

THE OLD WAYS HANDBOOK

*83 Chapters on Keeping a Household
Warm, Cool, Fed, and Safe*



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A Note Before You Begin

Elias Mercer, and the neighbors and teachers who appear in his stories, are characters. The opening story in each chapter is illustrative, written to carry a lesson, and is not a record of real events. The advice is meant seriously. Where a chapter gives a safety figure, such as a boiling time, a cooking temperature, or a battery caution, it comes from the public sources named at the back of the book, and where I could not confirm a figure, the chapter says so and sends you to the right authority instead.

How to use this book

Each chapter opens with a story, explains the one idea that matters, lists what you need, and walks through the steps. Look for three things. The **Safety First** box comes before the steps, and it is the part not to skip. **The old way** says what the old-timers got right and what to leave behind. **The botch** lists the common mistakes.

A few chapters are marked as dangerous to get wrong, among them canning, curing meat, lye soap, solar wiring, and the gas refrigerator. They tell you to follow a current tested recipe or a licensed professional, and they mean it. A quick-reference page of emergency steps is in the back.

Dollar amounts in chapter titles and text are rough, for comparison only. Prices vary by place and year, and each chapter says plainly what an amount does and does not buy. Local codes, local conditions, and your own equipment always come first.

Woodstove and Chimney Safety

A woodstove is one of the best heat sources in this book, and one of the most dangerous. It's a fire and a chimney that you live beside, and the chimney is the part that fails. This chapter is about keeping it from doing so: what creosote is, how to keep it down, how to know it's building, and what to do the moment it catches. The numbers that keep you safe come from the stove's own manual and the fire codes, and I won't guess at them.

I heard it before I saw it. I was walking the road one cold evening past a neighbor's place, and from his chimney came a sound like a freight train bearing down on the house, a deep, rising roar. Then flame and a fountain of sparks shot out of the top, and the pipe began to shudder. A chimney fire, in full cry.

He got his family out, and the fire department came, and the house was saved. But I've never forgotten that sound, because it was entirely avoidable. His stove had been burning damp wood, choked down low every night, for a whole winter. The chimney hadn't been looked at in years. Every bit of tar had been laid down in the flue, waiting for exactly one hot afternoon.

The one thing to understand

A woodstove and its chimney are **one system**. The stove makes heat and smoke. The chimney carries the smoke away. When the smoke cools on the way up, as it does in a smoldering fire or a cold flue, it leaves a sticky, flammable tar on the walls of the flue. That's **creosote**. It builds layer on layer, and when it gets hot enough it ignites, burning far hotter than the stove ever did, right inside your chimney and next to your roof.

So the whole job of chimney safety is simple to say and demanding to do:

1. **Make less creosote:** burn dry wood (Ch. 2), hot and clean, never smoldering.
2. **Remove what builds up:** inspect and clean the chimney regularly, with a professional.
3. **Install it right to begin with,** because a bad installation can burn the house down without any creosote at all.

SAFETY FIRST — THIS CHAPTER CAN SAVE THE HOUSE

- **Installation is licensed-professional, permit, and code territory.** The distances between stove, pipe, walls, and ceiling, the floor protection, and the chimney type are set by the stove's listing, the fire codes (NFPA 211), and your local building authority. **Don't install or alter a woodstove or chimney from this chapter,** and call your insurance company, since many require an inspected installation.
- **Follow the stove's manual to the letter.** Clearance to combustibles, floor protection, and the approved chimney are specific to each listed stove. Those figures live in the manual and the code, not in this book.
- **Have the chimney inspected and swept by a qualified professional.** Regularly, and at least once a year (NFPA 211 calls for an annual inspection, with cleaning when needed). Don't wait for a problem to announce itself.
- **Never burn it out.** The old habit of firing a roaring blaze to burn the creosote out of the flue is exactly how chimney fires start.

