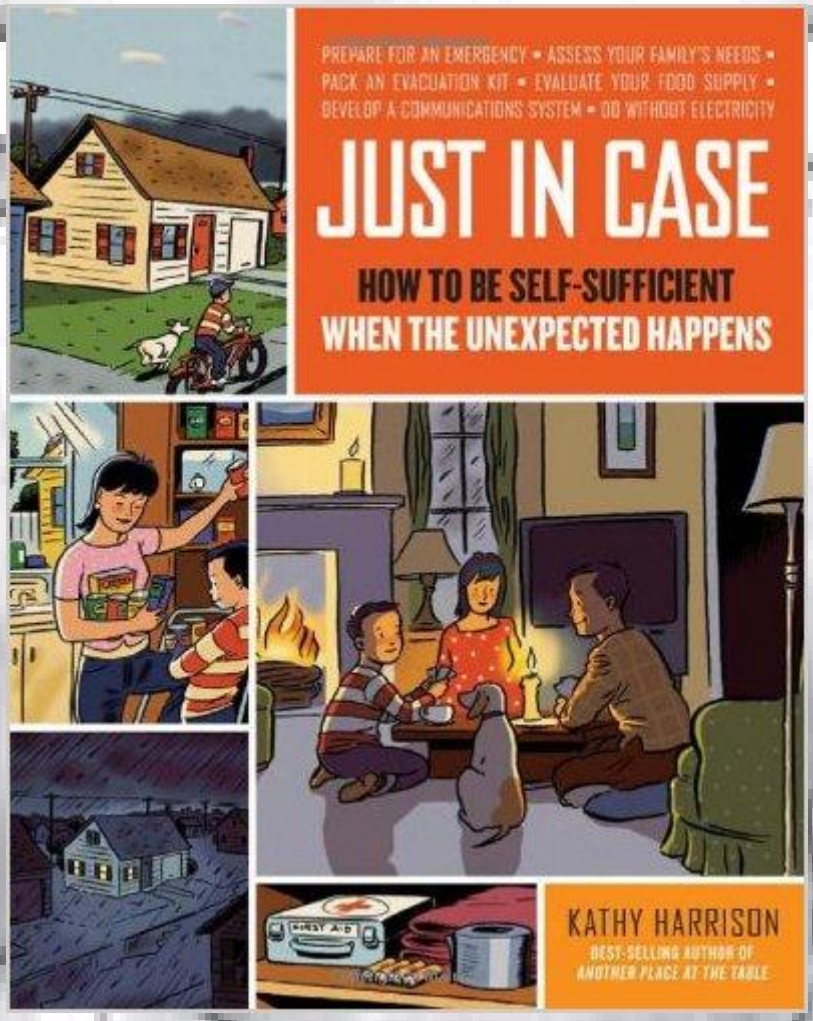
PREPARE FOR AN EMERGENCY • ASSESS YOUR FAMILY'S NEEDS •
PACK AN EVACUATION KIT • EVALUATE YOUR FOOD SUPPLY •
DEVELOP A COMMUNICATIONS SYSTEM • DO WITHOUT ELECTRICITY
JUST IN CASE
HOW TO BE SELF-SUFFICIENT
WHEN THE UNEXPECTED HAPPENS
KATHY HARRISON
BEST-SELLING AUTHOR OF
ANOTHER PLACE AT THE TABLE

# JUST IN CASE

# JUST IN CASE

## HOW TO BE SELFSUFFICIENT WHEN THE UNEXPECTED HAPPENS

BY KATHY HARRISON

Storey Publishing

**The mission of Storey Publishing is to serve our customers by publishing practical information that encourages personal independence in harmony with the environment.**

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## Introduction

**ON A THURSDAY MORNING** in midwinter the Tucker family woke up to the eerie silence and deepening cold that signal a power outage. Mike Tucker stumbled to the window. Every house on the street of their affluent suburb was as dark as his own. He muttered softly as he lit the fireplace in the family room. The fire was soon roaring, but it heated only a small area directly in front of the hearth. The rest of the room remained chilled. Lisa Tucker rummaged through the kitchen cabinets, looking for breakfast for the couple and their three children, eight-month-old Dan, six-year-old Austin, and twelve-year-old Audrey. Everything but a few boxes of cold cereal required some source of electricity to prepare. She looked longingly at the electric coffee grinder and automatic coffeemaker. They weren't much good without the power to operate them. As the children awoke, they gravitated to the only warm spot in the house, directly in front of the fireplace. Baby Dan woke up hungry and wet. He had to settle for a cold bottle while his mom opened a box of disposable diapers and quickly changed him.

The family pondered what to do. It was hard to make plans without being sure what the problem was or how long the power was likely to be out. They tried to make a few calls, but the cell-phone network was overloaded and they couldn't get through to anyone. Mike finally bundled up and headed out to the car. He planned to head over to Dunkin' Donuts to pick up coffee, doughnuts, and news. But without power, his garage door wouldn't open. At least he was able to use the car radio to hear the news. It wasn't good. A main switching station in upstate New York had failed. The tumbling blackout it precipitated ranged from New Hampshire to Pennsylvania. The power grid had long needed a major overhaul to handle increasing demand, but no one had been willing or able to make the financial commitment to get the work done. Officials were not giving estimates about how long the blackout would last. They asked that all but essential personnel stay home and off the streets. Schools would be closed until further notice. The broadcast was followed by a list of emergency shelters for people without the means to keep warm and fed.

Remembering the chaos at the New Orleans shelters after Hurricane Katrina, Mike and Lisa decided to tough it out at home. After all, this was America. No one was going to freeze or starve to death in the few days it would take to restore the power.

By day four, the Tuckers were questioning that premise. Their own supply of wood was gone. Mike had jimmied the garage door open and scavenged the surrounding area for more. He was able to find two unattended piles and, without any thought to right, wrong, or the state of the interior of his SUV, brought home what he could. The disposable diapers and the formula were gone. Lisa cut up her designer flannel sheets for diapers, washing them by hand in the cold water they kept running night and day in order to keep the pipes from freezing. Food was scarce. Dan developed diarrhea after the abrupt switch from formula and baby food to the less-than-adequate table food the family was able to prepare. Between the outdoor grill and a camp stove they had bought for a long-ago camping trip, they were able to cook what they could salvage from the freezer before it rotted. Cleaning up the mess and getting rid of the food they couldn't eat was a problem. They ended up letting it sit in the backyard, where it soon became a magnet for the neighborhood dogs. They quickly exhausted the food in the cupboards, surprised at how much a family of five consumed. A shocked Mike Tucker found himself standing in line to receive food handouts from an overwhelmed FEMA.

Nightfall was especially difficult. The flashlight batteries had quickly worn out, their few candles were burned to stubs, and there was no light except from the fire. Most people had left the neighborhood and the small family felt increasingly isolated. The Tucker children were used to being plugged in for entertainment. They had few resources to occupy themselves as the days turned into weeks. Austin got angry. Audrey became depressed.

By the time the power was restored, after several weeks, the family was ill and exhausted. As the news stories began to surface, it was clear that they had actually made out better than many. Some people had frozen, and while none had actually starved, many hundreds of thousands had gone hungry. It took months for the Tuckers to recover from their ordeal.

**NOT FAR FROM** where the Tuckers lived, another family also had to deal with the blackout. When the Brown family woke to find the power out, though, it caused barely a ripple in the course of their day. Steven Brown started a fire in the woodstove in the living room, which kept most of the downstairs warm. He started a second fire in the old cookstove they kept in the basement family room for just such occasions. Twelve-year-old Marsha made up a batch of her favorite pumpkin muffins for breakfast, baking them in the cookstove. Her mother, Claire, started a pot of coffee on the cookstove top and nursed the baby while it finished perking. While they ate, the family listened to the news on a radio powered by a hand cranked generator. There was much to keep them busy once they realized that this blackout was far from typical and they would need to rely on themselves for the foreseeable future.

Six-year-old Ben helped his dad carry in wood from the shed. Then he walked through the house with his sister, unplugging all of the appliances and lights. They would be using a gas-powered generator to keep the freezer running and to operate the pump for the well, but they had a limited amount of fuel and did not want to waste it on nonessentials. Though it would be several days before they would need to dig into the supplies in the basement food storage area, they did a thorough check to make sure everything was in order.

The days remained busy. There was always food to prepare. Each day they baked bread and made a batch of yogurt. There was water to keep heated, wood to carry, and the fires to tend. They did little wash but the essentials, like diapers, because they were using a small, pressurized hand washer that handled only small loads. They dried the clothes on a rack in front of the cookstove. When not attending to chores, the children read, played games, and entertained the baby.

When the power came back on, the Brown family talked over the experience. A few things had been problematic. In the future, they would need a more efficient way to heat water. They also needed more gas for the generator; they would have run out if the power had been out much longer. And they realized that they all had missed the company of other people; they needed to figure out a way to hook up with other families who were striving to be selfsufficient in a crisis. Still, they felt this had been a good test of the systems they had put in place. The older children appreciated that they had been necessary contributors to the effort of keeping the house running smoothly. Not only were they not traumatized, but they seemed to regard the experience as an adventure. They were dismayed and saddened that so many others had suffered. To them, being prepared and selfsufficient was second nature.

**THESE TWO SCENARIOS** are fiction, although I fear the Tucker family story would be close to accurate for most of us if we found ourselves off the grid for more than a few days. The majority of families in North America are unaware of how entirely dependent we are on outside services for our very survival.

Many of us have a false sense of security. We have become used to assuming that technology will prevail or that some government agency will

bail us out in a crisis. The grocery store is just around the corner and the array of food and supplies looks nearly limitless. In fact, nothing could be further from the truth. Keeping those shelves stocked relies on transportation and computerized inventory control systems. If there was a run on grocery stores, supplies would be gone in a matter of hours. We assume continued access to medical care even though history has taught us that in an emergency, it is the first system to become overwhelmed. With the use of credit and debit cards and cash machines, significant numbers of people carry very little actual money with them, not prepared for the cash kiosk on the corner to be out of commission and those little plastic cards to be virtually worthless.

Still, being prepared for an emergency — whether personal or global, natural or human produced — strikes many as irrational or succumbing to fear, being unduly pessimistic, or coming from a position of insecurity. But actually, the opposite is true. Being prepared to care for oneself and one's family brings with it a sense of calmness and security. Being self-reliant and independent gives one the confidence to face any challenge and see it as just that: a challenge, not the end of the world.

Everyone with a savings account and a firstaid kit is preparing for an emergency. Each family with a woodpile or a backyard garden is exercising a degree of independence. Even a smoke detector, a flashlight, and health insurance signal that you are aware that the unexpected can (and probably will) happen and that it would be irresponsible to be without some form of backup.

Developing a system for preparedness takes that sense of responsibility a step further. Managing a personal food supply, organizing your home, assessing your family's needs, and acquiring those goods that would see you through a time when the cavalry might not come to rescue you — these concerns are a sensible precaution, given what we know about the world and how it has historically operated in times of crisis and turmoil.

Such an undertaking might seem overwhelming at first. I have heard all of the arguments and excuses. "I don't have the space. I don't have the time. I don't have the money. I wouldn't know where to start. I'll never use all that stuff." This book will address all of these issues. Like all important journeys, the road to self-reliance and preparedness begins with a single step. That step is realizing, as all wise people do, that change is part of the human condition and calamitous change has defined our history. And faced with change, you can choose to take control of your own destiny rather than leave it up to fate to decide your personal outcome.

Being prepared is no longer the province of kooks and alarmists. It has gone mainstream. I have found it to be a liberating experience. Preparedness allows me to move forward with confidence and security and not feel burdened by the worry of an uncertain future.

My objective with this book is to offer access to the kind of crisis information that will be helpful to ordinary families in extraordinary situations. I have not, for instance, included the directions for making your own shoes or tanning hides because I don't think many people want or need to know how to do those things. But I have covered fire safety in detail because house fires can happen to anyone and we should all be aware of basic fire safety.

We live in precarious times, with a looming specter of global warming and climate change, pandemics, terrorism, and food insecurity assaulting us every day. Many families live only a paycheck away from homelessness. Our fragile and interdependent system of transportation, communication, and finance leaves most Americans only a few days away from hunger. My intention is to encourage all families to become familiar with the basic goods and skills necessary for self-reliance should the worst happen. I hope this book will challenge you to learn more and to pass that information on to your friends and neighbors.

I have been asked why a book like this is important. For me, the sheer volume of available information on the subject was a problem. I was looking for a manageable amount of useful advice on family preparedness and I found wading through what was available online cumbersome and a bit overwhelming. The second problem with relying on the Internet to supply lifesaving information is pretty basic: What are we all going to do for guidance when we push the "on" button and nothing happens?

**ARE YOU READY DISASTER?**

- Can you provide your family with sufficient food if the grocery stores are closed?
- Do you have access to safe, clean water if the municipal water system or your well is compromised?
- Can you Keep your home warm if fuel supplies are distrupted?
- Do you have a source of light if the power grid goes down during a strom?
- Can you evacuate your home with three day's worth of supplies for each family member in five minutes?
- Can you shut down your home systems in ten minutes?

DO YOUR KIDS KNOW:

- How and when to dial 911?
- Their names, addresses (including city and state), and phone numbers, along with their parents' names?
- What to do if the smoke detector goes off in the middle of the night
- The location of the family meeting place?

# PART 1 THE OAR SYSTEM ORGANIZE, ACQUIRE, ROTATE

**WHEN I BEGAN TO TAKE PREPAREDNESS SERIOUSLY**, more than twenty years ago, I knew I needed a plan to collect and store my supplies so I would have what I needed in places I could easily access. I needed a way to purchase supplies without doing serious damage to my finances, and I wanted to be sure that I didn't waste my money by not using what I had in my pantry. I came up with what I call the OAR system.

Essentially, OAR refers to the process of organizing, acquiring, and rotating supplies. First, I organized to determine what I already had and identify what my future needs might be. Organizing also provided additional room for supplies. After organizing, I began a preparedness notebook and acquired food and other supplies in a systematic way. As my shelves began to fill, I rotated supplies by dipping into my stock once or twice a week to prepare meals.

This past year, I took a serious fall. I broke several bones and was laid up for nearly five months. During that time, neither my husband, Bruce, nor I was able to work outside the home at all. Although our friends, family, and community helped out with meals, we were mighty glad to have supplies on hand that met our most pressing needs and kept Bruce from having to shop for several months. Our disaster was private, but it provided a clear picture of how quickly life can change for any of us and how important it is to be prepared to care for your family no matter what life throws at you. One of the first things I did when I got back on my feet was to reestablish the family safety net of provisions.

It has occurred to me that I am only doing what every housewife did as a matter of course only a generation or two ago. She always preserved food for the coming year as it came into season and bulk-purchased staples such as sugar and vinegar. Our grandmothers did this not because they were paranoid, isolated survivalists, but rather because they had learned from experience that blizzards, crop failures, and epidemics happened. The prudent, prepared household prevailed. Others did not.

As the winter storms howl outside my window and the political, economic, and ecological news goes from bad to worse, I sleep well, knowing I can care for my family during times of plenty and times of want.

# CHAPTER 1 ORGANIZE

"Honey, where's the flashlight?"

"Has anybody seen the tweezers?"

"I thought you bought peanut butter."

"Who's got the scissors?"

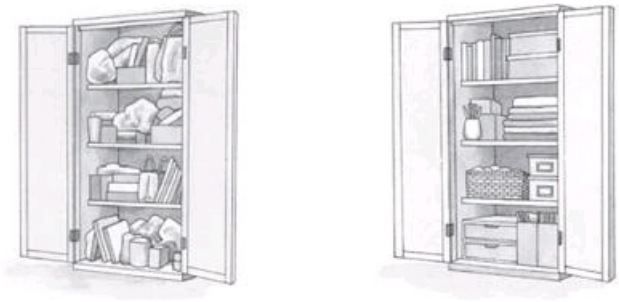
This is what my husband, Bruce, refers to as the maddening treasure hunt: ferreting out the necessities of life from under an avalanche of clutter. On a regular day, the overwhelming junk that many families are drowning in is just bad for us. Unfinished projects, broken or useless appliances, mountains of toys, and closets stuffed full of clothing rob families of space, time, energy, creativity, and resources. But during an emergency, clutter can be downright dangerous! Do you really want to evacuate your children from a smokefilled house in the middle of the night when you can't safely walk across their bedroom floor on a sunny day because of all the toys on the floor? When the lights go out, will you have to scour the house searching for the flashlights and batteries? Disorganized preparedness is just as bad as no preparedness if you can't locate what you need. The biggest obstacle most people cite with planning a preparedness program — lack of storage space — might disappear if we just clean house.

The organizing process also provides the perfect opportunity to determine your family's individual needs. After all, your family's must-have list is not likely to be exactly the same as mine or anyone else's. Organization will also allow you to figure out your equipment and storage-space needs. Having that list in hand will allow you pick up what you need when you find a good sale or, better yet, a tag sale or Freecycle find. In fact, all of your family systems will be getting a thorough inspection so that you can assess your needs and assets.

While the process of organizing your home could be a book in itself, the guidelines below will get you started with an eye toward creating space and assessing inventory.

## FINDING SPACE

**I AM NOT, BY NATURE, ORGANIZED.** I am a gatherer. Tag sales are far more appealing to me than any sale at an upscale department store. I am a particular sucker for kitchen gadgets from the 1940s, discarded furniture, and vintage toys. Left to my own devices, my house would look as though a thrift store exploded in the kitchen. Fortunately, I married a Navy man for whom organization is second nature. His mother claims he was neat even as a child. Together, we make a good team. I can find anything on sale and Bruce keeps me from buying it unless we really need it.



**CLOSET RECLAMATION: BEFORE AND AFTER**

The benefit of getting organized is that it creates both space and order. You'll be able to fill your home with those things that you really love or actually use, while at the same time making the best use of all the storage space available in your house.

## CLEARING OUT: PURGING OLD STORAGE

Purging your home of the stuff you don't want or don't use will give you the space you'll need for the equipment and goods that will sustain your family in a time of crisis. Tackle one room or space at a time. Pull everything out of the cabinets, drawers, and closets. Pay special attention to

stored clothing, books, toys, sports equipment, and small electric gadgets and appliances, especially broken ones waiting to be fixed (someday). Be ruthless! If you haven't used it, fixed it, worn it, read it, or played with it in the last year, you probably don't really want it or need it. It's junk! Get rid of it!

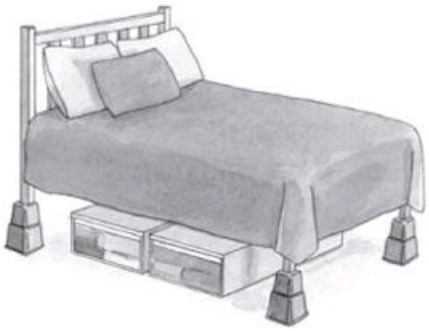
When I began looking for storage space, I found that by eliminating our stock of rusty bicycles, twenty-year-old skis and boots, and boxes of baby clothes (the baby was four!), I picked up enough space to stock a two-month supply of canned fruits and vegetables, one hundred pounds of wheat, and some camping gear. I also discovered places we were wasting space and money every day. While organizing the bathroom I found six almost-but-not-quite-empty bottles of shampoo, three half-used tubes of toothpaste, and an embarrassment of outdated bath salts and lotions. Tossing that stuff out and organizing what I actually used freed up enough space to store all of our daily needs plus a well-stocked first-aid kit.

We made a new family rule: No one may open a new bottle or box of anything until the old one has been used up and the container has been discarded or recycled. This one commitment freed up more space than you might imagine.

As you clear out and organize your storage, pay special attention to the kitchen. It is truly the heart of the home and command central in a crisis. A well-stocked kitchen can mean the difference between comfort and misery, abundance and want. You want as much of your stored food to stay in the kitchen as you can. Rotating your stock, the key to reducing waste, is much harder if everything is in a difficult-to-access space.

### KEEP FOOD WHERE YOU'LL USE IT

All too often, emergency food supplies are stored in out-of-the-way places like attics and sheds. Unless you are really diligent, it will lie there, forgotten, until it becomes, at best, fodder for the compost heap or, at worst, mouse McDonald's. It is far better to dedicate space for food storage in the living area of your home whenever possible and to restrict inconvenient spaces for items that you seldom use or that don't need to be rotated. Even odd places, like under beds and behind furniture, will often be better used than more traditional spots that you don't get to very often, such as cabinets in the back of the garage. For example, I purchased bed risers (for less than ten dollars each) that elevate my bed by six inches, and that under-bed storage has turned out to be both easy to use and surprisingly spacious.



**RISERS UNDER A BED**

Most kitchens are a breeding ground for useless stuff. I got rid of three fondue pots that had never been out of the boxes they came in and found space for eighteen quarts of spaghetti sauce. Donating an old high chair to our community house left a corner of the kitchen empty that was just right for a freestanding corner cupboard that now holds all of our pickled vegetables. Purging my cookbook collection (it was out of control) left me with all of the cookbooks I really use and two bare cabinet shelves that now hold a threemonth supply of bulk peanut butter. Do you use that cappuccino machine, the pasta maker, and the bread machine? If you do, great! Use and enjoy. If they are just taking up valuable kitchen real estate, consider donating them to a thrift store, selling them at a tag sale, or giving them to a friend. If your resolve starts to crumble when you think of the wasted money, jut think about how many boxes of pasta you could store in your newly acquired space.

I can hear the question now: "Won't I be glad I kept the [fill in the blank] in an emergency? After all, our grandparents never threw anything out. You never know what might come in handy." I can pretty much promise that twenty-five used margarine tubs and the three-foot stack of outdated *Reader's Digests* you got from your mother-in-law will not be as handy as a case of canned beans.

Beware the lure of the "antique mystique." Just because something worked in the last century doesn't necessarily make it the best bet for an emergency. For example, it is better to invest in a new, well-engineered pressure cooker than to waste time and energy on an old model of questionable safety and efficiency, no matter how much your grandmother loved it.

### THINKING AHEAD: CREATING NEW STORAGE

While you are purging and organizing, be on the lookout for space where an extra cabinet or cupboard might fit. Bruce hung a cabinet over the freezer in our mudroom, and now I have enough space for a six-month supply of jam. Not everyone is fortunate enough to have a pantry, but a small closet can be converted into one with the addition of inexpensive shelving. As I type this, I am eyeing a corner of the kitchen that is occupied by a very tall, very ugly plant and picturing a freestanding, antique cupboard that would be just right for storing my jars of dried fruits and vegetables. Hmmmm.

**CELLAR PANTRY**

### EVALUATING HOME SAFETY

While you're assessing storage possibilities and your family's needs, take a look at your home from the standpoint of safety. Are there obvious hazards such as blocked doorways or broken steps that need to be repaired? Have you planned two means of egress from each room? Does everyone know your evacuation plan? Do you have a fire extinguisher on each floor of the home, and one in the kitchen? If you have a home shelter, such as a safe room or tornado shelter, is it secure and easy to get to?

If there are any obstacles to quick action and secure refuge in your home, take care of them as soon as possible.

