



An Extended Guide · No. 1985

# AA & AAA Batteries — Alkaline, Lithium or Rechargeable?

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Which type suits remotes,  
flashlights, toys and cameras

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## Let's pick the right battery together

If you've ever stood in the store aisle, or in front of the kitchen drawer, wondering whether to grab the cheap batteries or the pricey ones — you are in very good company. This guide helps you choose the right kind of AA or AAA battery for each gadget, calmly and without the sales pitch.

I'm Bill, and I run Bill's Home Tech here in Portage County, Ohio. I've spent 30+ years helping folks get comfortable with the gear in their homes, patiently and in plain language. Think of this guide as me sitting at your kitchen table, sorting your batteries into the jobs they're actually good at.

There are really just three kinds you'll meet: ordinary alkaline, single-use lithium, and rechargeable. Each one shines at a different job. Once you know which is which, you stop overpaying for the easy gadgets and stop running out of power on the demanding ones.

### ★ You don't need to memorize a thing

By the end of this you'll know which battery suits a remote, a flashlight, a toy, or a camera. If you'd rather just ask, bring your gadget to me or send a photo — call or text (330) 200-8042 and I'll tell you what to put in it, free.

## The whole guide, on one page

If you remember only these things, you're already most of the way to choosing the right battery every time.

- ❑ **Alkaline** is the ordinary cheap battery — perfect for low-drain gadgets like remotes, clocks, and wall thermometers.
- ❑ **Single-use lithium** costs more, lasts longer, weighs less, and does far better in the cold and in power-hungry gear.
- ❑ **Rechargeable** (the kind you refill in a charger) pays for itself over time in gadgets you feed batteries to often.
- ❑ Match the battery to the job — an expensive battery in a remote is money wasted; a cheap one in a cold-weather camera is a frustration.
- ❑ Never mix old and new, or different types, in the same gadget.
- ❑ Take dead batteries out of anything you store, so they can't leak and ruin it.

### ✓ One habit that saves you money

Keep ordinary alkaline for the easy, slow-sipping gadgets, and spend the extra only where it earns its keep — the camera, the outdoor flashlight, the toy that eats batteries. Most homes overspend by doing the reverse.

## Meet the three kinds of AA and AAA

They all look nearly the same on the shelf and drop into the same gadgets. The difference is on the inside — and in how they behave.

**Alkaline** is the everyday battery most of us grew up with. It's cheap, it's everywhere, and it's single-use — when it's dead, you recycle or toss it. For gadgets that sip power slowly, it's all you need.

**Single-use lithium** is also a throwaway battery, but a different recipe inside. Don't confuse it with the rechargeable lithium in your phone. It costs more per battery, but it lasts longer, is noticeably lighter, and keeps working in cold weather and in demanding gadgets where alkaline fades.

**Rechargeable** AA and AAA (the common kind is called NiMH) you refill in a little charger and use again and again. They cost more up front for the batteries and the charger, but over many uses they can work out cheaper and make a lot less waste. We go deeper on these in our rechargeable-batteries guide.

### ! Lithium does not mean rechargeable

This trips folks up. The single-use lithium AA and AAA on the shelf are NOT rechargeable — putting them in a charger is unsafe. Rechargeable AA and AAA are a separate product, usually labeled NiMH and sold as rechargeable.

## Alkaline — the cheap, cheerful everyday battery

Start with the one in nearly every drawer. For most of what's around the house, this is the sensible, thrifty choice.

Alkaline batteries are inexpensive and sold everywhere, from the grocery store to the gas station. For gadgets that draw only a trickle of power — a remote, a wall clock, a kitchen timer — a set can last a very long time, and there's simply no reason to pay for anything fancier.

Their weak spots are real but easy to work around. They fade faster in power-hungry gadgets, they don't love the cold, and if you leave a dead one sitting in a gadget for months, it can leak a crusty white residue that damages the contacts. That leak is the main thing to guard against.

