BILL'S HOME TECH
Home & Small Business Tech Solutions

BILL'S COMPLETE MANUALS

Rechargeable & Everyday Batteries

AA and AAA, coin cells, chargers, safe storage and recycling — explained in plain English, one step at a time

A plain-English guide for every household

Take your time — you can't break it

Written for you by Bill — Bill's Home Tech

(330) 200-8042 · BillsHomeTech.com

For alkaline, lithium, NiMH & coin-cell batteries · facts current November 2026

What's Inside

This is your guide to the small batteries that keep a home running: the AAs in the remote, the coin cell in the car key, the tiny hearing-aid batteries, the 9-volt in the smoke alarm, and the rechargeables and chargers that can save you money. Read it in any order and at your own pace. The chapters on swallowed button batteries (Chapter 20) and damaged lithium batteries (Chapter 22) are worth reading first if there are children, grandchildren or pets in the house.

Part 1 — Getting Started

1 A Note from Bill
2 The Batteries in Your Home: A Quick Tour
3 Reading a Battery Label

Part 2 — Single-Use Batteries

4 Alkaline Batteries: The Everyday Workhorse
5 Lithium AA and AAA: Single-Use, Long-Lasting
6 Coin and Button Cells
7 Hearing-Aid Batteries

Part 3 — Rechargeables and Chargers

8 NiMH Rechargeables (eneloop and Friends)
9 USB-C Lithium-Ion AA and AAA Batteries
10 Choosing and Using a Charger
11 Do Rechargeables Really Save Money?

Part 4 — The Right Battery for Each Device

12 Smoke and Carbon Monoxide Alarms
13 Remotes, Clocks, Controllers and Toys
14 Car Key Fobs and AirTags
15 Glucose Meters and Other Medical Devices
16 Flashlights, Outdoor Gadgets and the Cold

Part 5 — Storage and Care

17 Storing Batteries Safely
18 Cleaning Up Leaks and Corrosion
19 Testing Batteries and Keeping Track

Part 6 — Safety First

20 If a Child or Pet Swallows a Battery
21 Child-Safe Batteries and Reese's Law

22 Damaged, Swollen or Hot Lithium Batteries
23 Tool, Vacuum and E-Bike Battery Packs

Part 7 — Disposal, Recycling and Buying Wisely

24 What Can Go in the Trash (and What Can't)
25 Where to Recycle Batteries
26 Fake Batteries, Bad Chargers and Too-Good Deals

Part 8 — When to Call Bill & Your Cheat-Sheet

27 When to Call Bill
28 Your Battery Cheat-Sheet

PART 1

Getting Started

A quick tour of the batteries in your home and how to read the label on any of them. Start here.

CHAPTER 1

A Note from Bill

Hello, and welcome. Batteries are the most ordinary technology in the house, and yet they cause more small headaches than almost anything else: the remote that stops working during the game, the smoke alarm that chirps at three in the morning, the car key that won't unlock the door, the drawer full of batteries nobody can tell apart. If any of that sounds familiar, this guide is for **you**.

I'm Bill. I've spent more than 30 years working with technology, and these days I help folks here in Portage County feel at home with theirs. I wrote this guide the way I'd explain it at your kitchen table: slowly, in plain English, and without trying to sell you anything. When I use a word like "NiMH" or "coin cell," I'll stop and explain it right then.

What this guide will do for you

- Help you tell the common batteries apart, and read the letters and numbers printed on them.
- Explain the three big families: **alkaline**, **lithium** single-use, and **rechargeable**.
- Show you when rechargeables save money, which charger to use, and what must **never** go in a charger.
- Match the right battery to the right device: smoke alarms, hearing aids, remotes, car keys, AirTags and glucose meters.
- Teach you to store batteries safely and clean up a leak without hurting yourself or the device.
- Cover the serious safety topics in real depth: swallowed button batteries, and lithium-ion fires.
- Tell you exactly what can go in the trash, what can't, and where to drop batteries off for recycling.

The big promise: you can't break it by learning

Most of what's in this guide is about choosing, swapping and storing — things you can do slowly and undo if you get them wrong. Put a battery in backwards and most devices simply won't turn on; flip it around and try again. There are two places where I'll slow down and be very direct with you, because they really matter: **button batteries around children and pets**, and **damaged or swollen lithium batteries**. I'll mark those clearly with safety boxes.

WHAT THIS DOES FOR YOU

Why this matters

A little battery know-how saves money, saves trips to the store, and saves that sinking feeling when something important stops working. More than that, knowing how to store and dispose of batteries safely protects your family and your home.

Two guides that go well with this one

This guide is about the small, swappable batteries you buy in a package. The battery sealed inside your phone, tablet, laptop or watch is a different subject, covered in our **Batteries: Health, Charging & Replacement** guide. Big backup batteries are covered in **Portable Power Stations** and **Surge Protectors & Battery Backups**.

I'm only a phone call away

If anything in this guide leaves you unsure, call me at **(330) 200-8042**. And if a child or pet may have swallowed a battery, don't call me — call the hotline in Chapter 20 right away.

Let's start with a quick walk through the batteries you probably already own.

— Bill

CHAPTER 2

The Batteries in Your Home: A Quick Tour

Open the kitchen junk drawer in almost any home and you'll find a small zoo of batteries. Here are the ones you'll meet most often, and what they usually power.

The everyday sizes

Size	What it looks like	Where you'll find it
AA	The classic pencil-thick cylinder	Remotes, clocks, flashlights, toys, wireless mice, game controllers
AAA	A thinner, shorter cylinder	Slim remotes, thermometers, small flashlights, keyboards
C and **D**	Fat cylinders; D is the biggest	Big flashlights, lanterns, radios, older toys
9-volt	A small rectangle with two snaps on top	Older smoke alarms, some toys, guitar pedals, wall scanners
Coin cell	A flat silver disc, about the size of a nickel or smaller	Car key fobs, AirTags, glucose meters, kitchen scales, watches
Button cell	A small, thick silver disc	Watches, small toys, laser pointers, calculators
Hearing-aid cell	A tiny disc with a colored sticker	Hearing aids that use disposable batteries
CR123A	A short, stubby cylinder	Some smart smoke alarms, cameras, door sensors, weapon lights

Three big families

Almost every battery in this guide belongs to one of three families. Knowing the family tells you how long it lasts, what it costs, and how to get rid of it.

Family	In plain words
Alkaline (single-use)	The everyday battery in most packages. Cheap and everywhere. Use it once and replace it. Chapter 4.
Lithium (single-use)	Lighter, longer-lasting and better in the cold, at a higher price. Also used once. Includes most coin cells. Chapters 5 and 6.
Rechargeable	Costs more up front but can be recharged many times. Most rechargeable AAs are **NiMH** (nickel-metal hydride); a newer kind is **lithium-ion** with a USB-C port. Chapters 8 and 9.

GOOD TO KNOW

Shape doesn't tell you the chemistry

An alkaline AA, a lithium AA and a rechargeable AA are all the same size and shape. The words on the label are the only reliable way to tell them apart. Chapter 3 shows you where to look.

WHAT THIS DOES FOR YOU

What this does for you

Once you can name the size and the family, you can buy the right replacement the first time — and stop wasting money on packs that don't fit.

CHAPTER 3

Reading a Battery Label

Every battery carries a little code that tells you its size, its chemistry and its voltage. It looks like alphabet soup at first, but there are only a few things to learn.

The four things to look for

1. **The size.** Printed as AA, AAA, C, D or 9V on cylinders and rectangles, or as a number like **2032** or **312** on small discs.
2. **The chemistry.** Look for the words **Alkaline**, **Lithium**, **Rechargeable**, **NiMH** or **Li-ion**. If it says "Rechargeable" anywhere, it's meant for a charger.
3. **The voltage.** Shown with a V: **1.5V** for alkaline and lithium AAs, **1.2V** for most rechargeable AAs, **3V** for most coin cells, **9V** for the rectangle.
4. **The date.** Many packages and some batteries show a "best if used by" or expiration date. Fresher is better, especially for alkalines.

