

FIELD MANUAL WD-01 · FIRST EDITION 2026



WOLF DEN SURVIVAL BOOK

Chemicals, compounds, and the den that keeps them



WOLF DEN FOODS · GLENDALE, ARIZONA · 3-RING BINDER COPY · PRINT DUPLEX

CONTENTS

Print on letter paper, both sides, flip on the long edge. Three-hole punch the stacked sheets on the binding edge. A one-inch 3-ring binder holds the pack.

00 · HOW TO USE THIS BOOK

01 · SAFETY FIRST

02 · WHY A FEW COMPOUNDS BEAT A CABINET OF PRODUCTS

03 · STORAGE FOUNDATIONS

04 · PACKING AND LABELING

05 · HANDLING AND GEAR

06 · WATER THAT YOU CAN DRINK

07 · FOOD, SALT, AND THE WOLF DEN PANTRY

08 · ARIZONA NOTES

09 · SOURCING AND GRADE

10 · KEEP THE DEN

COMPOUND INDEX A–Z

NEVER-MIX CHART

STARTER CHECKLIST

GLOSSARY

CHAPTER 00

HOW TO USE THIS BOOK

A field manual you can read on a screen and print onto paper that still works when the screen does not.

This is a working book. It is meant to live in a kitchen drawer, a glove box, and a phone, and to make sense at 2 a.m. when a label has faded. It is not a chemistry degree and it is not a dare.

Wolf Den Foods is a family operation in Arizona. Four generations of putting food by taught us the same lesson every old pantry teaches: a few well-chosen, well-stored materials beat a closet of single-use products that expire, leak, and cannot be replaced when the truck does not roll.

WHAT THIS BOOK IS

A field reference for common, legally sold household and homestead compounds: what they are for, how long they keep, how to store them in desert heat, and which pairings will gas you, burn you, or waste the jar.

WHAT THIS BOOK IS NOT

Not medical advice. Not a recipe book for weapons, explosives, or street drugs. Not a license to ignore the label on the bottle you actually bought. When a manufacturer's label and this page disagree, the label on the bottle in your hand wins.

HOW TO MOVE THROUGH IT

- ▶ Read Safety, Storage, and Never Mix before you buy a single oxidizer.

▶ Use the Compound Index when you are holding a bag and need the page for that bag.

▶ Use Field Tools to dose emergency water from EPA tables without doing arithmetic in the dark.

▶ Print the booklet and keep a paper copy next to the chemical shelf. Paper does not need a charger.

From our family to yours. Real food. Real preparedness. Real peace of mind.



CHAPTER 01

SAFETY FIRST

The compounds in this book are useful because they are chemically busy. Busy chemicals do not forgive sloppy hands.

Most of the harm in a home chemical shelf is not mysterious. It is bleach meeting vinegar in a bucket. It is lye in aluminum. It is pool shock in a hot shed next to a bottle of oil. It is a child who can read the pretty jar but not the hazard line.

THE FIVE STANDING ORDERS

- ▶ One job, one bottle. Never mix two cleaners, two disinfectants, or a cleaner with an acid ‘to make it stronger.’
- ▶ Gear up before the lid comes off. Goggles that seal, gloves that match the chemical, air you can actually breathe.
- ▶ Add the dangerous thing to the water, not the water to the dangerous thing. This is the lye rule and it has saved skin.

- ▶ A spill on skin or in eyes is running water for fifteen minutes, then medical care. Do not neutralize a chemical burn on a person with the opposite chemical. That reaction makes heat.
- ▶ Label, date, and isolate. Oxidizers alone. Acids away from hypochlorites. Lye away from aluminum. Kids and pets locked out.

IF IT GOES WRONG

EVENT	DO THIS	DO NOT
Splash in eyes	Flush with clean water 15+ minutes. Then emergency care.	Do not neutralize with vinegar or bicarb in the eye.
Skin contact, alkali or acid	Strip soaked cloth, flood with water 15+ minutes.	Do not ‘rub it in’ with the opposite chemical.
Chlorine or chloramine fumes	Get to fresh air. Shut the container if you can do it without a breath. Call 911 if breathing is hard.	Do not go back in to ‘finish the job.’
Swallowed unknown powder	Poison Control: 1-800-222-1222 (U.S.). Bring the label.	Do not induce vomiting unless they tell you to.

CHLORINE GAS IS NOT A FOLK TALE

Household bleach plus vinegar, plus toilet-bowl acid, plus rust remover, plus some lime-scale products, is how ordinary people end up in an ambulance. The ‘never mix’ page exists because this pairing is common, not rare.

Keep a cheap spill kit on the same wall as the shelf: a box of baking soda (for acid spills on counters), a bottle of 5% vinegar (for alkali spills on counters), a stack of rags you can throw away, a pail of clean water, and the goggles. Surface neutralization is a countertop tactic. It is not first aid.



CHAPTER 02

WHY A FEW COMPOUNDS BEAT A CABINET OF PRODUCTS

Versatility, cost, and time. The trade is knowledge.

A spray for glass, a bottle for the drain, a pod for the laundry, a kit for the first-aid closet, a jug for the dog run — each one is a formula you cannot rebuild when the label is a brand that no longer ships. Most of those formulas are a short list of the compounds in this book, plus water, plus scent.

Stock the short list instead. Baking soda is an antacid, a cleaner, a deodorizer, a leavener, and a dry dump for a small pan fire. Vinegar descale, pickles, and rinses. Salt preserves, seasons, and makes saline. A pound of the right pool shock, stored like the oxidizer it is, can disinfect on the order of thousands of gallons of water. Honey is food that does not die.

THE WOLF DEN VIEW

We sell freeze-dried meals because families should eat real food when the power is out. This book is the same idea one layer down: own the materials that make water drinkable, plates clean, and a wound washable, without a store trip.

WHAT YOU GIVE IN RETURN

Raw compounds do not come with a cartoon mascot and a child-safe trigger. They come with grades, percentages, and incompatibilities. That is the whole job of the pages that follow. If you are not willing to store pool shock alone, do not buy pool shock. Buy bleach, date it, and rotate it. The den is not a museum of dangerous powders. It is a working shelf with a few serious jars treated seriously.



CHAPTER 03

STORAGE FOUNDATIONS

Heat, light, and humidity. Get those three wrong in Arizona and the chemistry does the rest.

THE THREE THIEVES

Temperature. Hold a steady indoor range — roughly 50–70°F is the textbook; a climate-controlled interior closet is the realistic den. Heat does not just ‘age’ bleach. It can make oxidizers unhappy. Swings crack seals as containers breathe.

Light. Ultraviolet spends iodine, peroxide, and many organics. Opaque bins, amber glass, mylar, a closed cabinet. A pretty jar on a sunny sill is a display, not a store.