### ✓ Best for the slow sippers

Think remotes, clocks, wall thermometers, bathroom scales, and anything that runs for ages on one set. These are exactly the gadgets where cheap alkaline is not just fine — it's the smart pick.

## Single-use lithium — the long-haul, cold-weather battery

When a job is too demanding or too cold for ordinary alkaline, this is the throwaway battery that rises to it.

Single-use lithium costs more per battery — it's the priciest of the throwaway kinds — but you're paying for real advantages. It holds up far better in power-hungry gadgets, it shrugs off cold that would flatten an alkaline, and it's noticeably lighter in the hand.

It also keeps its charge for many years sitting in a drawer, which makes it a fine choice for things you want ready in an emergency. And unlike alkaline, it's far less prone to that crusty leak, so it's kinder to a gadget you'll store for a long stretch.

### ✓ Best for cold and demanding gear

Reach for single-use lithium in outdoor flashlights, trail and wildlife cameras, a camera's flash, and gadgets you keep in a cold garage, car, or shed. It's also a smart pick for a battery you want to just work years from now.

## Rechargeable — the money-saver for hungry gadgets

If a gadget eats batteries, the kind you can refill and reuse is often the one that pays you back.

Rechargeable AA and AAA — the everyday kind is labeled NiMH — go into a little charger when they run down and come back ready to use again. You spend more at the start, for the batteries and a charger, but one set can be refilled hundreds of times, so over the life of a hungry gadget they can work out cheaper and create far less waste.

They aren't the right answer for everything. In a remote that lasts a year on one set, you'd barely ever recharge them, so the savings never show up. And they slowly lose a little charge just sitting, so they're less ideal for something you set aside for emergencies. For that, the low-self-drain kind helps — more on that in our rechargeable-batteries guide.

### ★ Not sure if rechargeables are worth it for you?

It comes down to how often a gadget drains a set. Show me what you're feeding batteries to most, and I'll tell you honestly whether rechargeables will save you money or just sit in the charger. Call (330) 200-8042.

## What each one really costs you over time

The price on the package isn't the whole story. What matters is the cost over the life of the gadget — and that can flip the answer.

Alkaline is the cheapest to buy. Single-use lithium costs the most of the throwaway kinds, but because it lasts longer in demanding gear, the gap narrows when the job is hard on batteries. Rechargeable costs the most to get started — batteries plus a charger — then very little after that.

So the smart choice depends on the gadget. For a slow sipper you feed once a year, cheap alkaline wins easily. For a gadget you feed every couple of weeks, rechargeable pulls ahead over time. For cold or demanding gear, single-use lithium earns its higher price in reliability.

### ✓ Count the refills, not the sticker

Ask yourself how often a gadget drains a set of batteries. The more often it does, the more a rechargeable set saves you — and the less a cheap alkaline makes sense.

## Two kinds of households, two sets of needs

The right battery really depends on what you're putting it in. Sort your gadgets into these two groups and the choice almost makes itself.

### For low-drain gadgets like remotes and clocks

These sip power slowly and run for ages on one set. You rarely change them, so the cheapest battery is usually the right one.

- Ordinary alkaline is the sensible, thrifty pick here — no need to spend more.
- One set often lasts a year or more, so refills are rare.
- Rechargeables rarely pay off here — you'd hardly ever recharge them.
- Do take dead ones out promptly so they can't leak and ruin the gadget.

### For high-drain or cold-weather gear like cameras and flashlights

These drain batteries fast, or live out in the cold, or both. Cheap alkaline fades quickly, so a better battery earns its keep.

- Single-use lithium lasts longer and keeps working in the cold.
- Rechargeables save real money in gadgets you feed often.
- Keep a charged spare set on hand so you're never caught out.
- A camera flash or outdoor flashlight is where the extra cost pays off.

#### ★ Not sure which of your gadgets is which?

This is a perfect kitchen-table job. Gather up the battery-powered gadgets you use most, and I'll help you sort them into sippers and guzzlers — and match each to the right, cheapest battery that does the job. Call (330) 200-8042.

