FOOD PRESERVATION SAFETY GUIDE

Essential Safety Protocols for Home Food Preservation

This guide provides crucial safety information for home food preservation. Always follow current USDA guidelines and tested recipes.

⚠️ CRITICAL SAFETY WARNING

Food preservation can be dangerous if not done correctly. Improper techniques can lead to serious foodborne illness, including botulism, which can be fatal. Always:

- Use only tested recipes from reliable sources
- Follow processing times and temperatures exactly
- Never modify safety-tested recipes
- When in doubt, throw it out
- Seek professional guidance for questions about safety

UNDERSTANDING FOODBORNE ILLNESS RISKS

Botulism: The Greatest Threat

What it is: A potentially fatal illness caused by Clostridium botulinum bacteria **Where it grows:** Low-acid, oxygen-free environments (improperly canned foods) **Prevention:** Proper acidification, correct processing times/temperatures, safe canning methods

Signs of botulism in canned foods:

- Bulging lids or containers
- Leaking containers
- Cracked jars
- Loose lids
- Food that spurts when opened
- Off odors or appearance
- Moldy food surfaces

If you suspect botulism contamination:

- DO NOT taste the food
- Dispose of food safely (where people and animals cannot access it)
- Sterilize container and utensils with bleach solution
- Seek medical attention if anyone consumed the food

Other Foodborne Pathogens

- **Salmonella:** Found in eggs, poultry, produce
- **E. coli:** Found in ground meat, fresh produce
- **Listeria:** Can grow in refrigerated foods
- **Staphylococcus:** Produces toxins in improperly stored foods

---

pH LEVELS AND FOOD SAFETY

Understanding Acidity

pH Scale: 0 (most acidic) to 14 (most alkaline/basic) **Safe canning line:** pH 4.6 and below

High-Acid Foods (pH 4.6 and below) - SAFE for water bath canning

- Most fruits (apples, berries, citrus, stone fruits)
- Properly pickled vegetables
- Tomatoes with added acid (lemon juice or citric acid)
- Jams and jellies with proper sugar content
- Sauerkraut and fermented foods

Low-Acid Foods (pH above 4.6) - REQUIRE pressure canning

- All vegetables (except tomatoes with added acid)
- All meats, poultry, and seafood
- Dried beans and peas
- Soup stocks and broths
- Mixed dishes (casseroles, sauces with vegetables)

Borderline Foods - SPECIAL HANDLING REQUIRED

- **Tomatoes:** Must add acid (2 tbsp lemon juice or ½ tsp citric acid per quart)
- **Figs:** Require added acid for safe water bath canning

- **Asian pears:** Require added acid
- **White peaches:** May need added acid depending on variety

---

WATER BATH CANNING SAFETY

Equipment Requirements

- **Canner:** Large pot with lid and rack (at least 3 inches taller than jars)
- **Jars:** New or perfect condition canning jars only
- **Lids:** New canning lids each time (rings can be reused)
- **Tools:** Jar lifter, lid lifter, bubble removal tool, headspace tool

Safety Procedures

Jar Preparation

1. Inspect jars for cracks, chips, or scratches - discard damaged jars
2. Wash jars in hot, soapy water and rinse thoroughly
3. Keep jars hot until filling (in dishwasher, hot water, or low oven)
4. Prepare new lids according to manufacturer instructions

Filling and Processing

1. Fill hot jars with hot food, leaving proper headspace
2. Remove air bubbles with non-metallic tool
3. Wipe jar rims clean with damp cloth
4. Apply lids and rings finger-tight (don't over-tighten)
5. Process in boiling water for full recommended time
6. Start timing when water returns to full boil
7. Maintain rolling boil throughout processing

Post-Processing Safety

1. Let jars cool undisturbed for 12-24 hours
2. Check seals - center of lid should be down and not flex when pressed
3. Remove rings, wash jars, and label with contents and date
4. Store in cool, dark place

5. Use within recommended timeframe (typically 1-2 years)

Altitude Adjustments for Water Bath Canning

- **1,001-3,000 feet:** Add 5 minutes
- **3,001-6,000 feet:** Add 10 minutes
- **6,001-8,000 feet:** Add 15 minutes
- **8,001-10,000 feet:** Add 20 minutes

PRESSURE CANNING SAFETY

Critical Safety Points

- **Only method safe for low-acid foods**
- **Must reach 240°F (116°C)** to destroy botulism spores
- **Pressure and time must be exact** - no modifications allowed
- **Altitude affects pressure requirements**

Equipment Requirements

- **Pressure canner:** Must hold at least 4 quart jars and have accurate pressure gauge
- **Gauge testing:** Test dial gauges annually for accuracy
- **Weighted gauges:** Check for damage and proper weight
- **Safety valve:** Inspect and replace as needed