Humidity. Under 50% is the aim; drier is better for powders. The Valley is dry until monsoon, and then every bag of salt, lye, and calcium chloride will drink the air. Desiccant packets are not decoration.

DO NOT STORE THE SERIOUS JARS HERE

Attics, metal sheds, the garage along the west wall, the trunk of a truck, a greenhouse, or any place that hits 120°F in June. Liquid bleach especially dies there. Pool shock in a hot shed is a fire story waiting for a headline.

THREE WORKHORSE CONTAINERS

CONTAINER	USE IT FOR	SKIP IT FOR
Glass (amber when the chemical hates light)	Acids, iodine, oxidizers you trust not to pressure-build, tinctures	Kids’ reach, bounce-around truck kits, anything that freezes and can burst
HDPE (recycle 2)	Dry powders, dilute solutions, lye (with a good cap)	Strong solvents; do not assume every plastic is HDPE
Mylar + desiccant	Dry food-adjacent powders: salt, citric acid, baking soda, DE	Liquids, oxidizers that off-gas, anything sharp that will puncture

Default to glass when you are unsure. Metal lids corrode over acids and iodine — use a poly liner. Never store lye in aluminum. Never store iodine in cheap thin plastic and then act surprised at the brown stain in the cupboard.

DESICCANTS ARE NOT OXYGEN ABSORBERS

Silica gel fights water. Oxygen absorbers fight oxygen, and they are for dried food with a little residual moisture — not for a jar of baking soda, salt, or pool shock. Do not throw both into a chemical jar ‘to be safe.’ You will cake the powder or waste the packet.

Indicating silica gel that has changed color can be dried in a low oven on a tray until the color returns, cooled in a sealed jar, and reused. That loop is years long if you do not scorch it.

CHAPTER 04

PACKING AND LABELING

A jar only protects what you put into it on purpose.

Work a single packing ritual so you never invent a new one while you are tired.

- ▶ Clean and fully dry the container. A wet jar is a chemistry set.
- ▶ Portion into use-size amounts so the bulk stays sealed. The ten-pound pail you open twice a year should not be the same pail you dip every Saturday.
- ▶ Add the right helper: desiccant for dry powders, nothing extra for oxidizers and acids unless the page says so.
- ▶ Seal. Squeeze air out of bags. Check the gasket.
- ▶ Label the same way every time: name, formula if you know it, grade, hazard word, fill date, quantity, and where it lives.
- ▶ Store cool, dark, and with its own kind. Oldest dated stock gets used first.

WHITE POWDER PROTOCOL

Baking soda, citric acid, washing soda, borax, salt, and pickling lime can all look like the same snow. If the label falls off, the powder is trash you cannot identify — not dinner, not a wound wash. Tape the label. Write on the lid. Write on the body. Redundancy is cheap.

Group the shelf the way a fire marshal would, not the way an alphabet would.

Oxidizers on their own. Acids on their own. Alkali on their own. Fuels and waxes on their own. Heavy on the low shelf. Monthly look: leaks, rust rings, spent desiccant, a bulge, a wet caking that was dry last month.



CHAPTER 05

HANDLING AND GEAR

The right gloves turn a bad afternoon into a story you do not have to tell.

JOB	HANDS	EYES	LUNGS
Pouring DE, lime, charcoal, sulfur	Nitrile	Wrap-around or goggles	P100 / N100 dust. A cloth bandana is not a respirator.
Bleach, pool shock, permanganate	Heavier nitrile or butyl	Sealed splash goggles	Outside or a real fan. Do not lean over the jug and sniff.
Lye, mixing soap	Heavy nitrile or butyl, sleeves	Sealed goggles plus a face shield if you have it	Dry powder is a dust; the solution is a vapor sting. Air.

Kitchen ‘disposable’ gloves are a snack wrap. They tear on lye. Regular eyeglasses leave a gap that a splash will find. If you only buy one upgrade this year, buy splash goggles that seal and keep them in the same bin as the gloves, not in a toolbox in the other building.

A piece of plywood you can take outside, a plastic tub as a mixing tray, a dedicated set of spoons you will never cook with, and a bucket of rinse water already filled before you open the oxidizer. Setup is the safety system.



CHAPTER 06

WATER THAT YOU CAN DRINK

Boil if you can. Dose if you must. Filter first either way.

Dirty water is a particle problem and a germ problem. Chemistry that kills germs does a worse job when dirt is still in the glass. Settle, strain, then disinfect. The Field Tools page will do the drop-count for you. This chapter is the why.

ORDER OF OPERATIONS

- ▶ Source the cleanest water you can (closed well, rain from a clean roof, a known spring) before you reach for ditch water.
- ▶ Let mud drop. A pinch of bentonite or even time in a still bucket helps. Decant the top.
- ▶ Strain through cloth or a coffee filter.

- ▶ Boil, or dose with unscented bleach per the EPA table, or dose from a calcium hypochlorite stock per EPA, or use a rated filter that actually claims bacteria and protozoa — then still consider a chemical residual if the water will sit.
- ▶ Wait the full contact time. Thirty minutes is not a suggestion.

EPA BLEACH TABLE (UNSCENTED HOUSEHOLD)

CLEAR WATER. DOUBLE THE DOSE IF CLOUDY, COLORED, OR VERY COLD. WAIT 30 MINUTES.

VOLUME	6% BLEACH	8.25% BLEACH
1 quart / liter	2 drops	2 drops
1 gallon	8 drops	6 drops
2 gallons	16 drops (¼ tsp)	12 drops
4 gallons	⅓ tsp	¼ tsp
8 gallons	⅔ tsp	½ tsp

After 30 minutes you want a faint chlorine smell. No smell: repeat the dose, wait 15 more minutes. Still nothing: the bleach is likely spent. Boil, or open a newer bottle. A pinch of ascorbic acid after the wait will take the pool taste down — after, never before, or you spend the chlorine in the glass instead of on the germs.

WHAT THE EPA TABLE IS NOT

It is not for scented bleach, splash-less thickeners, color-safe bleach, or trichlor pool tablets. It is not a swimming-pool recipe. It is emergency drinking water.

WHEN YOU HAVE POOL SHOCK INSTEAD OF BLEACH

Granular 65–73% calcium hypochlorite, no algaecide. Make a stock: 1 heaping teaspoon in 2 gallons of water. That stock is roughly 500 mg/L. Dose the water you will drink at 1 part stock to 100 parts water. Wait 30 minutes. Store the bag of

granules like an oxidizer, alone, cool, dry.

BOILING STILL WINS

A rolling boil. At or above about 6,500 feet, give it 3 minutes. The Mogollon Rim and Flagstaff are not Phoenix. Boiling does not remove most chemicals, and it does not leave a residual for the bottle on the shelf — drink or re-treat. It does kill the living things that make you sick this week.