## A quick cheat sheet by gadget

Here's how I'd stock most homes. Use it as a starting point — your own habits may nudge a choice one way or the other.

| Gadget             | Best battery    | Why                        |
|--------------------|-----------------|----------------------------|
| Remotes, clocks    | Alkaline        | Sips slowly, cheap is fine |
| Toys, game pads    | Rechargeable    | Drains fast, refill it     |
| Outdoor flashlight | Lithium         | Cold and long standby      |
| Camera, flash      | Lithium or NiMH | Power-hungry, needs punch  |
| Smoke, sensors     | See its label   | Follow the maker's advice  |

Smoke alarms and some sensors are a special case — always use the type the maker calls for, since a safety device isn't the place to experiment. We cover that in our guide on smoke-alarm and sensor batteries.

★ **Bring me the gadget if you're unsure**

The gadget itself often gives a hint — a cold-weather tool or a fast guzzler tells you to spend a little more. Show me what you've got and I'll match each to the right battery, so you never overpay or run out. Call (330) 200-8042.

## Remotes, clocks, and the other slow sippers

This is the biggest group in most homes, and the easiest to get right — because the cheap answer is also the correct one.

A TV remote, a wall clock, a kitchen timer, a bathroom scale, a wall thermometer — these draw so little power that a single set of ordinary alkaline can last a year or more. Spending extra on lithium or rechargeable here buys you almost nothing, because you so rarely change them.

The one thing worth doing is jotting the date you put the batteries in, on a slip of paper tucked inside the battery door or on a little sticker. That way, when something acts sluggish, you'll know at a glance whether the batteries are simply old.

### ✓ Cheap is correct here

Don't let a salesperson or a flashy package talk you into premium batteries for a remote. For a slow sipper, ordinary alkaline is not the cheap compromise — it's the right tool.

## Flashlights — it depends where they live

A flashlight's best battery depends on where you keep it and how hard you lean on it. The one by the bed and the one in the cold garage want different things.

A flashlight you use now and then around the house does fine on ordinary alkaline. But one you keep for emergencies, or out in a cold car, garage, or shed, is a strong case for single-use lithium — it holds its charge for years and still works when it's freezing, which is exactly when you need it.

A bright flashlight you use a lot is a different story: that's a guzzler, and rechargeables can save you real money there. The trick is to be honest about which kind of flashlight you actually have before you buy.

### **! Don't leave batteries in a stored flashlight**

A flashlight set aside for months is where alkaline most often leaks and corrodes the inside, so the light fails right when you reach for it. Either use single-use lithium, or store it with the batteries out and beside it.

## Toys and game controllers — the battery guzzlers

If you have grandkids, you already know: some toys drink batteries like there's no tomorrow. This is where a little planning saves a lot of money.

Motorized toys, light-and-sound gadgets, and game controllers can run through a set of alkaline in no time. Buying throwaway batteries for these over and over adds up fast. Rechargeable AA and AAA are made for exactly this — refill them hundreds of times and the savings pile up.

The nice bonus is you're never caught empty-handed. Keep a charged spare set in the drawer, and when a toy dies mid-afternoon you simply swap and keep the peace. We cover getting set up with chargers in our rechargeable-batteries guide.

### ✓ Buy two sets so one's always charging

With a hungry gadget, keep one set in use and one set on the charger. You're never waiting, and you're never tempted to buy another pack of throwaways in a pinch.

## Cameras and other power-hungry gear

Cameras, camera flashes, and similar demanding gadgets ask a lot of a battery all at once — and that's where the cheap ones fall down.

An ordinary alkaline can read as empty in a power-hungry gadget while it still has life left, simply because it can't push power out fast enough. For these, single-use lithium or good rechargeables deliver the strong, steady punch the gadget wants, so you get far more shots per set.

Which of the two to pick comes down to how often you use it. A camera you take out now and then does well on single-use lithium you can store for years. A camera or flash you use heavily is a classic case for rechargeables, which pay for themselves over all those sessions.