- **Carbon monoxide and smoke alarms are not optional.** A CO alarm near each sleeping area and on every level (battery or battery backup), working smoke alarms, and an ABC fire extinguisher kept within reach but not next to the stove.
- **Stoves stay hot long after the fire's out**, and burn children and pets in an instant. Use a guard, and teach everyone to stay back.
- **Roofs and ladders injure more homeowners than chimneys do.** Hire out roof work, or use proper fall protection.

SEEK A PROFESSIONAL

Have a certified chimney sweep inspect and clean your chimney at least once a year and after any chimney fire. Installation, clearances, and repairs are a job for a qualified installer and your local code.

What you'll need

- An **EPA-certified stove** (older uncertified stoves burn dirtier and make more creosote) installed per its listing
- A **proper chimney system** of the type the stove requires (insulated, lined, correctly sized), installed by a pro
- **Dry, seasoned wood** (Ch. 2)
- A **qualified chimney sweep** and a yearly inspection
- A **CO alarm, smoke alarms, and an ABC extinguisher**
- A **stove thermometer** to keep the flue temperature in the right range (most magnetic stovepipe thermometers mark below about 250°F as the creosote zone and above about 500°F as too hot, but your stove's manual gives the right range)
- A metal **ash bucket** with a lid

How it's done

1. **Start with a certified stove, correctly installed and permitted.** If you're not sure yours is, have it inspected before you light another fire.

2. **Burn dry wood only**, per Ch. 2, because it's the single biggest creosote reducer you control.
3. **Run it hot and clean.** Light it with enough air, get it burning briskly, and then settle it. Don't close the air down and let it smolder. A stove thermometer shows you when it's in the right range.
4. **Look at the smoke.** A thin, nearly invisible plume means a clean burn. Thick gray or dark smoke from the top means incomplete burning and creosote forming.
5. **Inspect the chimney on a schedule.** Get a professional inspection and sweeping at least yearly, and sooner if you burn heavily or burn damp wood. They'll tell you what stage of creosote you have and whether the liner and cap are sound.
6. **Check the cap, the liner, and the connections**, and keep the area around the stove clear of kindling, paper, curtains, and furniture.
7. **Handle ashes safely:** metal bucket, lid on, set outside on bare ground or a nonflammable surface, away from the house, for days (Ch. 2).
8. **Know the signs of a chimney fire, and what to do**, below.

If you have a chimney fire

The signs: a loud roaring or rumbling like a freight train or a jet engine, flames or showers of sparks from the top of the chimney, dense smoke, a shaking or glowing stovepipe, or a hot, wavering chimney.

What to do (follow your fire department's guidance):

- **Get everyone out of the house.** Right away.
- **Call the fire department from outside.** Tell them it's a chimney fire.
- **Don't throw water** into the stove or the chimney. Thermal shock can crack the liner and flash steam out of the stove.
- **Don't use the stove again until a qualified inspector has checked the whole chimney**, even if the fire seems out. A chimney fire can crack the liner and send heat into the walls where it can smolder unseen.

IF YOU THINK THE CHIMNEY IS ON FIRE

THE SIGNS

A loud roar. Sucking sounds. Shaking pipes. Hot spots on the wall or chimney. Smoke in the house. Flames or sparks at the top of the chimney.

**1**

Only if it takes seconds: shut the stove's air inlet or close the damper. Don't delay leaving.

2

GET EVERYONE OUT of the house, pets too.

3

CALL 911 from outside or from a neighbor's phone. Call even if the fire seems to be out.

DO NOT

Pour water on or into the chimney or stove. The steam can crack the flue.

DO NOT

Use the stove or fireplace again until a qualified chimney professional has inspected the whole chimney.

What to do if you think the chimney is on fire.

The old way — carry it forward, minus two habits

The yearly sweep is the old way, and it's right. Amos cleaned his chimney every fall before the first fire, and he knew his stove's sounds and smells the way you know a familiar voice. Carry forward the habit of **looking after the chimney every single year**, because no new technology replaces it.