CHAPTER 07

FOOD, SALT, AND THE WOLF DEN PANTRY

Calories you already own, water you can make safe, and the compounds that keep both from walking off.

Wolf Den freeze-dried meals are built for a long sit: real food, sealed, a quarter-century class of shelf life when stored as directed. They still ask for water. A pallet of food with no water plan is a pile of dust. A water plan with no calories is a hard week. Own both.

REHYDRATION IS A WATER BUDGET

Read the pouch. Most freeze-dried meals want a cup or two of hot water per serving. In a den that is also treating ditch water, that cup has to come from the treated side of the operation — not from the bucket you have not dosed yet. Practice once on a Saturday so the first blackout is not a reading test.

HEAT IS THE QUIET THIEF

Arizona storage for food is the same as for bleach: interior, dark, steady. A garage that hits 110°F will not honor a 25-year claim. If the den is a house in the Valley, the food lives in the house.

SALT, ACID, LIME, HONEY

The old preservations still work because they are chemistry, not nostalgia. Salt pulls water out of meat and microbes. Vinegar and citric acid drop pH so the wrong bacteria cannot party. Food-grade lime waters eggs (water glassing) when you have a tested method and clean, unwashed eggs. Honey is a sugar fortress that does not spoil if you keep water out of it.

Use current, tested recipes for canning and curing — USDA and your state extension are not too proud to consult. A compound index is not a substitute for a tested process. Loose potassium nitrate from a stump can is not a ham recipe. Buy curing salt with a dose printed on it, and a scale.

GRAIN AND THE MOTH

Dry beans and grain in mylar, oxygen absorber sized to the container, bucket with a gasket. Food-grade DE as a mechanical assist if moths have already voted. Freeze a bag of flour for a few days when you bring it home if you have the freezer space — eggs die, then the pantry is quieter.



CHAPTER 08

ARIZONA NOTES

The den is in the desert. The desert has opinions about chemistry.

Surprise, Glendale, the whole Valley: long, honest heat, then a monsoon that turns every powder into a sponge. High country is a different book — boiling times change, winter storage gets easier, pipes freeze. Know which Arizona you are standing in.

HEAT

- ▶ Liquid bleach: interior closet, dated, rotated. Not the garage.
- ▶ Pool shock and permanganate: cool and alone. Heat plus oxidizer plus a nearby fuel is how sheds make the news.
- ▶ Honey darkens. Food stays food. Taste is vanity; calories are the point.
- ▶ Plastic warps. Check gaskets before monsoon, not after the first leak.

HARD WATER

Central Arizona water is mineral-heavy. Citric acid and vinegar are weekly tools, not annual. Washing soda and borax earn their keep in the laundry. A solar shower bag will crust shut if you never descale it. The same minerals that scale a kettle will also spend a little of your soap — dose soap for the water you actually have, not the water in a catalog.

MONSOON

When the humidity jumps, open the powder shelf and look. Salt bricks, lye cakes, calcium chloride brines, DE clumps and then fails as an insecticide. Replace desiccants. Do not add oxygen absorbers to a chemical pail because the internet said ‘sealed is sealed.’

HEAT INJURY

ORS packets in the truck, the pack, and the kitchen. Shade, water, and salt-sugar in the right ratio beat a sports bottle of dye. Infants, elders, and anyone on certain medicines go down faster. This is the part of preparedness that is just living in the Valley.

CHAPTER 09

SOURCING AND GRADE

The same chemical name can be a food, a drain opener, or a pool cocktail. The grade is the product.

Read the percent. Read the extras. Fragrance, algaecide, corrosion inhibitors, aluminum chips, denaturants, and ‘boosters’ are how a useful compound becomes a junk drawer.

IF YOU WILL...	BUY...	WALK AWAY FROM...
Treat drinking water with chlorine	Unscented 5–9% bleach, or 65–73% calcium hypochlorite granules	Scented / splash-less bleach; trichlor or dichlor tablets; shock blends with copper or algaecide
Put it in a mouth, on food, or on a plate	Food grade or USP	Masonry lime, pool DE, ice-melt blends, drain opener lye with extras
Make soap	100% sodium hydroxide from a soap supplier	Hardware drain opener that lists aluminum or mystery surfactants
Wipe skin or a tool	70% isopropyl USP, or 3% peroxide USP, or povidone-iodine	Denatured alcohol, 35% peroxide drums, iodine of unknown percent
Dust grain	Food-grade diatomaceous earth	Pool-filter DE

DATE EVERYTHING AT THE DOOR

A marker on the cap the day it arrives is the whole rotation system. Bleach especially. Future-you cannot smell a percentage.

CHAPTER 10

KEEP THE DEN

Knowledge on paper, gear on the wall, food in the bucket, water you can make safe.

A field manual is a poor substitute for a neighbor, a medic, or a full pantry. It is a good substitute for panic. Read it once in the light. Mark the pages you will actually use. Print it. Put one copy with the bleach and one copy with the meals.

We built Wolf Den Foods so ordinary families could buy real freeze-dried food without being treated like a joke or a wallet. This book is the same invitation: own a short list, store it like it matters, and never mix what this page says not to mix.

Protect your own. Work together. Stay prepared. Never leave family behind.

Poison Control (U.S.): 1-800-222-1222. Emergency: 911. This manual is a field reference, not a clinician, not a fire marshal, and not the label on the bottle in your hand.

COMPOUND INDEX

Thirty-three working materials. Grade matters. The bottle in your hand is the authority if it disagrees with this page.

ACTIVATED CHARCOAL

C · LOW HAZARD · INDEFINITE IF SEALED DRY

A sponge for toxins, odors, and many dissolved chemicals. It does not kill germs — it binds them and some poisons so they can be filtered or passed.

Container: Airtight jar or mylar, away from odors · **Grade:** USP / food / water-filter grade

Does: Binds many ingested toxins in a medical setting (use only as directed by poison control or a clinician); Polishes taste and odor from stored water when used in a filter bed; Controls odor in latrines, refrigerators, and closed rooms

Never mix: Household bleach, Calcium hypochlorite, Iodine

Field: For water: use as a filter stage after sediment and before or after disinfection — charcoal does not disinfect.

WATER · FIRST AID · HYGIENE

ASCORBIC ACID

C6H8O6 · LOW HAZARD · 3–5 YEARS TYPICAL; UP TO 10+ IF COOL, DARK, DRY

A stable, cheap vitamin and a reducing agent. It preserves color in fruit, knocks the chlorine taste out of treated water, and covers a scurvy gap in a long pantry.

Container: Opaque, airtight. Keep oxygen and light out. · **Grade:** USP / food grade

Does: Daily vitamin C when fresh produce is gone; Slows browning of cut fruit and helps canning color; Neutralizes residual chlorine / chloramine taste in treated water

Never mix: No listed chemical pairing.