### ✓ Keep a backup set in the bag

Power-hungry gadgets can fade suddenly. Whether you go lithium or rechargeable, tuck a spare set in the bag so a flat battery never ends the outing early.

## Why the cold changes the answer

Temperature matters more than most folks expect. A battery that's fine indoors can disappoint in the cold — and that catches people out.

Ordinary alkaline loses a lot of its pep in cold weather. A flashlight or gadget that works fine in a warm room can go dim or dead out in a freezing garage, car, or on a winter walk. It isn't broken — the cold is just hard on that kind of battery.

Single-use lithium is the clear winner in the cold. It keeps working when alkaline fades, which makes it the right choice for anything that lives outdoors or in an unheated space — an outdoor flashlight, a trail camera, a gadget in the car's glovebox for emergencies.

### ✓ For anything that lives in the cold, go lithium

If a gadget spends its life in a cold garage, shed, or car, single-use lithium is worth every penny — it's the difference between a tool that works when you need it and one that lets you down.

## Leaks, and the mistake that causes most of them

The saddest battery call I get is a favorite gadget ruined by a leak that was easy to prevent. A few simple habits spare you that.

Alkaline batteries can leak a crusty white residue, especially when they're left dead in a gadget for a long time, or when old and new batteries are mixed together. That residue is caustic — it eats the metal contacts and can ruin the gadget for good.

Two habits prevent almost all of it. First, never mix old and new batteries, or different types or brands, in the same gadget — replace the whole set at once. Second, take the batteries out of anything you're storing unused for months, like a seasonal decoration or a spare flashlight.

### **! If a battery has already leaked, handle it with care**

That white crust is caustic — wear gloves, don't touch it with bare hands or rub your eyes, and keep it away from children and pets. Our leaking-batteries guide walks you through cleaning it up safely and saving the gadget if you can.

## Storing your spare batteries so they last

Batteries keep best when they're stored sensibly. A little care means a spare actually works when you finally reach for it.

Keep spare batteries in a cool, dry place in their original packaging, or in a way that keeps the ends from touching metal or each other. A loose handful rattling around a drawer with coins and keys can short out and drain — or worse. A small box or a battery organizer keeps them tidy and safe.

Single-use lithium holds its charge for many years in storage, so it's ideal for a spare you want ready far down the road. Alkaline keeps for a good while too. Rechargeables slowly lose charge sitting idle, so top them up before you really need them.

### ✓ Don't freeze your batteries

There's an old notion that the fridge or freezer keeps batteries fresh. For today's batteries it isn't necessary and the damp can do harm. A cool, dry cupboard is all they want.

## Buying without overpaying or guessing

The battery aisle is full of bold claims and tempting multipacks. Here's how to buy what you actually need and skip the rest.

Start with the size — AA and AAA are different, and a gadget needs the one it's built for. Then match the type to the job, the way we've laid out: alkaline for the sippers, lithium for cold and demanding gear, rechargeable for the guzzlers. A big multipack of alkaline is a fine buy if you have lots of slow sippers to feed.

Be a little wary of packages promising they 'last ten times longer' or similar. For a demanding gadget there's truth to the premium kinds lasting longer; for a remote, you'll never notice. Buy the type that fits the job, from a seller you'd trust for anything else.

### ★ Text me your gadget before a big battery buy

Tell me what you're feeding batteries to, and I'll tell you the size and type to get — and whether a rechargeable setup would save you money. No commission, just a straight answer. Call or text (330) 200-8042.

## Getting rid of dead batteries the right way

What to do with a spent battery depends on the type and on where you live, but the rules are simple once you know them.

Ordinary used alkaline AA and AAA can usually go in the regular trash in most areas, with a couple of exceptions: some places ban it — California, for one, asks that all batteries be recycled — so when in doubt, recycle or check your local rules. Many stores keep a collection bin.