Coin-cell codes, decoded

Coin cells use a standard naming system. Take **CR2032**, the most common one:

Letters	What they mean
C	The chemistry family: lithium.
R	Round.
20	The diameter: 20 millimeters across.
32	The thickness in tenths of a millimeter: 3.2 millimeters thick.

So a **CR2025** is the same width as a CR2032 but thinner (2.5 millimeters), and a **CR2016** is thinner still. A **CR2450** is wider and thicker. All of these are 3-volt lithium coins.

HEADS UP

Close isn't good enough

A CR2025 may drop into a slot made for a CR2032, but it's thinner, holds less energy, and may not press firmly against the contacts. That can cause a device to flicker on and off. Always buy the exact code printed on the old battery or in the device's manual.

Other codes you might see

- **LR6** and **LR03** are the international names for alkaline AA and AAA. **HR6** and **HR03** are rechargeable NiMH AA and AAA. You'll see these in small print.
- **LR44** and similar codes are small alkaline **button** cells. **SR** codes (for example SR626SW) are silver-oxide button cells, common in watches.
- **mAh** (milliamp-hours) appears on rechargeables. It's a rough measure of how much energy the battery holds. A bigger number usually means longer between charges.
- Some newer lithium-ion AAs list **mWh** (milliwatt-hours) instead. That's a different unit, so you can't compare it directly with mAh.

TIP

Take the old one with you

Not sure what you need? Pop the old battery out, put it in a small zip-top bag, and take it to the store. Or take a clear photo of the printing on it with your phone. Either one beats guessing.

WHAT THIS DOES FOR YOU

What this does for you

Reading a label takes ten seconds and saves a wasted trip, a wasted purchase, and a device that won't quite work.

PART 2

Single-Use Batteries

The batteries you use once and replace: everyday alkalines, long-lasting lithium AAs, coin and button cells, and hearing-aid batteries.

CHAPTER 4

Alkaline Batteries: The Everyday Workhorse

When you buy a pack of Duracell, Energizer, Rayovac or store-brand AAs at the checkout, you're almost always buying **alkaline** batteries. They're inexpensive, sold everywhere, and fine for most things in the house.

What alkalines are good at

- **Low-drain devices** that sip power slowly: TV remotes, wall clocks, kitchen timers, thermometers, battery-powered candles.
- **Things you rarely think about**, because a fresh alkaline keeps most of its energy on the shelf for years. The package shows a "best by" date.
- **Emergencies**, since you can buy them in any grocery store, gas station or pharmacy.

Where alkalines struggle

- **High-drain devices** such as digital cameras, flash units, some toys with motors, and game controllers. These can drain alkalines quickly. A rechargeable (Chapter 8) or lithium AA (Chapter 5) often does better.
- **Cold places**, like a garage door keypad or an outdoor weather sensor in an Ohio January. Alkalines lose punch in the cold.
- **Leaks.** An alkaline left in a device for years, especially a dead one, can leak a white, crusty residue that damages the contacts. Chapter 18 shows you how to clean it up.

Good habits with alkalines

1. **Replace all the batteries in a device at the same time**, with the same brand and type. Mixing an old battery with a new one makes the old one work too hard, and that's when leaks happen.
2. **Take batteries out** of things you'll put away for months, like holiday decorations or a camping lantern.
3. **Check the date** on the package before you buy, and use the oldest packs first at home.
4. **Never put alkalines in a charger.** They aren't built to be recharged. Chapter 10 explains why.

GOOD TO KNOW

Alkaline isn't acid

People often call the crust on an old battery "battery acid." With alkalines it's actually the opposite: a caustic chemical called potassium hydroxide. It can still irritate skin and eyes, so use gloves when you clean it up (Chapter 18).

WHAT THIS DOES FOR YOU

What this does for you

Using alkalines where they shine, and swapping them all at once, means fewer dead remotes and far fewer ruined devices from leaks.

CHAPTER 5

Lithium AA and AAA: Single-Use, Long-Lasting

Next to the alkalines on the store shelf you'll often find **lithium** AA and AAA batteries, such as Energizer Ultimate Lithium. They cost more, but they're a smart buy for certain jobs. These are **single-use**: they are not the same as the rechargeable lithium-ion batteries in Chapter 9.

What makes them different

Feature	In plain words
Voltage	1.5 volts, the same as an alkaline, so they work anywhere an AA or AAA is called for.
Weight	Noticeably lighter than alkalines.
Cold weather	Energizer rates its Ultimate Lithium AA to work from -40°F up to 140°F, far better than alkalines in the cold.
Shelf life	Energizer lists up to 20 years in storage for its lithium AAs in the U.S. (check the package).
Leaks	Built to resist leaking under normal use.
Price	Usually several times the price of an alkaline per battery.

Where lithium AAs are worth the money

- Outdoor and garage gadgets: weather-station sensors, trail cameras, a garage keypad, a mailbox alert.
- Things you want to forget about for a long time, like a flashlight in the car or the emergency kit.
- Devices that are a nuisance to reach, such as a motion sensor high on a wall.
- Power-hungry gadgets like a camera flash, where alkalines run down fast.

When to stick with alkalines

For a TV remote or wall clock, lithium is usually more battery than you need. And always follow the device's instructions: if a manual says to use alkaline only, do what it says. That matters most for smoke alarms (Chapter 12) and medical devices (Chapter 15).

HEADS UP

Don't confuse the two lithiums

"Lithium" on a single-use AA means a disposable battery. "Lithium-ion" or "Li-ion" on an AA means a rechargeable, usually with a USB-C port. Only the second kind ever goes on a charger, and only the charger made for it.

WHAT THIS DOES FOR YOU

What this does for you

One pack of lithium AAs in the outdoor sensor or the car flashlight can mean years without thinking about it, and no dead flashlight when you need it.

CHAPTER 6

Coin and Button Cells

Coin cells and button cells are the small, flat batteries in car keys, watches, kitchen scales, glucose meters, AirTags, bathroom scales and computer motherboards. They're handy, but they're also the batteries that need the most care around children and pets (Chapter 20).

Coin cells versus button cells

Type	What it is
Coin cell	Wide and thin, like a coin. Usually **3-volt lithium**. Codes start with **CR**: CR2032, CR2025, CR2016, CR2450, CR1632, and so on.
Button cell	Small and thicker, like a shirt button. Usually **1.5-volt**. Alkaline ones start with **LR** (LR44, LR41); silver-oxide watch batteries start with **SR** (SR626SW, also sold as 377).
Hearing-aid cell	A special zinc-air button cell with a colored tab. Chapter 7.

Reading the code again: CR2032 versus CR2025

As Chapter 3 explained, the first two digits are the width in millimeters and the last two are the thickness in tenths of a millimeter. So:

Code	Width	Thickness	Common uses
CR2032	20 mm	3.2 mm	AirTags, many car keys, glucose meters, scales, computer motherboards
CR2025	20 mm	2.5 mm	Some car keys and remotes, small electronics
CR2016	20 mm	1.6 mm	Thin key fobs, some watches and fitness gadgets
CR2450	24 mm	5.0 mm	Some smart-home sensors, bike computers, larger scales

HEADS UP

Same width, not the same battery

A CR2025 or CR2016 will drop into a CR2032 slot, but it's thinner and holds less energy, and it may not touch both contacts firmly. Some people stack two CR2016s in place of one CR2032; don't do that unless the device's maker says to, because two cells together make 6 volts instead of 3.