Two things the old-timers did that I want you to leave behind. The first is **burning out the chimney** with a roaring fire to clear the creosote. They did it for generations, and it set a great many roofs alight. The second is **climbing a roof with no protection** to run a brush down the flue. More than one old hand fell doing it. Keep the discipline, hire out the dangerous part, and use the modern inspection to see what the old ones could only guess at.

The botch

- **Burning wet wood and choking the stove for a long, slow overnight burn.** The creosote factory.
- **Never inspecting or cleaning the chimney.**
- **“Burning it out”** with a hot fire.
- **Trusting creosote-remover logs or powders** to replace a sweep. They don’t, and the sweeping and inspection still have to be done.
- **Ignoring dark smoke** or a roaring sound from the flue.
- **A DIY installation**, wrong pipe, or wrong clearances.
- **Stovepipe run through a wall or ceiling** without the correct listed pass-through.
- **A tight house with a stove and exhaust fans** that can pull smoke and carbon monoxide back down (Ch. 5 and 16).
- **Dumping ashes** into a cardboard box or a wooden bin.
- **No CO alarm.**

What this won’t do

This chapter won’t tell you how to install a stove or what clearances to use, because those depend on the stove and the code and getting them wrong can kill. It won’t replace a professional inspection, and it can’t make a bad installation safe. What it will do is keep you from the habits that cause chimney fires, teach you the signs, and make sure you know what to do when the roaring starts.

What it costs

A yearly sweep and inspection costs a modest fee. A certified stove and a proper chimney installation cost real money, and they are worth it. A CO alarm and a good extinguisher cost very little. Against a house, and the people in it, that’s the best insurance you can buy, and it’s cheaper than the first night in a hotel.



A woodstove is a good servant and a bad master. Burn dry wood hot and clean, have the chimney looked over every year by someone who knows how, and never let a smoldering fire fill the flue with tar. And if you ever hear that freight train in the chimney, get everybody out first and call for help from the yard. A house can be rebuilt. Don't let the old days go, friend.

Why the Boiling Time Everyone Quotes Is Wrong

Ask ten people how long to boil water and you'll hear ten answers, and most of them are wrong. Some are too short to be safe. Others are far longer than needed, which wastes fuel and, in some cases, makes the water worse. Here's what boiling actually does, what a real boil looks like, and the one number you should take from the health authorities and not from a neighbor. Boiling is the most reliable thing you can do for water, but only when it's done right.

I once watched a man pour water into a pot, bring it to a little steaming and a few bubbles on the bottom, and announce it was “boiled.” He’d been drinking water that way for years and never been sick, he said. I believe him. He’d just been lucky, and you can’t stake your health on luck.

Then I met the opposite sort: a woman who boiled every drop of her water for what must have been twenty minutes because her mother had always done it, burning through fuel that she couldn’t spare in a hard winter. Neither of them was doing it right. One boiled too little and one boiled too much, and both were relying on folklore. The truth about boiling is simple, precise, and shorter than most people think. Here it is.

The one thing to understand

Boiling kills the germs that make people sick, including bacteria, viruses, and the parasites that survive filtration (Ch. 22). It does it with nothing but heat, which is why it's the reliable answer. But boiling only works if the water reaches a **true rolling boil** and stays there for **the right length of time**, and the right length comes from the health authorities, not from folklore. The CDC's figure is **1 minute at a rolling boil, and 3 minutes above 6,500 feet**. Other agencies differ a little (some set the altitude cutoff lower, and the WHO says the pot can come off the heat once it reaches a rolling boil), so if your local health department gives a different figure, follow theirs. It's not a guess, and it's not "until it looks done."

Three things trip people up:

- **Too short.** Warm water, steam, or a few bubbles at the bottom of the pot isn't a boil.
- **Too long.** Boiling for many minutes doesn't make water safer, and it wastes fuel. And if the water holds chemicals, boiling can actually concentrate them.
- **Altitude.** Water boils at a lower temperature the higher you are, so at altitude the boil has to last longer. The CDC says 3 minutes above 6,500 feet, instead of 1.

