9000
Recology San Bruno: 650-583-8536
Recology San Mateo County: 650-595-3900

SOUTH SAN FRANCISCO SCAVENGER COMPANY, INC.
Ssfscavenger.com
650-589-4020

IS IT RECYCLABLE?

Still not certain if something is recyclable or where it should go? Don't just toss it into a cart — when in doubt, find out by trying one of these methods:

1. **Ask your hauler** if they accept the item for recycling (see left for contact information).
2. **Drop off your item for free** at one of San Mateo County's Household Hazardous Waste Program's many events throughout the County. Go to **Smchealth.org/hhw** for more information.
3. **Visit Recyclestuff.org** to find the nearest retail locations that will take back those hard to recycle items!

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