Swapping a coin cell, step by step

1. Look at the old battery before you take it out. Note the code and **which side faces up**. Usually the flat side with the + and the writing faces you.
2. Open the cover the way the manual shows. Many slide or twist; some need a small coin or a tiny screwdriver. Since 2023, many new products are made so the battery cover needs a tool or two separate motions to open; that's a child-safety rule (Chapter 21).
3. Slide the old battery out with a fingernail or a plastic tool. Avoid metal tweezers, which can short the battery.
4. Handle the new battery by its edges so skin oil doesn't coat the faces.
5. Press it in, + side the same way as the old one, and close the cover fully.
6. **Put the old battery straight into a taped, sealed container**, out of reach (Chapter 17). Don't set it on the counter, where a toddler or a dog can find it.

STAY SAFE

Button batteries and little ones

A swallowed coin cell can cause serious burns inside a child's throat in as little as two hours. If you even suspect a child has swallowed one, call the National Battery Ingestion Hotline at **800-498-8666** or Poison Control at **1-800-222-1222** and head to the emergency room. Chapter 20 has the details.

WHAT THIS DOES FOR YOU

What this does for you

Knowing the code and which side faces up turns a confusing little chore into a two-minute job, and keeping the old cell contained keeps the youngest members of the family safe.

CHAPTER 7

Hearing-Aid Batteries

Many hearing aids today have a built-in rechargeable battery and sit in a charging case overnight. But plenty of hearing aids still use tiny disposable **zinc-air** batteries. If yours do, this chapter is for you. Rechargeable hearing aids are covered in our **Bluetooth Hearing Aids** guide.

The four sizes and their colors

Hearing-aid batteries come in four standard sizes. Every brand uses the same color on the package and on the little sticker, which makes buying the right ones easy.

Size	Color	Notes
10	Yellow	The smallest. Common in tiny in-the-canal aids.
312	Brown	Very common in small behind-the-ear and receiver-in-canal aids.
13	Orange	Larger behind-the-ear aids.
675	Blue	The biggest, for powerful aids and cochlear implant processors.

How zinc-air batteries wake up

A zinc-air battery uses oxygen from the air to make power. The colored sticker seals tiny air holes. As long as the sticker is on, the battery stays fresh. Once you peel it off, the battery starts working, and it won't stop even if you put the sticker back.

1. Wash and dry your hands. Open the battery door on the hearing aid and remove the old battery.
2. Peel the colored tab off a new battery.
3. **Wait a minute or two** before putting it in, so air can reach the inside. Phonak says about two minutes for full activation; follow your hearing-aid maker's advice.
4. Put the battery in with the flat + side facing the way the door shows, and close the door gently.
5. At night, open the battery door so the aid turns off and moisture can escape.

TIP

Make the batteries last

Keep unused batteries at room temperature in their package; don't refrigerate them. Pull the tab only when you're ready to use the battery. A magnetic battery stick, sold for hearing aids, makes handling the tiny cells much easier for stiff fingers.

STAY SAFE

Tiny, and easy to swallow

Hearing-aid batteries are small enough to be mistaken for a pill, or swallowed by a child or pet. Never keep them in a pill organizer or next to your pills. Put used ones in a closed container right away, and treat any swallowed battery as an emergency (Chapter 20).

WHAT THIS DOES FOR YOU

What this does for you

The right color, a short wait after peeling the tab, and a safe place for the used ones: that's all it takes to keep your hearing aids working and your household safe.

PART 3

Rechargeables and Chargers

NiMH batteries like eneloop, the newer USB-C lithium-ion AAs, choosing a charger, and whether rechargeables really save you money.

CHAPTER 8

NiMH Rechargeables (eneloop and Friends)

Most rechargeable AA and AAA batteries sold today are **NiMH**, short for nickel-metal hydride. Panasonic's **eneloop** is the best-known brand; Energizer, Duracell, IKEA, EBL and store brands all sell them too. You charge them in a separate charger and use them over and over.

The two things that surprise people

Fact	What it means for you
They're 1.2 volts	A NiMH AA is labeled 1.2 volts, a little lower than an alkaline's 1.5. Almost every device works fine anyway, because a NiMH holds that voltage steadily while an alkaline slowly sags. A few gadgets read the lower voltage as "low battery" too early.
They lose charge sitting	Older NiMH batteries went flat in a drawer within weeks. Modern **low self-discharge** types (look for "pre-charged" or "ready to use" on the package) hold their charge much longer.

What eneloop says about its batteries

- The standard eneloop AA can be recharged **up to 2,100 times**, based on Panasonic's testing to an international standard. Real-world results depend on how you use them.
- Panasonic says eneloop AAs keep **70 percent of their charge after 10 years** in storage, based on its own internal testing.
- They come **pre-charged**, so you can use them straight from the package.

Capacity: the mAh number

Rechargeables show a capacity in **mAh**. A higher number, such as 2,500 mAh on a "pro" or "max" battery, runs a camera longer between charges. The trade-off is that high-capacity versions are usually rated for fewer recharges and cost more. For remotes, toys and controllers, a standard battery is the better value.

Where NiMH works best

- Game controllers, wireless keyboards and mice.
- Kids' toys that eat batteries.
- Digital cameras, camera flashes, handheld radios and flashlights you use often.

- Anything where you'd otherwise buy a new pack every few weeks.

Where to skip them

- **Smoke and carbon monoxide alarms**, unless the alarm's maker lists them. Use the exact battery the alarm calls for (Chapter 12).
- **Medical devices**, unless the manual allows them (Chapter 15).
- Very low-drain gadgets such as wall clocks, where an alkaline lasts a year or more anyway.

TIP

Label your sets

Number or color-code your rechargeables in sets of two or four with a permanent marker, and always charge and use a set together. That keeps one weak battery from dragging down the others.

WHAT THIS DOES FOR YOU

What this does for you

A few sets of good NiMH batteries can replace years of store-bought packs for your hungriest devices, with far fewer dead batteries going out of the house.

CHAPTER 9

USB-C Lithium-Ion AA and AAA Batteries

A newer kind of rechargeable AA and AAA has a tiny **USB-C port** right on the battery. You charge it with a phone-style cable instead of a separate charger. Brands include Paleblue, XTAR, EBL and others. The label says **1.5V Li-ion** or "lithium-ion rechargeable."

How they work, in plain words

Inside is a small lithium-ion battery, the same family as the one in your phone. On its own it puts out more than 3 volts, far too much for an AA slot. So each battery hides a tiny electronic regulator that turns it down to a steady **1.5 volts**, right up until it's nearly empty, and then it simply stops.

The good

- No separate charger needed. Many come with a cable that charges four at once.
- A steady 1.5 volts, which suits gadgets that complain about 1.2-volt NiMH batteries.
- Often a small light on the battery shows when charging is done.

Why some devices don't like them

- **No warning before they quit.** Many devices judge how full a battery is by its voltage. Because these batteries stay at 1.5 volts, the battery meter may read "full" right up until the device shuts off. That's annoying in a remote and a real problem in anything you depend on.
- **Heavy loads.** Some cut out when a device draws a lot of power at once, such as a camera flash or a motorized toy, even when they still have charge left.
- **Mixing.** Never mix them with alkalines or NiMH batteries in the same device.
- **Fake capacity.** Some list capacity in **mWh** (milliwatt-hours) rather than mAh, which makes the number look bigger. You can't compare the two directly.

HEADS UP

Not for alarms or medical devices

Because they can stop with no warning, don't use USB-C lithium-ion AAs in smoke or carbon monoxide alarms, medical devices, or anything else where a sudden stop matters, unless that device's maker specifically says they're allowed.

Charging them safely

1. Use the cable that came with them, plugged into an ordinary USB phone charger.
2. Charge on a hard surface such as a counter, not on a bed, couch or carpet.
3. Unplug when the lights show they're full, and don't leave them charging overnight or while you're out.
4. Stop using any battery that gets hot, swells, or has a cracked wrapper. Recycle it (Chapter 22).