SAFETY FIRST — THIS CHAPTER CAN PREVENT ILLNESS

- **Boiling kills germs. It does not remove chemicals, heavy metals, nitrates, or salt,** and it can concentrate some of them as water boils away. Some toxins, such as those from algal blooms, aren't destroyed by boiling at all. **Don't use water that looks or smells like an algal bloom, or that you suspect is chemically fouled.** Find another source (Ch. 20 and 22).
- **Start with the clearest water you can.** Cloudy water should be strained through cloth and allowed to settle first, then boiled (the two jobs from Ch. 22: clear it, then disinfect it).
- **Use the figure from the health authorities,** not folklore. The CDC figure is 1 minute at a rolling boil, or 3 minutes above 6,500 feet. If your local health department says otherwise, follow them.

- **Boiling water scalds.** A tipped pot, a boil-over, or steam can cause severe burns. Use a stable stove, handle hot pots with care, and keep children and pets well clear.
- **Don't boil on an unvented stove indoors.** Camp stoves, grills, and any flame that isn't properly vented make carbon monoxide (Ch. 1 and 9). Boil outside, or on a properly vented stove.
- **Don't let it be re-contaminated.** Cool it covered, store it in a clean, covered container, and pour it, don't dip into it with a dirty cup.
- **If fuel is short,** use another reliable method (a rated filter or the correct chemical disinfection, in Ch. 22) rather than skimping on the boil.

SEEK A PROFESSIONAL

If you are unsure your water is safe, follow your local health department's instructions and use bottled or properly treated water. Boiling does not remove chemicals.

What you'll need

- **A pot or kettle** with a lid, on a stable, properly vented heat source
- **A timer or clock**
- **Cloth for straining,** if the water is cloudy
- **A clean, covered container** for storing the boiled water
- **Your altitude** (a map or phone will give it)
- **The boil figures** (1 minute at a rolling boil, 3 minutes above 6,500 feet, per CDC)

How it's done

1. **Clear it first.** If the water is cloudy, strain it through a clean cloth and let the sediment settle, then pour off the clearer water.
2. **Bring it to a rolling boil.** That means large bubbles rising rapidly and continuously and breaking the surface of the whole pot, not a few small bubbles at the bottom, and not steam alone. That's a simmer, and it isn't enough.

3. **Start the clock when it reaches a rolling boil**, not when you put the pot on.
4. **Boil for 1 minute at a full rolling boil**, or **3 minutes if you're above 6,500 feet** (CDC; follow your local health department if it gives a different figure). Use the lid to save fuel and speed things up.
5. **Don't boil far longer "to be safe."** More time doesn't add safety, burns fuel, and can concentrate anything the water holds.
6. **Let it cool covered.** Don't add ice made from untreated water.
7. **Store it safely.** Pour it into a clean, covered container, keep it cool and covered, and pour from it rather than dipping.
8. **Use boiled water for what needs it:** drinking, brushing teeth, making ice, washing produce, and mixing baby formula. For infants and anyone with a weak immune system, follow the guidance of your health department during a boil-water advisory.
9. **If the water was never clear, smelled wrong, or came from a questionable source**, treat it as suspect no matter how well you boil it, and use another source.

MAKING WATER SAFE BY BOILING

1 Cloudy? Let it settle, then pour it through a clean cloth or filter first.



2 Bring it to a full, rolling boil.



3 Boil for 1 minute. Above 6,500 feet, boil for 3 minutes. (CDC. If your local health department gives a different time, follow theirs.)



4 Let it cool covered, and store it in a clean, covered container.

BOILING DOES NOT REMOVE

Chemicals, heavy metals, or salt. If the water may be contaminated that way, use a different source.

Boiling water, step by step.