Most garages, cellars, and attics are treasure troves of untapped space. Although the temperature extremes and moisture problems in these locations may make them unsuitable for the storage of some foods, they can work well for dry goods like toilet paper and soap. The petroleum and exhaust fumes in many garages make it the wrong place to store water but just right for your lanterns, fuel, and canning supplies.

Look hard at recreational spaces like dens, spare bedrooms, and family rooms. Can some portion of that space be converted to storage? A blank wall along one end can provide room for simple shelving. It's a question of priorities. Is a six-foot length of wall space better devoted to collectible beer steins or powdered milk? If the aesthetics bother you, curtains can partition off a wall of shelves and doors can be added to bookcases.

### ASSESSING NEEDS

**WHILE YOU ARE ORGANIZING** your space you can also be looking at your assets and assessing your needs. What supplies does your family need? How much food and water should you keep on hand? What equipment might you need to keep your family comfortable in an emergency? What sort of skills would you like to learn in order to feel confident in your ability to handle a crisis?

To answer these questions, you must begin by looking at the crises your family and community are most vulnerable to. Plans for evacuation must be foremost if you live in hurricane territory. If you live in an area of major winter storms, priority must be given to emergency heating and cooking supplies. A flu pandemic or power grid failure could affect any of us, and drastically, since transportation of people and goods, communication, banking, medical care, and other societal systems all rely on electronic networks and databanks. Today, a computer virus is potentially more devastating than a biological virus.

### THE PREPAREDNESS NOTEBOOK

The most valuable tool you can have for assessing your needs is a dedicated preparedness notebook. My notebook is a three-ring binder, divided into categories such as food, home systems (including lighting, heating, and cooking), first aid, car supplies, and evacuation kits. Each section contains a list of items my family needs; the lists make up an inventory of what I have on hand and what I need to locate. I also have a section dedicated to skills I want to have, such as canning food, CPR, and cutting firewood.

As you organize and clear out storage, you can take inventory of your own state of preparedness. Maybe you already have a couple of kerosene lanterns but you need to figure out how to bake bread without an electric oven. Perhaps you have a four-week supply of pasta but no pasta sauce. Beginning an inventory of such things in your preparedness notebook is the first step toward being prepared for a crisis.

## THE PREPAREDNESS NOTEBOOK

### SUPPLIES

As part of your assessment of your family's needs, keep track of what your family eats. Keep a log of daily meals and snacks for a two-week period. This exercise will show you the foods and beverages that your family typically enjoys. There is no point in buying a case of pineapple, no matter how good the price, if everyone in the house hates pineapple. On the other hand, recognizing that your kids don't consider the meal complete without potatoes means that it is worth the expense to purchase a supply of good-quality dehydrated potatoes.

Be sure to make note of any special dietary needs and plan for them. My youngest child requires a special formula, so I have made it a point to put aside a case every few weeks for the past year, and I now have a stockpile that can last several months.

Do the same for health-care products, soap and shampoo, and other nonfood supplies. (See page 41 for the basic essentials of these "other necessities" of life.) If you have a child in diapers, for example, you must have either a large supply of disposable diapers or a way to launder cloth ones.

### HOW MUCH SHOULD YOU STORE?

The amount of supplies you will want to put away is an individual matter. Obviously, the storage needs for a couple in a city apartment are going to be very different from the needs of a rural family with six small children and a flock of chickens. How vulnerable are you, and to what sorts of emergencies? Are you planning for a power outage, a flu pandemic, or a breakdown of society? Are you comfortable with a four-week stash, or does three months seem reasonable? Do you have a 250-pound lumberjack or a nursing mother to feed? Are you likely to be responsible for just the people in your household, or do you have extended family that would join you in an emergency? Have you decided to purchase everything at once or a packaged survival kit and get it over with, or do you plan to stretch your purchases over time?

I can't answer these questions for you. This is a conversation to have with your family in the early planning stages. The process will be much easier if you have a common goal and work together for the good of the family.

Most families find it easiest to begin by planning to store enough to meet their most pressing needs for three days. With an appropriate satchel, this can become your evacuation kit. (See page 93 for more on evacuation kits.) Next, move on to a two-week supply. You can then add a week's worth of supplies at a time until you reach your target goal of, say, two to three months. You'll probably need to purchase durable goods such as lanterns, radios, and a nonelectric cookstove as well. With good planning and organization it should be possible to accomplish this task with minimal family disruption.

### EQUIPMENT

Sit quietly in your kitchen. What do you hear? The low-pitched rumble of your furnace? The whine of the washing machine's spin cycle? The phone rings. The teapot whistles on the stove, and the microwave beeps to signal that lunch is ready. A toilet flushes in the upstairs bathroom. The refrigerator motor comes on. The sounds go on all day without our really being aware of them. The background noise is only apparent when the power goes out and your home is truly silent.

When you begin a preparedness program, you will learn how to manage all of these home systems without electricity. Chapter 4 will give you the details of how this can be done. After reviewing that chapter, make note of each of the systems you are currently dependent on for comfort and survival, and whether those systems will operate without power. Decide which home-system alternatives your household needs. For example, if you depend on an electric water pump for your water supply, you must be especially diligent about water storage or purchase a hand pump or generator. Then add the necessary equipment to your preparedness notebook.

### SKILLS

Assess skills as well. Baking bread and making yogurt are as much art as science, and the time to learn how to do either is not when you are feeling desperate. The time is now to make a list of skills you want to have and to make a plan for getting them. I had listed learning how to dehydrate in my preparedness notebook, so when I found a dehydrator (for five dollars, still in the box) at a tag sale, I picked it up. I added a book on the subject to my home library and tried it out over the summer. I made a few mistakes but I learned from them, and I can now cross dehydrating off my list. I had the space for the dehydrator, which is quite large, because I had donated an equally large bread machine that I never used to a thrift shop.

During this phase, look at your community resources. Are there like-minded neighbors who could support you in your efforts to prepare? What classes, such as first aid or CPR, can you take advantage of? Can you ask your local librarian to keep books on preparedness available? It may make sense to share the purchase of some expensive items such as pressure canners and grain grinders with a friend or relative and work together to put up food. In this way preparedness can serve what I believe to be its true purpose: not to isolate us from the world but rather to build local community and allow us to recognize our interdependence.

### GETTING READY TO STORE FOOD

**NOW THAT YOU** have organized your space and belongings and assessed your needs for emergency food and supplies, it is time to give some thought to the particulars of storing food. This will include identifying the household spaces you plan to devote to storage and acquiring any equipment and containers that will be necessary to store food and keep it fresh. Temperature, moisture, light, oxygen, rodents, insects, and bacteria are the enemies of stored food, and all deserve careful consideration when you are looking for space for your supplies. There is nothing more disheartening than opening a cupboard and finding the telltale signs of bugs or mice that mean throwing out your hard-earned food supply and starting over.

When Bruce and I moved to our first house in the country over thirty years ago, I was thrilled to have a cold storage room in the basement. We had a huge garden that produced well in spite of our inexperience. The fruits and vegetables multiplied like so many loaves and fishes. That first summer I canned on our ancient cookstove every day and gave away mountains of zucchini, stopping only long enough to deliver son number three. And still the vegetables came. We stored bushels of tomatoes, carrots, beets, and potatoes. Unfortunately, I was unaware of what went into storing foods, and most of what we put away ended up feeding the worms. The tomatoes rotted, the potatoes turned green, the carrots shriveled, and the beets developed a mold. The jelly got furry, and we were afraid to eat the spaghetti sauce after reading about the dangers of botulism. The right

storage systems could have prevented this.

We have learned a lot about food storage since those early days and, so far, have not lost any of the kids to botulism.

### TEMPERATURE

Temperature matters in longterm storage. The best temperature for food is generally between 40°F and 50°F, with the lower temperature being better. Higher temperatures shorten the shelf life of all food, including foods touted as lasting nearly forever. The temperature in many basements is adequate, although it can be considerably warmer near the furnace or hot water heater. If you want to use your basement for food storage, it may be necessary to construct an insulated room to maintain an even temperature. This needn't be an expensive undertaking and can solve all of your storage space needs.

Temperature swings are actually worse than a sustained higher-than-optimal temperature, which is why attics and unheated garages seldom make good storage spaces for food. The temperature can vary by as much as a hundred degrees in a year here in the Northeast. I once stored a 100-pound container of wheat on an uninsulated porch and lost the whole thing to mold because the uneven temperature made the can sweat. The moisture was pulled into the wheat and it rotted. Although it looked all right on the surface, the wheat developed an alcohol odor, a sure sign that it had spoiled. Spaces that experience temperature swings can still make good storage for dry goods, however.

The closer to your food preparation area you store your food, the more likely you are to use it routinely. A freestanding pantry that fits along a wall in the kitchen or an adjacent room might be an excellent investment, especially if the room you put it in is on the cool side. The north side of the house is often cooler than the south side, as are closets with doors that shut tightly enough to keep out your home's heat. We emptied out a closet that had held toys, games, and puzzles that our children had outgrown. The space is accessible, dark, and cool. With some added shelving, it became a perfect pantry.

### MOISTURE

Any space you choose for food storage must be dry. A clothes dryer in a room is likely to make the space too humid for good storage, even if properly vented. Basements can be tricky, too, because they often have moisture problems. This may make them a good option for the storage of root vegetables that like some humidity, but moisture in the air will rust cans and may ruin foods like flours and cereal.

Airflow is key in reducing the impact of ambient moisture. Cans that will be stored on a concrete or dirt floor must be protected from moisture leaching up through the floor; you can place them on a wooden pallet, for example, to allow for maximum air circulation. When you have the choice, go for round rather than rectangular containers. Round bins take up more floor space, but the improved airflow around them will be better for your food.

#### KEEPING DRY FOOD DRY

Moisture can be a problem not just in storage spaces but also in storage containers, particularly in warm, humid weather. I sometimes place a tablespoon of white rice wrapped in cheesecloth in containers if I am concerned about moisture. The rice absorbs moisture, allowing the food to remain dry. Dried apples in particular seem to benefit from this trick. Be sure to replace the rice every few weeks.

### LIGHT

Many foods are adversely affected by light. If you store food in a cabinet, closet, or room with no windows, this is less of a problem; however, it is still prudent to choose storage containers that block light whenever possible. When I do use glass jars or clear plastic jugs, I often put them in brown paper bags or cardboard boxes for added protection against light.

### OXYGEN

The presence of oxygen causes food to spoil. Spoilage due to oxygen is most often thought of as a canning problem. Home-canned food that has been canned properly (see chapter 17) will be as free of oxygen as commercially canned food, and it'll last as long, too.

However, oxygen exposure can be a problem for some dry foods. Oxygen causes rancidity in fats and allows insects, fungi, and aerobic bacteria to persist. This is a problem in dehydrated foods with a relatively high fat content, such as powdered milk and eggs. It's even a problem for grains with a relatively high fat content (such as brown rice and rolled oats), split peas, and most nuts if they will be stored for more than a year. (It's not a problem for refined products such as white flour, white rice, and degerminated cornmeal, or for whole wheat, corn berries, or dried beans.)

Food purchased for longterm storage will arrive properly sealed so as to exclude as much oxygen from the containers as possible. But food simply purchased in bulk, such as oatmeal from a natural foods store, will likely come in a plastic bag sealed with a twist tie. Obviously, this will not protect the food from the deleterious effects of oxygen. This is not a problem if you plan to rotate your supplies on a regular basis, but if you do plan to store oxygen-sensitive food such as dried milk for more than a few months, repackaging your supplies with oxygen absorber packets will greatly increase the storage life.

Room air is about 21 percent oxygen, 78 percent nitrogen, and 1 percent other random gases. If you can replace that 21 percent oxygen, you will be left with a nearly pure nitrogen-packed product. Oxygen absorber packets absorb oxygen from the air and chemically bind it into iron oxide. Without oxygen, bugs, molds, and fungi can't live in the container and fats cannot turn rancid. The problem is that it is difficult for the average person to acquire the appropriate storage containers to make this a viable option. If the container is permeable to the air, as plastic food storage bags and cardboard boxes are, the air moving into the container will quickly overcome the packet's ability to absorb the oxygen. Canning jars and Mylar bags will provide a good oxygen barrier. The question becomes whether you want to use canning jars and Mylar bags for storage, and whether you intend to store oxygen-sensitive food for great lengths of time. After careful consideration, it made more sense for me to rotate my oxygen-sensitive foods often. For food such as powdered milk with a relatively short shelf life, I purchase sealed containers from a reputable food storage company.

### PESTS

Whatever space you decide to dedicate to storage, you might need to tighten it up some to make it less inviting to rodents. These voracious pests can squeeze through the tiniest gaps. Be sure to seal all cracks, holes, and gaps under doors. For example, in preparing a closet for food storage, I vacuumed the walls and floor and then washed the space with an all-purpose cleaner. The cleaning helped me to see the cracks in the walls and identify spots of crumbling plaster. I sealed the spaces between the floorboards and the seam between the plaster and the woodwork

with silicon caulk. I patched a few spots in the walls where the plaster had crumbled and added a coat of paint. My husband hung a new door that fit snugly in the frame. The resulting space was as safe from rodents as possible in a nearly 200-year-old house.

Bugs can be a real problem, especially in flours, grains, seeds, and beans. I once brought home a large bag of cornmeal and forgot it in the back of a cabinet until the following spring when I was greeted by a swarm of moths. Silverfish, weevils, ants, roaches, and earwigs are also common infiltrators. These pests can arrive with your food, as larvae or eggs, and quickly ruin your stock. There are several protective measures you can take against such bugs, although none is foolproof and you'll need to check your stock frequently for signs of infestation.

The first step in protecting food from insects is to repack anything you purchase in plastic bags, paper sacks, or cardboard boxes directly into bug-proof glass or plastic containers. I prefer smaller containers (one gallon or less), because then if I should have a bug problem in a container, I won't lose my entire supply.

Since there is no way to spot the eggs or larvae, I assume that any food I plan to store has some and I treat it accordingly. There are several ways to do this but I always go for the easiest and cheapest way. Freezing works well. In cold weather, you can set containers of grain, seeds, or beans in an area where the temperature will stay well below 32°F (below 0°F is best) for seven to ten days. This will kill any bug. You can also do this in your freezer, if you have room, with the temperature set for 0°F.

Diatomaceous earth (DE) that is suitable for human consumption — not the swimming pool variety — is another good alternative. DE is a white powder composed of the spiny skeletons of tiny marine creatures. After the soft body parts decomposed, the remaining skeletons accumulated on the ocean floor over many thousands of years. Those skeletons are now mined and used for pest control. When a bug ingests the powder along with a nibble of grain, the spiny skeleton tears up its digestive tract and it dies before it can reproduce. DE is not harmful for humans to ingest and it has no taste.

Put about ½ to 1 cup of diatomaceous earth into a five-gallon container of any grain or seed and roll it around until every grain is covered. The food can then be consumed without worry, as this method is nontoxic. The fine powder can irritate lungs and eyes, though, so wear a face mask and eye protection when you work with it.

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**DRY ICE PRECAUTIONS**

Dry ice is very cold — as cold as -100°F — and it will freeze unprotected skin on contact, so it must be handled carefully. Pick it up only with heavy, insulated gloves or tongs. I would not use it around children, as this stuff is just too tempting for curious little ones. Dry ice also causes tremendous pressure when it turns from its solid state to its gaseous state, so it must not be used in glass containers, as it can cause a serious explosion. In spite of these drawbacks, it is an inexpensive and reliable way to fumigate food.

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Dry ice is another good option for fumigating food. Dry ice is frozen carbon dioxide. When placed in a container and allowed to evaporate, it replaces the oxygen in the container with carbon dioxide, eliminating all existing bugs and pests. Though eggs or larvae may still be present, they will be dormant. If they manage to survive, they will not be a problem until you open the container. At that point you can freeze the grain or seed to kill the larvae or use the contents before any bug has time to hatch and breed. To use dry ice, wrap a chunk of it in brown paper (an opened paper bag works well) and place on top of a nearly full container. Cover the container loosely so air can escape. When the ice has evaporated (generally this takes twenty to thirty minutes), seal the container and store. Dry ice can be purchased at many grocery stores and from beverage companies.

Once your food is free of pests, the trick is to keep it that way. Bugs can get into any small opening, so I always tuck a couple of bay leaves into my stored grains, beans, and seeds. Bugs don't seem to like the smell of bay. I also take extra care in sealing the lids of my storage containers. With plastic containers I often wrap the lids in duct tape. With glass containers, I often dip the jar tops into a bowl of melted paraffin. (If a jar is too large to dip, I may paint its lid with two thin coats of paraffin.)

**CHOOSING FOOD-STORAGE CONTAINERS**

Foodgrade plastic is an excellent material for storage, and foodgrade plastic buckets and gallon jars can often be had for the asking from schools and restaurants. There may be a lingering odor in the plastic buckets, especially if they previously held something like pickles. I wash them in hot soapy water and rinse them in a sanitizing solution of one part bleach to ten parts water, letting the solution sit in the buckets for twenty minutes. Then I drain and rinse them with clear hot water, dry them well, and line them with a foodgrade plastic or metallized bag. This usually solves the odor transfer problem. (Metallized bags can be purchased from preparedness and wilderness-survival companies. Large foodgrade plastic bags are usually available through food-service companies. If you can't find a source for these large bags, you can pack the food in one-gallon bags that can be purchased in any market and store five in each bucket. Just remove each bag as you need it.) To ensure a good seal I either tape the edge with duct tape or paint the lid seam with two thin coats of melted paraffin.

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**PARAFFIN PRECAUTIONS**

Paraffin is highly flammable. It must be melted over hot water, whether in a double boiler or by setting a can in a pan of hot water. It should not be melted over direct heat, as it can burst into flame. This is another project to start without children underfoot.

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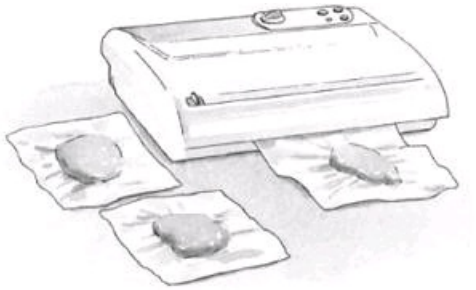
Glass gallon jars are wonderful to look at, but they leave you with the problems of breakage and light permeability. If you're going to use them, handle them carefully and store the jars in paper bags to keep out unwanted light.

Five-gallon buckets are just right for storage, and they stack well. The one downside is that these buckets are very big and, if filled with something heavy such as wheat or flour, may become awkward to lift. The best thing about the buckets is that the lids come with gaskets that really seal the contents from moisture and insects. If you do get a few of these buckets, I would suggest purchasing a bucket opener, which will save you many scraped knuckles and broken nails. There are expensive bucket openers on the market, but my three-dollar model works well for me. I often store items that I don't want to repack, such as pudding and cake mixes, in these buckets.

I don't often recommend buying gadgets. Most take up more space than they are worth and often are not used at all after the first week or two, but I have one appliance that I use all the time, especially for food storage. I inherited a Deni Freshlock vacuum sealer from my mother-in-law, and I love it. Vacuum sealers work like a charm for freezing fruits and vegetables from the garden and also make food storage a lot easier. You can make a bag any size you want, fill it with your food, vacuum out the air, and seal, all in the space of a couple of minutes. Filled bags can be frozen or stored in a cabinet or plastic bucket. The vacuum seal keeps food fresher for longer, and I can pack in only as much as I need at one time. I use my

vacuum sealer to store recipe mixes. Before I tried it, I assumed that the vacuum would suck up the mix, but it turned out the suction wasn't that strong. It is so handy to be able to pull out the one bag I need with everything in it. The bags come on a roll and are expensive. But I bought rolls of premade four-cup bags from a restaurant supply catalog, and that has saved me a lot of money. I also reuse the bags most of the time; I just turn them inside out, wash them, dry them, and then turn them right side out and use them to make smaller bags the next time.

**BUCKET OPENER**



**VACUUM SEALER**

Another gadget I have come to love is my Pump-n-Seal, a device for extracting air from jars and sturdy plastic bags. I pack whatever I want to store in a one-gallon jar and cap it. Then I punch a thumbtack-size hole in the lid. I place one of the small tabs that comes with the pump, similar to a small sticker, over the hole, fit the pump over the tab, and pump out the air. The tab seals the hole when I'm done. The result is a vacuum-packed jar that will keep dry foods fresh for many months.

No matter which option you choose for food storage, remember to label the container with its contents, its date of purchase, and a "use by" date. I use a laundry pen and a strip of masking or freezer tape to make labels. Since I always repack items that come in flimsy cardboard or plastic containers into something sturdier, I make sure to include any preparation instructions on an index card taped to the lid of the new container. I forgot to do the labeling once and I now have a jar of either wheat gluten or soy flour or pancake mix in a jar in the pantry. I don't use it because I'm not sure what it is, and I'm too cheap to throw it away.

What not to use for storage is as important to know as what works. Never use any container that has held toxic material. Do not use plastic garbage bags, as these are often treated with fragrances or pesticides. Make sure to thoroughly clean all of the containers you use, even new ones, in hot soapy water and a sanitizing bleach solution to kill any mold. Rinse containers in clean hot water and dry thoroughly, because any residual moisture will result in mold. In fact, I use my hairdryer to dry hard-to-reach crevices on lids. Fresh, clean food in pristine containers will last much longer and be far more appealing than questionable food in an unsanitary box.

# CHAPTER 2 ACQUIRE AND ROTATE

As the clutter and nonessentials move out of your home, you can begin to acquire those things that will see you through a crisis. But how much food do you need? Enough for a month? Or a year? And in what form? Canned or dehydrated? Should you store flour or wheat berries? What about essentials like toilet paper and toothpaste? And how do you keep your supplies fresh? These are questions that must be answered before you begin to fill up all of that newly acquired space if you wish to avoid the all-too-common pitfall of lots of food but nothing to eat.

We will first look at how you can build a food supply tailored to the needs of your particular family.

## BUILDING YOUR FOOD SUPPLY

**ACQUIRING A STOCK** of food is the meat (pardon the pun) of a family preparedness plan. Since few of us have the resources to rush to our closest supermarket with a pickup truck and return home with a threemonth supply of food and goods, planning is key. After assessing your family's needs, as described in chapter 1, you can make that plan based on your unique situation and priorities.

Most of us, in spite of owning numerous cookbooks and having access to a seemingly endless array of food options, tend to rotate through the same basic menus. Even if you are more adventurous than most, in a time of crisis you are likely to crave the comfortable and the familiar. This is the very essence of homesickness, the desire for the smells and tastes and textures that make us feel safe. Crisis is not the time to experiment with the unfamiliar, especially in our food. Storing what you eat and eating what you store won't just protect your food from spoiling. It will ensure that the food you serve your family nourishes them in body, mind, and spirit. A good meal can raise your spirits and energy level like nothing else can.

I have read any number of books on food storage, and while there is a lot of worthwhile information in many of them, a good deal of it isn't practical for a majority of families. One source suggests first putting by a year's supply of powdered milk, peanuts, wheat, and tomato juice, since these foods will sustain life almost indefinitely. While that may well be true, I suspect that after a couple of months of tomato juice and peanuts for dinner every night, your body might be okay but your spirits will certainly be flagging.