WHAT THIS DOES FOR YOU

What this does for you

Used in the right places, such as game controllers, wireless mice and toys, USB-C AAs save money and clutter. Knowing their one big quirk keeps them out of the devices where a sudden stop would matter.

CHAPTER 10

Choosing and Using a Charger

NiMH batteries need a charger. The right one makes them last longer and keeps them safe. Here's what to look for, and the one rule you must never break.

STAY SAFE

Never put alkaline batteries in a charger

Ordinary alkaline batteries, lithium AAs, coin cells and other single-use batteries are **not** made to be recharged. Energizer says standard alkalines should never be placed in any battery charger, and Duracell warns that recharging a battery not marked "rechargeable" may cause it to rupture or leak and may cause injury. Only charge batteries that say **Rechargeable** on the label.

What a "smart" charger does

- **Charges each battery on its own**, so you can charge one, two, three or four. Cheaper chargers charge in pairs, so one weak battery can be overcharged or undercharged.
- **Stops when the battery is full** instead of running on a timer.
- **Shows status** with a light or small screen for each slot.
- **Refuses bad batteries.** Some smart chargers can detect an alkaline or a damaged cell and won't charge it. Don't count on that; read the label yourself.

Match the charger to the battery

Battery	Charger
NiMH AA/AAA	A NiMH charger, ideally the same brand. Many also take C, D and 9-volt NiMH with adapters.
USB-C Li-ion AA/AAA	The cable that came with them. Never put these in a NiMH charger unless the charger specifically lists 1.5-volt lithium-ion batteries.
Older NiCd batteries	Rarely sold now. Use a charger that lists NiCd, and recycle them when they're done.
Tool and e-bike packs	Only the maker's charger (Chapter 23).

Charging step by step

1. Check each battery says **Rechargeable** and **NiMH** (or Ni-MH).
2. Place the charger on a hard, dry surface away from curtains and paper.
3. Put the batteries in with + and – matching the marks in each slot.
4. Plug in the charger and watch the lights. Most go from red or blinking to green when done.
5. Remove batteries when they're full, and unplug the charger when you're not using it.

TIP

Warm is normal, hot is not

Batteries feel warm while charging. If one is too hot to hold comfortably, unplug the charger, let it cool away from anything that can burn, and retire that battery.

WHAT THIS DOES FOR YOU

What this does for you

A decent smart charger, used only for rechargeables, makes your batteries last for hundreds of charges and takes the guesswork out of "are these ready yet?"

CHAPTER 11

Do Rechargeables Really Save Money?

Rechargeables cost more up front: a charger plus a set of batteries can cost as much as many packs of alkalines. Whether they pay off depends on how fast your devices use batteries.

A simple way to decide

How often you change batteries	Best choice
Every few days or weeks (controllers, toys, cameras)	**Rechargeable.** Pays for itself quickly.
Every few months (wireless mouse, flashlight you use often)	Rechargeable is usually worth it.
Once a year or less (remote, clock, thermometer)	**Alkaline.** A rechargeable would sit for months.
Outdoors or in the cold, rarely changed	**Lithium AA** (Chapter 5).
Smoke alarm, medical device	Whatever the maker specifies (Chapter 12, Chapter 15).

Less waste, too

One rechargeable can stand in for many single-use batteries. Panasonic rates the standard eneloop AA for up to 2,100 recharges. Even if you get a fraction of that, it's a lot fewer batteries to throw out or recycle.

Keep your rechargeables healthy

- Charge them before storing them for a long time, and top them up every few months.
- Store them in a case at room temperature, not in a hot car or a freezing garage.
- Retire a battery that won't hold a charge, has a torn wrapper, or looks swollen or leaky. Rechargeables are always recycled, never thrown out (Chapter 25).

WHAT THIS DOES FOR YOU

What this does for you

Putting rechargeables where batteries disappear fast, and alkalines where they barely get used, gets you the savings without the hassle.

PART 4

The Right Battery for Each Device

Smoke alarms, remotes and toys, car keys and AirTags, glucose meters and other medical devices, and flashlights and outdoor gadgets.

CHAPTER 12

Smoke and Carbon Monoxide Alarms

Of all the batteries in the house, the ones in your smoke and carbon monoxide (CO) alarms matter most. The golden rule is simple: **use exactly the battery your alarm's maker says to use**. It's printed on the alarm itself, usually inside the battery door or on the back, and in the manual.

Why the exact battery matters

Alarm makers test their alarms with specific batteries. Kidde's manuals, for example, list the approved 9-volt batteries by brand and type, and warn that using other batteries may hurt the alarm's performance. A battery that quits suddenly, or reports its charge oddly, could leave you without warning.

The three kinds of alarm power

Type	What you do
Replaceable battery	Takes a 9-volt, AA or AAA. Replace the batteries at least once a year, and right away when it chirps.
Sealed 10-year battery	The battery is built in and can't be changed. When it chirps for low battery, or reaches its end date, you replace the **whole alarm**.
Hardwired with battery backup	Wired into the house, with a backup battery for power outages. The backup battery still needs replacing, usually yearly.

Good alarm habits

1. **Test every alarm once a month** with its test button.
2. **Replace replaceable batteries once a year.** Pick a date you'll remember and write it on the Cheat-Sheet (Chapter 28).
3. **Replace the whole alarm 10 years after the date of manufacture** printed on the back.
4. **Use the battery named on the label**, not rechargeables or USB-C lithium-ion batteries, unless the maker lists them.

That 3 a.m. chirp

A single chirp every half-minute or so usually means a low battery. Kidde's manuals describe a chirp about every 40 to 50 seconds. Some alarms also chirp when they reach end of life, which no new battery will fix. Look for a label or light pattern that explains which it is, and check the date on the back.

STAY SAFE

Ladders and late nights

Changing a ceiling alarm at night is how falls happen. If you can, take the battery out to stop the chirping, then put in a fresh one in daylight with someone holding the ladder. Don't leave an alarm without a battery longer than you must. Many local fire departments help older residents with alarm batteries; call their non-emergency number to ask.

GOOD TO KNOW

Our smoke alarm guide

Smart alarms, interconnected alarms, where to put them, and what to do when one goes off are all in our **Smart Smoke & CO Alarms** guide.

WHAT THIS DOES FOR YOU

What this does for you

The right battery, a monthly test and a yearly swap are the simplest things you can do to protect everyone who sleeps in your home.

CHAPTER 13

Remotes, Clocks, Controllers and Toys

These are the devices that go through batteries most often, and the ones where a smart choice saves the most money and frustration.

Device	Good choice	Why
TV and streaming remotes	Alkaline	Very low drain; a pair lasts months or longer.
Wall and kitchen clocks	Alkaline	Barely sip power. Rechargeables would self-drain first.
Game controllers	NiMH rechargeable, or the controller's own pack	Use lots of power; swaps every week or two.
Wireless keyboards and mice	NiMH or alkaline	Depends how much you use them.
Kids' toys	NiMH rechargeable	Hungry motors and lights; big savings.
Digital thermometers, small scales	Whatever the manual says	Often coin or button cells.

When the remote stops working

1. Point a phone camera at the remote's front tip and press a button. Many phone cameras show a flicker of light from an infrared remote. No flicker usually means dead batteries. (Some remotes use Bluetooth or radio, which won't show anything.)
2. Put in two fresh batteries of the same type, matching + and – to the marks.
3. Look inside the battery door for white or green crust. If you see it, clean it first (Chapter 18).
4. Still not working? The remote may need re-pairing with the TV or streaming box; see the guide for that device.

TIP

Batteries in kids' toys

Toys that use AA or AAA batteries usually have a screwed-shut battery door. Keep it that way, and keep the screwdriver handy. Toys with coin or button cells must have a secure battery door; if one is broken, tape it shut and put the toy away until it's fixed (Chapter 21).