Field: A pinch (about 1/8 tsp) in a gallon of freshly bleached water takes the swimming-pool taste down after the 30-minute contact time is finished — do not add it before disinfection or you undo the chlorine.

FOOD · PRESERVE · WATER · FIRST AID

BAKING SODA

NAHCO3 · LOW HAZARD · INDEFINITE DRY

The most useful powder in the den. It cleans, deodorizes, leavens, calms acid indigestion, and smothers small grease or electrical-adjacent fires as a dry dump.

- Container:** Sealed HDPE or glass, dry · **Grade:** Food grade
- Does:** Gentle abrasive cleaner and refrigerator deodorizer; Baking and some food-preservation chemistry; Paste for insect bites and mild skin itch; Neutralizes acid spills (vinegar, citric, battery acid splash — after PPE); Dry-powder smother for a small pan fire
- Never mix:** White vinegar, Citric acid, Lye
- Field:** Spill kit: box of bicarb for acids, bottle of vinegar for alkali spills. Keep both on the chemical shelf — used on the spill, not mixed into one bottle.

CLEANING · FOOD · FIRST AID · HYGIENE · FIRE

BEESWAX

— · LOW HAZARD · INDEFINITE

Fuel, waterproofing, and the backbone of simple salves. A block of wax is candles, lip balm, jar seals, and a moisture barrier for tools.

- Container:** Cool, dark, wrapped. Rodents will chew it. · **Grade:** Cosmetic / food-grade block
- Does:** Candles and fire starters (with cotton or cardboard); Salves with oil and optional honey; Waxed cloth wraps and boot waterproofing; Lid seals for jams and some storage jars
- Never mix:** Calcium hypochlorite, Potassium permanganate, Potassium nitrate
- Field:** Cloth + beeswax + a little oil = reusable food wrap. Do not use on raw meat.

HYGIENE · FIRST AID · FIRE · PRESERVE

BENTONITE CLAY

— · LOW HAZARD · INDEFINITE DRY

A swelling clay that makes poultices and can help fine sediment drop out of muddy water before you filter and disinfect.

- Container:** Sealed, dry. It will drink humidity from the air. · **Grade:** Food / cosmetic (calcium bentonite preferred for internal folklore uses — stick to external unless a clinician says otherwise)
- Does:** Drawing poultice for splinters and some insect bites (external); Settling aid for muddy water, followed by filtration and chlorine; Simple facial or skin mask
- Never mix:** No listed chemical pairing.
- Field:** Muddy wash water: stir in a spoon of clay, let sit until the top looks clearer, decant, then filter and disinfect. Clay is not a disinfectant.

FIRST AID · WATER · HYGIENE

HOUSEHOLD BLEACH

NAOCL · HIGH HAZARD · 6–12 MONTHS ONCE OPENED; BUY FRESH FOR WATER DUTY

The default emergency drinking-water disinfectant in U.S. public guidance. It is also a surface sanitizer. It is not soap, it is not a wound wash, and it is not to be mixed with anything else.

Container: Original opaque bottle, cool, dark, child-locked · **Grade:** Regular unscented, 5–9% sodium hypochlorite, no thickeners, no fragrance, no splash-less polymers if you can help it

Does: Emergency disinfection of clear water (EPA / CDC method); Sanitizing non-porous surfaces after cleaning; Laundry sanitizer when the machine still runs

Never mix: White vinegar, Citric acid, Lye, Hydrogen peroxide 3%, Isopropyl alcohol 70%, Ethanol, Calcium hypochlorite Also avoid: ammonia, urine, glass cleaners that contain ammonia, acids of any kind.

Field: Drinking water, unscented 6% bleach: 8 drops per U.S. gallon of clear water; 16 drops if cloudy, colored, or very cold. Mix, wait 30 minutes. You should smell a faint chlorine odor; if not, repeat the dose and wait 15 more minutes.

WATER · CLEANING

BORAX

NA2B4O7·10H2O · MOD HAZARD · INDEFINITE

A laundry booster, grease cutter, and the base of simple ant baits. It is not a food. Keep it away from children, pets, and anything you will eat off of.

Container: Sealed tub, dry · **Grade:** Laundry grade is typical; keep off plates and out of mouths

Does: Boosts laundry soap in hard Arizona water; Softens water for cleaning; Ant bait when mixed with sugar syrup (place where kids and pets cannot reach)

Never mix: No listed chemical pairing.

Field: Hard-water laundry: 1/2 cup in a standard load with your soap, not instead of soap.

CLEANING · PEST · HYGIENE

BORIC ACID

H3B03 · MOD HAZARD · INDEFINITE

A long-used insecticide dust for cockroaches in cracks they travel, and a listed ingredient in some old first-aid recipes. Treat it as a pesticide first, medicine second.

Container: Sealed; not metal if it might get wet with acids · **Grade:** USP for any skin or eye folklore — and still, modern sterile saline is better for eyes

Does: Roach and silverfish dust in wall voids and under appliances; Some antifungal foot powders (commercial products are safer than kitchen mixing)

Never mix: White vinegar, Citric acid

Field: Roaches: a light dust in cracks, not piles. Piles get walked around; a film gets walked through.

PEST · FIRST AID

CALCIUM CHLORIDE

CaCl2 · MOD HAZARD · INDEFINITE IF SEALED. IT PULLS WATER OUT OF THE AIR AND WILL TURN INTO BRINE.

A hungry desiccant and a food-safe firming salt when the grade is right. In the den it keeps dry stores dry and can crisp pickles. It also releases heat when it hits water — useful, and a burn hazard.

Container: True airtight. Glass or HDPE with a good gasket. · **Grade:** Food grade for any food use (pickle crisp, cheese). Ice-melt grade is not food.

Does: Reusable-style moisture control in sealed cabinets (replace when liquid); Pickle crisp / some cheese making (food grade only); Emergency ice melt on walkways (not plant-friendly in quantity)

Never mix: No listed chemical pairing.

Field: Do not use ice-melt bags in food. The label will say sodium chloride, calcium chloride, magnesium chloride, or a blend — plus corrosion inhibitors you do not want to eat.

PRESERVE · FOOD · HYGIENE

CALCIUM HYDROXIDE

$\text{Ca}(\text{OH})_2$ · HIGH HAZARD · INDEFINITE IF DRY AND SEALED. IT SLOWLY TURNS TO CHALK (CALCIUM CARBONATE) IN AIR.

The old name is slaked lime. Food-grade lime waters eggs (water glassing), nixtamalizes corn, and raises pH. It is alkaline enough to burn skin and eyes. The wrong bag (builder's lime) does not go in food.

Container: Airtight, dry. Not a paper bag. · **Grade:** Food-grade pickling lime for eggs and nixtamal. Type-S mason lime is for mortar, not food.