Many sources tout the superiority of wheat as the foundation of a food storage program. It can be ground, sprouted, boiled, and turned into a rather gummy gluten mass that can be boiled in bouillon and pass for Salisbury steak. I do store some wheat (I grind it into flour), so I decided to give this a try. I followed the directions to the letter and served the results to my kids. They were quick with the verdict: "Nice try, Mom, but this tastes a lot more like a gummy mass boiled in bouillon than any kind of steak, and can we please make tuna sandwiches?"

Other preparedness guides suggest focusing on storage foods that have an incredibly long shelf life, such as dried beans and seaweeds. They offer "homestyle" recipes using these foods, imitating the familiar. To that end, I have tried recipes for, among others, pinto bean fudge and soybean and kelp casserole. Not surprisingly, none of these are high on my family's list of favorite foods.

Rather than trying to work with the unfamiliar, it makes more sense to customize your storage plan with foods your family already uses and enjoys. Your pantry becomes your grocery store, stocked with everything you need, ready and accessible when things go well or when crisis erupts. If you've kept a log of the meals and snacks your family eats over a two-week period, as suggested in chapter 1, you're well on your way to having such a storage plan.

I want to add a word of caution: Don't believe everything you read. When I began to look into storage food, I read a good deal that was inconsistent. Some foods are said to have an indefinite shelf life, which makes it sound like they'll last forever. They won't. All food deteriorates. I have heard some MREs (meals ready to eat) referred to as yummy by one person, while the same food was called vile by another — I guess taste is a personal matter. I have read many conflicting reports on the nutritional quality of dried food versus frozen versus dehydrated versus canned, making it nearly impossible for the average shopper to make an informed decision. Many food storage guides call for complicated mathematical equations to determine needs based on family configuration, and nearly all have food lists that suit the needs of the list maker, not those of me and my family. I looked at all of my options, and here is what I decided would work for us.

### SURVIVAL MEAL KITS

It is possible to purchase complete meal kits that are supposed to meet all of the nutritional and caloric needs of one person for a full year or for a family of four for three months. These kits are made up of freezedried and dehydrated foods and/or meals ready to eat (MREs), and they are quite expensive, costing several thousands of dollars. Freezedried and dehydrated foods require significant water for preparation, and it must be boiling. I found many of the dehydrated meals to be extraordinarily salty. One serving of beef stew had 1,270 milligrams of sodium, half of the recommended daily amount. On the other hand, they have a shelf life of seven-plus years, and they are very light, which is a real bonus if you have to carry them for any distance.

MREs were designed by the military to provided sustenance to service people under the harsh conditions of the battlefield. They offer a full range of entrees, accompanied by, among other options, a side dish, crackers or bread, jelly and peanut butter, a drink mix, dessert, eating utensils, a wet wipe, and some hard candy.

I don't think that these meal kits are practical for most families. Canned foods work just as well in most cases. Canned foods have an undeserved bad reputation in many circles. Many consider them less nutritious and too salty, but there is much to recommend canned foods. They are readily available, can be purchased for approximately half the cost of dehydrated foods or MREs, and come in a variety of nutritious options that store easily and are familiar to most palates.

I first looked at what we were eating every day. I then thought about which of those foods would work in storage and what could serve as a substitution if a food did not store well. I divided my list into categories and entered everything into my preparedness notebook. I thought about how I normally shop and how I could buy extra to store without straining my budget. By referring to my notebook, I was able to purchase several items from each category every week. I was also able to take advantage of sales to stock up on staples and canned goods. Slowly my in-home grocery store started to take shape.

To get in the habit, and to keep my stored foods rotating and therefore fresh, I cooked using storage foods several times a week. Not everything was a success. Some dehydrated meals were too salty for our tastes and some too bland, but I learned from my mistakes and soon had a repertoire of meals that I could make from my supplies, that met our nutritional needs, and that we enjoyed eating. We had plenty of options for meeting our needs for protein, fats, vitamins, minerals, and fiber. I would not claim that eating exclusively from storage is the healthiest or most

interesting diet on the planet, but it is adequate for the two- to threemonth period I prepare for, and it is probably as good a diet as many people eat on a regular basis.

### KEEPING INVENTORY

The easiest way to keep track of what foods you have and what foods you need is to keep an inventory in your preparedness notebook. Sometimes an item takes up a full page in my notebook. For example, after keeping track of my family's apple use for a month, I realized we ate a lot of apples. My kids prefer dried apples to almost any other snack. We go through at least two jars of applesauce each week and also enjoy apple butter and jelly and apple pie. My page devoted to apples looks like this. I write everything but the numbers in pen. I write the numbers in pencil so that I can erase and update them when I shop. A quick glance before I shop lets me know whether I need to add any sort of apples to my shopping list.

| | |
|---|---|
| Applesauce | **Need:** 30 quarts<br>**On hand:** 10 quarts |
| Dried slices | **Need:** 30 quarts<br>**On hand:** 15 quarts |
| Jelly/butter | **Need:** 8 pints<br>**On hand:** 16 pints |
| Preserves | **Need:** 12 quarts<br>**On hand:** 12 quarts |

### SAVINGS START AT HOME

It makes sense to grow, gather, can, dehydrate, and otherwise preserve all the food you can yourself. My goal is to grow and preserve as close to one year's supply as possible of garden and wild produce, such as tomato sauce, jams, applesauce, and vegetables. I'm not there yet, but I get closer each year. You can save a lot of money if you buy or harvest produce in season and learn to preserve it yourself. And if you grow the food yourself or purchase it from a local grower, you'll know just how it was grown (with or without pesticides, for example) and you'll be supporting your local economy.

The previous list is designed to inventory our apple supplies for a threemonth period. The numbers shown here, for example, let me know that I need to purchase applesauce and dried apples. Since these are items that I would prefer to make myself, they also let me know that I should plan to make more applesauce and dried apples in the coming fall than I did previously, since last year's production hasn't lasted the whole year. This means I'll also need more canning jars and lids this coming fall. I will add that increase to the page I dedicate to canning supplies in my preparedness notebook. Canning supplies are generally available only in summer and fall, unless I special-order them. Therefore, I'll have to be diligent about getting them in July, when the supply is good.

On my notebook pages I sometimes add notes about brands we didn't like or recipes using an item that worked particularly well. I also note next to each item what I paid for it, generally as the price per ounce. That gives me a record of what an average price is, and if I see a remarkable sale, I can take advantage of it. I never run out of necessities, I never pay more than I should, and I could manage without a trip to the market for nearly six months.

One note: I know people who have acquired all of a particular item for storage in one big buy, then gone on to purchase all they might need of another food. I would not recommend this method of acquisition. If the crisis you are preparing for happens next month, you might have all of the dehydrated potatoes or peanut butter you are likely to need but not any powdered milk or oil. I think it wiser to fill in your stock on a week-by-week basis. The exception to this would be if you ran across an extraordinary sale on something and got enough to last several months at once. My co-op, for example, just had a sale on rolled oats, and I bought six months' worth because the bargain was too good to pass up.

### WHAT TO STOCK

As you head out on your first preparedness shopping trip, have a goal in mind. Your preparedness notebook, divided into categories such as the ones that follow, will provide you with a jumping-off place and keep you organized. Now ask the question that must be at the forefront of all crisis planning: If a disaster hit tomorrow, what must-have goods would I need to see me through the next few weeks with no power and no help from the outside?

### BASIC BAKING SUPPLIES

- ☐ Flours (oat, soy, rice, wheat) or wheat berries
- ☐ Wheat germ
- ☐ Wheat bran
- ☐ Sweeteners (brown sugar, white sugar, honey, molasses, maple syrup, corn syrup, confectioner's sugar)
- ☐ Oils (corn, olive, shortening)
- ☐ Leavenings (baking soda, baking powder, yeast, sourdough starter)
- ☐ Cornstarch and tapioca
- ☐ Salt
- ☐ Powdered milk

- ☐ Powdered buttermilk
- ☐ Powdered margarine
- ☐ Powdered egg whites
- ☐ Powdered whole eggs
- ☐ Baking mixes*
- ☐ Spices and flavorings
- ☐ Cocoa
- ☐ Chocolate chips

** I look for mixes such as pancakes and quick breads that require only water for preparation. Otherwise I make my own mixes (see chapter 18 for my recipes).*

I put this category first because so much of our diet depends on basic baking supplies. With these items in stock, you can make pancakes for breakfast, bread for lunch sandwiches, and dumplings to go with chicken and gravy for dinner. Muffins and cookies will supply much-needed calories. Keep in mind that everything that comes in a box or sack must be repackaged in glass jars or plastic containers lined with food-grade plastic bags for storage (see page 25).

I have included flour on this list. White flour is essentially a dead food. The milling process strips it of nearly all nutrition. Enriching puts back only a tiny fraction of what has been lost. Its only virtues are that it stores well and kids like its blandness. I store both white flour and whole wheat berries that I grind as needed. I do not bother storing whole-wheat flour, as it begins to lose nutrition as soon as the wheat is ground. Within six months, it is no more wholesome than enriched white flour. By mixing ground wheat berries with white flour in a 1:1, 1:2, or even 1:3 ratio, I get a loaf that kids love and that is a healthier alternative to plain white bread. If you don't choose to store whole wheat berries, consider replacing two tablespoons of flour per cup in recipes with one tablespoon of wheat germ and one tablespoon of wheat bran. (Opened containers of wheat germ should be kept cold or else the oil in it will become rancid.) A teaspoon of soy flour per cup will give a nutritional boost as well. If you do decide to store wheat berries, you will need a grain mill for grinding them, which is a considerable investment.

Baking supplies are easy to buy. Most items are easy to find and inexpensive, although I have had to buy my powdered eggs, powdered margarine, and wheat berries from a catalog. Food cooperatives are excellent options for buying baking staples in bulk, as are warehouse stores. If you find that the volume is too much for you, even with storage in mind, offer to split a large amount with a friend. Flour and wheat berries take up the greatest amount of space of any food storage items, but they will reward you with almost limitless cooking options.

**GRAIN MILL**

How much to store will be based on how much baking you are planning to do and your family size. As a rule of thumb, you'll need:

- 3 to 4 cups of flour per loaf of bread
- 1 ¾ cups of flour per dozen muffins
- 2 cups of flour per dozen pancakes
- 2 cups of flour per three dozen cookies

Obviously, a family of four will have no trouble consuming five to six cups of flour per day. At seventeen to eighteen cups of flour in a five-pound bag, it would be easy to use more than ten pounds per week.

**STAPLES**

- ☐ Rice
- ☐ Beans
- ☐ Pasta
- ☐ Cereals
- ☐ Peanut butter
- ☐ Canned meat (tuna, salmon, chicken, ham)
- ☐ Canned vegetables (including tomato sauce)
- ☐ Canned fruit
- ☐ Canned meals (chili, soups, stews, pasta meals)
- ☐ Nuts
- ☐ Seeds
- ☐ Bouillon (beef, chicken, vegetable, fish)

Along with your baking supply, what we call food “staples” are the building blocks of tasty, nutritious meals. These are the foodstuffs found in most kitchens. If meat is in short supply, the right combination of these foods can be your family’s source of protein. Your challenge will be to acquire enough to provide for your family during a crisis of undetermined length and to know how to use them to their best advantage. These foods are often used as “loss leaders” in supermarkets. They are offered at a really low price to lure you into the store. Shop wisely and stock up when the price is excellent and you can fill in this category for less than you might think.

### CHECKING EXPIRATION DATES

Check the sell-by date stamped on the bottom of all cans, boxes, and bags of food before you buy them. A stamped code of 08109 means that the food is best used by August 1,2009. This does not mean that you have to throw out that can of peaches on August 2, but it does mean that you shouldn’t buy it on July 31. Choose a fresher can. Freshness can be a particular problem if you purchase food at a salvage store. The price may be exceptional but the product might be approaching or even past its expiration date. That may not matter if you plan to eat it right away, but it must be avoided if you plan to store it.

If a can or box of food that you have in storage is approaching its expiration date, use it up. While most canned and dried foods remain safe well after the expiration date, they do begin to lose nutrition and palatability.

**CONDIMENTS**

- ☐ Ketchup
- ☐ Mustard
- ☐ Pickles
- ☐ Olives
- ☐ Salad dressings
- ☐ Gravy mixes
- ☐ Sauces (cocktail, barbecue, salsa)
- ☐ Mayonnaise
- ☐ Spices

Items from this category may not do much to enhance nutrition, but they can certainly brighten up a meal. Several months’ worth can be stored in a good-sized box.

**DEHYDRATED FOODS**

- ☐ Instant potatoes
- ☐ Rice meals
- ☐ Pasta meals
- ☐ Soups, stews, chili

- Vegetables
- Fruits
- Eggs and dairy products

Dehydrated foods have gone mainstream. You can now purchase full meals, not just from sporting goods and camping stores, but in your local market. In fact, many convenience foods like Rice-a-Roni, instant gravy, powdered milk, instant potatoes — anything, in fact, that says "just add water" — is usually a dehydrated food. Full meals can be planned around some of these rice, pasta, and potato products. Many can be quite expensive, but because they are so convenient — easy to store, requiring only boiling water to prepare, and with a shelf life of several years — they must be considered as part of every home storage system. Storage food companies also offer foods like cheese, eggs, butter, and sour cream in a dehydrated form.

Dehydrated foods are different from dried foods. Dried foods, such as raisins or dried apples, still have some moisture in them, while dehydrated foods have had nearly all the water removed from them. As a result, dehydrated foods are hard and brittle. Freezedried foods are flash frozen, and the ice crystals are removed in a vacuum chamber.

**BEVERAGES**

- Powdered milk
- Juices (canned and powdered)
- Coffee
- Tea
- Hot chocolate
- Milk flavorings
- Beer
- Wine

Many of the foods on this list would fit in the category of fun foods. Other than milk and juice, both of which supply essential calories and nutrition in an emergency, none is necessary, but they are often comfort foods and therefore important.

**FUN FOODS**

- Popcorn
- Flavored gelatin
- Puddings
- Candy and gum

Even fun foods can supply important elements to the emergency diet.

**SUPPLEMENTS**

Maintaining your health is important during a crisis. Stress increases the body's need for many vitamins and minerals. Supplements can fill in the nutritional gaps left by a diet of all stored foods. I store a threemonth supply of good-quality multivitamins, vitamin C, and antioxidants. Check with your physician for recommendations on the appropriate supplements for your family.

**FRESH FOODS**

You can eat, and eat well, on stored foods, but after a while most of us will crave, both physically and emotionally, something fresh. For that reason, I suggest storing seeds for sprouting. The process is easy and, as long as you don't forget about rinsing them, pretty foolproof. See page 203 for more details.

Many fresh fruits and vegetables will store in a root cellar or basement if the temperature and humidity are right. We store apples, onions, winter squash, potatoes, carrots, and beets in our basement in late fall, and we're often still enjoying them in February. See page 164 for more details on cold storage.

**INDIVIDUALIZING YOUR SYSTEM**

There are a few things to keep in mind when purchasing food for your storage program. It may be tempting to buy economy-size cans and jars, as they are usually considerably cheaper than smaller sizes. But if your family is not large enough to consume the contents of these large containers at one sitting, you will then have to deal with leftovers at a time when you may not have reliable refrigeration. It is more cost effective to purchase food in quantities that you can consume in a sitting than to throw away rotted food.

You must also consider how you will prepare storage foods in an emergency. Some foods, like beans, are much less expensive and take up less space dried than canned, but dried beans require an overnight soaking and then hours of long, slow cooking in a lot of water to become palatable — a bad option when both water and fuel might be in short supply. I store about fifteen pounds of dried kidney, black, navy, and garbanzo beans as well as ten pounds of lentils, but I also put canned beans in my storage pantry for the convenience.

If I lived in a place where access to clean water was likely to be an issue in an emergency, I would opt for more canned meals that could be heated and served or even consumed cold rather than dehydrated meals, which require the addition of water. If I lived in an apartment with very limited storage, I would store at least some MREs, because of their small size.

Whatever method you choose, begin now! Write down a three-day menu plan for your family based entirely on foods you can store. What would you need to prepare those meals and snacks? What is on hand? What are you lacking? Make your purchases and assemble everything in a dedicated spot. Next week, add another three days. I got a tremendous amount of satisfaction from achieving that first week of storage. Adding the

next week was much easier. Much of what I needed was already on hand.

It is wise to try out your system from time to time. Prepare a complete meal using only your camp stove. Use only stored foods and eat by candlelight. Don't open the refrigerator and don't run to the store. No cheating! Could you do it? Was something critical, like a manual can opener, missing? Now is the time to figure out what works and what doesn't and make adjustments. Practice like this will serve the dual purposes of tweaking your skills and systems and rotating your supplies. It might just turn out to be the best night of the week.

## FINDING AND STORING WATER

**WATER IS THE MOST** common substance on the planet and, after air, the most necessary for life. We can live for weeks with very little food but only days without water. Most of us are quite spoiled when it comes to water. We are used to turning on a faucet and having clean water available. We flush, shower, and drink without a thought about just how fragile and critical that supply might be. It does no good to have a case of pasta in your pantry if you have no water in which to cook it. Life gets unpleasant (and unhealthy) pretty quickly when you can no longer flush your toilet. When thinking about family preparedness, it is crucial to assess your family's access to water and to secure an emergency supply now.

Any number of incidences will put your water supply at risk. If you live in an urban area, it is likely you get your water from a municipal water supply, probably from a river or a reservoir. Electricity is needed to pump the water from its source to your home. No electricity means no water. The water in the river or reservoir is susceptible to chemical or biological contamination, whether accidental or purposeful. If your supply is from groundwater from your own well, you are at risk of a temporary pump failure or a dry well. In a natural disaster, even a generally reliable source may become unreliable.

There are four steps to ensuring you can meet your family's water needs in a crisis:

**1.** Identify the ways in which your water system is at risk, and do what you can to minimize those risks.

**2.** Store a minimum amount of water now.

**3.** Seek out those places in your home, yard, and community that could be emergency sources of water.

**4.** Learn how to purify potentially contaminated water.

## IDENTIFYING RISKS TO YOUR WATER SYSTEM

If, like most Americans, you get your water from a municipal water service, take some time to trace your water from the tap to its source. You may need to contact your local water commissioner for that information. Think back over the past decade or ask someone who has lived in your neighborhood for a long time if they have ever been without water. Was it the result of a line break from earthquake damage or contamination after a storm? Think about other possibilities. If you have your own well, how does your electric well pump operate if the power is out? How vulnerable are you to longterm drought?

## STORING WATER

There is good news and bad news about storing water. The good news is that water is inexpensive and easy to acquire, and if properly bottled in opaque, airtight, uncontaminated containers, it will last almost indefinitely. With the proper storage containers, acquiring water can be no more difficult than turning on your faucet. The bad news is that water is heavy and bulky and takes up a tremendous amount of space. It would not be possible for me to store all the water that my large family would need for a two- or threemonth period in our current situation. Even a two-week supply would put a severe strain on my storage space. However, I live in an area with fairly predictable rainfall and snowfall, have water delivered by a gravityfeed system that does not require electricity, and have ready access to a year-round river.

### TRANSPORTING WATER

When you're thinking about water containers, consider whether you might have to carry water any distance. A gallon of water weighs about eight pounds, so a five-gallon container, weighing about forty pounds, is about as large a container as most people can manage. A five-gallon collapsible water jug with a rugged handle can be had for less than ten dollars and is worth the investment if you will have to carry water. I can lift the five-gallon collapsible jug fully loaded, but I can't carry it too far.

So I have ample water resources, and I am comfortable with having on hand only a three-day supply of water for cooking and drinking, which equates to one gallon per person per day. If I relied on a well with an electric pump I would want more water and a backup hand pump or a generator that would run my pump if the power were out. Only you can decide how much water is enough for your family. If your supply of clean water is at risk, most preparedness experts suggest keeping a two-week supply on hand.

When storing water, be very careful about choosing containers. Never use any container that has held nonfood liquids, especially hazardous material like petroleum products. Plastic especially tends to hold odors and flavors that will contaminate your supply, so avoid reusing containers that have held milk, juice, or acidic items like pickles. Also avoid lightweight containers not intended for longterm storage. They will degrade and leak over time. Do not store your water near paint, chemicals, petroleum products, or animal wastes, as the smell can invade even heavy plastic containers. Metal containers are not a good choice for water storage. They rust and can make water taste bad. Used two-liter soft drink bottles work well for storage, but make sure every trace of sugar is removed or you will likely have a problem with bacteria growth.

The Department of Transportation has developed a burst test and handling standard referred to as DOT#34 for plastic containers used in interstate hauling. You can get these containers in sizes from five to fifty-five gallons. The five-gallon containers are designed to stack, which is convenient. If you want to store a large supply of water, these containers may be the way to go. It is also possible to purchase water in fifty-five-gallon drums from most food storage and emergency supply companies. This is a good option for those living in an arid climate with little access to surface water. (If you do choose to purchase a barrel, you will also want a siphon and hose to remove the water.)

For the average family, it is probably cost effective to purchase water in gallon jugs. Commercially bottled water will keep almost indefinitely although it is still a good idea to check it from time to time, at least every six months, and replace it if it looks cloudy or smells funny.

I recently purchased one-gallon water storage bags. They were inexpensive, less than a dollar apiece, and fold flat when not in use. If partially filled, they can be frozen. The downside is that they are awkward to carry because they don't have handles.

To prepare a new or used container for water storage, wash it well in hot soapy water. Then rinse and rinse again until every trace of soap is

gone. Then fill the container with a solution of one tablespoon of bleach to one gallon of water. Let the bleach solution sit in the container for thirty minutes, and then pour it out. Refill with clean water (don't rinse the container before filling it). Make sure to thoroughly clean and disinfect the cap or lid as well.

Stored water can begin to taste stale. One option for preserving its freshness is ascorbic acid powder. One teaspoon per gallon of water when you fill the container will keep water fresh tasting, with a slight citrus flavor that most people don't mind. Check with your pharmacist about a source for this powder. I found small bottles in the canning section of a hardware store.

### EMERGENCY WATER SOURCES

In addition to water you store, water is available from sources in your home such as your hot water tank, plumbing pipes, and even the toilet tank (not the bowl!), as long as it is free of chemical additives. Flushing your hot water tank once or twice a year will keep it clear of sediment and keep the water inside it cleaner.

Suppose an explosion ruptured the water lines to your home. Your first step would be to shut off the main water valve to your home. Know where this valve is and have an appropriate wrench to do the job. Then, to access the water already in your plumbing, turn on the tap in the highest part of the house and then turn on the tap in the lowest basin. The water in the line will flow to the lowest point. (If you have circulating hot-water heat, check with your heating contractor about doing this. If that system is depleted of water, it could damage the furnace.)

If there is time, for instance before an anticipated storm, you can store water in your bathtub and washing machine. Make sure the tub is well cleaned and free of soap residue, and then fill to below the overflow port.

Water from a swimming pool or a water bed can be used for flushing a toilet but, because of the chemicals, should not be consumed.

Rain and snow can both be consumed untreated if collected in clean containers. Rainwater is the softest, purest water you can get. It seems foolish to waste it, even if you have plenty of tap water available. A barrel or bucket under a downspout will collect rainwater, but it may contain sediment from your roof or gutter so it should be filtered and treated.