Rechargeable batteries are different — don't put those in the household trash. They should go to a battery-recycling drop-off, which many home-improvement and battery stores host. If a battery is leaking or looks damaged, bag it and treat it with the extra care covered in our leaking-batteries guide.

### ✓ Keep a little recycling cup

Set an old mug or small tub in the garage for dead batteries. When it fills, drop them at a store collection bin on your next errand. It keeps loose batteries out of the junk drawer and out of the trash.

## A simple system so you're never caught short

Choosing well is step one. A light-touch system keeps the right battery on hand without turning it into a chore.

Stock just two or three types for the whole house: a multipack of alkaline for the sippers, a few single-use lithium for cold and emergency gear, and a set or two of rechargeables with a charger for the guzzlers. That small kit covers nearly every gadget you own.

Keep your spares together in one labeled spot, with the charger plugged in nearby so refilled batteries are always ready. Jot the date when you load a long-lived gadget, and do a quick round once a year pulling batteries from anything stored unused. That yearly habit alone prevents most leaks.

### ✓ One drawer, three types, one charger

You don't need a battery for every occasion — just alkaline, lithium, and rechargeable, kept in one place. Simple to stock, simple to find, and you're never making an emergency run to the store.

## Your quick reference, start to finish

The short version you can lean on any time you're standing in the battery aisle or the kitchen drawer.

- ❑ Slow sippers (remotes, clocks): ordinary alkaline, the cheap pick.
- ❑ Cold or emergency gear: single-use lithium, works when it's freezing.
- ❑ Battery guzzlers (toys, heavy-use gear): rechargeable, saves over time.
- ❑ Cameras and flashes: lithium or good rechargeables for the punch.
- ❑ Smoke alarms and sensors: use the type the maker calls for.
- ❑ Never mix old and new, or different types, in one gadget.
- ❑ Take dead batteries out of anything you store, so they can't leak.

### ★ Keep this guide in the drawer

You don't have to hold any of this in your head. Keep these pages with your spare batteries, and when in doubt, I'm a phone call away at (330) 200-8042.

## Common Questions

The questions I hear most about AA and AAA batteries, answered plainly.

### **Q: Are the expensive batteries worth it?**

It depends on the gadget. In a remote or clock, no — cheap alkaline lasts just as long for your purposes. In a cold-weather flashlight or a power-hungry camera, yes — a premium battery really does last longer and work better there.

### **Q: Can I recharge single-use lithium or alkaline batteries?**

No. Only batteries clearly sold as rechargeable (usually labeled NiMH) go in a charger. Single-use lithium and ordinary alkaline are throwaway — trying to recharge them is unsafe.

### **Q: Why do my batteries leak and ruin things?**

Alkaline can leak a caustic crust when left dead in a gadget a long time, or when old and new are mixed. Replace the whole set at once, and pull batteries from anything you store unused. See our leaking-batteries guide.

### **Q: Do rechargeables really save money?**

In gadgets you feed batteries to often — toys, game controllers, heavy-use gear — yes, over time they can work out cheaper and make far less waste. In a remote you change once a year, the savings never really show up.

### **Q: What should I put in my smoke alarm?**

Always the type the maker calls for — a safety device isn't the place to experiment. Our guide on smoke-alarm and sensor batteries covers it, including the sealed ten-year kind.

#### **★ Still not sure what to buy?**

Sorting out batteries is one of my favorite quick jobs — it saves folks real money and a lot of frustration. Call or text (330) 200-8042 and we'll match every gadget to the right battery.

## You don't have to do this alone

You just have to remember that a friendly, patient person is one call away.

I hope this guide made choosing the right AA and AAA batteries feel a little less daunting and a lot more doable. Keep it in a drawer with your other home papers, come back to a page whenever you need it, and don't worry about memorizing anything.

When you'd rather have a hand, that's exactly what I do. I come to your home, work at your pace, and never make you feel rushed or silly for asking. A first visit is a flat \$99, and for the parts that don't need me on-site I can often help right on your screen for \$49. Every visit comes with a 30-day, come-back-free guarantee. I don't do licensed electrical, gas, or appliance-repair work myself — for that I'll help you line up a trustworthy local pro.