Pre-Canning Safety Checks

1. **Gauge accuracy:** Have dial gauge tested annually
2. **Gasket inspection:** Check for cracks, brittleness, or food residue
3. **Vent port:** Ensure it's clean and unobstructed
4. **Safety valve:** Verify it moves freely
5. **Lid fit:** Ensure lid sits properly and locks securely

Processing Procedures

1. **Venting:** Exhaust steam for 10 minutes before closing vent
2. **Pressure build-up:** Allow pressure to build gradually
3. **Processing time:** Start timing when correct pressure is reached

4. **Pressure maintenance:** Monitor and adjust heat to maintain steady pressure
5. **Natural pressure release:** Turn off heat, let pressure return to zero naturally
6. **Wait period:** Wait 2-10 minutes after pressure drops before opening

Altitude Adjustments for Pressure Canning

Weighted Gauge Canners:

- 0-1,000 feet: 10 lbs pressure
- Above 1,000 feet: 15 lbs pressure

Dial Gauge Canners:

- 0-2,000 feet: 11 lbs pressure
- 2,001-4,000 feet: 12 lbs pressure
- 4,001-6,000 feet: 13 lbs pressure
- 6,001-8,000 feet: 14 lbs pressure

FREEZING SAFETY

Safe Freezing Practices

- **Temperature:** Maintain 0°F (-18°C) or below
- **Speed:** Freeze foods quickly to maintain quality
- **Packaging:** Use moisture-vapor resistant containers
- **Air removal:** Minimize air contact to prevent freezer burn
- **Labeling:** Date all packages clearly

Blanching Vegetables

Why blanch: Stops enzyme action that causes quality loss **Method:**

1. Bring large pot of water to rolling boil
2. Add vegetables in small batches
3. Start timing when water returns to boil
4. Remove promptly and plunge into ice water
5. Cool completely, drain, and package

Blanching Times (minutes in boiling water)

- Asparagus: 2-4 minutes (depending on size)
- Beans (green/wax): 3 minutes
- Broccoli: 3 minutes
- Brussels sprouts: 3-5 minutes
- Carrots: 2-5 minutes (depending on size)
- Cauliflower: 3 minutes
- Corn (on cob): 4-6 minutes
- Corn (kernels): 4 minutes
- Peas: 1-2 minutes
- Spinach: 2 minutes

Foods That Don't Freeze Well

- Lettuce and other leafy greens (raw)
- Radishes, cucumbers (high water content)
- Hard-boiled eggs
- Mayonnaise-based salads
- Cream-based sauces
- Fried foods

DEHYDRATION SAFETY

Safe Drying Temperatures

- **Fruits:** 135°F (57°C)
- **Vegetables:** 125°F (52°C)
- **Herbs:** 95-115°F (35-46°C)
- **Meat (jerky):** 145-155°F (63-68°C)

Pre-treatment for Safety

Fruits: Prevent browning and improve safety

- Ascorbic acid solution
- Lemon juice dip
- Blanching (for some vegetables)

Vegetables: Blanching recommended for most

- Steam blanching preferred over water
- Maintains color, nutrition, and safety

Testing for Dryness

- **Fruits:** Leathery, no moisture beads when squeezed
- **Vegetables:** Brittle or crisp
- **Herbs:** Crumble easily
- **Meat:** Cracks when bent but doesn't break

Safe Storage

- Cool completely before packaging
- Use airtight containers
- Store in cool, dark, dry place
- Check periodically for moisture or mold

FERMENTATION SAFETY

Understanding Fermentation Safety

Good bacteria: Lactobacillus creates acid environment **pH target:** Below 4.6 for safety **Salt concentration:** Critical for safety (typically 2-3% by weight)

Safe Fermentation Environment

- **Temperature:** 65-72°F (18-22°C) for most vegetables
- **Salt:** Use non-iodized salt (sea salt, kosher salt, pickling salt)
- **Water:** Chlorine-free water (filtered or aged tap water)
- **Containers:** Glass, food-grade plastic, or ceramic only

Signs of Successful Fermentation

- Tangy, sour smell (not putrid)
- Bubbling activity
- pH below 4.6
- No mold growth

- Pleasant sour taste

Warning Signs - DISCARD IMMEDIATELY

- Fuzzy mold growth (any color)
- Foul, putrid odors
- Slimy texture
- Off colors (pink in sauerkraut, black spots)
- pH above 4.6 after fermentation period

Basic Sauerkraut Safety

1. Use 2-3% salt by weight of cabbage
2. Keep vegetables submerged under brine
3. Ferment at 65-72°F for 3-4 weeks
4. Test pH - should be 4.6 or below
5. Refrigerate after fermentation complete