Snow should be taken from a spot as far removed from roadways as possible. If there is a crust, break through and gather snow from the layer below. It is wise to keep several buckets and a clean shovel on hand if you plan to collect snow.

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### SHUTTING OFF THE WATER

Make certain all the adults in your home know how to close the main water valve that shuts off water to your home. If the outside water lines are damaged from an earthquake or an explosion, you will need to prevent your house water from flowing out and dirty water from flowing in. The valve is usually located in the basement and will require a pipe wrench and some muscle to turn.

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Don't forget to check out your immediate neighborhood for natural springs and small streams that could be good sources of emergency water.

Whatever source you use for water, remember that it is necessary to purify water not just for drinking but also for hand washing, tooth brushing, and washing fruits and vegetables as well as dishes. If you are cooking with it, purify the water first, then add whatever food you will be preparing.

### PURIFYING WATER

If your tap water is not running and you've run through all the water you've stored, you may find it necessary to use water whose cleanliness you can't confirm. Remember, just because water looks clean doesn't mean it doesn't have the potential to make you very ill. Even clear water can carry a variety of unseen bacteria and other parasites that can cause nausea, vomiting, diarrhea, and even life-threatening illnesses like typhoid and dysentery. When in doubt, assume your water is contaminated and treat it accordingly. Learning how to purify water is one of the important skills you can learn in the quest for self-sufficiency, and acquiring the tools and supplies necessary to do so is an imperative in any preparedness plan. See page 157 for further details.

Now, as you think about water storage and resources, is the time to discuss with your family just how important your water supply is and ways in which you can conserve water every day. In many parts of the country, warm-weather water rationing is already common. Fresh, potable water is a diminishing resource in many areas. Wars in the future may well be fought over water, as we now fight them over oil. It will be much easier to deal with a water shortage in your family if conservation is an everyday matter rather than an occasional consideration brought about by crisis.

### THE OTHER NECESSITIES OF LIFE

**BRUCE AND I** are parents by birth, adoption, and foster care. Living as far from a supermarket as we do while raising a gaggle of children has taught us the importance of a well-stocked bathroom. You do not want to run out of toilet paper around here. Planning for an emergency means expanding our stock to include enough of the nonfood items our family relies on for good hygiene, health, and safety. While we could manage without some of the things on this list, life would not be as comfortable. Some items, like toilet paper, take up considerable storage space. However, since they do not need to be rotated as frequently and are not affected by temperature extremes, they can at least be stored in those out-of-the-way places that are not appropriate for food.

Many of these items are available in giant sizes at a significant savings. I would offer a word of caution, though. Some things, like shampoo, are so heavy in the largest size that they become unwieldy to lift. And my younger children mangled one tube of supersize toothpaste so badly that we had to toss it out half-full.

### KITS

This list of "other necessities" is lengthy and may look intimidating at first, but you are likely already to have a good deal of what you need on hand. As you organize your belongings and assess what you have, it will be easy to acquire those things you are lacking. Much will be useful even in nonemergency situations. Putting things together in kits with a list of contents will keep your supplies organized and accessible and make keeping track of inventory a simple matter of checking your list. My preparedness notebook contains sections for each of my kits. Each family will have their own ideas about what constitutes necessary items based on their own needs and skills. There is no point in storing something you don't know how to use or cannot envision a use for.

#### HOME OFFICE KIT

- [ ] Paper
- [ ] Note cards
- [ ] Pens and pencils
- [ ] Thumbtacks
- [ ] Ruler
- [ ] Indelible markers
- [ ] Paper clips

**HOME REPAIR KIT**

- [ ] Hand tools (including at least a hammer and Phillips and flathead screwdrivers in several sizes)
- [ ] Nails (variety of sizes)
- [ ] Screws (variety of sizes)
- [ ] Pliers
- [ ] Adjustable wrench
- [ ] Glue (Super Glue, wood glue, fabric glue, all-purpose white glue, Liquid Nails)
- [ ] Tape (duct tape, masking tape, electrical tape, transparent tape)
- [ ] Outdoor tools (shovel, ax, wheelbarrow, hand saw)
- [ ] Utility knife
- [ ] Clamps and hoses
- [ ] A good basic book on home repair

**SEWING KIT**

- [ ] Needles of various sizes
- [ ] Spools of thread
- [ ] Fabric (suitable for patching)
- [ ] Safety pins
- [ ] Common pins
- [ ] Tape measure
- [ ] Darning egg and wool yarn
- [ ] Buttons
- [ ] Shoe repair product such as Shoe GOO
- [ ] Shoelaces

**FIRST-AID KIT**

- [ ] Hydrogen peroxide
- [ ] Rubbing alcohol
- [ ] Antibiotic ointment
- [ ] 1 percent cortisone cream
- [ ] Digestive remedies (antidiarrhea, antinausea, antacid)
- [ ] Antihistamine
- [ ] Pain medication (ibuprofen, naproxen, acetaminophen, aspirin)
- [ ] Toothache kit (available in most pharmacies)
- [ ] Cough and cold medication
- [ ] Thermometer
- [ ] Adhesive bandages (small and large)
- [ ] Gauze pads (small and large)
- [ ] First-aid tape
- [ ] Butterfly closures
- [ ] Elastic bandages
- [ ] Slings
- [ ] Splints
- [ ] Instant hot and cold packs
- [ ] Cotton balls
- [ ] Tweezers
- [ ] Safety pins
- [ ] Small scissors

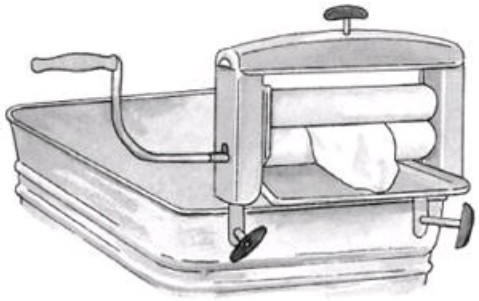
- Suture kit
- Flashlight
- Magnifying glass
- Sanitary napkins (these are great as pressure bandages)
- Disposable gloves
- Electrolyte replacement therapy (in liquid or powder)

Have one first-aid kit for your home and one for each car. Your kits can contain many more items than are listed here, but you must be sure you know how and when to use them. It is also possible to purchase first-aid kits from most preparedness supply catalogs. The kits are convenient but cost more than preparing your own. A good first-aid and CPR class should be high on your to-do list for preparedness. First-responder classes are a big commitment but could be a lifesaver for yourself or a loved one. Even young children can be taught basic first aid through 4-H or Scout troops. A health care handbook and the Red Cross *First Aid and Emergency Preparedness Quick Reference Guide* should be on everyone's bookshelf.

### BATHROOM AND LAUNDRY SUPPLIES

For bathroom and laundry supplies, I listed the things we would really need in an emergency. That did not include things like styling gel, nail polish, and dryer sheets. Both lists, in fact, were quite short.

The biggest challenge in this category is figuring out how you will wash clothes if you have no power. Hand washing systems can be as simple as a plunger or washboard and your bathtub, or you can invest in a complete system with a hand wringer. However, these can cost as much as an electric model. There is a hand-operated model that will wash a very small load (two or three shirts) in a couple of cups of water that costs less than fifty dollars. It would at least keep you in clean diapers. The hardest part of hand washing isn't the washing; it's the wringing out. A good wringer will cost between $130 and $190 but is worth the money to someone who has tried to hand-wring a pair of men's jeans or a couple dozen diapers. You would also need a tub to clamp it to, and that will add about fifty bucks to the price.



**LAUNDRY WRINGER**

### BATHROOM SUPPLIES

- Toilet paper (1 roll per person per week)
- Sanitary napkins
- Toothpaste
- Toothbrushes
- Dental floss
- Soap (bar and liquid)
- Shampoo
- Conditioner
- Shaving supplies
- Hand lotion

### LAUNDRY SUPPLIES

- Hand washing system
- Laundry soap
- Drying rack or clothesline and clothespins

### KITCHEN EQUIPMENT

- Nonelectric can opener (having two is a good idea)
- Matches (wooden)
- Castiron cookware*
- Disposable dishes and flatware (to conserve water, if necessary)
- Paper towels

- [ ] Rags
- [ ] Pot holders
- [ ] Teakettle
- [ ] Nonelectric coffee pot
- [ ] Coffee mill
- [ ] Nonelectric grain mill
- [ ] Plastic bags (all sizes)
- [ ] Knives and sharpener
- [ ] Corkscrew
- [ ] Aluminum foil (heavy duty)
- [ ] Quart thermos (for making yogurt)
- [ ] Standard cooking and baking utensils
- [ ] Mouse and rat traps
- [ ] Basic cookbooks
- [ ] Smoke and carbon monoxide detector**

** Cast iron is the only cookware material that will stand up to the high temperature of wood and woodstove cooking. Most other cookware will be ruined very quickly. There are nowbrands that come preseasoned from the factory.*

*** These are must-have items, even in nonemergency situations. Put them first on your shopping list. If you are using alternative fuel sources to cook and heat and light your home, these detectors could save your life.*

A well-stocked, well-organized kitchen is not just a pleasure to work in, it is critical when caring for your family in an emergency. “Well stocked” does not mean “stocked with the latest gadgets.” So many specialty items become clutter once the newness wears off. So don’t be too tempted by trendy tools. Instead, invest in good-quality, nonelectric kitchen supplies that will receive daily use, no matter what your situation.

**CLOTHING**

- [ ] 2 sets of long underwear (silk or synthetic, not cotton)
- [ ] 2 T-shirts
- [ ] 2 turtleneck pullovers
- [ ] 2 flannel or chamois shirts
- [ ] 2 pairs of jeans (1 flannel lined)
- [ ] 7 pairs of socks (4 cotton, 3 wool)
- [ ] 1 pair of sneakers
- [ ] 1 pair of hiking boots
- [ ] 1 knit cap
- [ ] 1 scarf
- [ ] 1 parka
- [ ] 1 pair of waterproof pants
- [ ] 1 pair of heavy-duty boots with extra felt liner
- [ ] 1 pair of leather work gloves
- [ ] 1 pair of ski gloves

Most of us have an embarrassment of clothing. Current practice often involves two or three different outfits a day, worn for a few hours and then tossed in the hamper to be laundered before another wearing. We have office clothes, gym clothes, party clothes, and clothes to clean the garage in. It is estimated that most people wear 20 percent of their clothing 80 percent of the time. That sounds about right to me. In a crisis, our clothing will be much more than an ornament. We will rely on it to protect us from the elements when the comforts we are used to may be in short supply. You will want to acquire a supply of clothing that is warm and durable and won’t need fussy care to remain presentable. The list given above is my own, appropriate for an adult in a northern climate in the winter.

When we were kids, we were expected to fold our pajamas and put them under our pillows each morning. We washed them by hand and hung them on a drying rack each Saturday. We washed our socks and underwear out each night and dried them next to the parlor stove. We changed out of our school clothes every afternoon and put on our play clothes. Play clothes were washed once a week. Church clothes were worn for two hours on Sundays and rarely laundered. My mother always wore an apron when cooking. Today I have an amazing washing machine and dryer, but I spend more time doing laundry than my mother did. I am not about to give up my laundry room, but I do think we would all do well to ask ourselves how many of our conveniences have actually created more work for us and how many of them we could do without if we had to.

**BEDDING**

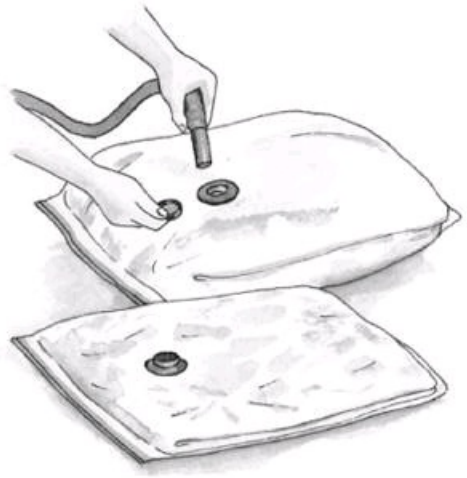
- [ ] Flannel sheets (the heaviest you can afford)
- [ ] 2 heavy fleece or wool blankets

☐ Comforter

Our house was built during the Civil War and much of the upstairs is not heated, so my children are used to sleeping in the cold. Because of this, we pay attention to our bedding. Sleeping in front of the parlor stove is fun for a night or two, but if your power goes out for an extended period, everybody will probably want to sleep in their own beds. Good bedding might make that possible. For cold climates, the list above makes sense.

### BEDDING STORAGE

If you currently store blankets, pillows, and comforters in a linen closet, consider investing in vacuum-seal bags that lie nearly flat when the air is pulled from them. The bags can be slipped under a bed and the closet claimed for storage.



**VACUUM-SEAL BAGS**

I never thought anything could compare to down in comforters, but I bought a comforter with a synthetic fill called PrimaLoft this year, and I must say, I am impressed. It is lightweight and warm, and it cost about half what down does.

Sleeping bags are a decent alternative to a comforter and have the advantage of being portable.

If it is really cold, thermal underwear under pajamas and a cap might be necessary. Cuddling helps too.

### AT THE VERY LEAST, THE BASICS!

If preparing to meet your needs for several weeks or months seems over the top, I encourage you to keep reading; you'll find that the process is neither difficult nor expensive, and it is worthwhile. In the meantime, at the very least, every household should commit to these very simple basics:

- Food and water for all family members for one week (see page 28)
- In cold climates, a backup heat source (see page 70)
- Emergency lighting (see page 61)
- Radio with extra batteries
- If you live in anarea where an evacuation may ever be necessary, evacuation kits for every family member (see page 93)
- Emergency car kit (see page 88)
- Crisis communication and family reunion plans (see page 76)
- Backup copies of all important documents in a safe place

# PART 2 PREPAREDNESS GETTING YOUR HOME AND FAMILY READY TO HANDLE CRISIS

**AS YOU MAY WELL IMAGINE, PREPAREDNESS INVOLVES** much more than food and water. It also encompasses the systems that keep your house and family running on a day-today basis. If you must rely only on yourselves and the goods and resources in your home, can you still live comfortably and safely? If you must leave your home to find safety elsewhere, can you be out of your house in ten minutes, confident that your home is secure and that all family members know where you are going, how you will get there, and how to keep in touch with each other? Some planning now will ensure that your answer will be “yes” when you need it to be.

But Bruce and I do not strive to be as selfsufficient as possible solely because we wish to be prepared for a crisis. Rather, we do not wish to be entirely dependent on a fragile web of “systems” that lie outside of our control. Every step we take that leads us closer to independence lets us feel a bit more real, a bit more whole. Our home is the heart of our family life, and as we prepare it to shelter us through storms of every kind, we know that we are investing in our most valuable asset. Our home is not a fortress and we do not wish it to be one. It is comfortable, safe, and welcoming, a true haven for our friends and family.

# CHAPTER 3 PERSONAL PREPAREDNESS

There is a good deal more to personal preparedness than simply acquiring more stuff. Without an investment in yourself, your knowledge, your skills, and your health, you risk having all that you acquire become just more clutter in your life.

Last summer, my youngest child, Phoebe, choked on a penny. She was losing consciousness when I found her. Did I panic? Of course I panicked, but only for an instant. Then my preparedness training took over. "Karen, call 911. Emily, go open the front door and let the EMTs in." All the while, I am recalling my first-aid training. Mouth sweep. Turn her over. Place fist. Upward thrust. Two thrusts and the penny shot across the room. By the time the EMTs arrived, Phoebe was breathing on her own and no longer blue. A minute later, she was able to tell me what happened. Five minutes later, she was playing with a stethoscope and back to her perky little self. It took me a bit longer to recover.

How different this ending could have been. What if I hadn't learned the Heimlich maneuver? What if panic had rendered me incapable of performing? What if Karen had not known how to dial for help or how to give the appropriate information? Suppose Emily had argued or frozen when I needed her help? In short, what would have been the outcome had we not been prepared?

This is what I think of as mental preparedness. It comes from knowing that I am capable of handling whatever life throws my way. I draw strength from knowing that my family depends on me. I am nurtured by a community that values my contributions. I take pride in the many things I have learned to do well, and I enjoy sharing what I know. I appreciate the comforts of a warm house and an excellent meal, but I know that if I had to, I could start a fire, dress a wound, change a car tire, or feed six hungry kids for a month with what's in my pantry.

## HEALTH

**AN INVESTMENT IN** your health is the best money you can spend. Make sure that you and every member of your family is up-to-date on all physicals and health screenings, immunizations, dental exams, and eye exams. If you wear glasses, get a copy of your current prescription and purchase a backup set of glasses. During an emergency, broken or misplaced glasses will compound every challenge.

Putting by a stock of prescription medication is much trickier. Most prescriptions are written for a one-month supply, and insurance companies are unlikely to pay for more than that at one time. If your doctor is willing to write extra prescriptions for noncontrolled substances and you are willing to pay for them, it may be possible to purchase an extra month's supply of some drugs. If you decide to do this, talk it over with your physician first and be diligent about rotating, always using the oldest supply first. Otherwise, be certain to refill any prescriptions as soon as allowable. Don't wait until you have no medication left.

Maintain your health with a sound program of healthful eating and exercise. The less you rely on drugs, including caffeine, alcohol, and nicotine, the better off you'll be, both now and in the event that you can't purchase these things.

Avoiding junk in all forms — junk food, junk entertainment, junk acquisitions, and junk relationships — will simplify and destress your life, which is key to maintaining good health.

## SKILLS

**TAKE STOCK OF** the skills and knowledge you may need in a crisis. A working knowledge in areas such as gardening, food preparation, first aid, sewing, home repair, and auto maintenance will never be wasted. Acquiring those skills will help you confront adversity without panic.

I would consider first-aid and CPR training a priority. Fortunately, that training is available through the Red Cross and through most volunteer fire departments. In addition, I would recommend first-responder training for as many community members as possible. If you are interested and want to invest the time, EMT and paramedic training is available through many community colleges. Community emergency response teams (CERTs) are in need of volunteers and will provide the necessary training to teach members how to assist in a disaster until other help arrives.

Although you can't purchase skills in things like first aid as easily as you can purchase a box of bandages, you can purchase or borrow books and take classes. In fact, I would consider a reference library an invaluable preparedness tool.

Once you have acquired a working knowledge in a subject, practice! Seek out folks with more knowledge or experience and ask for their guidance. Libraries, church groups, community centers, and adult education centers are all possibilities for classes in any number of subjects. Right now, Bruce is advancing his woodworking skills at an adult education center, and I just updated my CPR training through our local health center. We are both participating in a group interested in local sustainability and self-reliance. We are sharing knowledge, information, and skills for the benefit of all of us. In a crisis, we will be a cohesive group, supporting and taking care of each other.

As your skills improve, share them, especially with children. Leading a 4-H group or Scout troop is an excellent way to practice skills you might

not use every day and pass them on.

### BOOKKEEPING

**We began the** adoption process for our first two daughters at the same time we were preparing financial aid documents for our first college-bound son. I spent days gathering paperwork that should have been at my fingertips. The search caused unnecessary delay and needless stress. I made the commitment to get my papers in order. It was a chore, but the results were worth it. I appreciate the ease with which I can lay my hands on vital documents, and in an emergency, all of my records are easily and readily available.

Take an afternoon and gather all of your important papers. Make a list of any that are missing and plan to replace them immediately. Include the following documents:

- ☐ Birth certificates or adoption decrees
- ☐ Marriage license
- ☐ Wills
- ☐ Statements of durable power of attorney
- ☐ Deeds and titles
- ☐ Diplomas and certificates of completion
- ☐ Insurance policies
- ☐ Contracts
- ☐ Social security cards
- ☐ Military separation papers
- ☐ Visas
- ☐ Passports
- ☐ Income tax returns
- ☐ Any vital medical and financial documents

If possible, obtain copies of all documents. Store one copy in a safe deposit box, and keep the originals in a fireproof file box in a secure location in your home. Also include in each location a copy of all your credit card numbers and the VIN and license plate numbers of your vehicles. If you have valuables that are insured, keep an up-to-date inventory, complete with serial numbers and pictures.

For many people, family photographs are their most cherished possessions. Fortunately, it is easier than ever to protect them. Digital photos can be copied onto a disk and the disk left with a friend. They can also be sent by e-mail to a relative. Older photos can be copied and the copies left in another location. If you still have pictures developed, make a habit of ordering two copies and store one away from your home. If I had a fire, I could replace my sofa but not my children's baby pictures.

Digital information can be key for many people. It is for me; I keep my manuscripts on my computer. Each night, I e-mail myself my day's work and save it on my server. I might lose my laptop in a fire, but not a year's worth of hard work. If you can't easily keep your vital files in an off-site location or on a hard disk in your fireproof safe, consider registering with one of the Internet businesses that lets you save data on their servers.

### FINANCIAL PREPAREDNESS

**Don't underestimate the** importance of getting your financial house in order. This is a twofold process: eliminating debt and securing a supply of cash in your home.

Debt is an anchor holding you back from true independence and financial security. There are any number of agencies that can help you through the process of eliminating debt, but they will all give you the same advice: Tally exactly what you owe. Make the minimum payments on all outstanding balances except the one with the highest interest rate. Pay as much as possible on that debt each month. When the highest-interest-rate debt is erased, move to the debt with the next highest interest rate. This program is successful only if you are extremely frugal, buying only necessities, and live on less than you earn.

Think about your cash on hand. Many people seldom have more than twenty dollars in actual cash. They use credit and debit cards for nearly all transactions. I don't think it's wise to be so dependent upon computers and electricity for a gallon of milk. I suggest keeping at least two hundred dollars in small bills hidden in a secure location in your home. More, of course, would be better. This is in addition to the money you keep in your evacuation kits (see page 93 for more information).

With our economy in such disarray, it is probably a good idea to keep your savings in different institutions and investment vehicles. This will keep you from being wiped out financially if one bank or investment firm fails or the stock market crashes.

Above all, think hard about the way you spend money. Money spent on fleeting pleasure is seldom well spent. Just putting off purchases for a few days may make the urge to buy disappear. Erasing debt will provide more lasting peace and satisfaction than anything you can purchase at your local mall.

### TRIAL RUN

**Across the country**, communities are holding emergency preparedness drills. The reasons are obvious. There is no way to know how well prepared you really are until you practice. Drills of all kinds will point out where you have been successful and where the weak spots in your systems are.

How fast can you evacuate your home, complete with evacuation kits and vital documents? If you practice once a month, try to better your time. Try it in the dark and when family members are busy with tasks around the house. Can you prepare a complete meal from your stored food? Can you do it using no power except what you can produce yourself? Can you make a meal from food you have grown or foraged? Can you wash the dishes? Turn off all the electrical appliances in your home for an hour or two one night a week. How do you occupy yourself and your children? Can you all manage to prepare for bed and sleep comfortably?

The next time you are driving on a lonely stretch of road, pull over and stop the car. Now think. What would you do if the car refused to start again? How would you signal for help? Could you keep warm if it were cold outside? Do you have some extra food and water?

Try a switch from packaged vacations to camping adventures. There are so many benefits. You will naturally acquire supplies that will be useful in an emergency, and you will practice some of the real skills of self-sufficiency. You will also be giving your family a vital contact with the natural world.