Does: Water-glassing clean, unwashed eggs in a 1:1 lime:water saturated solution (food grade); Nixtamal / hominy for corn; Garden pH amendment (agricultural lime is usually carbonate, not hydroxide — know which you bought)

Never mix: Household bleach, Calcium hypochlorite, White vinegar, Citric acid

Field: Water glassing is for fresh, unwashed eggs with the bloom intact. Use a tested recipe from a current extension service, keep the crock cool, and discard any cracked eggs. This is preservation, not magic — sniff and look before you cook.

FOOD · PRESERVE · GARDEN

CALCIUM HYPOCHLORITE

$\text{Ca}(\text{OCl})_2$ · HIGH HAZARD · 5–10 YEARS DRY AND COOL IF IT IS UNSTABILIZED 65–73% GRANULES

The long-shelf cousin of liquid bleach. A small jar can disinfect thousands of gallons if you make a dilute stock the way EPA describes — and if you never, ever mix it with acids, ammonia, or organics.

Container: Glass or the original HDPE, airtight, alone on its own shelf · **Grade:** 65–73% granular, no algaecide, no clarifier, no cyanuric acid (not trichlor / dichlor tablets)

Does: Emergency drinking-water disinfection via a 1% stock solution; Surface and tool sanitation from that same dilute stock

Never mix: White vinegar, Citric acid, Glycerin, Petroleum jelly, Camphor, Hydrogen peroxide 3%, Isopropyl alcohol 70%, Ethanol, Beeswax, Paraffin wax, Household bleach Also avoid: ammonia, oils, grease, fertilizers, any acid.

Field: EPA stock method: dissolve 1 heaping teaspoon of 65–70% granular calcium hypochlorite in 2 gallons of water. That stock is roughly 500 mg/L chlorine. Add 1 part stock to 100 parts water you will drink. Mix, wait 30 minutes, confirm a faint chlorine smell.

WATER · CLEANING

CAMPHOR

C10H16O · MOD HAZARD · INDEFINITE IN A TIGHT TIN (IT SUBLIMES — IT VANISHES INTO AIR)

A strong-smelling solid used in chest rubs and as a moth-and-mouse deterrent. It is toxic if eaten, and it is a fire risk next to oxidizers.

- Container:** Airtight metal or glass. It will perfume everything nearby. · **Grade:** USP camphor for topical rubs; keep away from children
- Does:** Traditional chest / muscle rubs (commercial Vicks-style products are dosed; raw camphor is easy to overdo); Moth and rodent scent barrier in closed trunks — not in food rooms
- Never mix:** Calcium hypochlorite, Potassium permanganate, Household bleach
- Field:** Prefer finished commercial rubs over mixing raw camphor. If you store the raw gum, treat it like a solvent: sealed, labeled, out of reach.

FIRST AID · PEST · FIRE

CASTILE SOAP

— · LOW HAZARD · INDEFINITE (BARS LAST LONGEST)

Real soap. Body, hair, dishes, laundry, and the first step of wound care: wash dirt out with soap and clean water before anything fancy.

- Container:** Original bottle or wrapped bars · **Grade:** True soap (saponified oils), not detergent blends if you can help it
- Does:** Hand and body wash; Dishes and laundry (needs a rinse; hard water takes more); Cleaning dirt from minor skin wounds before a dressing
- Never mix:** Household bleach, Calcium hypochlorite
- Field:** Wound logic: soap + clean water to remove debris, then a clean dressing. Skip bleach, skip peroxide soaks, skip iodine baths on healthy tissue unless a clinician told you otherwise.

HYGIENE · CLEANING · FIRST AID

CITRIC ACID

C6H8O7 · LOW HAZARD · INDEFINITE DRY

The clean acid of the pantry. It sets pectin, acids tomatoes for canning, descale kettles, and wipes mineral crust off Arizona hard-water fixtures.

- Container:** Sealed; it will corrode unprotected metal lids over time · **Grade:** Food grade
- Does:** Canning acidifier for tomatoes and some salsas (follow a current USDA / extension recipe); Bottled-water-like flavor and preservation in some drinks; Descaler for kettles, shower heads, and coffee pots
- Never mix:** Household bleach, Calcium hypochlorite, Lye, Baking soda, Washing soda
- Field:** Kettle scale: 1–2 tbsp in a kettle of water, simmer, sit, rinse. Do that before you ever reach for a chloride bleach on a metal vessel.

FOOD · PRESERVE · CLEANING

CORNSTARCH

— · LOW HAZARD · INDEFINITE DRY; WATCH FOR PANTRY MOTHS

Thickener, body powder, and a calm-down for chafing in the heat. Keep it dry or it becomes glue.

Container: Sealed, with bay or DE if moths are a problem · **Grade:** Food grade

Does: Gravies and canning slurries; Dry body powder in desert heat; Soothing dust on minor heat rash (clean skin, not on broken wet wounds)

Never mix: No listed chemical pairing.

Field: Heat rash: wash, dry, thin dusting. If it is infected or open, skip powder and keep it clean and seen by a medic.

FOOD · HYGIENE · FIRST AID

DIATOMACEOUS EARTH

SiO₂ (AMORPHOUS) · MOD HAZARD · INDEFINITE

A mechanical insecticide: microscopic sharp dust that scratches insects' waxy coats. It is not a poison in the chemical sense, but the dust is hard on lungs — yours included.

Container: Sealed tub. Dust is the hazard, not spoilage. · **Grade:** FOOD GRADE only for grain and home use. Pool DE is a different, sharper silica — do not breathe it, do not put it on food.

Does: Protects dry beans and grain when mixed at labeled food-grade rates; Crawling-insect barrier in dry cracks; Garden dust on some pests (reapply after rain)

Never mix: No listed chemical pairing.

Field: Grain: a light, even coat in dry grain, not a paste. DE fails when wet.

PEST · FOOD · GARDEN

EPSOM SALT

MgSO₄·7H₂O · LOW HAZARD · INDEFINITE

A soak for tired feet and a magnesium source for some soils. As a laxative it is old-fashioned and easy to overdo — follow the USP label or skip it.

Container: Sealed; it is mildly hygroscopic · **Grade:** USP for soaks and any internal use

Does: Warm foot and body soaks; Garden magnesium where a soil test says you need it (not a universal tonic)

Never mix: No listed chemical pairing.

Field: Soak: warm water, handful in a basin, 15 minutes. Dry skin after. Not a treatment for infected wounds.

FIRST AID · GARDEN · HYGIENE

ETHANOL

C2H5OH · HIGH HAZARD · INDEFINITE SEALED

Disinfectant, solvent for tinctures, and fuel. Denatured alcohol is a different product with bitterants and toxins — it is for stoves and shellac, not bodies.