The old way — carry it forward, with the right numbers

Boiling is the oldest safe-water habit there is, and the one the trail families who stayed well all shared (Ch. 22). Ida kept a kettle on the back of the stove all day, and every drop that went into a cup or a baby's bottle had been through it. Amos boiled the creek water on a trip without a second thought. That habit is why they lived.

Carry it forward, and add what they didn't have, which is the right number. They boiled by feel and by habit, and mostly they erred on the long side, which kept them safe at a cost of fuel. We can do better, with a precise figure and the altitude correction, and we can save the extra fuel. The old wisdom was to boil. The new part is knowing exactly how long.

The botch

- **Calling steam and a few bubbles “boiled.”**
- **Not starting the clock** at a true rolling boil.
- **Boiling far too long**, wasting fuel and concentrating contaminants.
- **Ignoring altitude.**
- **Assuming boiling fixes chemicals, metals, nitrates, or algal toxins.**
- **Boiling cloudy water without straining it first.**
- **Storing it uncovered**, dipping into it with dirty hands or cups.
- **Boiling on an unvented stove indoors.**
- **Scalding yourself** with a tipped pot or boil-over.
- **Putting ice made from untreated water** into boiled water.

What this won't do

Boiling won't make chemically contaminated water safe, won't remove metals, nitrates, or salt, and won't destroy every kind of toxin. It won't help water that was recontaminated after it was boiled. It doesn't replace testing a water source you'll depend on for years. What it does is kill the germs, reliably, with nothing but heat, which is the job most people need done most often.

What it costs

A pot, a heat source, and a little fuel. The cost is mostly the fuel, and the honest saving here is that you almost never need to boil as long as folklore says. Using the right figure instead of the long one saves fuel every single day, and it costs nothing to get right.



Boiling is the one thing you can always do for water, and most people do it wrong in one direction or the other. Wait for a true rolling boil, take the time from the health authorities and not from the neighbor, add time at altitude, and don't count on it to fix a chemical. A few minutes of honest boiling has kept more people alive than any gadget ever sold. Don't let the old days go, friend.

Emergency Quick Reference

Call 911 (US) for	heat stroke, a chimney fire, any snakebite, a person who has collapsed, or botulism symptoms. Poison Help: 1-800-222-1222 (US only).
Carbon monoxide	A CO alarm belongs outside each sleeping area and on every level, tested monthly. If it sounds, get outside to fresh air and call for help. Run generators outdoors only, at least 20 feet from the house, exhaust pointed away from windows, doors, and vents.
Heat stroke	Confusion, slurred speech, fainting, hot skin, very high body temperature. Call 911, move to a cooler place, remove outer clothing, and cool fast with cold water. Never leave them alone.
Hypothermia	A body temperature below 95°F is an emergency. Get medical help, move to shelter, warm the chest, neck, head, and groin, and give warm drinks but no alcohol.
Botulism	Double or blurred vision, drooping eyelids, slurred speech, trouble swallowing, dry mouth, muscle weakness, usually 18 to 36 hours after eating (as early as about 6 hours, as late as 10 days). Seek care at once.
Chimney fire	Get everyone out and call 911 from outside. Don't pour water on it. Don't use the stove until a professional has inspected the chimney.
Gas smell	No flames, sparks, or switches. Leave at once, shut off the gas at the tank if it is safe, and call the supplier or 911 from outside.
Snakebite	Call 911. Keep the person calm and still, remove rings and tight clothing, keep the limb at about heart level or lower. Don't cut, suck, use a tourniquet, or apply ice. Don't let the bitten person drive.
Never mix	Bleach with vinegar or other acids (chlorine gas), with ammonia (chloramine), or with rubbing alcohol (chloroform). Hydrogen peroxide with vinegar (peracetic acid).
Boiling water	A rolling boil for 1 minute, or 3 minutes above 6,500 feet (CDC). Follow your local health department if it differs.