Trial runs may initially feel awkward and even a little silly, but trust me, they will really pay big dividends should the grid go down. With practice you will find you can comfortably slip into an off-the-grid mode while the unprepared struggle to meet even their most basic needs.

# CHAPTER 4 HOME SYSTEMS POWER, LIGHTING, COOKING, HEATING, REFRIGERATION, SANITATION

In our instant society, we are used to flipping a switch, pushing a button, or turning a knob and, like magic, we are warm, fed, and illuminated. If something doesn't work properly, help is a phone call away. We don't give much thought to the stability of the network that supplies the energy and technology that make our lives so convenient.

But when the power goes out, even if only for a day or two, the fragility of our basic household systems would soon become apparent. How will you cook your food? In a cold climate, how will you keep your children warm? Can you flush the toilet? How will you light your home? How will you keep the food in your refrigerator from going bad?

Deciding to commit to preparedness means finding ways to meet all the basic needs of a household independent of the power grid. It is harder than you might think.

## POWER

**POWER IS THE** lifeblood of the modern home. We may rely on electricity for everything from heating our home and water, cooking our food, keeping perishables cold or frozen, lighting, pumping water, and washing and drying our clothes to powering our phones, computers, coffeemakers, televisions, air conditioners, and other electronic devices.

But as recent history has shown us, the power grid is not quite as reliable as we'd like it to be — and efforts to expand its capacity have, so far, not kept up with demand. Developing a plan for getting along without the power grid will give you the peace of mind of knowing that an interruption in your power supply, whether it is caused by an ice storm or a rolling brownout, will not bring the workings of your household to a grinding halt.

The first step is to determine which systems and appliances your family absolutely must have on a day-to-day basis. You may be able to do without your television, for example, but if you have a water pump you will certainly want it to keep working so you'll have running water in the house. You may be able to get along for at least a week or so without doing laundry, but you probably won't be able to do without some method of cooking.

When you have a list of the essential systems and appliances for your home, highlight those that require electricity. For each, you'll need a nonelectric backup or an alternative source of power.

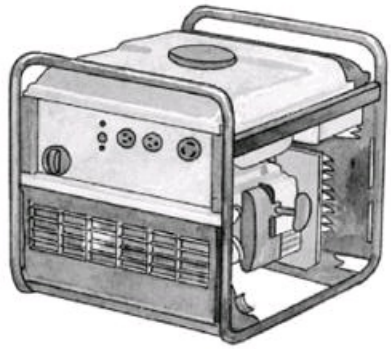
## NONELECTRIC APPLIANCES AND SYSTEMS

You may already have nonelectric systems or backups for some household essentials. For example, if you have a woodstove, you have a nonelectric method of both heating your home and cooking your food. Others you may need to invest in. We'll talk about nonelectric options for various home systems later in this chapter.

## ALTERNATIVE SOURCES OF POWER

Homemade power would be a surefire protection against breakdowns in regional power grids. However, few households have the wherewithal to meet all of their power needs off the grid. Solar power is an up-and-coming technology, but the equipment is expensive and it doesn't produce a great deal of power, so you'd have to invest in a range of nonelectric appliances anyway. Wind power is in the same situation, as are other new alternative energy technologies. If you want to live completely off the grid, an investment in these technologies may be worthwhile for you. If you want a backup system that can power a few essential appliances in the event of a power outage, solar power or another alternative energy could be an option, if you can afford it. Another option, still pricey but not as expensive as solar power, is a generator.

A generator is a machine that turns mechanical energy into electrical energy. This is one of those items that you really have to investigate. Generators work only when you have on hand the fuel (usually gasoline or propane) to run them. Even then, you can't expect to run your entire house on a generator. At best, you can run one long enough to keep your freezer or furnace going, to operate your stove, to do a few loads of laundry, or to catch up on the news, but you won't be able to do all of these things at once and you won't be able to do any of them for very long without a large supply of fuel.

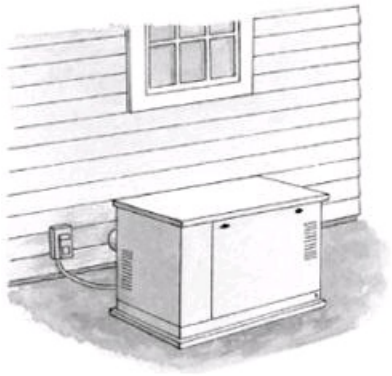


**PORTABLE GENERATOR**

Generators should never be used indoors. In addition to being loud, they emit toxic fumes, including carbon monoxide. They should only be used outdoors.

Small portable generators are often used in locations without power, such as camps or construction sites. They can be used to power appliances that are normally plugged into wall outlets, provided you have an extension cord long enough to reach from the appliance to the generator outdoors. Their electric capacity is on the low end, though, so you probably won't be able to use one to run a large appliance such as a freezer or washing machine.

A stationary generator is much larger. It is permanently connected to your house wiring. When the power fails, you simply throw a transfer switch (or the generator kicks on automatically), and the generator sends power right into your home wiring.



**STATIONARY GENERATOR**

A dual-purpose generator is a mobile unit that connects to your home's electrical system through a special receptacle on your home's exterior. When you're not using it, you can disconnect and store it.

Both stationary and dual-purpose generators require that you have an electrician modify your home's electrical system before you can use them. Though both generate more electricity than portable generators, most do not provide enough to power all of a modern home's electrical needs. Their most practical use is as a power supply for select pieces of essential equipment such as heating appliances, freezers, and perhaps a few lights. You must match the electrical requirements of these items (how many watts they require, both to start up and to run) with the generating capacity of the generator you acquire. And when you're using the generator, you should turn off or unplug all other electrical appliances in your home to make sure that they don't draw from the generator and prevent it from powering those items you've designated as essential.

You will need to store fuel for your generator. Propane can be stored indefinitely in a tank; if you have a large propane tank on your property, you can connect a propane generator to it. Gasoline degrades over time; a fuel stabilizer will extend its shelf life, but you must replace your stock on a regular basis to keep it viable. You may need a special permit to store large quantities of propane or gasoline; check with local authorities to find out whether this is the case in your area.

A generator can be a handy piece of equipment, and it can bring the peace of mind of knowing that when the power fails, you'll still be able to cook, heat your home, or do whatever you decide to use it for. However, keep in mind that generators are mechanical engines with all of the attendant problems: noise, exhaust fumes, and breakdowns. And you may not consider the hefty price tag worth the bother. In that case, assess your needs for power and plan accordingly.

### RENEWABLE ENERGY

Watching a news broadcast can be a sobering experience. As scenes of war and environmental degradation flash across the screen, coupled with the stories of an economic downturn that is costing thousands of families the very roofs over their heads, it is clear that we are an oil-hungry world competing for dwindling reserves and that the fallout from that hunger is beginning to impact us all. The solution may well lie not in the hands of politicians but rather in the hands of each of us as we make choices about the amount and kind of energy we use.

No book on preparedness can be complete without addressing how we power our homes and lives, not just during a crisis, but all the time. Every barrel of oil saved is not just money in our pockets but an investment in our planet and in our ability to live sustainably and responsibly on it.

Much of the renewable energy technology is in its infancy. As such, it is still expensive, but costs are slowly coming down and tax

incentives are making the purchase of many systems a worthwhile investment. Most families are not in a position to live off the grid, relying entirely on renewable energy sources, but the smallest choices we make, whether we're replacing an old water heater or installing a solar power system to meet part of our electrical needs, can make a difference.

What exactly do I mean by renewable energy? Oil is formed over the course of fifty million years. First, plankton and other microscopic life form an organic carpet on the floor of the ocean. Over the ensuing eons, those tiny life forms harden into a layer of rock. Sandstone sediment covers the rock in layers five miles thick. The weight coupled with the high temperatures pressure-cooks the fossils and transforms the hydrogen and carbon molecules into petroleum. Coal has a similar beginning but is formed from plant rather than animal matter. With that kind of a time scale, the truth is plain. Once you burn oil or coal, it's gone. There is no way to make more. It is nonrenewable.

Renewable energy comes from sources that are constant. The sun shines today and will shine tomorrow. The wind will always blow. Trees, if grown and harvested sustainably, can be replaced in our lifetime. These energy sources are renewable. Using renewable energy impacts three areas of my life I care deeply about: It promotes my independence, it protects our fragile ecosystem, and it saves money.

No single type of renewable energy works best for every person in every climate. Most people who live off the grid rely on several systems to meet a variety of needs. They also make lifestyle changes in order to make the systems work optimally.

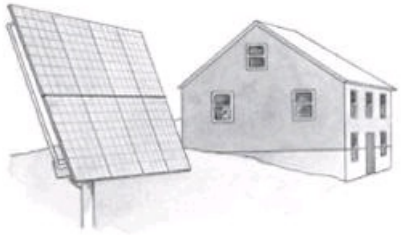
Solar energy seems to be the most popular choice for beginners in the renewable energy field. Solar energy can be harnessed to provide home heat. This can be as simple as situating a new home with a south-southeast orientation and placing as much glass on that side of the house as possible while insulating the north side from winter winds. Opening window coverings during the day and closing them at night will help retain some of that warmth. In the heat of summer, the window coverings are closed during the day and opened at night to reduce the costs of cooling your home. More elaborate designs call for heat collectors and distribution systems.

Solar energy has seen good success in heating water. In its simplest form, sunlight enters a clear glass panel and hits a black plate that is in contact with water. The water gets hot and insulation on the box keeps it hot. A few such panels placed on a wellsituated rooftop can provide much of the hot water a family needs for daily use. Obviously, the return on such a system is far greater in Phoenix than in Anchorage. I spoke to several families in the Northeast who had solar hot water systems and found they worked well except during the darkest days of January and February, when they generally needed a backup system to have enough hot water for all of their needs.

**SOLAR HOT WATER HEATING PANELS**

Photovoltaics are a solar panel system that converts the sun's energy into electricity. The energy can be used, stored in batteries, or sold back to the power company. In a hot and dry climate, a photovoltaic system can produce enough electricity to actually run a negative balance on your electric bill. These are expensive systems, but they are quite reliable, and as electricity costs continue to rise, they are looking a lot more appealing to many. As the demand goes up, the cost is likely to decrease.

**SOLAR HOT WATER HEATING PANELS**



**PHOTOVOLTAI CARRAY**

Obviously, energy conservation is key, not just when using renewable energy, but as a way of life. Think about your purchases as they relate to your life and the planet. Compact fluorescent bulbs, Energy Star appliances, and manually operated small appliances help all of us. Why use a plastic bag that winds up in the landfill when you can make a bag that you will have for years? Grow a garden. Get a bike. Walk. Sustainability and preparedness are linked to a better, more independent life for all of us.

**RESOURCES**


*Homemade Money,* by Richard Heede

*Practical Photovoltaics,* by Richard Komp

*The Real Goods Solar Living Sourcebook: The Complete Guide to Renewable Energy,* by John Schaefer

*The Solar Electric Independent Home,* by New England Solar Electric Inc.

*Technologies and Sustainable Living,* edited by Douglass R. Pratt

*When Technology Fails: A Manual for Self-Reliance,* by Matthew Stein


**LIGHTING**

**LIGHTING IS SO** critical to our sense of wellbeing in a crisis. Being unable to see creates a great feeling of vulnerability. Light a lantern during a power outage and you can feel calm settle over the room.

There are several choices for lighting, and this is one place where spending a bit more money is probably worth it. Candles may make for a romantic dinner, but they are not the best choice for illumination should the power go out. A plain taper gives off very little light, and candles can be a fire hazard, especially around children. If you do decide to use candles, consider a long-life candle and protect the flame with a glass globe. Hundred-hour candles may be a good option. These small glass containers filled with liquid paraffin burn more brightly than wax candles and give off a small amount of heat as well.

Kerosene lamps, sometimes called hurricane lamps, are glass containers with wicks and a removable chimney. They give off a moderate level of amber light. They also give off an odor that bothers some people, especially those with asthma. If you're planning on using kerosene lamps, you'll need to store extra wicks as well as fuel. The fuel is highly flammable and should be stored well away from food, children, pets, and heat sources; in fact, you may want to store it outside your home. The least expensive kerosene lamps can be had for under fifteen dollars. There is even a kit that will convert a canning jar into a kerosene lamp for about six dollars. All kerosene lamps will benefit from being placed in front of a reflector, such as a mirror, to enhance their light.

**LONG-LIFE CANDLE**

**HURRICANE LAMP**

**CAUTION**

When you have candles lit, place the candleholders on stable surfaces, well away from curtains and wall hangings. Never fall asleep with a candle burning, and don't leave the room with one burning either.

For short-term power outages, a few inexpensive kerosene lamps will probably meet your needs, but if you are worried about lighting for a longer period, you might want to investigate the Aladdin lamps. These are considered the Cadillacs of nonelectric lamps. They burn with no odor and no noise. They use an incandescent mantle in addition to a wick and are far more efficient and bright than other nonelectric lighting options. But those qualities come with a price: A basic Aladdin costs about a hundred dollars, and prices go up from there. The manufacturer recommends that you use only Aladdin lamp oil with these lamps, and this is more expensive than regular lamp oil. If this seems a little more than you want to spend for your needs, shop around. Other types of oil lamps and lamp oil can be purchased from hardware and department stores as well as camping and sporting goods stores.

Also available at most camping stores, propane and white gas lanterns give off a very bright light, but they have some drawbacks. They hiss and glare when burning, and the white gas can be dangerous to burn and store.

The new kid on the block for lighting is the hand cranked lantern. One minute of winding will generate one hour of illumination. These lanterns are small and don't provide as much light as kerosene lanterns, but they don't require flammable fuel and can be handled safely by children. I expect to see this technology continue to improve and look forward to more hand-powered options on the market soon.

Whatever lighting choice you make, you will also want to have a good selection of flashlights available. I recently have begun replacing all of my C- and D-cell battery flashlights with hand cranked models. They cost about twice as much as the battery-powered models, but one minute of winding will furnish you with thirty minutes of bright LED light. I recently found some of these flashlights on sale for a few dollars at a discount store. I bought a couple and found them lighter and less substantial feeling than the more expensive ones, but if you are working with a tight budget, even one of these would be better than a traditional flashlight. With normal use, the lithium battery can be recharged five hundred times and will last ten years. Similar flashlights can be charged by shaking or hand pumping. With batteries so expensive, short-lived, and difficult to dispose of properly, not to mention their propensity for going dead at inopportune moments, the hand-powered models are a good investment.

**HAND CRANKED LANTERN AND FLASHLIGHT**

If you do use battery-powered lighting, you will need to have a supply of fresh batteries on hand. Although more expensive initially, rechargeable batteries are better environmentally and economically over the long run, but they need electricity to recharge and they run down faster. A good battery organizer will keep your batteries accessible, and most have a check port so you can test the amount of power left in a battery and not risk thinking it's bad and throwing it out when it's the appliance that's not working.

Chemical light sticks are also handy to have on hand. An easy snap breaks the interior glass cylinder, allowing chemicals to combine in a tough plastic tube to provide twelve hours of surprisingly bright, although tinted, light. These sticks are especially handy for children. They are very safe to use, and frightened children may feel calmer when allowed to carry their own light source. I buy my light sticks by the case from a novelty toy

catalog. I keep them tucked all over. In a pinch, a couple of light sticks can substitute for an emergency road flare.

## COOKING

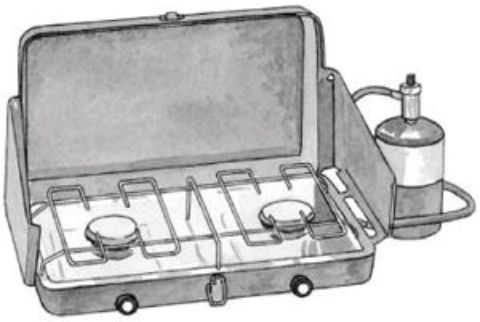
**IT'S POSSIBLE TO** eat without cooking, but peanut butter and jelly and cereal with powdered milk are going to wear pretty thin after a day or two. In cold weather, hot food raises your spirits as well as your body temperature. A cup of tea or hot chocolate is welcome when you wake to a cold, dark house. Figuring out how to cook when the power is out is an integral part of family preparedness.

## OUTDOOR COOKING

Many of us already have some outdoor cooking gear, such as a backyard grill or a camp stove. If your grill or stove runs on propane, be sure to have on hand an extra, full propane tank, or fill your existing propane tank when it is half empty, and you will have a way to cook many things. If you don't own a camp stove, look for one at tag and garage sales, where you can often pick one up for under ten dollars. In inclement weather you will probably want to cook under cover, but these stoves cannot be used indoors. For the short term, you could convert a portion of a garage (with the door opened to provide fresh air) or porch to a semi-outdoor kitchen and make use of these cooking options.

If you choose to use fuel canisters such as propane tanks, be sure to store fuel in approved containers well away from food, kids, and pets. (This is sound advice for all energy sources.) If your grill runs on charcoal briquettes, store them in a dry space, such as in the garage in a trashcan. Be sure also to store lighter fluid to get them started. A few briquettes will produce a good amount of heat for cooking.

Outdoor cooking generally means "stovetop" cooking, whether on a grill or an outdoor stove. But baking is possible, too, with the right equipment. Camping supply stores offer box ovens that fit on top of burners. You will want to use a medium-weight pan for this sort of baking, as lightweight ones will likely be damaged by the open flame and cast iron takes a long time to heat up, which wastes fuel.



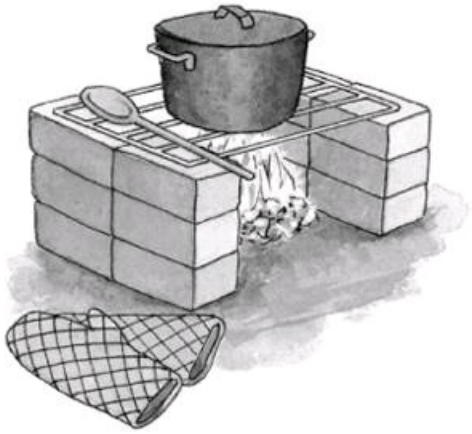
**CAMP STOVE**

### MAKE-YOUR-OWN CHARCOAL

Charcoal is easy to make. You must set good, dry wood to burn and then cover it so it will smolder in the absence of oxygen. The easiest way to do this would be to dig a long trench and burn the wood in it. As soon as the wood is burning well, cover the trench with metal sheeting, such as corrugated roofing material, and cover that with a layer of soil. It will take a couple of strong people with shovels to accomplish this. It's certainly a lot less work to buy and store the charcoal, but it never hurts to know how things are made.

It is possible to cook on outdoor fireplaces and campfires, but a storm would make that impossible. These are not reliable options for nonelectric cooking.

In a pinch, any metal container can be converted to use as a stove. Line it with aluminum foil and add a grill and you have a cooking surface. I have seen cookstoves made from barrels, roasting pans, large and heavy cans, and even the drum of a washing machine. None of these homemade stoves should be used indoors. And the time to take on a project like this is when the lights are on and you have the resources to experiment. When the house is cold and dark and your stomach is growling, you may be motivated to find a cooking solution, but any job you tackle will be a lot harder.

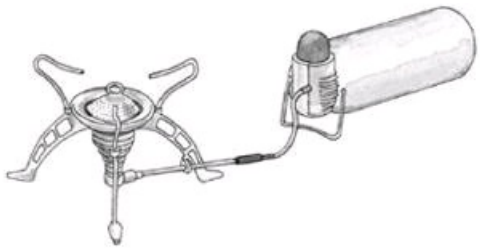


**COOKING OVER AN OPEN FLAME**

**INDOOR COOKING**

If you have an indoor fireplace, you may think your cooking dilemma is solved. But cooking over an open flame is harder than it looks, and you will need special equipment to make it possible. If you expect to cook more than hot dogs on a stick you will want some sort of fixed metal bar or swinging crane to hang a pot from, tongs and other long-handled utensils, heavy-duty pot holders, and Castiron pots, including a Dutch oven. You can make a cooking surface by supporting a grate from your oven or grill over the fire on a couple of bricks or concrete blocks.

Flat-fold stoves are another option. They are heavy metal, one-burner grills with foldout legs. When folded they take up little space, about seven square inches, which makes them ideal for slipping into an evacuation pack or car kit. When open, these stoves are sturdy enough to support a pot of stew. They run on heat cell fuel canisters, available from camping stores. One canister will burn at 400°F for up to five hours.



**FLAT-FOLD STOVE**

Wood- and coal-burning stoves are an excellent option for nonelectric indoor cooking, and they double as a source of heat. For several years I did all of my cooking on a Majesty cookstove. I cherish the memories of those days when we grew what we ate and cooked what we grew. We cut, hauled, and seasoned the wood ourselves. It probably sounds more romantic than it actually was. I know it was hard work, especially in the early morning dark when I stumbled to the cold kitchen, hoping enough embers remained from the banked fire of the night before to stir up a blaze. Bruce would come up from the barn with a basket of eggs, cold and ready for breakfast. I liked to greet him with a warm kitchen and a cup of coffee. I wish I still had that Majesty, but it stayed with the farm. I make do with a propane parlor stove that is a lot easier to use and a lot cleaner, but still leaves me at the mercy of a gas company. Not all progress is a good thing.

**COOKSTOVE**

**BOX STOVE**

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**CAUTION**

*Never* use a barbecue grill, hibachi, propane camp stove, or any cookstove not approved for interior use inside your house. These stoves replace oxygen in the air with carbon monoxide. When used in a closed space, the results can be fatal.

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Although not as versatile as a good cookstove, which has an oven, a large cooking surface, and often a hot water reservoir, a wood- or coal-burning box stove has enough top surface to keep you in hot water and meals. These are the stoves often put in living rooms to provide backup heat for a house with a traditional furnace. Coal burns hotter than wood, so you can burn wood in a coal stove but not coal in a woodstove or you will burn out the bottom.

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**CAUTION**

Teach your children to respect any stove. If they are too young to understand the concept of no running or roughhousing near it, then block it off with a secure gate.

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**SOLAR COOKING**

Solar cooking has come a very long way from my Girl Scout days, when I made my first solar cookstove. The newest plans are so easy to make and so efficient to use that I believe every family interested in preparedness and/or limiting their carbon footprint should have one.

A solar cooker is basically a sealed box that absorbs and magnifies the power of sunlight. Its interior temperature usually reaches about 200°F, though some commercially manufactured cookers can get hotter. While a solar cooker will not work in the midst of a storm or even on an overcast day, on a sunny day it is possible to use one to simmer soup or bake bread, cookies, or a casserole. With some experimenting, you will be able to turn out an entirely solar-cooked meal with little more trouble than preheating your oven.

Cooking with a solar oven requires some practice. So much depends on conditions in your particular location. I had to fool around with recipes and pans to come up with some meals that I could reliably produce in my solar cooker, and here's what I learned:

**SOLAR COOKER**

• **It takes time.** In general, a solar cooker takes quite a bit more time to cook foods than a conventional oven, usually about twice as long. Having ingredients at room temperature or warmer before you put them in the cooker cuts down on cooking time.