- Container:** Glass, cool, away from spark and oxidizers · **Grade:** 95% (190 proof) or 70% for skin. Never denatured if it will touch a mouth or a wound.
- Does:** Skin and tool wipe at ~70% (dilute 95% with distilled water); Herbal tinctures (food-grade only); Alcohol stove fuel in a designed burner
- Never mix:** Calcium hypochlorite, Household bleach, Potassium permanganate, Potassium nitrate
- Field:** To make ~70% from 95%: 70 mL of 95% plus 25 mL of boiled-then-cooled water, mix, label. Do the math once on paper.

FIRST AID · CLEANING · FIRE · HYGIENE

GLYCERIN

C3H8O3 · MOD HAZARD · INDEFINITE

- A sweet, thick humectant for skin, soap, and alcohol-free extracts. Next to strong oxidizers it is a fire waiting for a mistake — especially potassium permanganate.
- Container:** Glass or HDPE, tightly closed (it pulls water from air) · **Grade:** USP vegetable glycerin
 - Does:** Skin softening in dry desert air; Soap and lotion making; Alcohol-free herbal extracts
 - Never mix:** Potassium permanganate, Calcium hypochlorite, Household bleach
 - Field:** A drop in a palm of water is a decent winter/desert hand oil. That is the job. Do not invent fire starters with oxidizers.

HYGIENE · FIRST AID · FIRE

HONEY — · LOW HAZARD · INDEFINITE IF SEALED AND NOT WATERED DOWN. IT MAY CRYSTALLIZE; THAT IS NOT SPOILAGE.

- Food, cough soothe, and one of the oldest wound dressings that still shows up in modern clinics when the honey is medical-grade. Grocery honey is food first.
- Container:** Glass. Tight lid. Ants will find any drip. · **Grade:** Real honey. Medical-grade (Manuka / sterile) for wound protocols when you can get it.
 - Does:** Calories and flavor that do not die; Hot-drink cough soothe for adults and older children; Minor burn / wound cover when you have medical-grade honey and clean technique
 - Never mix:** No listed chemical pairing.
 - Field:** Crystallized honey is fine. Warm the jar in a water bath, not in a microwave with a metal lid.

FOOD · FIRST AID · PRESERVE

HYDROGEN PEROXIDE 3%

H₂O₂ · MOD HAZARD · 1–3 YEARS UNOPENED; MONTHS AFTER OPENING. IT WANTS TO BECOME WATER AND OXYGEN.

A short-lived oxidizer. Useful on surfaces and as a stain-lifter. A poor routine wound wash (it kills new cells too). Never a drinking-water plan at 3%.

Container: Original brown bottle, cool, dark. Never a clear drink bottle. • **Grade:** USP 3% for home. 12–35% ‘food grade’ bulk is a chemical burn in a jug — do not treat it like the brown bottle.

Does: Spot sanitizing of non-porous surfaces; Mouth rinse in a pinch (spit, do not swallow); Garden fungus folklore — mixed evidence; ventilation and sanitation matter more

Never mix: Household bleach, Calcium hypochlorite, White vinegar, Lye

Field: Wound care: irrigate with clean water or sterile saline. Save peroxide for dried blood on tools and surfaces.

CLEANING · FIRST AID · GARDEN

ISOPROPYL ALCOHOL 70%

C₃H₈O · HIGH HAZARD · 5+ YEARS SEALED; IT EVAPORATES IF THE CAP IS LOOSE

The everyday disinfectant wipe in a bottle. Flammable. Not for drinking, not for open deep wounds as a bath, excellent for skin before a splinter needle and for scissors.

Container: Original bottle, cool, away from flame • **Grade:** 70% USP is the sweet spot for skin and tools. 91–99% is a solvent and a worse germ killer on skin.

Does: Skin prep and tool wipe; Sticky-residue and ink solvent; Low-odor stove fuel in a designed burner only

Never mix: Household bleach, Calcium hypochlorite, Potassium permanganate

Field: A small spray bottle of 70% IPA is the kit’s default tool wipe. Label it. Keep it off open flame and off pool shock.

FIRST AID · CLEANING · HYGIENE · FIRE

IODINE

12 (IN SOLUTION) · MOD HAZARD · 3–5 YEARS TYPICAL IN AMBER GLASS; LONGER IF STILL DARK AND CAPPED

A classic antiseptic and a backup water disinfectant. Thyroid disease, pregnancy, and some allergies take iodine off the table — have bleach or boiling as the real plan.

Container: Amber glass. Iodine crawls through plastic and stains everything. · **Grade:** USP. Know whether you have tincture (alcohol), Lugol’s (iodide in water), or povidone-iodine.

Does: Skin antiseptic (povidone-iodine is gentler than old tincture); Backup water disinfection with tincture / elemental iodine (not povidone-iodine)

Never mix: Household bleach, Calcium hypochlorite, Activated charcoal

Field: Water backup with 2% tincture (common field rule of thumb): 5 drops per quart of clear water, 10 if cloudy; wait 30 minutes. This is a backup, not the primary method. Confirm the exact percent on your bottle before you need it, and write the math on the label tonight.

FIRST AID · WATER

LYE

NAOH · HIGH HAZARD · INDEFINITE IF DRY AND SEALED. IT DRINKS WATER FROM AIR AND CAKES.

Soap-making alkali and a drain clearer. It can blind in seconds. It heats violently in water, hotter if you add water to lye instead of lye to water. It belongs in the den only if you will actually make soap and will kit up every time.

Container: HDPE or glass with a poly liner. NEVER aluminum. NEVER a metal paint can that can fizz hydrogen. · **Grade:** 100% sodium hydroxide, no drain-opener additives, no aluminum chips in the formula

Does: Traditional bar soap with fats you already have; Unclogging some organic drains (commercial drain openers are often lye plus extras)

Never mix: White vinegar, Citric acid, Household bleach, Calcium hypochlorite, Hydrogen peroxide 3%, Baking soda Also avoid: aluminum, tin, zinc, acids of any kind, water poured onto lye (always lye into water).

Field: If you do not make soap, do not store lye. The risk is not worth a drain you can rod by hand.

CLEANING · HYGIENE

ORAL REHYDRATION SALTS

NaCl + KCl + Citrate + Glucose · LOW HAZARD · 2–5 YEARS SEALED DRY PACKETS; HOMEMADE DRY MIX KEEPS IF BONE-DRY

The thing that actually saves people with diarrhea, heat exhaustion, and the flu: water with the right salt and sugar, not a sports-dye bomb. Arizona heat makes this a first-line kit item.

Container: Foil packets or a labeled jar of the dry mix · **Grade:** WHO / UNICEF ORS when you can. Homemade is a backup.

Does: Replaces what vomit and diarrhea take out; Heat-stress hydration when food is not staying down

Never mix: No listed chemical pairing.