WHAT THIS DOES FOR YOU

What this does for you

Matching the battery to the device means the remote just works, the toys don't cost a fortune to run, and you stop buying the wrong pack.

CHAPTER 14

Car Key Fobs and AirTags

Most car key fobs and Bluetooth trackers run on a single coin cell. When they get weak, the fob only works close to the car, or your phone warns that the tracker's battery is low.

Car key fobs

1. Check your car's owner's manual (or the maker's website) for the battery code. CR2032 is common, but many fobs use a CR2025, CR2016 or CR2450.
2. Many fobs hide a small mechanical key that slides out; the slot it leaves is often where you pry the case open. The manual shows the right spot.
3. Use a plastic tool or a coin wrapped in a thin cloth to open the case without scratching it.
4. Note which side of the old battery faces up, swap it, and snap the case shut.
5. Test the lock and unlock buttons. Most cars don't need any reprogramming after a battery swap.

> **TIP**
>
> **If the fob dies completely**
>
> Most cars with push-button start have a backup way to start the car with a weak fob, often by holding the fob against the start button or putting it in a marked spot. Your owner's manual explains it. It's worth reading before the day you need it.

AirTags

Apple's AirTag, including the second-generation AirTag released in January 2026, uses a user-replaceable **CR2032** coin cell. Your iPhone tells you in the **Find My** app when the battery is low. Apple's steps for the AirTag are below; if yours looks different, search Apple Support for "replace the battery in your AirTag."

1. Press down on the polished stainless-steel back and turn it counterclockwise until it stops.
2. Lift off the cover and remove the old battery.
3. Put in a new CR2032 with the **+ side facing up**.
4. Put the cover back and press down while turning clockwise until it stops. You may hear a sound when the new battery connects.

HEADS UP

Bitter-coated coin cells

Some CR2032 batteries now have a bitter-tasting coating to discourage children from swallowing them. That's a good safety idea, but Apple warns that some coated batteries may not work in an AirTag, depending on where the coating sits against the contacts. If you buy a coated battery, look for one whose package says it works with AirTag.

STAY SAFE

Keep trackers away from little hands

AirTags and similar trackers end up on keys, bags and pet collars, all within reach of children and pets. Make sure the battery cover is locked tight, and replace any tracker whose cover won't stay closed.

WHAT THIS DOES FOR YOU

What this does for you

A fresh coin cell takes two minutes and means the car unlocks from across the parking lot and your keys show up on the map when you need them.

CHAPTER 15

Glucose Meters and Other Medical Devices

Blood glucose meters, blood pressure monitors, digital thermometers, pulse oximeters and hearing aids all depend on batteries. For anything to do with your health, the rule is firm: **follow the device's manual**.

Finding the right battery

- Many glucose meters use one or two coin cells, often a CR2032, but models differ. Some are rechargeable.
- Blood pressure monitors usually take AA or AAA batteries, and some also have a wall adapter.
- Thermometers and pulse oximeters often use AAA batteries or small button cells.
- Continuous glucose monitor sensors have built-in batteries you don't change; you replace the whole sensor.

The battery type is printed in the manual, on a label inside the battery door, or on the maker's website. The customer-service number on the back of the meter can tell you too.

Good habits for medical devices

1. Keep a spare set of the right batteries with the device, in their original package, and check the date once a year.
2. Change batteries when the device shows a low-battery symbol, not after it dies in the middle of a reading.
3. After a battery change, check the **date and time** on a glucose meter or blood pressure monitor. Many reset, and the wrong date can scramble your readings log.
4. Use only the battery chemistry the manual allows; don't swap in rechargeables or USB-C lithium-ion AAs unless it says you can.

HEADS UP

If a reading seems wrong

A low battery can cause error messages or a meter that shuts off. If a reading doesn't make sense, change the battery, then follow the meter's instructions or call your pharmacist or doctor. Never change your treatment based only on a reading you don't trust.

WHAT THIS DOES FOR YOU

What this does for you

A spare battery in the kit and a quick date check mean your health readings are there when you, or your doctor, need them.

CHAPTER 16

Flashlights, Outdoor Gadgets and the Cold

Flashlights, lanterns, weather sensors, garage keypads, trail cameras and doorbell chimes have one thing in common: you need them to work on the one day you remember them.

Pick the battery for the place

Where	Good choice
Emergency flashlight, car kit	Lithium AA or AAA (Chapter 5). Long storage, works in the cold, resists leaks. Or keep alkalines in the package beside the flashlight, not inside it.
Flashlight you use every day	NiMH rechargeables, or a flashlight with its own built-in rechargeable.
Outdoor weather sensor, garage keypad	Lithium AA or AAA for an Ohio winter.
Lanterns and radios (C or D)	Alkaline, stored outside the device until needed.

Cold-weather tips

- Alkalines and NiMH batteries lose power in the cold and often recover when they warm up. A sensor that dies in a cold snap may just need lithium batteries.
- Don't charge rechargeables in a freezing garage. Bring them inside to room temperature first.
- Avoid storing batteries in a hot car in summer; heat shortens battery life.

Get ready for power outages

1. Pick one flashlight per person, plus one for the kitchen.
2. Keep fresh batteries in their package next to each flashlight, or use lithium batteries inside.
3. Twice a year, when you check the smoke alarms, try every flashlight.
4. Keep a battery-powered radio and a few extra AAs in your emergency kit.

GOOD TO KNOW

Bigger backup power

For keeping a phone, the internet or a CPAP going in an outage, see our **Portable Power Stations** and **Surge Protectors & Battery Backups** guides.

WHAT THIS DOES FOR YOU

What this does for you

The right battery in the right place means the flashlight works when the lights go out, and the outdoor gadgets keep going through January.

PART 5

Storage and Care

Storing batteries safely (goodbye, junk drawer), cleaning up leaks and corrosion, and testing and keeping track of the batteries you have.

CHAPTER 17

Storing Batteries Safely

A drawer full of loose batteries, keys, coins and paper clips is more than a mess. It's a small fire risk, and a hazard for children and pets. A few simple changes fix both.

Why loose batteries are a problem

- **9-volt batteries** have both terminals side by side on top. A key, coin, paper clip or another battery touching both at once can short-circuit it. Fire departments warn this can make enough heat to start a fire.
- **Lithium batteries and coin cells** can also heat up if their ends are shorted by metal.
- **Mixed old and new batteries** get confused, and old ones are more likely to leak.
- **Coin and button cells** rolling around a drawer are easy for a child or pet to find.

A safe battery-storage setup

1. Keep new batteries in their **original packaging** until you use them. It keeps the ends apart and the dates visible.
2. Get a **plastic battery organizer** or a small plastic box with a lid. Hardware and office-supply stores sell organizers with a slot for each size.
3. **Store 9-volt batteries upright** with their caps on, or with a piece of tape over the terminals. Never toss them in loose.
4. Keep coin and button cells in their child-resistant package, on a **high shelf or in a locked cabinet**.
5. Store everything in a cool, dry place indoors, away from heat and direct sun. A closet shelf works well. The refrigerator isn't necessary.
6. Keep a separate, clearly labeled **"Used batteries"** container for batteries waiting to be recycled (Chapter 25).

How to tape a battery

Before storing used batteries or dropping them off for recycling, cover the terminals with a small piece of clear packing tape, electrical tape or masking tape. On a 9-volt, cover both snaps. On a coin cell or lithium battery, cover the + side or the whole battery. Clear tape lets you still read the label. The EPA recommends taping lithium battery terminals, or putting each battery in its own plastic bag.

STAY SAFE

No metal in the battery box

Keep keys, coins, screws and tools out of any container that holds batteries. And never carry loose batteries in a pocket or purse with coins or keys.