• **Smaller is better.** Smaller amounts of food cook better than larger amounts. After turning out several loaves of undercooked bread, I began using soup cans to make smaller loaves, and that solved the problem. Rolls worked well when I began leaving an empty space in the middle of the pie tin I baked them in.

• **Pans matter.** Wide, shallow pans work better than deep ones, and dark pans work better than light-colored or glass ones.

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**PROJECT INNER TUBE SOLAR COOKER**

This very simple cooker, while not the most efficient of cookers, serves to illustrate the basic principle of solar cooking: magnifying the power of the sun to cook food.

**YOU WILL NEED**

• Inner tube

• Sheet of glass

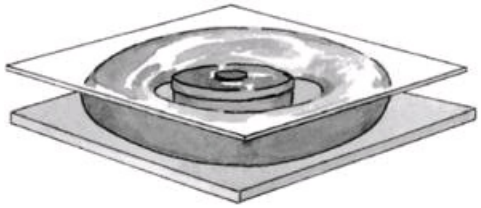
• Stable bottom surface (a board will do; covering it with aluminum foil will make the cooker more efficient)

1. Set the board in direct sunlight.

2. Place the inflated inner tube on the board.

3. Put an aluminum cooking vessel, of a dark color or painted black on the outside, in the middle of the inner tube. Fill it with the food you wish to cook.

4. Cover the tube with the sheet of glass and wait for the food to cook!



**AN INNER TUBE SOLAR COOKER**

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• **Temperature matters.** Cool temperatures of, say, less than 60°F or brisk breezes will reduce an oven's efficiency. They will work indoors in a sunny window, though.

• **Direct sun moves around.** As the sun moves, so does the path of its light to your cooker. You must move the oven as necessary so that it stays in direct sunlight.

• **Water-hungry foods need precooking.** Foods that absorb a lot of water during cooking, such as rice, dried beans, and potatoes, benefit from being cooked *before* they are added to any dish that will be cooked in a solar cooker. Otherwise they end up a little crunchy.

• **Solar cookers don't burn food.** The heat is so gentle that it is nearly impossible to burn anything. Cookies or breads may get hard after a while, but they won't burn the way they will in a traditional oven. This is a real advantage for those of us who get busy and forget to check on our dinner.

Good foods to try in a solar cooker are those with a lot of liquid that need heating more than cooking, such as canned soups or stews or instant oatmeal. A solar cooker will do a good job with hot dogs, too. I am able to cook meat, even a roast, in a solar cooker, but it takes a long time, even on a warm day. Potatoes will bake as well, but plan on baking them for at least two hours.

Another plus for the solar cooker is the cost. You can make a good cooker from mostly recycled materials for under ten dollars. I made one with nothing but everyday items I had at home for no cash outlay at all. More efficient, sturdier stoves can be made as well, with only slightly more effort. There are plenty of plans available on the Internet; the Solar Cooking Archives (www.solarcooking.org) is a good starting place. Pick a sunny day for construction — you will want to use your cooker right away, and if it's raining you won't be able to.

I like the idea of knowing how to make a solar oven, and I want my children to know how to make one as well; but if you don't have the inclination, you can purchase a commercially made solar oven. A lightweight solar oven that will fit in a backpack can be had for less than twenty dollars. More substantial cookers run up to several hundred dollars and come with all the bells and whistles: self-stabilizing shelves so you can tilt the oven toward the sun, tempered glass doors, wellinsulated sides with rubber gaskets, and a heating capacity of 375°F, even in winter.

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**PROJECT BOX SOLAR COOKER**

This stove can be made from any thin box, such as a pizza box. This is a good afternoon project for a group of kids, and it might help get them interested in the concept of solar cooking. You need just a few simple household items.

**YOU WILL NEED**

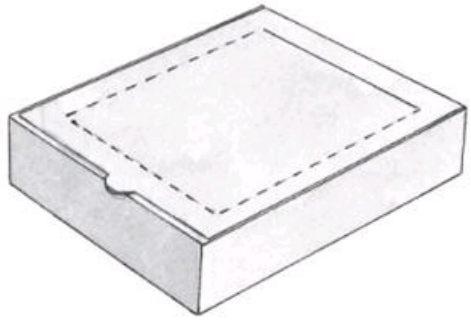
• Thin box, such as a pizza box
• Heavy-duty aluminum foil
• White glue
• Marker
• Utility knife
• Scissors
• Large sheet of black construction paper
• Plastic wrap
• Masking or duct tape
• Couple of feet of string

1. Assemble the box and open it up.

2. Glue aluminum foil to all the inside surfaces of the box except for the top. Keep the shiny side of the foil facing out, and avoid wrinkling it as much as possible.

3. On the top of the box, use a marker to draw a rectangle one inch in from the edges of the lid on all sides.

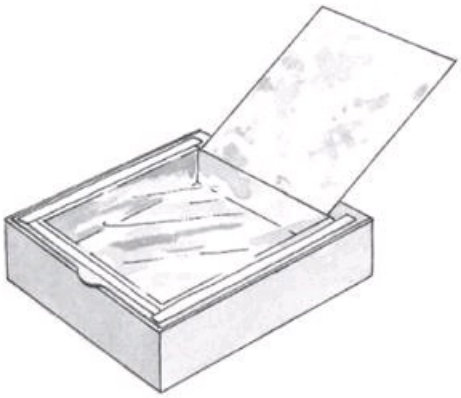
4. Cut the front and two sides of that rectangle with the utility knife. Leave the back side intact.



5. Cut out a piece of aluminum foil the same size as the flap in the top. Glue it to the inside of the flap, again with the shiny surface facing out and smoothing out as many wrinkles as possible.

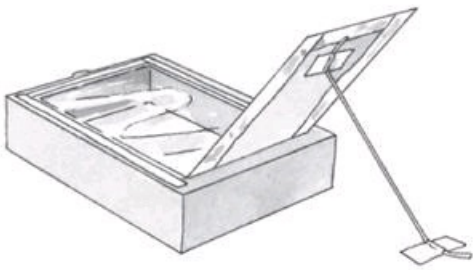
6. Tape the black construction paper to the bottom of the box over the aluminum foil.

7. Close the box lid and open the flap. Cover the opening in the box top with plastic wrap. Seal the edges with tape.



8. When you are ready to cook, place your cooker in a spot that receives direct sun and orient it so the open flap faces the sun.

9. Put your food on a dark-colored paper plate or a small metal or foil pan. Pull up one side of the plastic-wrap top, put your food inside the box, and reseal the plastic. Use the string and the duct tape to tie back the reflector lid (this is the most difficult part).



10. Wait for the food to cook, and then enjoy.

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### HEATING

**IT IS REMARKABLE**, even in a wellinsulated house, how fast the cold creeps in when the furnace goes out, especially if the wind is blowing. If you are dry, dressed properly, and getting enough calories, you can withstand a good deal of cold, but who would want to?

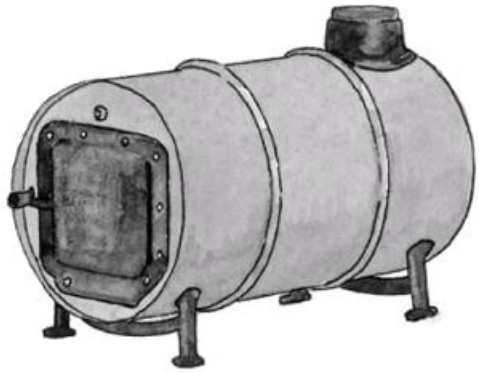
The first step in preparing your home for a power disruption is to have an energy audit. Most utility companies offer them for free. The audit technician can show you where you are losing energy (and money) and offer solutions for making your home more energy efficient. Making your home as tight and efficient as possible is an excellent investment of preparedness resources.

Next you'll need to be sure that you have a nonelectric heat source and plenty of fuel for it. A woodstove might keep all or most of your home warm and provide a cooking surface. But heating with wood is no small undertaking; the wood needs to be acquired and stacked, the fire started and fed, the ashes dumped. If you're using a woodstove as your backup heating system, be sure you get plenty of practice using it before you actually need it. A blackout is no time to be fiddling with the damper and getting exasperated trying to get the fire started. There are a number of excellent stoves on the market. But the price tags are high; you might check the classified ads for a used stove.

You can make a woodstove with a clean fifty-five-gallon steel barrel that has permanently attached, nonremovable ends. Kits that will help you convert such a barrel to a stove can be had for less than a hundred dollars. You need to cut a hole in the end of a drum and bolt on the Castiron pipe connection, doorframe, and legs. A second barrel mounted above the first as a smoke chamber will increase the heat output by 20 percent. I grew up with one of these stoves in our family room. It was not attractive, but it kept our downstairs warm.

### BURNING WOOD

Make no mistake. Committing to burning wood is a huge undertaking. You need to cut or purchase cordwood and have a place to store it. You need to understand the intricacies of wood and how it's priced to avoid being taken by unscrupulous dealers wanting to make a quick buck by selling short cords of unseasoned wood. But the rewards of the energy independence are immense and not just financial. See chapter 16 for more information. And if you plan to burn wood, I would suggest a copy of Frank and Stephen Philbrick's book, *The Backyard Lumberjack* (Storey, 2006).



**WOODSTOVE FROM A STEEL BARREL**

Modern technology has brought us beyond traditional woodstoves to a host of good heating appliances powered by a variety of fuels, including propane, natural gas, kerosene, wood pellets, and even corn. Before investing in one of these, be sure it will run without electricity! Many of these heaters depend on electricity to power fans and blowers, fuel injectors, and thermostats. I had a friend who chose to invest in a pellet stove to provide an alternative source of heat for her family, only to realize when the power went out that the stove had an electric ignition. No power, no heat!

If you have the unfortunate opportunity to replace your furnace or boiler, you might consider investing in a multifuel one that can run on either a conventional fuel such as gas or oil or, depending on the model, wood, coal, corn, or some other fuel. Again, just be sure it can still operate when the power goes out.

Whatever stove or heater you decide on, install it properly and according to the highest codes. Shield it from your children and don't allow clutter to build up around it. If you're burning wood, be sure to have your chimney cleaned yearly.

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### DRESSING WARMLY

When it's cold in the house, dress in layers to trap your body heat. Flannel, fleece, and wool are the best options for layering. Think about investing in flannel sheets, wool blankets, and down comforters or a good-quality sleeping bag to create the same warmth in beds.

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If you can't heat your whole house with your nonelectric heater, focus on heating a smaller section of it, even just one room. Isolate that space from the rest of the house by shutting the doors or covering openings with heavy blankets, space blankets, or quilts.

### REFRIGERATION

**IF THE POWER FAILS**, one of your first worries may be for the preservation of the food in your freezer. How long the food in your freezer will stay frozen is impossible to predict; it depends on variables such as freezer size, how full you keep it, how low the temperature is set prior to the power going off, how often the door is opened, and the temperature of the room the freezer is in. In the best of circumstances, three days is probably the maximum you can hope for.

I have a number of friends who live off the grid and use propane refrigerators, freezers, and washing machines. They look like traditional appliances but use no electricity. As long as you have propane, you have power. The only criticism I have heard is that the refrigerators are small. If you have a big family, that could be a problem. The one large family I know bought two refrigerators and keeps one in the basement for the things they use less often.

Cold storage is the lowtech method of keeping cold foods cold. If outdoor temperatures stay below zero, you can store food from your freezer outdoors, so long as you're sure that it will never end up in direct sun. But having subzero temperatures for an extended length of time is unlikely in most regions, so you probably are best off keeping the food in your freezer, not opening the door, and hoping the power comes back on soon.

Foods from your refrigerator also need to be kept cold, meaning less than 40°F. If temperatures outside are less than 40°F, you can keep such foods outdoors, again keeping them out of direct sun. Store any food you're going to set outdoors in a cooler with a secure top to prevent animals from getting inside. Note that raccoons are perfectly capable of opening the latch on a cooler. Placing something heavy on the cover will keep out most pests, except for those with two legs.

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### FILL THE FREEZER TO SAVE FOOD

When the power goes out, a full freezer will keep food frozen a lot longer than a half-empty freezer. So if a storm is heading your way, or just as a general precautionary measure, fill any empty corners of your freezer with ice.

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If you have a bulkhead with a door separating it from the rest of your cellar, you will find temperatures there cool enough to keep many foods fresh for a few days. In the winter, a cupboard on an exterior wall will get quite cold if it is shut off from the warmth of the rest of the house. In warm

weather, any room below ground level will be cooler than the rest of the house; a thermometer will tell you whether your cellar is cool enough to substitute for refrigerator storage.

### SANITATION

**LACK OF WATER** becomes a real problem when the toilet won't flush and you can't wash your hands. Fortunately, in many homes water supply is not dependent on electricity (though hot water may be). But for those of us with water pumps, or in cases where pipes to or from the home have been damaged, such as by earthquake, knowing how to deal with a lack of water is essential.

### TOILETS

If your water supply system is no longer working, the loss of water may be most sorely missed in the bathroom, specifically for the toilet. Fortunately, you don't need potable water to flush a toilet. Even muddy water will work. Pour a bucket of water directly into the bowl, flush, and the contents will swirl away. You will have to manually fill the tank if you want more water in the toilet bowl. You might consider slipping a sock on the toilet handle to remind people not to flush every time they use the toilet, to minimize the amount of water you have to lug in.

You might also consider purchasing a backup toilet system. Bear in mind, unless you want to invest in a composting toilet system, you are likely to find the alternatives pretty primitive. Most are nothing more than a five-gallon receptacle with a liner, snap-on lid, and seat. Some add an enzyme pack that acts as a deodorant.

Composting toilets reduce human waste to an earthlike substance that can be easily emptied and disposed of outdoors. Some require electricity and others don't. They require some maintenance, such as the addition of peat/hemp mix every day, agitation of the toilet contents on a regular basis, and removal of the composted waste. They cost a thousand dollars and up.

If you don't want to invest this much money, you will need another option. A large bucket lined with a heavy-duty plastic bag will do. For the sake of odor control, locate your makeshift toilet away from your living quarters, perhaps in the garage or in a shed. You can mount a regular toilet seat on the top of the bucket for comfort and stability. A cover will help control odor and flies. You might consider one bucket for liquid waste and another for solids, which will make removing and carrying the contents easier.

Solid wastes should be buried as deeply as possible. Liquid wastes can be disposed of in a shallow trench. Just dig a trench about one foot deep by one foot wide and as long as you can manage. Heap a pile of sawdust, ashes, wood mulch, grass clippings, or even plain dirt nearby. Dump the contents of your liquid waste bucket into the trench twice a day and cover it well. A solid wood or metal sheeting cover will help keep animals out of the trench.

If frozen ground prevents you from digging a trench, or if you live in a city and don't have access to open ground, you will need to dispose of the waste bags as they fill up, taking care to minimize the possibility of animals getting into the bags. I would suggest keeping a good supply of contractor's trash bags on hand. Every time you change the liner of your makeshift toilet, place it in one of the contractor's bags and fasten the top tightly with a twist tie. These bags are large and very heavy duty. They will hold a number of liners and are unlikely to split during transport.

### BATHING

In addition to waste disposal, general hygiene is a problem if you have no running water and no way to heat the water you can acquire. In our affluent society, we are used to taking a shower (and sometimes two) every day. We have clothes to sleep in, clothes to work in, and clothes to play in. Many of us think nothing of changing clothes several times a day and tossing everything into the hamper after one use. If you are hauling water and heating it on an improvised stove, that kind of wasteful behavior will cease. Still, cleanliness is important. Under stress, we are more likely to become ill if we don't take good care of ourselves.

For summer use, a solar shower works quite well. A solar shower is nothing more than a black receptacle with a hose and a clamp. Let the water heat in the sun for several hours and you have a hot, if time-limited, shower. In cold weather, a solar shower may still heat water if placed in direct sun. You can heat the water and then hang the bag over the faucet in your shower for use. Solar showers don't offer as much water as most of us are used to; you should use the water to rinse off, then close the clamp while you lather up and wash, then open the clamp and rinse. Camping supply stores and catalogs offer a selection of solar showers as well as various other portable showers, any of which may be useful as a backup to your water heater.

If your hot water supply is limited, you may find it easiest to go back to the tin washtub, Saturday-night bath system, at least for children. Get a large tub — a storage bin works nicely since most of us don't have an actual washtub anymore — and have ready two containers of water, one hot and one cold. Put in the hot first, then add cold until it is a comfortable temperature. You want kids, soap, washcloths, towels, and clean clothes assembled in the warmest room of the house for this. Then pop kids in, one after the other. It's a good idea to go from cleanest to dirtiest. The water will stay cleaner if you wipe off the surface dirt first. Parents today would be horrified to know that when I was kid, back in the 1950s, baths were always done this way, with one tub of water per household of children. We survived quite nicely and without lasting psychological damage.

If bathing is just not possible, at least make sure to keep hands and faces clean. Waterless soap is mostly alcohol and very drying after a while, but you should have some on hand. Otherwise, have a small basin of water ready. Wet hands, lather up with liquid soap, then rinse in the same basin. You can brush your teeth with about a half cup of water if you wet the toothbrush, brush with a dollop of toothpaste or baking soda and salt, then swish and spit.

### DISHWASHING

If your water supply is likely to be at risk, store disposable plates, cups, and utensils so you don't have to waste that precious resource on washing up. Using disposables may go against everything you believe in, but it should only rarely be necessary. You can splurge on the biodegradable kind so they can go into the compost heap if it makes you feel better. Keep a few sets in your evacuation packs and car kits, too.

### LAUNDRY

My mother had a house full of kids, a basic washing machine, and no dryer, and yet she spent a lot less time on laundry than I do. This was, in part, because we had far fewer clothes than most children do now. But it was also due to expectations. We were expected to keep school clothes clean and play clothes dirty and to wear our church clothes for an hour on Sunday. We used napkins on our laps and washed out underclothes and socks in the sink each night. We weren't scarred by this either. If you can't use your washing machine, you and your children will find you can adjust

to this system as well.

**WHENEVER YOU ARE** making buying decisions for your home and family, think about its need for power. You will save more than money if you purchase things that do not require electricity or gas to be useful. Often, the so-called convenience of things is outweighed by the way they complicate your life. Take a can opener. A manual can opener is inexpensive, easy to clean, and portable, and takes up little storage space. I have a hand-me-down can opener from my mother that has been kicking around for the past thirty years and still works just fine. Now look at an electric can opener. It comes with all sorts of features that you will never use. You need an instruction manual just to figure out how to open a can of tuna. It's ugly and impossible to keep clean. When it breaks down, and it will, you can't get it repaired. It will be tossed in a landfill where it will sit for the next hundred years. When the lights go out, it is less than useless. It will sit on the counter, mocking you and taking up space better used for something useful, like a manual blender.

The landfills are full of fancy watches that need batteries you can't find, appliances that no longer work, and the latest electronic gadgets that were obsolete before you got them home. If you really think you need an electric anything, wait a week before buying it. In that time the impulse may pass or you might find a manual model that better suits.

### COULD YOU SHUT DOWN YOUR HOUSE IN TEN MINUTES?

- Do you know where all the shut-off valves are for gas and water? Do you have all the tools you need to close those valves?
- Do you know how to shut down your electrical service?
- Do you know the exact location of all keys?
- Are your essential documents in a fireproof safe or backed up in a separate location?
- Do you have evacuation packs for all family members?

# CHAPTER 5 COMMUNICATIONS

Information in a crisis is critical. If the lights go out in the middle of a blizzard, the reason is pretty obvious, but what if they go out in the middle of a sunny, windless day? If there has been an automobile accident that has taken out a power line, the problem will be fixed in a couple of hours. If a main switching station has gone down, however, you might be waiting for lights for days or even weeks. It is important to be able to get news and information so you can plan accordingly. It will also be important to reach friends and family.

## KEEPING INFORMED

**THE MOST LIKELY** obstacle to keeping informed about a crisis is lack of electricity. Traditional alternating-current (AC) items like televisions and radios will be out of commission. A laptop computer may remain operational as long as the battery holds up, but if any of your equipment for connecting to the Internet relies on electricity, it won't be of much use to you in finding out what's going on.

A battery-operated radio would be the minimum you want to have available in order to get the latest news and weather updates. A hand cranked radio could be a better choice, since you don't need to stock batteries to keep it operational. If you can afford two radios, keep one at home and one in your evacuation kit.

**HAND CRANKED RADIO (WITH CELL-PHONE CHARGER)**

Other options for getting and sharing news include emergency scanners, CB radios, and emergency alert radios. Scanners will let you listen in on communications among local fire, police, public safety, ambulance, aviation, and government transmissions. They are pricey, though, costing several hundreds of dollars. CB radios don't have a long range, only a few miles, but they are useful for finding out about road conditions, especially if you travel a great deal.

Emergency alert radios receive weather forecasts and warnings from the National Weather Service. This is also the service that provides the Emergency Alert System, which you have probably heard tested on your local television and radio stations. Emergency alert radios feature an alarm system that will turn on automatically and warn you with an alarm if an alert is issued for your area. These are inexpensive devices and well worth the cost if you live in tornado or flood country or close to a nuclear or chemical plant.

## KEEPING IN TOUCH

**HAVING FAMILY MEMBERS** away from home when a crisis hits can be incredibly stressful and worrying. Drafting a plan for contacting each other will ensure that you know where everyone is and that they are okay.

Of course the easiest way to stay in touch is by phone. There are three kinds of phone connections: land lines, portable, and cellular. While portable phones need to be plugged into electrical service to be operational, an old-fashioned land line does not need electricity to work. As long as the phone lines are up, your phone works.

A cell phone is the obvious choice for person-to-person communication. If you don't live, as I do, in a cell-phone dead zone, keeping your phone charged is then your biggest obstacle. You can store extra batteries, but I would recommend one of the hand cranked radios with an attached cell-phone charger. That way you can always be sure of being able to charge your phone.

In the case of a local emergency, local phone lines can quickly become overwhelmed with calls. In this case making a long-distance call may be easier than making a local call. So it's a good idea to designate an out-of-town family member or friend as your family's main contact person. In the event of a natural disaster or other emergency that has your family scattered and trying to get in touch with each other, each member can call that out-of-town contact to check in.

Do not underestimate the importance of having emergency contact information for all family members in a hard copy. So many people keep all of this information on their computers or PDAs. They are handy, but relying on technology as the only repository of such vital information is a risky proposition. I spent a profitable hour making a master list of names, addresses, phone numbers, work numbers, and e-mail addresses of all family members on my computer and printed copies for myself and each of my children and other family members. I e-mailed a copy of the list to myself, then saved the e-mail on my server, so even if my house burned down or my hard drive crashed, I could retrieve the information.

Every family should have three meeting-place plans. The first is a plan to meet in a specific neighborhood location should you need to evacuate your home, as in the case of a house fire. This is especially important for large families. If you are all gathered on a neighbor's porch or under a large tree, there will be no doubt about who is safe and who is among the missing.

The next plan should be for a local disaster such as a wildfire, small chemical spill, or flash flood. Agree to meet at a friend or relative's home or a community location, such as a school or civic center. Avoid choosing locations, such as hospitals or fire stations, where your gathering could hinder emergency response teams.