### ★ Bill's Home Tech — real help, close to home

Call or text me at (330) 200-8042, or visit BillsHomeTech.com. Serving Atwater and all of Portage County. 30+ years of patient, plain-English tech help — and if you're ever not 100% happy with a visit, I'll make it right or refund it. That's a promise. — Bill

## The Three Kinds, Side by Side

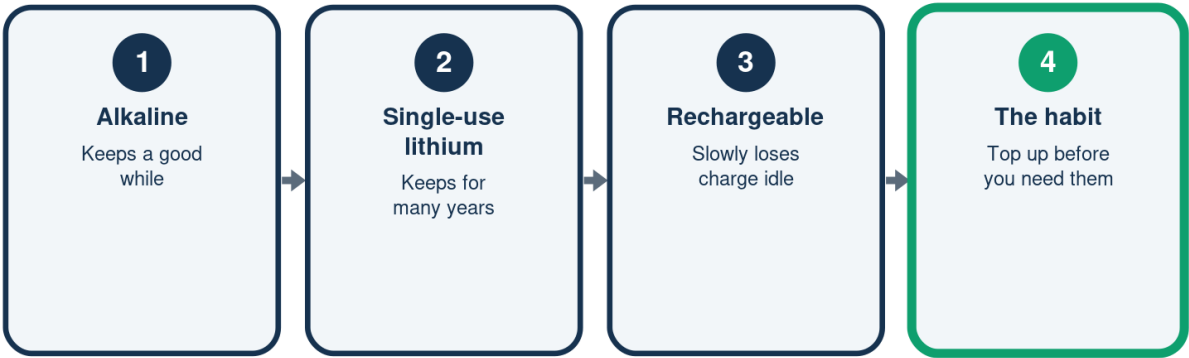
Match the battery to the job and you stop overpaying

|              | Cost          | Best use        | Cold weather  |
|--------------|---------------|-----------------|---------------|
| Alkaline     | Cheapest      | Remotes, clocks | Fades in cold |
| Lithium      | Priciest each | Cold, demanding | Works great   |
| Rechargeable | More up front | Hungry gadgets  | So-so         |

Lithium here means single-use -- not the rechargeable kind.

## How Long a Spare Keeps

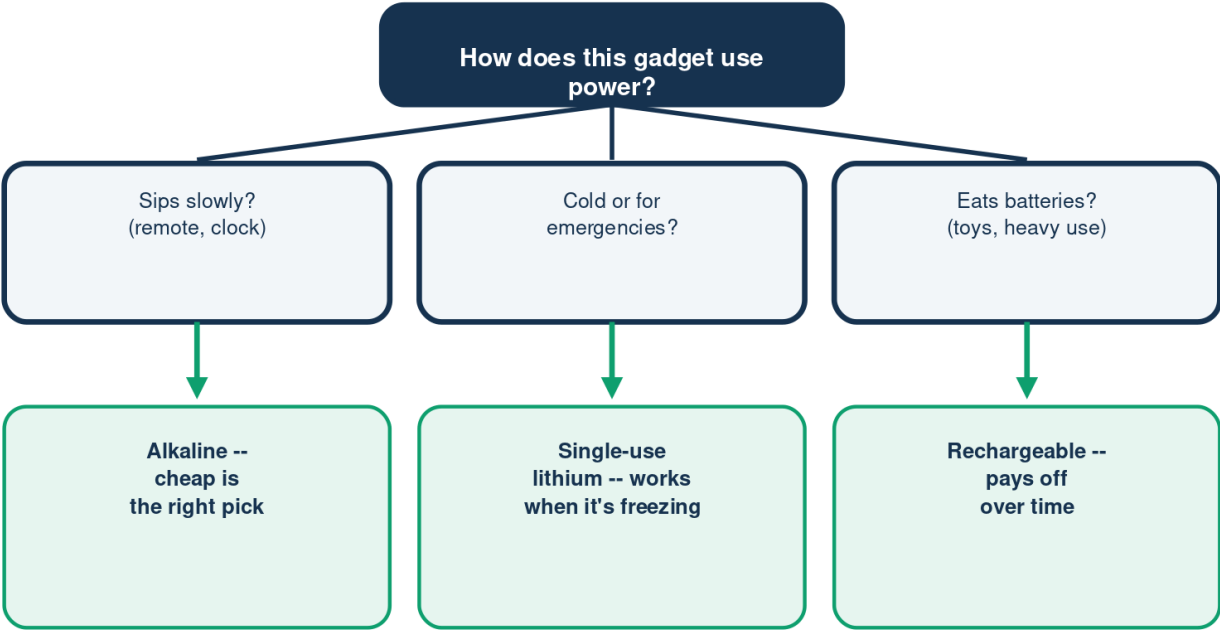
Roughly how each type holds up sitting in the drawer