WHAT THIS DOES FOR YOU

What this does for you

One small organizer and a roll of tape turn the junk drawer from a hazard into a place where you can find the right battery in seconds.

CHAPTER 18

Cleaning Up Leaks and Corrosion

Open a flashlight or remote that's been sitting for a while and you might find white, blue-green or crusty residue around the batteries. That's a leak. With care, you can often clean it up and save the device.

First, protect yourself

Alkaline battery leaks contain **potassium hydroxide**, a caustic chemical. Energizer says leakage can cause chemical burns and recommends gloves and eye protection when you clean a device.

Cleaning an alkaline leak, step by step

1. Put on disposable gloves and safety glasses or ordinary glasses. Work on newspaper or paper towels.
2. Remove the leaking batteries. Put them in a plastic bag; they can't be used again.
3. Dip a cotton swab or an old toothbrush in a little **white vinegar** or **lemon juice**. The mild acid neutralizes the alkaline residue. Don't soak the device.
4. Gently scrub the crust off the metal contacts. You may see a little fizzing.
5. Wipe with a swab barely dampened with water, then dry thoroughly. Let it air-dry for a few hours.
6. If the contacts are still dull, rub them gently with a pencil eraser.
7. Put in fresh batteries and test the device. Wash your hands when you're done.

HEADS UP

When it can't be saved

If the corrosion has spread past the battery contacts into the circuit board, or a contact has broken off, cleaning the contacts won't fix it. For an inexpensive remote, replacement is usually simpler.

If it gets on your skin or in your eyes

- Skin: rinse with plenty of running water for several minutes.
- Eyes: rinse with clean running water for at least 15 minutes and call Poison Control at **1-800-222-1222**.
- Swallowed residue or a swallowed battery: call Poison Control right away (Chapter 20).

Rechargeable and lithium leaks are different

A lithium or lithium-ion battery that leaks, hisses, smells sweet or chemical, or looks swollen is a different matter. Don't clean it. Follow Chapter 22.

Preventing leaks

- Replace all batteries in a device at once, with the same type.
- Take batteries out of things you won't use for months.
- Remove dead batteries promptly.
- Consider lithium AAs (Chapter 5) for devices that sit unused a long time.

WHAT THIS DOES FOR YOU

What this does for you

A cotton swab and a little vinegar can rescue a favorite flashlight or remote, and a few good habits keep leaks from happening at all.

CHAPTER 19

Testing Batteries and Keeping Track

Is that battery in the drawer good or dead? Instead of guessing, a few easy tricks will tell you.

Ways to test

Method	How it works
Battery tester	An inexpensive gadget from hardware stores. Put the battery in and a needle or light shows good, low or replace. The simplest choice for most homes.
Multimeter	A meter that reads volts. A fresh alkaline AA reads a bit above 1.5 volts; around 1.2 volts or lower it's getting weak. NiMH batteries read about 1.2 to 1.4 when charged.
Try it	Put it in a low-stakes device like a remote. Not precise, but quick.

GOOD TO KNOW

USB-C lithium-ion AAs fool testers

Because they hold a steady 1.5 volts until they quit (Chapter 9), a tester usually shows "good" right up until the end. Just recharge them.

A simple battery log

A short list saves a lot of head-scratching. Write it on the Cheat-Sheet (Chapter 28), or keep a note on your phone.

1. List the devices that matter: each smoke and CO alarm, the car key fobs, the glucose meter, hearing aids, the emergency flashlights.
2. Next to each, write the battery it takes (for example, "9V alkaline" or "CR2032").
3. Write the date you last changed it.
4. Set a yearly reminder on your phone or calendar for the smoke alarms, and check the rest at the same time.

TIP

A strip of masking tape

Put a small piece of masking tape inside the battery door, or on the back of a device, with the date you changed the batteries. Next time, you'll know at a glance.

WHAT THIS DOES FOR YOU

What this does for you

Knowing what each device takes and when you last changed it means fewer trips to the store, fewer surprises, and no more guessing which batteries in the drawer are any good.

PART 6

Safety First

Swallowed button batteries, child-safe battery rules, damaged or swollen lithium batteries, and the big packs in tools and e-bikes. Please read this part if children, grandchildren or pets visit your home.

CHAPTER 20

If a Child or Pet Swallows a Battery

This is the most important chapter in this guide. Coin and button batteries are small, shiny and easy to swallow. Once swallowed, a coin cell can get stuck in a child's throat and cause severe burns in as little as two hours. A child may seem fine at first. **Don't wait for symptoms.**

Numbers to keep on the refrigerator

Who	Number
National Battery Ingestion Hotline	**800-498-8666**, open 24 hours a day, staffed by poison specialists
Poison Control	**1-800-222-1222**, open 24 hours a day, anywhere in the U.S.
Emergency	**911** if the person is having trouble breathing, is drowsy, or you're worried

If you think a child swallowed a battery

1. **Go to the emergency room right away**, or call 911. Don't wait to see if symptoms appear.
2. On the way, or as you leave, call the **National Battery Ingestion Hotline at 800-498-8666** or **Poison Control at 1-800-222-1222**. They can advise you and the hospital.
3. **Don't make the child vomit.**
4. **Don't let the child eat or drink** anything unless the poison specialist tells you to.
5. If you can, bring the battery package or a matching battery, or the device it came from, so doctors know the size and type.

GOOD TO KNOW

About honey

Poison Control may tell you to give a child older than 12 months small spoonfuls of honey on the way to the hospital, if the battery was swallowed recently. Honey can slow the injury but does not stop it. Give it only if the specialist tells you to, follow their amounts exactly, and never delay the trip to the hospital to find honey.

Warning signs

A child may have no signs at all at first. Later signs can include drooling, gagging, trouble swallowing, chest pain, coughing, vomiting, refusing food, or blood in spit or vomit. Any of these after a battery may have gone missing is an emergency.

Batteries in the ear or nose

Small children sometimes push button batteries into an ear or nostril. These can burn quickly too. Don't try to dig it out; go to the emergency room and call Poison Control.

Adults swallow batteries too

Hearing-aid batteries and tiny button cells are easily mistaken for pills, especially when they're kept near medicine. If an adult swallows one, call Poison Control at **1-800-222-1222** or the battery hotline right away and follow their advice.

If a pet swallows a battery

Dogs in particular chew remotes and key fobs. Call your veterinarian or the nearest emergency animal hospital right away. You can also call the **ASPCA Animal Poison Control Center at (888) 426-4435** or the **Pet Poison Helpline at 855-764-7661**; both are staffed around the clock, and a consultation fee may apply. Don't make your pet vomit unless a vet tells you to.

STAY SAFE

Missing battery? Treat it as swallowed

If a coin cell goes missing and a small child was nearby, act as though it was swallowed. An X-ray at the hospital can tell quickly. It's far better to make a trip for nothing than to wait.

WHAT THIS DOES FOR YOU

What this does for you

Knowing these two numbers and the first three steps, before you ever need them, can make all the difference in the minutes that matter most.

CHAPTER 21

Child-Safe Batteries and Reese's Law

In 2022, Congress passed **Reese's Law**, named for Reese Hamsmith, an 18-month-old who died after swallowing a button battery. It set new federal safety rules for button and coin batteries and the products that use them.

What Reese's Law requires

Rule	What it means for you
Child-resistant packages	Button and coin batteries, sold alone or packed with a product, must come in packaging that's hard for children to open. That's why new coin cells come in tough blister packs that need scissors.
Secure battery doors	Products made or imported since October 23, 2023 must have battery compartments a child can't easily open: one that needs a tool such as a screwdriver or coin, or two separate movements at the same time.
Warning labels	Since September 2024, packages must carry warnings about the danger of swallowing button and coin batteries.