If there were a more widespread crisis, such as a terrorist attack or large chemical spill, you would need a regional safe location at least fifty miles away. In the best situation, your entire family would travel there together, but in the event that you're separated, you'll all know where to head. Again, a friend or relative's home is probably a good bet. Just be sure to communicate this information to your whole family and update it periodically.

FAMILY EMERGENCY CONTACT PLAN

Local Contact 1: _____
Phone Number(s): _____
Address: _____

Local Contact 2: _____
Phone Number(s): _____
Address: _____

Out-of-Region Contact: _____
Phone Number(s): _____
Address: _____

Neighborhood Meeting Place: _____
Town Meeting Place: _____
Out-of-Region Meeting Place: _____

FAMILY EMERGENCY CONTACT PLAN

Local Contact 1: _____
Phone Number(s): _____
Address: _____

Local Contact 2: _____
Phone Number(s): _____
Address: _____

Out-of-Region Contact: _____
Phone Number(s): _____
Address: _____

Neighborhood Meeting Place: _____
Town Meeting Place: _____
Out-of-Region Meeting Place: _____

# CHAPTER 6 PREPAREDNESS WITH CHILDREN

I first became interested in preparedness when my youngest son, Ben, was a baby. We were living way out in the country at the time, nearly a mile from the closest neighbor and miles from the main road. Ben woke up one freezing, stormy February night burning with fever and unable to keep anything down. He was only a few months old at the time and tiny, maybe twelve pounds. Bruce and I took turns walking the floor with him, trying not to panic. As that long night wore on, he became limper and limper. Getting to the hospital wasn't possible. Every outside surface was coated with a thick layer of ice. The phone lines went down first; the electrical lines right after. All night we walked, listening to the raging storm, unable to get out or call for help. I knew Ben needed electrolyte replacement, an inexpensive concoction that will keep a small child hydrated until the worst of an illness passes, but I had given the last of mine to a neighbor earlier in the week and hadn't gotten to town to replace it. As soon as it was light and the winds died down, Bruce hooked up a chain to our old John Deere and pulled enough debris from the road to make it passable in our four-wheel-drive pickup. We slipped down the mountain to the hospital and raced Ben inside. He spent the next eight days there, on the critical list for several days. I sat by his crib the whole time, vowing to never again put one of my children at risk from poor planning.

At the risk of sounding like a curmudgeon, I must confess that I worry about our nation's children. We are raising a generation who feel entitled to the trappings of an affluent society. Too many young people expect cell phones and computers and a life of instant: instant food, instant entertainment, and instant information. Our kids have lessons in every subject imaginable but are, in many ways, the least competent creatures ever to populate the planet. They can work a microwave but can't cook. They know how to instant message but can't communicate face to face. They know fashion but can't replace a button. They can drive fast but can't change a tire. The evening news has taught them about danger but not about how to survive in a changing world. As parents, our job is not just to protect our children, but also to raise them to be competent, self-reliant, and self-confident.

I am often asked whether hearing me discuss preparedness has made my children worried or anxious. I have found the opposite to be true. My children feel confident in their ability to handle a crisis, and each one knows he or she makes valuable contributions to the family welfare.

It is important to make family preparedness a family project. If your children hear you calmly discuss how to evacuate your home in a fire and have the opportunity to practice those skills routinely, the smoke detector going off in the middle of the night will put them on autopilot. They will know the steps to take to reach safety. If, in an effort to protect your children from the fear of fire, you never bring the subject up, the smoke detector going off in the middle of the night may well lead to panic, and panic is always dangerous.

In preparing to care for your children in an emergency, panic will be your biggest threat. If you feel desperate and out of control, you can be assured that your children will feel the same way. If you are prepared and confident, your children will draw their strength from you and will often show remarkable resourcefulness and resilience. For this reason, if for no other, family preparedness is crucial.

## THE BASIC NECESSITIES

**IF YDU LISTEN** to advertisers, you may believe that your baby won't survive without a plethora of gadgets, from battery-operated swings to exercise saucers. In reality, kids have lived for thousands of years without crib gyms (or even cribs!) or vibrating bouncy chairs. The true "needs" of an infant are simple. They need food (breast milk or formula). They need to be kept warm and dry. And they need to be loved. That's it. You could have a perfectly happy and healthy baby without spending a dime on anything but diapers and clothing — and you could probably borrow those.

One area that does need extra consideration in a crisis is the health needs of children. Be certain to keep children up-to-date on immunizations and preventive health and dental care. Keep accurate immunization and growth records. Be sure to include necessary children's medications in your first-aid kit.

In their early months, infants are unable to regulate their body temperature. During that time especially, it is critical to protect them from extremes of heat and cold. In the summer, that means protection from the sun. If you must be outside in the heat of the day, as many families were in the aftermath of Katrina, an umbrella provides shade and is easy to carry. Other than that, summer is manageable. It is the cold of winter that you will need to be most mindful of.

When it's cold, keep your children in layers. In the coldest weather, there is no reason to dress your kids at all. They will stay warmest in a long-sleeved thermal shirt and pants topped with a zippered fleece blanket sleeper. Wool socks under the sleeper and a wool hat will keep them comfortable, even at night. At night they can sleep two or even three to a bed and benefit from the shared body heat. If it gets really cold during the day, add a sweater or zippered fleece jacket.

Changing diapers and bathing can be tricky when it's cold in the house. You want your children to stay clean, but you don't want them to freeze for the sake of hygiene. Don't change your child's diapers any more than you have to. When it's diapering time, get all of your supplies ready, find the warmest spot in the house, and get the job done as quickly as possible. As for bathing, kids don't need a bath every day. If their hands, faces,

and privates are kept clean, they'll be fine.

### FEEDING KIDS IN A CRISIS

**CHILDREN ARE USUALLY** far less accepting of unfamiliar foods than adults, which is why getting them accustomed to eating stored food on a regular basis is so important. If your child is used to a steady diet of Sugar-Frosted Gummy Tidbits and a glass of sweetened juice for breakfast every morning, getting her to welcome oatmeal with raisins and brown sugar is going to be a challenge. Start teaching your children the value of a healthy diet now. Let your child go "shopping" with you in your pantry. You can set up a store and let her choose some foods to put in her own grocery sack and check them out with you as the cashier. Encourage her to help with the food preparation and play waiter. Not only might this help your kids be more willing to try something new, but they will be gaining valuable, real-life skills that may be of use in a crisis.

### SKILLS BUILD CONFIDENCE

**HAVE YOUR CHILDREN** participate in groups such as 4-H, Scouts, and Camp Fire, where they can learn valuable skills such as cooking, sewing, gardening, and small engine repair. As soon as possible, children should learn basic first aid and CPR. They should also learn to swim. Taking classes such as self-defense together can be an enjoyable experience for both of you, and a confidence builder.

Every family should run routine fire drills. Make sure your children know what to do if the smoke or CO **g** detector goes off and how to evacuate from all areas of your home. Teach young children their name, address, and phone number and how to dial 911. Teach older kids how to drive as soon as they are of legal age, at least well enough to move the family car to provide room for emergency vehicles.

### KEEPING KIDS HAPPY

**KEEPING CHILDREN OCCUPIED** when the lights go out can be a challenge, especially if they are used to being plugged in or transported to activities in order to be entertained. It helps if they've had some practice in lowtech entertainment, so you might consider turning off computers and the television one night a week and playing games or doing fun projects together as a family.

Crayons or markers and paper, Play-Doh, and other craft supplies are good to have on hand. Jigsaw puzzles and board games that involve the whole family, like Clue, Monopoly, and Yahtzee, can entertain for hours. Dolls, blocks, and toy cars should be in every house with kids. And start amassing a library. Books such as the *Little House on the Prairie* series, the Boxcar Children stories, *Hatchet, My Side of the Mountain,* and others that depict children using ingenuity to survive adversity are good choices.

Be prepared to teach your child at home in the event you're shut in for more than a couple of days. Have some workbooks tucked away to pull out when the time is right.

Above all, try to establish and stick to a regular routine with your kids. Your children will be most comfortable if a crisis disrupts their daily routine as little as possible.

### WHEN IT'S OVER

**AFTER ANY CRISIS,** keep a close eye on children for signs of stress. A change in eating, sleeping, or toilet habits might signal that your child is suffering from a stress reaction. This happened a lot after 9/11; even preschoolers were talking about the terrorists. In my opinion, today's kids are exposed to too much unnecessary information about everything from child predators to terrorism. It is our job to protect children from information they cannot process. Being prepared should not translate into scaring our children with tales of possible calamities. Rather, it should be another opportunity for children to acquire age-appropriate information and skills that will enable them to take part in a family's goal of self-reliance.

Capable children are confident children. Confident children will come through a crisis with their sense of security intact, gratified by the contributions they can make toward their family's wellbeing.

# CHAPTER 7 PETS

Pets are just as vulnerable to the stress of a crisis as people are and deserve as much consideration in the building of a family preparedness plan. In general, cats, birds, and rodents are more forgiving of changes in routine than dogs are. They also are better able to fend for themselves if you need to leave them alone for a day or two, assuming you leave them with enough food and water and adequate shelter. However, no domestic animal can fend for itself indefinitely. If you make the commitment to acquire a pet, you must have a plan in place to care for it in a crisis.

## PREPARING YOUR HOME

**IF YOU ARE** able to remain in your home during a crisis, preparedness is a simple matter of storing a supply of food and ensuring your access to water. Emergency situations are not the time to introduce any animal to a new food. If your dog is used to dry food, a quick switch to table scraps or canned food is likely to seriously disrupt his system. So store the same type of food your pet is used to eating. The amount of food you will need to store will depend on the size of the animal and the length of time you've decided to prepare for. Like people food, pet food needs to be protected from humidity, heat, and pests such as insects and rodents. Galvanized metal garbage cans with secure lids are a good choice for storing quantities of dry food.

If you have a dog, you'll also need a plan for exercising him, so that neither you nor he are made crazy by his pent-up energy. You might consider practicing some indoor exercise games with your dog now, before any kind of crisis, so that you both are used to the routine.

You will need to make provisions for your animal's wastes in the event that you are not able to bring him outside. Again, with dogs, practicing now will make the routine easier in a time of crisis. Cats will need kitty litter boxes and plastic bags for disposing of soiled litter.

## PREPARING FOR EVACUATION

**IF YOU MUST** leave home, more detailed systems must be in place. You must have a copy of your pet's immunizations with you; keep it with your other vital records. You will also need food, feeding and watering equipment such as bowls, and plastic bags for cleaning up waste. If you have a dog, you will also need a crate, leash, collar with tags, and a muzzle.

Keep with your evacuation kit (see page 93) a large, full-color picture of your pet, in case your pet becomes lost. You might also consider having an electronic identification marker surgically implanted in your pet; your vet will have more information about this technology.

Finding a place to stay with your pet can be a hassle if you haven't done your homework ahead of time. If the crisis has affected just your home or neighborhood, as might be the case in a fire or localized flooding, an animal shelter or kennel might be a good option. Some hotels accept pets; check the Web site www.petswelcome.com for a list of hotels in your area that are pet friendly. You'll want to check out all the local options so that when the time comes you'll feel comfortable bringing your pet to your chosen shelter. Since finding shelter for a pet is so unpredictable, your best bet may be to make arrangements for a friend who lives out of the danger zone to care for your pet if necessary.

## RETURNING HOME

**WHEN YOU ARE** able to return home with your pet, give him some time to settle in. Major storms and floods can leave dangerous debris behind, so be alert for hazards like downed power lines, broken glass, rodents, and animal carcasses.

Dogs in particular may be uneasy returning home, especially if their surroundings look or smell different. Allow your pet some leash time to explore and get reacquainted with the territory. Be alert for changes in his behavior. Even the most even-tempered dog may become defensive or aggressive in a chaotic and unfamiliar environment.

If you have lost a pet during a crisis, after you return home, contact your local animal control office as soon as possible. It will have information on where lost pets can be retrieved.

# CHAPTER 8 PREPARING YOUR CAR

Your vehicle may be your lifeline in an emergency. It can provide transportation to safety or may even be your shelter if you are unable to remain home during a localized disaster, if other shelter is unavailable or unsafe, or if a wrong turn or sudden storm leaves you stranded for hours or even days. A well-maintained, well-prepared vehicle could save your life.

## UPKEEP AND INSPECTIONS

**KEEPING YOUR CAR** in good shape is imperative. Many states require a yearly inspection. If yours does not, make such an inspection a yearly event anyway. Look over your car yourself or have a mechanic give it a thorough inspection. Are the tires in good shape and properly inflated? Is the tread appropriate for the climate you drive in? Are the windshield wipers in good condition? Are all lights working? Do the brakes hold without squealing or pulling? Are the hoses, belts, and radiator in good shape? Are the battery terminals free of corrosion? Are all systems performing well? If you answer no to any of these questions, get the problem fixed right away.

Every vehicle needs an owner's manual and maintenance log to help you keep track of routine maintenance and repairs, including rotating tires and changing the oil. Follow to the letter your manufacturer's specifications for routine maintenance, and your car will have the best chance of running well for years to come.

Your battery should be replaced every three to four years, or sooner if the manufacturer recommends it. A battery will most likely last longer than that, but since a dead battery can literally leave you out in the cold, why take the chance?

## REPAIR KIT

**EVERY CAR NEEDS** dedicated space for an emergency repair kit. The minimum you need will include the following:

- ☐ Jack and tire iron
- ☐ Spare tire
- ☐ Tire repair kit
- ☐ Collapsible shovel
- ☐ Sand or kitty litter (for traction on slick or icy spots on the road)
- ☐ Road flares
- ☐ Extra fuses
- ☐ Duct tape
- ☐ Hose clamps
- ☐ Snow brush and ice scraper
- ☐ Floodlight
- ☐ Windshield washer fluid
- ☐ One pint of oil (of the kind recommended for your vehicle)
- ☐ Engine coolant (of the kind recommended for your vehicle)
- ☐ Jumper cables
- ☐ Fire extinguisher
- ☐ Pen magnet (useful for retrieving keys you have dropped into a narrow space)
- ☐ Pry bar (useful for pulling a fender away from a tire should you be in a minor fender bender)
- ☐ Empty gas can, siphon, and funnel (note that I wrote "empty" it is a bad idea to drive around with a full gas can in your vehicle, because the fumes are hazardous and the chances of a serious fire in a collision are too great to take the risk)

A more extensive tool chest is necessary only if you know how to do your own repairs. Otherwise, an honest, reliable auto mechanic is worth whatever he or she charges.

We are not all going to learn to tear down an engine, but everybody with a car should be able to change a flat tire, check the oil, add coolant

and windshield washer fluid, and pump gas. When your kids get driver's licenses, require that they prove they can do these things.

Get in the habit of filling your gas tank when it is half full. During a crisis, gas might be rationed or completely unavailable. You don't want that to happen when you are running on empty.

### EMERGENCY KIT

**IN ADDITION TO** a repair kit, it is wise to have a first-aid kit and an emergency kit for every family member in your automobile. A first-aid kit containing all the items listed on page 43 should be stored in each of your vehicles. An emergency kit for each vehicle should include, at minimum, the following:

- ☐ Water
- ☐ Light sticks
- ☐ Road flares
- ☐ Collapsible stove and fuel canister
- ☐ Small pan
- ☐ Unbreakable cup or mug
- ☐ Radio (battery operated with fresh batteries or hand cranked with added cellphone charger, siren, and strobe light)
- ☐ Flashlight (battery-operated with fresh batteries or hand cranked)
- ☐ Whistle
- ☐ Four heavy-duty trash bags
- ☐ Wool blankets
- ☐ Space blankets
- ☐ Rain ponchos
- ☐ Emergency cell phone (even if you don't have a regular cell phone, one of the inexpensive pay-as-you-go phones will allow you to make an emergency call if stranded)
- ☐ GPS (global positioning system) receiver
- ☐ Baby supplies, if you have a young child (diapers, baby food, and so on)
- ☐ Energy bars
- ☐ Waterproof matches
- ☐ Hot packs
- ☐ Sunscreen and insect repellent in summer

Because we live in a section of the country with severe winter weather, I never leave the house in the winter without full winter gear for everyone, including hats, coats, snow pants, gloves, and boots. The kids don't have to wear everything, but they do need to have it available.

### TRAVELING SAFELY

A FEW PRECAUTIONS WILL make all travel safer, especially if you plan to travel some distance from home or in remote areas.

- • Leave your itinerary with someone before setting out, and agree on a daily check-in time.
- • Stick to your route.
- • Start with a full tank of gas and fill up when the tank is half empty.
- • If the weather is iffy, stay home.
- • If you find yourself stranded, stay with your car. It's the safest place and the easiest to keep warm in. It is also likely to be found well before a person wandering in the woods will be.
- • If you run out of water and are contemplating eating snow, don't. Take the time to use your stove to melt the snow for drinking, as eating snow will lower your body temperature.
- • Don't ration food too sharply or restrict it to children. It's a noble idea but foolhardy in the long run. Your children will need you at your best if you are going to care for them. A couple of high-calorie energy bars and water every day will keep you going for several days without too much physical stress.
- • If you hear other vehicles or people nearby, stay put and use your whistle or flares to signal rescuers.
- • If you hear or see search planes, use your road flares as a signal. Your spare tire will make a good, smoky signal fire as well.

I used to get teased a bit about my concern over car and travel safety, but the winter of 2006-2007 put an end to that. People were stranded in record numbers and for record amounts of time as violent storms swept the country. All of a sudden, keeping a spare blanket and some emergency food and water in your car no longer seemed like such a radical idea.

#### BETTER SAFE THAN BOGGED DOWN IN TRAFFIC

It is seldom wise to put off leaving your home if a disaster seems likely. It is far easier to leave and return when the immediate danger is past than it is to wait until the last minute and do battle with the crowd of others who did the same thing.

# CHAPTER 9 EVACUATION

Anyone interested enough in self-sufficiency to read this book would probably want to prepare his or her home well enough to stay there in an emergency, rather than evacuate. Familiar and comfortable surroundings can make any crisis situation easier to handle. Still, there are times when staying home is simply not possible. You must, of course, rely on your own judgment, but it is never wise to ignore a mandatory evacuation warning, especially when you are also making the decision for your children. Mandatory evacuations happen hundreds of times each year, so it is wise to think about how to prepare for such an event.

There are generally two evacuation scenarios to consider. The first is grab and go. If your house is on fire or a tanker truck carrying a highly toxic material crashes in your front yard, there may be time only to grab your children, pets, and evacuation packs and run. This is why having evacuation packs fully loaded and accessible is so critical; we'll discuss them later in this chapter.

In the second scenario, you may have some warning that a crisis event is likely, such as a hurricane or wildfire. In this case, you will have time to secure your home before you leave. In both cases, organization and planning are key to a successful evacuation.

## WHERE TO GO

**WELL BEFORE EVACUATION** is necessary, identify a destination. You want a location far enough away to provide protection, inland or on high ground for instance, but reachable on one tank of gas, as lines at the pump will be long, assuming gas is available at all. One to two hundred miles is a good distance. If at all possible, do not plan to rely on motels. They will fill up quickly and could become as uncomfortable as a public shelter. You could make a reciprocal arrangement with family or friends to shelter each other as necessary. A good camping site might even be workable.

It is a good idea to stash some supplies such as bedding, clothing, and toiletries at or near your destination. To save space, I purchased vacuum bags, which compress bulky items such as sleeping bags into flat packages. The bags have the added benefit of being water- and insect-proof. If you are packing for children, swap out the clothing at least yearly to accommodate growth. Take into account changing seasonal needs as well.

If you want to stash a considerable cache of goods, or if you cannot store goods at your chosen evacuation destination, you could rent a storage unit near that location. A unit with twenty-four-hour access will enable you to retrieve what you need, when you need it.

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## PUBLIC SHELTERS

After an evacuation, try to avoid public shelters. But if you find that, in spite of all your planning, you end up in a shelter, take some precautions. Keep your children and belongings with you at all times. Make sure adults take turns on watch duty. Don't flash your emergency supplies where all can see. On the other hand, be willing to share. Try to team up with other families to form a small shelter community. You will be safer and happier with some support. Be a good citizen. Watch your children and try to keep them quiet and occupied. Refrain from playing loud music or arguing. Keep your area neat and offer to help if you can. Crisis can bring out the best in people, or the worst. Strive to be one of the good guys.

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## HOW TO GET THERE

**ONCE YOU HAVE** identified a location, get a detailed map and plan several possible escape routes to it. While the main roads might be the most direct routes, in heavy traffic, the less-traveled back roads might be a better choice. Drive the routes to be sure that you are familiar with them and that they are in decent condition. Being very familiar with your surroundings will be a real advantage if you're evacuating under stress or in bad weather.

Evacuation is possible on foot, but not practical, especially if you are taking children along. Bicycles are not much better. Motor scooters and motorcycles are fast and maneu-verable and may allow you to exit even an urban center with standstill traffic jams, but you can't carry much with you and inclement weather could pose a problem.

You'll most likely choose to evacuate by car or truck. Make sure your chosen vehicle is in tip-top shape and, if possible, equipped with four- or all-wheel drive. SUVs are larger than cars, so you can carry a lot more gear. They also have a higher ground clearance, which may make it possible to drive over water that would stall a car. They are heavier, which gives the passengers better protection. The downside to SUVs, and it's a big one, is the abysmal gas mileage, especially when the vehicle is fully loaded. If an SUV is your vehicle of choice, you might think about filling up the tank whenever it is three-quarters rather than half full.

A pickup truck is another option, and a good one, especially if it has a four-wheel-drive option and a cap. With a cap, you can store a lot of gear, and when the truck is emptied out, you have a good sheltered spot in which to sleep.

Whatever vehicle you choose, don't skimp on it. Get the best suspension, tires, and batteries you can afford and keep an extra set of tires in storage. Worry less about the gizmos like DVD players, sound systems, and buttersoft leather upholstery and more about your car's record for reliability.

Many family cars are just extensions of the family junk rooms, so cluttered with sports equipment, old fast-food wrappers, compact discs, toys, and miscellaneous clutter that they provide little room for passengers or necessary gear. Get in the habit of emptying your car every day. The only things that should be left in your vehicle are your emergency car kits (see page 88) and any other necessary supplies.

If you know that an impending storm or other disaster may make evacuation necessary, prepare your vehicle in advance. Make sure the gas tank is full. Park your car so that you can pull out of your garage or driveway without turning around. Park in a way that protects your car from hazards such as falling tree branches, blowing and drifting snow, or downed power lines that might block your access. Make sure all your emergency supplies have been replenished. Have a dedicated spot for car keys, but if evacuation seems imminent, have them in your pocket.

### LEAVING IN A HURRY

If you have children, it is wise to hold evacuation drills. An evacuation drill is pretty much the same as a fire drill, except in this case everyone is free to leave via the main door and should pick up their evacuation pack (see below) on the way. As with a fire drill (see page 115), everyone should meet at a prearranged spot outside the house, such as the family car, a neighbor's porch or yard, or a tree well away from the house. And to ensure that everyone gets out safely, get in the habit of leaving a pair of shoes and a flashlight next to every bed, and make clearing the floor of hazards such as toys and clothing a nighttime ritual.