Store cool and dry -- no need for the fridge or freezer.

# Which Battery For This Gadget?

Work from the gadget in your hand

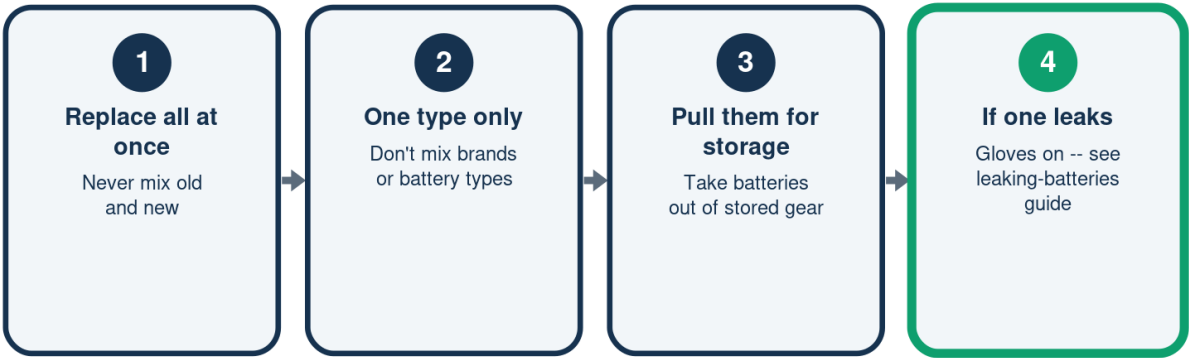


Smoke alarms and sensors: always use the type the maker calls for.

Illustration - a schematic, not to scale. Your setup may differ.

## Two Habits That Prevent Leaks

Most ruined gadgets come down to these two slips



That white crust is caustic -- keep it off skin and away from kids.



## Need a Real Person?

You do not have to remember all of it.  
You just have to remember you can call.  
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If you are not 100% happy with a visit, I will  
make it right -- or refund it. No awkwardness,  
no fine print. That is how I would want to be treated.

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— Bill

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### Prefer help without a visit?

Bill can screen-share and fix many things remotely — a flat \$49, free for Support Plan members.



## A Note From Bill

### A quick note from Bill.

I write these guides to make home tech a little less frustrating, and I do my best to keep every step accurate and up to date. Still, every home, device, and setup is a bit different, so I can't promise a guide will match yours exactly or fix your particular problem. These guides are for general information only — they're not professional, legal, or financial advice, and they don't replace your device's own manual or the manufacturer's instructions. Please go slow, use your own good judgment, and use everything here at your own risk. If a step involves electrical wiring, a gas appliance, a water heater, plumbing, or climbing a ladder — or if anything just doesn't feel safe — please stop and call a licensed professional (or give me a call at 330-200-8042). Bill's Home Tech and Bill Davis can't be responsible for any damage, data loss, or injury that comes from using these guides. Thanks for reading, and stay safe out there.

— *Bill*



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