Field: WHO homemade backup in a clean liter of drinking water: 6 level teaspoons of sugar + 1/2 level teaspoon of table salt. Taste should be like tears, not seawater. A pinch of salt substitute (potassium chloride) helps if you have it.

FIRST AID · WATER

PARAFFIN WAX

— · LOW HAZARD · INDEFINITE

Cheap, clean-burning wax for candles, fire starters, and old-style jelly seals. It is a fuel. Keep it away from oxidizers.

Container: Cool, wrapped, rodent-proof · **Grade:** Canning / candle grade

Does: Emergency light; Cotton-ball or cardboard fire starters; Traditional jelly jar seals (modern lids are more reliable)

Never mix: Calcium hypochlorite, Potassium permanganate, Potassium nitrate

Field: Egg-carton cardboard + wax + a dryer lint nest is a known fire kit. Store that kit away from the oxidizer shelf.

FIRE · PRESERVE · HYGIENE

PETROLEUM JELLY

— · LOW HAZARD · INDEFINITE

A moisture barrier for chapped skin, a rust preventer on tools, and a cotton-ball fire starter. It is an oil. Oxidizers hate it.

Container: Original tin or jar · **Grade:** USP white petrolatum

Does: Skin barrier (diaper-area, windburn, split fingertips); Light rust prevent on saw blades and gun safes (clean off before use); Cotton + jelly fire starter

Never mix: Calcium hypochlorite, Potassium permanganate

Field: A film on chapped desert hands at night. A film on a shovel in the shed. Not a film on an oxidizer lid.

FIRST AID · HYGIENE · FIRE

POTASSIUM NITRATE

KN₀₃ · HIGH HAZARD · INDEFINITE DRY

An oxidizer used in some traditional meat-curing chemistry and as a stump-rotting treatment. It is not a toy, not a firework recipe, and not something to mix with sugar, sulfur, charcoal, or wax.

Container: Sealed, labeled OXIDIZER, away from all fuels · **Grade:** Food/curing grade if it will touch meat. Stump-remover grade is not food.

Does: Some old curing formulas (modern pink curing salt / Prague powder is the safer, measured product — prefer it); Stump decomposition when applied as labeled on a stump-remover product

Never mix: Sulfur, Beeswax, Paraffin wax, Petroleum jelly, Glycerin, Ethanol, Isopropyl alcohol 70%, Camphor

Field: For bacon and ham, buy a current curing salt with instructions and a scale. Loose saltpeter from a stump can is the wrong tool.

FOOD · GARDEN · PRESERVE

POTASSIUM PERMANGANATE

KMNO₄ · HIGH HAZARD · INDEFINITE DRY

A purple oxidizer still used to pretreat some water (iron, hydrogen sulfide) and as a dilute soak in old protocols. It stains everything and will ignite glycerin on contact. Store it like it wants to burn the shelf.

Container: Amber glass, own bin, OXIDIZER label · **Grade:** Technical or USP crystals. Know the percent.

Does: Water pre-treatment for iron / odor in some field systems, followed by real disinfection; Very dilute soaks in some traditional skin protocols — commercial products are safer

Never mix: Glycerin, Petroleum jelly, Camphor, Beeswax, Paraffin wax, Ethanol, Isopropyl alcohol 70%, Hydrogen peroxide 3%

Field: If you do not already have a reason and a written dilution, skip this compound. Bleach and boiling cover drinking water for almost every den.

WATER · FIRST AID

SALT

NaCl · LOW HAZARD · INDEFINITE. IODIZED SALT CAN CAKE; THE IODINE SLOWLY FADES.

The original preservative. Brines, cures, oral rinses, and half of an ORS glass. Buy it by the stone, not the shaker.

Container: Sealed. Iodized in the kitchen, plain canning salt for brines. • **Grade:** Food. Canning/pickling salt has no iodine and no anti-caking starch that clouds brine.

Does: Curing, fermenting, and pickling; Electrolyte backbone; Gargle and wound soak in clean saline you mix fresh

Never mix: No listed chemical pairing.

Field: Simple saline (not sterile, but useful for rinsing): 1/2 teaspoon canning salt in 8 oz of boiled-then-cooled water.

FOOD · PRESERVE · FIRST AID · WATER

SULFUR

S · MOD HAZARD · INDEFINITE

A garden fungicide and a soil acidifier. It burns with a blue flame and a choking gas (sulfur dioxide). Keep it far from nitrates and pool shock.

Container: Sealed, away from oxidizers and sparks • **Grade:** Garden dust or USP. Not a food.

Does: Some powdery-mildew dusts; Lowers pH in alkaline desert soils when used as labeled

Never mix: Potassium nitrate, Calcium hypochlorite, Household bleach, Potassium permanganate

Field: Garden use only, as the bag directs. This book will not give fuel-oxidizer mixes. There is no good reason to combine sulfur with a nitrate in a den.

GARDEN · PEST

WHITE VINEGAR

CH₃COOH (5%) · LOW HAZARD · INDEFINITE

The den's default mild acid: descaler, rinse, pickle brine backbone, and the bottle you grab for an alkali splash on a COUNTER (not on skin). It is not a hospital disinfectant, and it is a chlorine-gas recipe if it meets bleach.

Container: Original plastic is fine; glass for long-term • **Grade:** 5% distilled white for cleaning and most pickles. Cleaning vinegar is often 6–30% — not for food, harder on lungs.

Does: Mineral scale and hard-water film; Pickling (tested recipes); Deodorizing drains and boards; Neutralizing alkali spills on surfaces

Never mix: Household bleach, Calcium hypochlorite, Hydrogen peroxide 3%, Lye, Baking soda

Field: Shower head: bag of 5% vinegar tied over the head, sit 1 hour, rinse. Arizona calcium will come off in flakes.

CLEANING · FOOD · PRESERVE · HYGIENE

WASHING SODA

NA2CO3 · MOD HAZARD · INDEFINITE DRY

The heavy cleaner baking soda wishes it was. Degreases, unsours laundry, and softens hard water. It will bite skin and etch aluminum.

Container: Sealed. It pulls water and can turn lumpy. · **Grade:** Laundry grade. Not baking soda — different chemical, stronger alkali.

Does: Laundry booster in mineral-heavy water; Degreasing shop parts and oven racks; Water softening for wash water

Never mix: White vinegar, Citric acid, Household bleach

Field: You can bake baking soda into washing soda (low oven, time, chemistry) — or just buy the bag and skip the science fair.

CLEANING

NEVER MIX

TOXIC GAS Household bleach + White vinegar. Chlorine gas. Eyes, lungs, and anyone downwind.

TOXIC GAS Household bleach + Citric acid. Chlorine gas.

TOXIC GAS Calcium hypochlorite + White vinegar. Chlorine gas. Worse in a closed room.

