

Fire-Starting & Generator Safety

Four separate skills that all live in the Energy & Heat chapter and its addendum: building a fire you can actually count on, running a generator without becoming one of the roughly 100 people who die every year from doing it wrong, knowing why an indoor propane or kerosene heater carries the same kind of risk, and knowing how to shut off your home's gas, water, and electricity before you actually need to.

Building a reliable fire

A fire is heat, cooking, light, morale, and, per the water purification guide, the surest method for making water safe to drink. The skill isn't lighting one fire once; it's being able to get one going reliably, in bad conditions, with whatever you have on hand.

Carry redundant ignition

A single point of failure for fire-starting is a real risk: a lighter runs out of fuel, matches get wet. Carry at least two independent methods.

- **Matches or a lighter** as your primary method. Store matches in a waterproof container; a basic butane lighter is cheap, small, and reliable until it isn't.
- **A ferro rod (ferrocium rod)** as your backup. Scraped with the back of a knife, it throws sparks over 3,000°F, hot enough to ignite proper tinder even when wet, and it doesn't run out the way fuel does. Get the technique right or it feels unreliable even though the rod itself is fine: plant the rod's tip right against your tinder, hold the striker (the spine of your knife) steady against the rod at roughly a 90-degree angle, and pull the rod back toward you in one firm motion, don't push the striker forward against a rod you're holding still. Pushing the striker tends to knock the tinder bundle over right when you need it undisturbed; pulling the rod keeps the striker, and the sparks, aimed exactly where you planted it.

Get the tinder right

More fires fail from bad tinder than from a weak spark. The combination that consistently works: a cotton ball worked through with petroleum jelly until it's fully saturated but still has some dry fibers pulled loose at the center for the spark to catch. It lights with a single spark, resists wind and light rain, and burns for 3 to 5 minutes, long enough to dry out and ignite small twigs even in damp conditions. *Where to find it:* cotton

balls and petroleum jelly are both sold at any grocery or pharmacy; premade version are also sold at outdoor retailers as "fire starter cubes" or similar. Making your own costs pennies and stores indefinitely in a sandwich bag.

Watch it: MerkWares, "Ferrocerium Tinder Tricks: Cotton and Petroleum Jelly".

1. Build your tinder bundle first, before you strike anything: prepared cotton balls, dry grass, birch bark, or dryer lint all work.
2. Stack kindling (pencil- to finger-thick dry twigs) around or over the tinder in a loose teepee shape that leaves airflow underneath.
3. Ignite the tinder, not the kindling directly; let the flame climb into the kindling on its own.
4. Add fuel wood gradually as the kindling catches, thumb-thick pieces first, then larger, always leaving gaps for air.

Check current fire restrictions before you practice

Utah's public lands use a standardized Stage 1–3 restriction system: Stage 1 limits fires to designated sites, Stage 2 bans open fire entirely, and Stage 3 closes the area outright. Restrictions change through the season and are exactly the kind of thing this document's own record 2026 wildfire year makes more likely to be in effect when you'd otherwise want to practice. Check the BLM Utah fire restrictions page before you build a practice fire, and never during a red flag warning.

Running a generator without it killing you

This isn't an exaggeration for effect. The CDC attributes more than 400 U.S. deaths a year to carbon monoxide poisoning, and the Consumer Product Safety Commission puts the number specifically tied to portable generators at close to 100 a year, most of them after storms, when a generator is exactly the tool people reach for. Carbon monoxide is colorless and odorless; by the time you notice symptoms, you're already being poisoned.

Infants, pregnant women, older adults, and anyone with heart or lung disease are especially vulnerable, sick at concentrations too low to seriously affect a healthy adult. A fetus is at particular risk since fetal blood cells bind CO even more readily than an adult's do. If anyone like this is in the home, treat the earliest symptoms and the smallest suspected exposure as urgent, rather than waiting to see if it gets worse.

WARNING

The rules that actually prevent deaths

Never run a generator indoors, not in a house, garage, basement, crawlspace, or shed, even with doors and windows open. Opening a window does not provide enough ventilation to prevent lethal CO buildup.

Never run it on a porch or in a carport either. Both are common mistakes and both are too close to the home.

Keep it at least 20 feet from your home, with the exhaust pointed away from windows, doors, and vents, even ones that are currently closed. A portable generator produces roughly as much carbon monoxide as hundreds of cars, and it can linger in and around a home for hours after the generator has been shut off.

Install carbon monoxide detectors with battery backup on every level of your home, so they still work if the utility power (not your generator) is out. *Where to find it:* any hardware store or general retailer; look for UL listing on the package.

Watch it: U.S. Consumer Product Safety Commission, "CPSC PSA: One portable generator produces the same amount of Carbon Monoxide as hundreds of cars".

Never backfeed your house

WARNING

Backfeeding kills lineworkers, not just a theoretical risk

Plugging a generator into a regular wall outlet with a double-male "suicide cord" to power your house's circuits from the outside in, called backfeeding, is illegal in every U.S. jurisdiction and has directly killed utility workers. The power doesn't stay in your house: it travels back through your breaker panel to the transformer outside, which steps it back up to line voltage and can energize the entire neighborhood's utility lines, including for a lineworker who has every reason to believe those lines are dead while repairing the outage your generator is now feeding power into.