EMERGENCY PROCEDURES

If You Suspect Food Poisoning

1. **Stop eating** the suspected food immediately
2. **Seek medical attention** if symptoms are severe
3. **Save** remaining food for testing
4. **Document** what was eaten and when
5. **Report** to local health department if multiple people affected

Botulism Symptoms (seek immediate medical care)

- Double or blurred vision
- Drooping eyelids
- Slurred speech
- Difficulty swallowing
- Muscle weakness
- Difficulty breathing

Power Outage and Freezer Failure

Food safety guidelines:

- Full freezer: Food safe for 48 hours if unopened
- Half-full freezer: Food safe for 24 hours if unopened
- Refrigerator: Food safe for 4 hours if unopened
- Check each item - when in doubt, throw it out

What to save/discard:

- **Save:** Items still frozen solid or with ice crystals
- **Discard:** Items above 40°F for more than 2 hours
- **Discard:** Any items with off odors, colors, or textures

TESTING AND MONITORING

pH Testing

Why test: Ensure foods are acidic enough for safe preservation **Equipment:** Digital pH meter or pH strips (calibrated for food use) **When to test:** Before canning borderline foods, after fermentation

Pressure Gauge Testing

Dial gauges: Test annually at county extension office **Weighted gauges:** Check for damage, ensure proper weight **Replace if:** Gauge reads more than 2 pounds off at 10 pounds pressure

Temperature Monitoring

Freezer: Check monthly with appliance thermometer **Canning:** Use reliable thermometer to verify processing temperatures **Dehydrator:** Verify temperature accuracy with separate thermometer

---

SAFE RECIPE SOURCES

Trusted Sources for Tested Recipes

- **USDA Complete Guide to Home Canning**
- **Ball Blue Book Guide to Preserving**
- **University Extension Publications**
- **National Center for Home Food Preservation (nchfp.uga.edu)**

- **So Easy to Preserve (University of Georgia)**

Avoid Unsafe Sources

- Social media recipes without testing
- Old recipes (pre-1990s) without verification
- "Pinterest" or "blog" recipes without scientific backing
- Modifications to tested recipes
- Recipes from countries with different safety standards

RECORD KEEPING FOR SAFETY

What to Record

- **Date processed:** When food was preserved
- **Recipe source:** Where recipe came from
- **Processing method:** Water bath, pressure, freezing, etc.
- **Processing time/temperature:** Actual conditions used
- **Batch notes:** Any observations or modifications

Sample Record Entry

Date: March 15, 2025 **Product:** Tomato Sauce **Recipe:** USDA Complete Guide, page 3-19 **Method:** Water bath canning **Processing:** 40 minutes at 212°F (sea level) **Yield:** 8 pints **Notes:** Added 2 tbsp lemon juice per quart, all jars sealed properly

---

ANNUAL SAFETY REVIEW CHECKLIST

Equipment Inspection (Yearly)

- [ ] Test pressure canner gauge accuracy
- [ ] Inspect canner gaskets and safety valves
- [ ] Check jar condition - discard damaged jars
- [ ] Verify thermometer accuracy
- [ ] Test freezer and refrigerator temperatures

Knowledge Update (Yearly)

- [ ] Review current USDA recommendations

- [ ] Check for recipe updates or recalls
- [ ] Update preservation knowledge through extension courses
- [ ] Review and improve record keeping system

Inventory Review (Twice Yearly)

- [ ] Check all preserved foods for signs of spoilage
- [ ] Use oldest items first (rotate stock)
- [ ] Discard items past recommended storage time
- [ ] Evaluate preservation successes and failures

EMERGENCY CONTACTS

In Case of Suspected Poisoning

- **Emergency Services:** 911
- **Poison Control:** 1-800-222-1222
- **Local Hospital:** _____

For Food Safety Questions

- **Local Extension Office:** _____
- **USDA Meat & Poultry Hotline:** 1-888-674-6854
- **FDA Food Safety:** 1-888-723-3366

QUICK SAFETY REFERENCE

Water Bath Canning - YES

- Fruits and fruit juices
- Jams, jellies, preserves
- Tomatoes (with added acid)
- Pickles and relishes
- Sauerkraut

Water Bath Canning - NO (Use pressure canner)

- All vegetables (except tomatoes with acid)
- Meat, poultry, seafood

- Dairy products
- Pasta or rice dishes
- Soups and stocks

When in Doubt

- **Don't guess** - look up tested recipes
- **Don't modify** tested recipes for safety
- **Don't take risks** - discard questionable food
- **Don't can** what you wouldn't eat fresh

Remember: Food preservation safety is serious business. When you're uncertain about safety, consult current USDA guidelines or your local extension office. It's better to be safe than sorry when it comes to food preservation.