TOXIC GAS Calcium hypochlorite + Citric acid. Chlorine gas.

FIRE Calcium hypochlorite + Glycerin. Fire. Oxidizer plus fuel.

FIRE Calcium hypochlorite + Petroleum jelly. Fire.

FIRE Calcium hypochlorite + Camphor. Fire.

FIRE Calcium hypochlorite + Beeswax. Fire.

FIRE Calcium hypochlorite + Paraffin wax. Fire.

TOXIC GAS Calcium hypochlorite + Household bleach. Unstable chlorine soup. Store them apart; do not combine concentrates.

FIRE Potassium permanganate + Glycerin. Can self-ignite at room temperature. Famous, and still a surprise to the unlucky.

FIRE Potassium permanganate + Petroleum jelly. Fire.

FIRE Potassium permanganate + Camphor. Fire.

FIRE Potassium permanganate + Beeswax. Fire.

FIRE **Potassium permanganate + Paraffin wax.** Fire.

HEAT / SPLASH **Lye + White vinegar.** Violent heat, splash, and a ruined batch. The acid and the alkali spend each other the hard way.

HEAT / SPLASH **Lye + Citric acid.** Violent heat and splash.

HEAT / SPLASH **Lye + Household bleach.** Heat plus extra caustic fumes. Do not.

FIRE **Sulfur + Potassium nitrate.** Classic oxidizer-plus-fuel fire. There is no household reason to combine them.

FIRE **Potassium nitrate + Paraffin wax.** Oxidizer plus fuel.

FIRE **Potassium nitrate + Beeswax.** Oxidizer plus fuel.

HEAT / SPLASH **Household bleach + Hydrogen peroxide 3%.** Oxygen off-gassing and heat. Wastes both.

TOXIC GAS **Household bleach + Isopropyl alcohol 70%.** Chloroform-adjacent nastiness and fumes. Never mix cleaning products.

HEAT / SPLASH **White vinegar + Hydrogen peroxide 3%.** Peracetic acid in a closed bottle is not a home project.

WASTES BOTH **White vinegar + Baking soda.** They neutralize. Fine as a volcano, useless as a stored cleaner.

WASTES BOTH **Citric acid + Baking soda.** They spend each other.

WASTES BOTH **White vinegar + Washing soda.** They neutralize.

STARTER CHECKLIST

- ☐ **Two fresh bottles unscented 6% or 8.25% bleach, dated.** The default EPA drinking-water method. Rotate every 6–12 months.
- ☐ **One small jar 65–73% calcium hypochlorite, stored alone.** Long-shelf backup when liquid bleach dies in the heat.
- ☐ **Cloth filters or a gravity filter plus spare gaskets.** Disinfection wants clearer water. Particles hide germs.
- ☐ **A pot you can boil in, and a way to make fire or run a stove.** Boiling still beats chemistry when you have fuel.
- ☐ **Bar soap and a bottle of unscented castile.** Dirt comes off with soap. Disinfectant is step two.
- ☐ **70% isopropyl alcohol.** Tools, skin prep, sticky messes.
- ☐ **Gallon of 5% distilled white vinegar, stored away from bleach.** Arizona scale, alkali spills on counters, pickles.
- ☐ **Box plus a bulk bag of baking soda.** Acid spills, deodorize, gentle clean, small pan fires.
- ☐ **Washing soda and borax.** Hard water laundry and degreasing.
- ☐ **Bag of food-grade citric acid.** Kettles, canning acid, rust film.
- ☐ **25–50 lb canning salt plus a box of iodized.** Preserve, ORS, thyroid iodine at the table.
- ☐ **Real honey in glass.** Calories that do not die, cough, kitchen wound folklore with limits.
- ☐ **Food-grade pickling lime if you water-glass eggs.** Not masonry lime. Not pool shock.

- ☐ **ORS packets in every bag, plus sugar and salt labeled for mixing.** Heat and stomach bugs. Measure; do not guess.
- ☐ **Nitrile or butyl gloves, sealed splash goggles, P100 dust masks.** The cheap insurance that keeps a spill from becoming a hospital trip.
- ☐ **Food-grade diatomaceous earth.** Grain moths and crawling insects. Never pool DE.
- ☐ **Amber / clear glass jars with poly-lined lids, HDPE buckets, mylar + desiccant.** The compound is only as good as the lid.
- ☐ **Permanent labels: name, grade, date, hazard, location.** Future-you will not remember which white powder is which.

GLOSSARY

ACID

A compound that donates hydrogen ions. Vinegar and citric acid are the household set. They neutralize bases and can free chlorine gas from hypochlorites.

ALKALI / BASE

The opposite of acid. Lye, washing soda, lime, and to a milder degree baking soda. They neutralize acids and burn skin as the pH climbs.

AVAILABLE CHLORINE

The oxidizing power left in bleach or pool shock. Heat, time, and sunlight spend it. A dated bottle in an Arizona garage may be water with a memory of chlorine.

CAUSTIC

Alkaline enough to destroy tissue. Lye and slaked lime. Flood with water, 15 minutes, then medical care. Do not ‘neutralize’ a skin burn with vinegar.

DESICCANT

Something that holds water so your stores do not. Silica gel is reusable when oven-dried. Calcium chloride is stronger and turns to brine.

FOOD GRADE / USP / ACS

Grade is not marketing. Food grade (or GRAS) is for mouths and plates. USP is pharmacy grade. ACS is laboratory. Pool, masonry, and drain-opener grades stay out of the kitchen.

HDPE

High-density polyethylene, recycle code 2. The usual plastic for lye, vinegar, and many dry powders. Not magic — acids and solvents still pick their own fights.

HUMECTANT

Pulls moisture from air. Glycerin, calcium chloride, lye. They clump or dilute themselves if the lid is loose — a monsoon problem.

OXIDIZER

A chemical that feeds fire and reactions by donating oxygen or taking electrons. Bleach, pool shock, permanganate, nitrates, peroxide. They live alone.

PPM / MG/L

Parts per million, same number as milligrams per liter in water. Emergency chlorination aims for a residual you can barely smell after 30 minutes, not a swimming pool.

SHELF-STABLE

Does not mean ‘ignore.’ Heat, light, oxygen, and humidity are the four thieves. Arizona takes the first and, in monsoon, the fourth.

STOCK SOLUTION

A stronger mix you dilute at the point of use. Pool-shock stock is the example. Label it so no one drinks the stock.

FIELD NOTES

Lot numbers, mix-ups, and what the bottle actually said. Pencil lives longer than a phone.



FIELD MANUAL WD-01

KEEP THIS COPY ON THE CHEMICAL SHELF

Poison Control (U.S.) 1-800-222-1222. This is a field reference,
not medical advice. When the bottle in your hand disagrees
with this page, the bottle wins.

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