Child-proofing your home, room by room

- **Living room:** check every remote's battery door. If one is loose or missing, tape it shut with strong tape, or replace the remote.
- **Kitchen:** scales, timers, thermometers and the junk drawer. Move spare coin cells to a high or locked spot.
- **Bathroom:** scales, electric toothbrush heads, hearing-aid batteries, and pill organizers. Keep hearing-aid batteries apart from pills.
- **Bedroom and nightstand:** watches, hearing aids, small flashlights, and greeting cards that play music.
- **Holiday time:** flameless candles, light-up ornaments, musical cards and small toys often use button cells. Older items may not meet today's rules.
- **Keys and bags:** car fobs and trackers like AirTags.

HEADS UP

Older and online products

Products made before late 2023, cheap imports bought online, and novelty items may not have secure battery doors. When grandchildren visit, do a quick walk-through and move anything with an easy-open coin cell out of reach.

TIP

Dispose of used coin cells safely

Used coin cells still have enough power to cause harm. Tape them right away and put them in a closed container out of reach until recycling day.

WHAT THIS DOES FOR YOU

What this does for you

Ten minutes walking through the house with grandchildren in mind can remove the most dangerous little objects before anyone finds them.

CHAPTER 22

Damaged, Swollen or Hot Lithium Batteries

Lithium-ion batteries are everywhere: USB-C AAs, power banks, phones, cordless tools, vacuums, e-bikes. They pack a lot of energy into a small space, which is why a damaged one can overheat and catch fire. This chapter tells you how to spot trouble and what to do.

Warning signs

Stop using a lithium-ion battery or device right away if you notice:

- **Swelling**: a bulge, a case that won't close, or a phone or tablet screen lifting.
- A strange **smell**, sweet or chemical.
- **Heat**: too hot to hold comfortably, especially when not charging.
- A change in **color or shape**, **leaking**, or odd **noises** like hissing or popping.
- It won't charge, or it was dropped, crushed, punctured or got wet.

What to do

1. Stop charging and stop using it. If it's plugged in and safe to reach, unplug the charger at the wall.
2. If it's safe, move it away from anything that can burn, onto a hard surface such as concrete, or outdoors away from the house.
3. If it's smoking, hissing or on fire, **get everyone out and call 911**. Don't try to fight the fire yourself.
4. Once it's cool and calm, don't put it back into service. Keep it outside or in a garage, away from anything that burns, in a metal container or a bucket of sand or kitty litter, until you can drop it off.
5. Call the maker or the place you bought it, and check for recalls at **cpsc.gov/Recalls**.

STAY SAFE

Never in the trash or recycling bin

The EPA says lithium-ion batteries must **never** go in household trash or curbside recycling. They can be crushed in a garbage truck or at a recycling plant and start fires. Damaged batteries also don't belong in ordinary store drop-off bins. Take them to a household hazardous waste program or ask the drop-off site how to handle damaged batteries (Chapter 25).

Charging habits that prevent trouble

- Use the charger and cable that came with the device, or a replacement from the same maker.
- Charge on a hard surface, not on a bed, couch, pillow or carpet.
- Don't charge while you're asleep or away from home, especially larger batteries.
- Keep batteries out of hot cars and direct sun.
- Buy batteries and chargers listed by a recognized testing lab such as UL, ETL or CSA, and avoid unknown bargain brands.

GOOD TO KNOW

Phone, tablet and laptop batteries

Swollen phones, battery health and getting a sealed battery replaced are covered in our **Batteries: Health, Charging & Replacement** guide.

WHAT THIS DOES FOR YOU

What this does for you

Recognizing a swollen or overheating battery and knowing the safe next steps protects your home and the people in it.

CHAPTER 23

Tool, Vacuum and E-Bike Battery Packs

Cordless drills, string trimmers, leaf blowers, stick vacuums and e-bikes run on big lithium-ion packs. They're wonderful, but they hold far more energy than an AA, so they deserve extra respect.

Safe charging and storage

1. Use only the maker's charger for that battery. CPSC warns against universal chargers for e-bikes and scooters.
2. Charge in a cool, dry place on a hard surface, away from anything that can burn, and away from your exit doors.
3. Charge when you're home and awake, and unplug when it's full.
4. Store packs indoors at room temperature when you can, not in a freezing shed or a baking-hot garage, and never leave them on the charger for weeks.
5. Keep packs away from water and don't use one that's been dropped hard, cracked or soaked.

Look for the safety mark

For e-bikes, look for certification to **UL 2849**; for e-scooters, **UL 2272**. A cheap replacement battery from an unknown online seller is one of the riskiest things you can buy. Buy replacements from the tool or bike maker, or a source they approve.

When a pack wears out

Tool and vacuum packs go into the rechargeable-battery recycling stream. Tape the terminals, and take them to a drop-off site (Chapter 25). E-bike batteries are big enough that you should call ahead; The Battery Network runs a program for e-bike batteries with participating bike shops.

GOOD TO KNOW

Our e-bike guide

E-bike classes, Ohio rules, riding and charging safely are covered in our **E-Bikes & E-Scooters** guide.

WHAT THIS DOES FOR YOU

What this does for you

A few charging habits and genuine replacement batteries keep your tools and e-bike running safely for years.

PART 7

Disposal, Recycling and Buying Wisely

What can go in the trash in Ohio, where to recycle the rest here in Portage County and at stores, and how to avoid counterfeit batteries and fake deals.

CHAPTER 24

What Can Go in the Trash (and What Can't)

The rules are simpler than they seem. In Ohio, only one kind of everyday battery may go in the household trash, and nothing battery-shaped ever goes in the curbside recycling bin.

The Ohio rule

Ohio EPA says ordinary single-use **alkaline** and **zinc-carbon** ("heavy duty") batteries are the only household batteries that may go in the regular trash. Everything else should be recycled or taken to a household hazardous waste collection. Batteries don't belong in curbside recycling at all; recycling plants aren't set up for them, and lithium batteries can start fires there.

Battery	Trash?	Where it goes
Alkaline AA, AAA, C, D, 9V	Allowed in Ohio	Trash, or a drop-off that accepts single-use batteries. Tape 9-volts.
Lithium AA/AAA (single-use)	**No**	Battery drop-off or household hazardous waste. Tape ends.
Coin cells (CR2032 etc.)	**No**	Battery drop-off or household hazardous waste. Tape both sides.
Button and hearing-aid cells	**No**	Battery drop-off; or ask your hearing-care office. Tape them.
NiMH and NiCd rechargeables	**No**	Rechargeable battery drop-off at many stores.
Lithium-ion (USB-C AAs, tools, power banks)	**Never**	Rechargeable battery drop-off. Damaged ones: Chapter 22.
Car batteries (lead-acid)	**Never**	Auto parts stores and the place you buy a new one.

TIP

Even alkalines are worth a drop-off

The EPA prefers that household batteries go to a drop-off or collection program when one is available. If you're already taking rechargeables to the county or a store, it costs nothing extra to bring alkalines to a site that takes them.

Getting batteries ready to drop off

1. Keep a labeled "Used batteries" container with a lid (Chapter 17).
2. Tape the ends of lithium, coin, button and 9-volt batteries, or bag each one separately. The EPA recommends this for lithium batteries.
3. Keep damaged, swollen or leaking batteries separate, in sand or kitty litter, and tell the drop-off site about them (Chapter 22).
4. Drop them off a few times a year.

WHAT THIS DOES FOR YOU

What this does for you

One container, a roll of tape and a few drop-offs a year keep the house safe and the batteries out of the landfill and away from garbage-truck fires.

CHAPTER 25

Where to Recycle Batteries

There are good options close to home. Here's where to start.

Portage County

The **Portage County Solid Waste Management District** runs the county recycling center at **3588 Mogadore Road in Kent**. The district lists batteries among the items it accepts, and it runs a household hazardous waste program on set days. Hours and days change, so **call (330) 678-8808** or check the county's solid waste page at portagecounty-oh.gov before you go. Ask which battery types they take and how to bring any damaged ones.