The legal, safe alternative is a **transfer switch** (manual or automatic), which physically isolates your home's wiring from the utility grid before your generator's power can reach it, making backfeeding impossible by design. An **interlock kit** on your breaker panel does the same job at lower cost. *Where to find it:* transfer switches and interlock kits are sold at hardware and electrical supply stores and online, but installation belongs to a licensed electrician; this is not a DIY wiring project given what's actually at stake.

Basic safe operation

Rule	Why
Let the engine cool before refueling	Spilled gasoline on a hot engine or muffler can ignite instantly
Keep the generator dry and on a dry surface	Operating it wet risks electrocution
Don't overload it	Check the generator's rated wattage against your total load; overloading damages the generator and connected appliances and is itself a fire risk
Store fuel outside the home, in approved containers	Gasoline vapor is itself a fire and health hazard indoors

See [Sizing a Fuel-Powered Generator](#) for the actual sizing math behind "check the generator's rated wattage against your total load," real fuel consumption by type, and why an inverter generator matters if a CPAP or other medical electronics are in the picture.

Indoor propane and kerosene heaters carry the same risk

When a generator isn't the tool, an unvented propane or kerosene space heater often is, and it comes with the identical twin dangers of fire and carbon monoxide poisoning, for the same underlying reason: burning fuel indoors without a chimney or vent to carry the byproducts outside.

WARNING

Rules for using one anyway

Every kind of portable propane or kerosene heater sold for home use is classified as unvented. Health authorities don't recommend using them indoors at all; treat one as a genuine last resort, not routine heat.

If you do use one: run it only in a room with real ventilation (a cracked window or door), never in a small closed space, never while sleeping, and never in a bedroom. Use only the fuel specified for that heater (1K kerosene specifically, never gasoline or any substitute). Confirm it has an oxygen depletion sensor (standard on newer unvented heaters), which shuts the heater off automatically before oxygen depletion becomes dangerous, and pair it with the same battery-backed carbon monoxide detectors already covered above.

Kerosene heaters specifically cause an estimated 90 deaths and 2,300 house fires a year, most from flare-ups; keep anything flammable well clear of one and never refuel it while it's running or still hot.

Know how to shut off your utilities before you need to

This is a genuinely different skill from anything above: not preventing a fire or CO buildup you're causing, but responding to damage, most commonly from an earthquake, that's already happened. Find and test each of these now; a real emergency is the worst time to be locating a valve for the first time.

- **Gas:** locate your main shutoff valve (usually near the meter, on the pipe running out of the ground, typically 6-8 inches up from it) today, and keep a 12-inch or larger adjustable wrench, or a dedicated gas shutoff wrench, attached nearby. Fit the wrench snugly over the valve's tab and turn it a quarter turn in either direction; the valve is **on** when the tab runs parallel to the pipe and **off** once it's turned crosswise (perpendicular) to it, that crosswise position is what you're turning it to. **Don't shut it off unless you smell or hear gas, or suspect a leak;** once it's off, only a professional can safely turn it back on and relight pilot lights. If you smell gas, leave the house on foot immediately, don't operate light switches or anything electrical on the way out, and shut off the valve from outside only if you can do so safely without going back in.
- **Water:** the main shutoff is typically at the meter box where the line enters your property; turn the valve clockwise to close it. Check now that it isn't rusted stuck, a valve that won't turn is useless in the moment you actually need it, and replace it in advance if it is.
- **Electricity:** shut off power at the main breaker panel if you see sparking, smell something burning, or the building has visible structural damage. Know which breaker is the main before you need to find it by flashlight.

Where to find it: a gas shutoff wrench is inexpensive and sold at any hardware store; keep it attached near the valve itself with wire or tape so it's never missing when needed.

TIP

Glow-in-the-dark tape at the breaker panel and the flashlight's spot

A roll of cheap photoluminescent tape charges under normal room light and glows for roughly 20 minutes once the lights actually go out, long enough to find a flashlight in a nightstand or locate the breaker panel without fumbling in the dark. Worth knowing: most power outages are a tripped breaker, not a utility failure, so being able to find that panel fast in the dark solves more outages than it might seem.

Write your own plan, in one sentence

A shutoff valve you've never found before is a valve you won't find fast during an actual earthquake. Finish this sentence with your own real plan:

"Before the end of this month, I will find my gas shutoff valve."

Know someone this guide would actually help? Being the person who's ready includes being the person who says something.

[Send them this page ›](#)

Sources

- CPSC, generator carbon monoxide safety guidance and annual death estimates: CPSC; CPSC Safety Alert
- Generator backfeeding hazards and transfer switch/interlock requirements: Jaspector (IRC 2024); Norwall
- Ferro rod spark temperature and cotton ball/petroleum jelly tinder performance: Survival Common Sense
- Utah public-lands fire restriction stages: BLM Utah
- Unvented propane/kerosene heater fire and carbon monoxide risk, and kerosene heater fire/death statistics: University of Alaska Fairbanks Extension; Insurance Information Institute
- Elevated carbon monoxide vulnerability in infants, pregnant women, older adults, and people with cardiopulmonary disease: Pediatric Environmental Health Specialty Units
- FEMA and Red Cross, utility shutoff procedures for gas, water, and electricity: FEMA; Red Cross
- Correct ferro rod striking technique (pull the rod, hold the striker steady): Skillset Magazine
- Gas meter shutoff valve mechanics and wrench size: Prepper Trail; SoCalGas
- Photoluminescent tape glow duration and use for marking switches, panels, and equipment in a power outage: Safety Direct America; most outages being a tripped breaker rather than a utility failure: Wurkkos