GOOD TO KNOW

Live outside Portage County?

Search for your county's "solid waste district" or "household hazardous waste" page, or call your city or township office. Nearly every Ohio county has a program.

The Battery Network (formerly Call2Recycle)

The nation's biggest battery collection program, long known as **Call2Recycle**, now goes by **The Battery Network**. Its free locator at **batterynetwork.org** finds drop-off sites near you by ZIP code. Every site takes rechargeable batteries; only some take single-use batteries like alkalines and coin cells, and the locator shows which.

Stores that collect batteries

Where	What they take
The Home Depot	Drop-off for **rechargeable** batteries, up to 11 pounds each and under 300 watt-hours. Home Depot says its drop-off does not take single-use batteries.
Lowe's and Best Buy	Take part in The Battery Network program with rechargeable-battery drop-off at many stores. Check the locator or call the store for what that location takes.
Auto parts stores	Usually take car batteries, often with a credit when you buy a new one.
Your hearing-care office	Some offices collect used hearing-aid batteries; it never hurts to ask.

Drop-off checklist

1. Tape the terminals of lithium, coin, button and 9-volt batteries.
2. Separate rechargeables from single-use, since many store bins take only rechargeables.
3. Leave damaged or swollen batteries out of store bins; ask the county how to bring them.
4. Look for the drop-off box near the store entrance or customer service, and ask an employee if you can't find it.

WHAT THIS DOES FOR YOU

What this does for you

Knowing your nearest drop-off turns "what do I do with these?" into a quick stop on an errand you're already running.

CHAPTER 26

Fake Batteries, Bad Chargers and Too-Good Deals

Batteries are one of the most counterfeited products sold online. A fake battery may hold far less than the label says, leak sooner, or, in the case of lithium-ion, be unsafe.

Signs a battery deal isn't what it seems

- Prices far below what the same brand costs at the local store.
- Capacity claims that seem too good, such as an AA "9,900 mAh." A real NiMH AA is in the low thousands.
- Misspelled brand names, blurry printing, or packaging that looks slightly off.
- Sellers with no address, no phone number and only very new reviews.
- Chargers, power banks or e-bike batteries with no testing-lab mark (UL, ETL or CSA).

How to buy safely

1. Buy from a store you know, or from the brand's own store on a big shopping site, rather than an unknown third-party seller.
2. For coin cells, buy child-resistant packages from known brands.
3. For tool and e-bike packs, buy from the maker or a dealer they approve (Chapter 23).
4. Keep receipts and packaging until you're sure the batteries work.

SCAM ALERT

"Free" battery offers and fake recall calls

Be wary of pop-up ads, emails or calls offering free batteries, a "battery recall refund," or a warranty "if you just confirm your card number." Real recalls are listed at cpsc.gov/Recalls and on the maker's own website. Never give a card number, gift card or remote access to someone who contacted you first. If in doubt, hang up and call the company using the number on its official website.

SCAM ALERT

Fake tech support about a battery warning

A pop-up on your computer or phone saying your "battery is damaged" and to call a number is a scam. Close it. Real battery messages come from your device's own settings, never from a web page.

WHAT THIS DOES FOR YOU

What this does for you

Buying batteries from sources you trust means they last as long as the label says, and keeps unsafe lithium-ion knock-offs out of your home.

PART 8

When to Call Bill & Your Cheat-Sheet

An honest word about when a hand is worth it, and a one-page summary to keep with your batteries.

CHAPTER 27

When to Call Bill

Most battery jobs are things you can do yourself with this guide. But part of being helpful is being honest about when a hand saves time, worry or a trip up a ladder. Here's my straight advice, with no pressure.

Times it's well worth a call

- **A battery walk-through of the house**: going room by room to list what each device takes, setting up a safe storage box, and child-proofing before the grandchildren visit (Chapter 17 and Chapter 21).
- **Setting up reminders** on your phone or calendar for smoke alarm tests and battery changes (Chapter 19).
- **A gadget that still won't work** after fresh batteries, such as a remote that needs re-pairing, a thermostat, a doorbell or a smart-home sensor.
- **Choosing rechargeables and a charger** that fit the devices you actually own (Chapter 11).
- **Checking whether a deal or a call is a scam** before you pay (Chapter 26).
- **You'd simply rather have a patient person handle it.** That's always a good enough reason.

What I don't do

I don't work on hardwired smoke alarm wiring; that's a job for a qualified electrician. And for a swallowed battery or a battery that's smoking, don't call me: call 911, or the hotline in Chapter 20.

What working with me is like

I work at your pace, with no rushing, no talking down and no jargon. I explain what I'm doing in plain words, and I'll always tell you honestly when something isn't worth the money. Home visits are here in Portage County, Ohio; remote help reaches you wherever you are. I've been doing this work for more than 30 years.

FROM BILL

How to reach me

Call **(330) 200-8042**, or book a time at **billshometech.com/book**. My help is **$49 remote · $99 in your home**. This guide is free to read and share with family and neighbors.

GOOD TO KNOW

You may be greeted by Sophie

When you call or visit billshometech.com, you might first meet **Sophie**, my AI receptionist. She can answer quick questions and help you book a time. The actual help always comes from me.

Thank you for taking the time to learn about the little batteries that keep a home running. A few good habits go a long way, and you don't have to figure it all out alone.

— Bill

CHAPTER 28

Your Battery Cheat-Sheet

Keep a copy of this near your battery box or on the refrigerator. The whole guide, boiled down.

The essentials

Remember	
Swallowed battery	ER right away. Battery hotline **800-498-8666** or Poison Control **1-800-222-1222**.
Pet swallowed one	Your vet, ASPCA (888) 426-4435 or Pet Poison Helpline 855-764-7661.
Chargers	Only batteries marked **Rechargeable**. Never alkalines.
Smoke alarms	Exact battery the label names. Test monthly, change yearly, new alarm at 10 years.
Coin cell codes	CR2032: 20 mm wide, 3.2 mm thick. Buy the exact code.
Hearing-aid colors	10 yellow · 312 brown · 13 orange · 675 blue. Wait a minute or two after the tab.
AirTag	CR2032, + side up.
Storage	Original package or organizer; 9-volts taped or capped; no loose batteries with metal.
Leaks	Gloves; vinegar or lemon juice on a swab; dry well.
Swollen, hot, smelly	Stop, move it away from anything that burns, 911 if smoking.
Trash in Ohio	Only alkaline and zinc-carbon. Everything else recycled. Nothing in the curbside bin.
Recycling	Portage County (330) 678-8808 · batterynetwork.org · store drop-offs.

Write it down once

Keep handy	
Smoke/CO alarms: battery type and date changed	_____
Car key fob battery (each car)	_____
Glucose meter / BP monitor battery	_____
Hearing-aid battery size and color	_____
Other devices and their batteries	_____
Where the battery box is kept	_____
Where the used-battery container is kept	_____
Nearest battery drop-off	_____
Veterinarian (name and phone)	_____
Next smoke-alarm battery date	_____

When something's wrong, in order

1. Child or pet may have swallowed a battery: go to the ER or vet now, and call the hotline (Chapter 20).
2. A battery is swelling, hot, hissing or smoking: stop, move away, call 911 if there's smoke (Chapter 22).
3. Smoke alarm chirps: replace the battery with the type on the label; if it still chirps, check its date (Chapter 12).
4. A device stopped working: fresh batteries of one type, + and – matched, contacts clean (Chapter 13 and Chapter 18).
5. A coin cell won't fit or work: check the exact code, like CR2032 versus CR2025 (Chapter 6).
6. Rechargeables die fast: charge as a set in a smart charger, and retire weak ones (Chapter 10).
7. Still stuck: call Bill at **(330) 200-8042**.