## GETTING READY TO LEAVE

**MAKE A LIST** of things to do to secure your home should you need to leave. Do not leave this to chance and your memory. It's easy to forget important details when you are stressed. Well before any crisis, do a home walk-through to determine what you would want to shut down, close, lock up, or otherwise take care of if you were going to leave your home for an undetermined length of time. Locate your home's electrical service and learn how to shut off the current to your home. Locate the plumbing pipes, drains, and shut-off valves. Do the same with your heating system. Label everything with a tag and assemble an emergency kit with the tools you would need to shut off water and utilities. Keep all owner's manuals together with the kit. Should you have time before you evacuate, it will be an easy matter to check off each system as you take the necessary steps to protect it. Once a year, check to be sure all the shut-off valves are not rusted shut.

If there is time before you evacuate, make sure everyone leaves home with a full stomach, has a glass of water, and uses the bathroom. This goes for pets, too. Leave a note with the names of everyone going with you and your destination. Tape it to the refrigerator. Lock your doors and windows. Locks won't stop a determined intruder, but they will deter the casual passerby, and having the house locked up might make you feel better about leaving.

## EVACUATION KITS

**WEATHER EVENTS THAT** disrupt power and essential services are quite common in all parts of the country, so I am continually amazed that so few families prepare for them. News coverage of the 2007 California wildfire evacuations, for example, showed families, who had known for several days that evacuations might be possible, scrambling around and randomly tossing belongings into the trunk of the family car before making a hasty getaway. Chaos like that ensures that something vital will be left behind, and the stress isn't good for anybody. Watch the news after a hurricane has been forecast. Supermarket shelves in the affected area are quickly depleted of supplies like water, nonperishable food, candles, and batteries. Long lines form for gasoline and hardware stores run out of plywood. It is as though no one has ever lived through such an event before or had reason to expect one in the future.

I can think of no part of the country that is immune from all natural disasters. Winter storms, hurricanes, tornadoes, floods, wildfires, earthquakes, and mudslides are all common in one place or another. Too often, these crises leave families struggling, dependent on a combination of luck and outside help to get them through. In any case, being prepared can make the difference between relative comfort and real suffering. And as Hurricane Katrina taught us all, it is better to depend on yourself and your own resources than it is to assume that a government agency is going to rescue you.

Preparing for emergency evacuation is often less a matter of purchasing supplies than it is of gathering what you would need in a transportable pack and keeping it in a convenient place so you can grab it on your way out the door.

There are several sources for pre-packed three-day emergency kits. The price range is dramatic. Very basic kits can be had for as little as twelve dollars, while deluxe kits that contain everything from camp stoves to radios run to well over three hundred dollars. The smallest kits are nothing more than two tea bags, two bouillon cubes, two sugar packets, matches, a plastic bag, four hard candies, a square of aluminum foil, four fuel sticks, and a miniscule folded camp stove, sealed in a pull-top can that doubles as a pan. The whole thing fits in a glove compartment or coat pocket. I bought a couple of these and I was impressed at how much could be packed into one small can. If I was going on a hike I would definitely want one of these in my pocket.

While a purchased kit has some advantages, the most obvious being convenience, I prefer to individualize a kit for each family member. That way I can tailor the contents, not just to my family's needs but also to take into account the types of weather and environment I am likely to encounter. Obviously, the needs of a family in rural Massachusetts in January are going to be very different from those of a family in west Texas in July.

The easiest kit to carry is an ordinary backpack. Excellent bags are available from Army-Navy surplus stores, but they can be very expensive. I had a few backpacks on hand and picked up the rest at a thrift store, checking for sturdy construction and dependable zippers. After a trip through the laundry in hot water and detergent, a day drying in the sun, and a new strip of reflective tape across the base, I had serviceable packs for under ten dollars. A coat of silicon spray made the packs rain repellent.

While thinking about what to pack in your bags, remember that you or your children might be carrying them for a considerable distance; you should keep the contents as light as possible. Have each family member answer this question: If I had to live out of this bag for three days, what things would I need to stay safe, warm, and healthy?

### ADULT EVACUATION KIT

- ☐ Flashlight (windup is best)

- ☐ Two heavy-duty trash bags
- ☐ Whistle (attached to the outside)
- ☐ Water (foil pouches plus a canteen to be carried)
- ☐ Pocket water purifier
- ☐ Water jug
- ☐ Water purification tablets
- ☐ Energy bars (look for those with the highest calorie count)
- ☐ Rain poncho
- ☐ Space blanket
- ☐ First-aid basics (analgesic, adhesive bandages, moleskin, antibiotic cream, tweezers)
- ☐ Extra socks, preferably wool
- ☐ Comb
- ☐ Lip balm
- ☐ Toothbrush and toothpaste
- ☐ Soap and washcloth
- ☐ Hard candy or gum
- ☐ Notepad and pen
- ☐ Toilet paper
- ☐ Sanitary supplies
- ☐ Hand warmers
- ☐ Multifunction pocketknife
- ☐ Radio (hand cranked or battery operated with batteries)
- ☐ Lightweight sleeping bag*
- ☐ Three- to five-day supply of any medication taken regularly
- ☐ Matches or butane lighter
- ☐ Cash (a hundred dollars in small bills and change)
- ☐ Cell phone
- ☐ Mess kit
- ☐ Spare eyeglasses, if necessary
- ☐ Spare shoelaces
- ☐ Change of clothing
- ☐ Tube tent
- ☐ Insect repellent and sunscreen, in warm weather

** Bulky items such as a sleeping bag or extra clothing can be stored in a vacuum-sealed bag. With the air removed, they take up much less space.*

Children may have special needs, such as disposable diapers and wet wipes, formula or sterile boxed milk, extra clothing, and small toys or books.

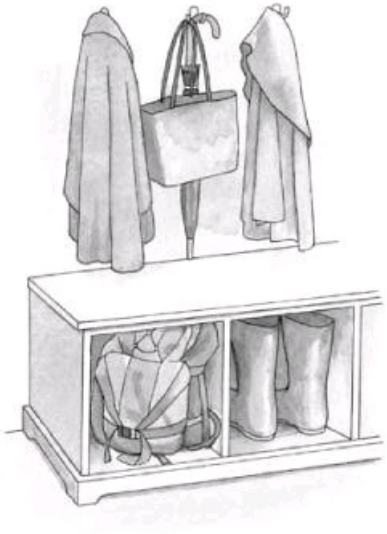
Fill any odd spaces in the pack with food that can be eaten from the package, such as power bars, nuts, jerky, trail mix, dried fruit, and MREs (meals ready to eat). Worry less about nutrition and more about calories and ease of preparation for this kit. The point of this kit is to meet your very basic needs for the short term.

I would suggest adding to each pack an index card with the owner's name, address, emergency contact information, and pertinent medical information, like blood type and important health history.

Obviously, this is a very basic kit. It is intended to meet your needs if you are evacuated. I assume you will be wearing the warmest outdoor clothing you will need for your climate, a hat, good gloves, and sturdy shoes or boots. I cannot stress enough the importance of good footwear. Nothing is as demoralizing as cold, wet, blistered feet.

Consider basic packs for younger family members and larger packs for adults, including other items for comfort such as a portable camp stove, kettle, collapsible shovel, rope, ground cloth, and small tent.

Keep your bags in a designated place, close to an exit or in the trunk of your car. If they are kept in the family vehicle, they will do double duty as part of your car emergency kit. Be sure to rotate the consumables every few months. Make sure all of the children know that if you say, "Time to leave!" this means they should grab their bag and outdoor gear and head to your designated meeting spot. This is especially critical if you live in an area prone to floods or wildfires or near a chemical or nuclear facility. A few minutes can mean the difference between life and death.



**EVACUATION BAG**

**FIVE-STEP EVACUATION**

1. Turn off your gas, water, and electrical service, if the crisis calls for it.
2. Unplug appliances, including computers.
3. Shut windows and interior doors.
4. Grab evacuation packs for each person and proceed to the car. Do not forget to either take pets or leave sufficient food and water for them. Make sure you have your cell phone, money in coins and small-denomination bills, and any necessary medications.
5. Lock all doors.

**A FEW DAYS AND A FEW (HUNDRED) DOLLARS …**

Not everyone who reads this book will follow through with a preparedness plan. Some could read this book and think that none of the talked-about scenarios pose an immediate threat to their family. Some might decide that preparedness does not work with their current lifestyle. Others may plan to prepare but find excuses to put off most purchases until another time.

Then something may change. Maybe the “storm of the century” is forecast. Perhaps an influenza epidemic strikes in Asia and you realize that its emergence in the United States is only a matter of time. Perhaps a terrorist strike causes a panic that threatens to disrupt local services. Whatever the reason, you may wake up one morning and find that you have put off preparing for too long.

So what could you do with only a few days and a few hundred dollars at your disposal? What steps should you take to get the most bang for your preparedness buck? The worst thing you could do would be to rush out without a plan. You would likely waste both time and money and forget some vital supplies that could mean the difference between relative comfort and real deprivation.

Your first step should be to sit down with pencil and paper to map out a shopping route and supply list. If possible, divide and conquer, sending adults out to separate locations in separate vehicles to cover as much ground as possible in the shortest amount of time.

• Fill up all of your vehicles’ gas tanks. In a longterm crisis, one of the first things to run short will be gasoline. In that case, lines may be long, prices high, and rationing in place. You will be ahead of the game if you keep your tank always at least half full.

• Obtain refills of all prescription medications. If your insurance company will not pay for refills, get an extra month’s worth anyway, no matter the cost. You can’t afford to play with a chronic health condition in a crisis. Pick up necessary over-the-counter medications as well.

• Check your water supplies. You need about one gallon of water per person per day. You can store water in clean soda bottles. Milk jugs will work for short-term storage if they are very clean. Fill up any canning jars, coolers, large kettles, and other containers you can find. A few drops of unscented bleach will protect water from contaminants. If supplies are short, it may be easier and cheaper to buy containers and fill them at home than it is to purchase bottled water.

• Look over your nonperishable food. You will need canned soups and stews, fruits and vegetables, “just add water” mixes, powdered milk, and some fun foods like popcorn and pudding. If you are worried about how you will cook food, think about things that can be eaten cold from a box or a can. Dried fruits and nuts, boxed cereals, powdered milk, and canned meats like tuna, chicken, and ham will all keep well and do not require cooking.

• Update your bathroom inventory. Pay attention to first-aid supplies, toilet paper, sanitary supplies, soap, and toothpaste.

• If you have a young one at home, restock diapers and formula. Make sure you have a warm fleece or wool suit to put your little one in if you live in a cold climate.

• If you have hurricane lamps, clean the globes and pick up extra fuel and wicks. If you don’t have hand cranked flashlights and lanterns, see if you can get them. Otherwise get extra candles and holders. The thicker emergency candles are better than tapers.

• If you have a propane camp stove, get it out and set up an emergency kitchen in a well-ventilated area such as a garage or covered porch. Make sure to get a few extra propane cylinders or to refill the tank on your gas grill.

• Restock household necessities. Don’t forget extra batteries for flashlights and a radio as well as matches.

• Recharge your cell phone.

• Take as much cash as possible from your bank or ATM. You want small bills if possible.

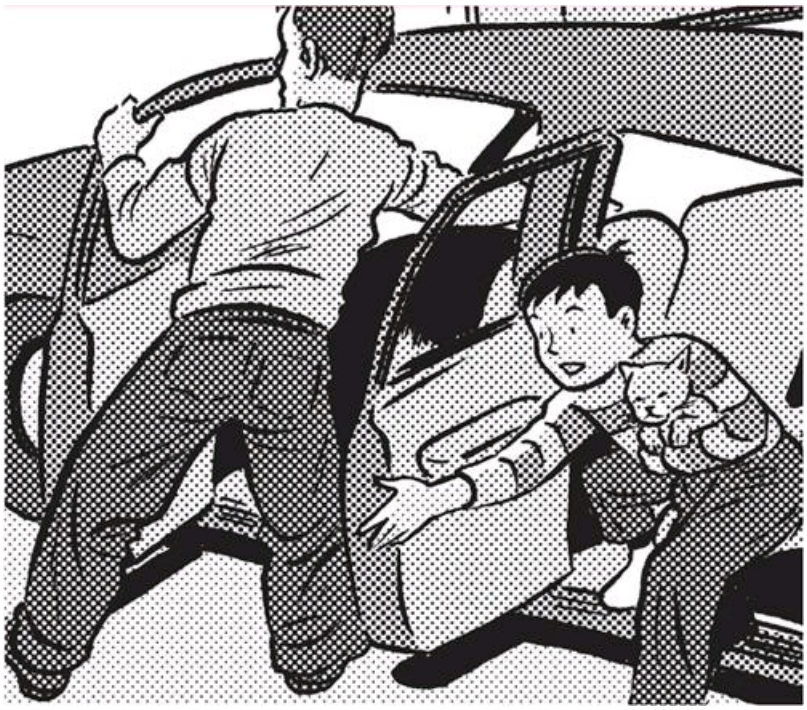
• If you have pets, make sure you have adequate food stored for them.

• Get out some nonelectric fun like board games, jigsaw puzzles, books, and a deck of cards.

Your best bet for the kind of bulk purchasing that you will need to do is one of the big-box stores. You can buy case lots of canned goods and extra-large sizes of nonperishables at a considerable savings.

Balance your needs against community needs. Stocking up before a crisis is wise. Buying all of any essential item like water or gas in the midst of a crisis is hoarding. Strive to be one of the good guys.

# PART 3 DEALING WITH DISASTER WHAT TO DO IN AN EMERGENCY



WHEN YOU ARE SITTING, WARM AND FED, IN YOUR own living room, it can be easy to forget about emergency planning. Like the fiddling grasshopper, we are tempted to believe that there will always be more time. Winter will come but not today. We will prepare our house and put some food by at some point, just not today. But winter always comes and the unprepared are cold and hungry. The truth is, real crisis can occur with little or no warning. The time to prepare is now, when the sun is shining and you have the time and resources to make the necessary arrangements to care for yourself and your family, no matter what circumstances arise.

I understand people's reluctance to prepare for crisis. It can be depressing to think about the many ways we are at risk. How much easier it is to turn on the television and watch a pretend catastrophe with a neatly packaged, happy ending. To examine the reality of our global condition makes it impossible to ignore how vulnerable we all are.

Crisis can take many forms. Every segment of the country is prone to particular natural disasters, such as a floods, tornadoes, hurricanes, severe heat, winter storms, earthquakes, volcanoes, landslides, tsunamis, or wildfires. Our dependence on an increasingly complicated and interdependent web of services and service providers makes us particularly vulnerable to technological disasters such as a power grid failure. A serious worry in an unstable political world is the threat of terrorism, whether in the form of bombs, biological threats, chemical threats, nuclear threats, or attacks on our food and water supply. Viral epidemics or even pandemics are another serious concern of the modern world.

It would be impossible for anyone to be prepared for every possible disaster. I am not even certain it would be healthy to spend one's life on the constant lookout for the worst possible scenario. Still, some crises can be predicted and it behooves families to think about what they can do to protect themselves from the most likely difficulties.

While much emergency planning is appropriate for all scenarios, some preparation is disaster specific. These chapters will deal with specific threats and teach you ways you can prepare and respond in order to minimize your risk, cope in the midst of a crisis, and begin the recovery effort in the aftermath.

### FOR MORE INFORMATION

I found *Are You Ready? An In-depth Guide to Citizen Preparedness,* a free publication put out by **FEMA** in 2004, to be an excellent resource, and I would urge everyone to order a copy. See the Ready Web site of the U.S. Department of Homeland Security, at www.ready.gov, for more information.

### CRISIS MANAGEMENT AND ALERT ORGANIZATIONS

These agencies and systems will be of invaluable assistance in keeping you informed about an emergency, ways to get assistance, and how to stay safe.

**CERT** stands for Community Emergency Response Team. This program supports local response capability by training volunteers to organize themselves at a disaster site. This is a vital program, as a community may well be on its own for a period of hours or days in a widespread disaster. For information visit www.citizencorps.gov/cert.

**Citizen Corps** provides opportunities for people to participate in a wide range of activities that make families and communities safer from threats of crime, terrorism, public health emergencies, and natural disasters. Local Citizen Corps Councils bring together leaders in law enforcement, emergency medical response teams, local elected officials, and volunteers to support a community's emergency services. To find out more about Citizen Corps, visit www.citizencorps.gov.

**The Department of Homeland Security** issues national safety alerts and also provides information for the public sector on emergency planning. Many of its publications are available online at www.dhs.gov or www.ready.gov.

**EAS** refers to the Emergency Alert System. You have probably heard the beep-beep-beep sound on your television that signals an alert that then scrolls along the bottom of your television screen. This system can address the entire nation on very short notice about any grave threat or national emergency. Teach your children that if they hear the alert tones they are to tell you immediately.

**FEMA** is the Federal Emergency Management Agency. In addition to bearing the responsibility for disaster relief, this agency supplies the public with information on public safety. Information from FEMA is available at www.fema.gov. The Web site offers many helpful, free publications on preparedness.

**NOAA** is the National Oceanic and Atmospheric Administration. A NOAA weather station can provide up-to-theminute information on weather conditions. To receive this information, however, you must have a radio receiver that will pick up the NOAA signal; one of the first pieces of preparedness equipment you should purchase is a hand-crank NOAA weather radio receiver. Information from NOAA is available online at www.noaa.gov. Visiting the Web sites of the agencies named here will yield a wealth of preparedness information that can be ordered or downloaded. I would suggest investing in a file to hold all of this additional information. As you acquire new resources, you can add them to the file to become part of your preparedness library.

# CHAPTER 10 LOSS OF POWER

The warnings of rolling brown- and blackouts and possible power grid failure have been with us for years. In 1998, former utility chief executive John Casazza predicted that the risk for blackouts would increase if plans for deregulation went ahead. We should have listened. On August 14, 2003, a blackout that covered most of the Northeast confirmed that he was correct.

Until the 1990s, utilities were tightly regulated monopolies. A single company controlled electricity distribution in a defined area. Each utility had enough capacity to meet the immediate needs of the customers in that geographical region. Long-distance energy shipments happened but were called upon only in an emergency. The very limited use of long-distance connections made the entire system more reliable.

In 1992, the Energy Policy Act was passed, deregulating the way power is distributed across the country. Deregulation changed power from an essential service to a commodity, like soybeans or pork bellies. Power is now traded increasingly over much longer distances, which has led to congestion that controllers did not expect and have trouble handling. I think of it rather like a tightrope walker. If a tightrope walker had to walk across a room on a wire stretched across the length, it's likely she would be able to do so without much difficulty. If, however, the wire were suspended across a football field, it would be much more challenging, as the wire would become less stable the farther it were stretched. If lots of walkers were attempting to do the same thing at the same time, it would be harder still. That's rather what has happened to our power grid. More traffic and greater distance leads to instability.

Since deregulation, the demand for electricity has continued to rise while the grid remains unchanged. Power lines that used to handle energy demands from a specific area are now expected to meet demands from across North America, but the grid has not been updated. Without some major changes, our grid is extremely vulnerable.

Avoiding a grid failure means ensuring that the amount of power traveling along a transmission line does not exceed the capacity of the line to handle it. If too much power flows on a line, excess heat is generated. This can actually cause the line to sag or break, which in turn results in power-supply instability and fluctuations in voltage. For complicated reasons of physics, longer power lines have less capacity than shorter lines.

A second layer of vulnerability comes from the necessity of human oversight to keep the grid up and running. If an event such as a flu pandemic were to sideline a large portion of our workforce at home and fear kept another portion from reporting to work, most of the grid would shut down within twenty-four hours. Nuclear-powered power plants are technically supposed to be able to run for upward of five hundred days without refueling, but other necessary maintenance would probably put the actual number of days before shutdown at closer to seven.

There will likely be no advance warning of impending grid failure beyond the rolling brownouts that are now a common summer occurrence in much of the country. In the event of a grid failure, all of your general preparedness strategies will be invaluable in helping you remain comfortable.

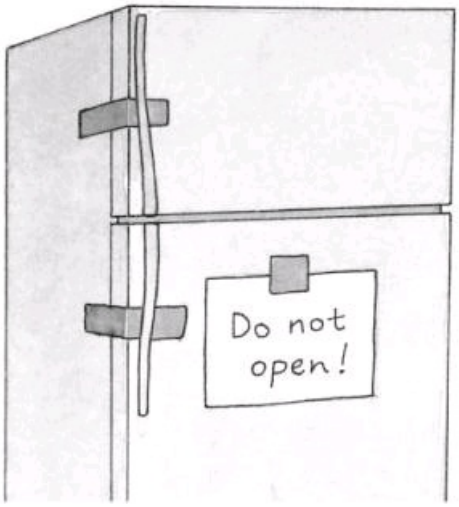
If you experience a blackout, it will be imperative to find out whether the source is an isolated event, such as a car accident taking out a power pole, or grid failure. The need for information and communication is the reason I put purchasing a hand-crank radio with a cell-phone charger at the top of my preparedness supply list.

An isolated event will be inconvenient; grid failure will be a longterm crisis. Banks will shut down. Grocery store shelves will empty overnight. Medical care will be difficult to access. You will be very glad to look in your storage space and see those rows of canned goods and that water purifier. Those less prepared will be sorry they didn't heed the warnings.

## WHAT TO DO WHEN THE POWER FAILS

- **Find out what's happened.** If you have a cell phone, call your power company to alert them to the outage and find out what's happened. If you have a battery-operated or hand cranked radio, tune in to local news radio; any widespread power outage is likely to be reported. If you can't find out what's happened, though, don't panic; if you've followed the suggestions in this book, you'll be prepared to get along for quite some time without power.
- **Prepare alternative lighting.** Get out your nonelectric lighting fixtures (see page 61). Even if it's still light outside, you'll want these on hand before darkness falls.
- **Unplug electrical equipment.** Turn off and unplug all appliances such as televisions, computers, and freezers, so that when power is restored, the surge won't damage them. Leave one light turned on to alert you to when power is restored. Make a list of everything you turn off so you can remember to turn it all back on when power is restored.

Other steps will depend on your household's state of preparedness. If it's cold, you'll probably want to start up a nonelectric heating appliance, if you have one, and you'll want to look after your plumbing (see the following section for details). If it's hot, you may want to distribute hand fans, damp cloths, and water to everyone in the house. If you have a generator, you may fire it up immediately to power your essential home systems, or you may decide to wait and see whether the power outage lasts.




"DO NOT OPEN"

In addition, if family members may not remember not to open the freezer and refrigerator, tape them shut. Post a sign on them: "Don't open unless absolutely necessary!" Opening the freezer and refrigerator doors will dramatically raise the interior temperatures and hasten the thawing and warming of your food.

### KEEPING PIPES FROM FREEZING

**F YOU FIND** yourself in a cold house with no means to adequately heat it, it is imperative that you take steps to protect your plumbing pipes from freezing. These include not just the pipes that supply your sinks, toilets, and bathtubs, but also any hot-water-circulating heating pipes. When water in pipes freezes, it expands and will crack those pipes. You won't know there's a problem until the house warms up. When the pipes thaw, water will gush through those cracks and you will have a flood.

Water pipes are likely to survive without damage in a power outage that lasts only a few hours; your home won't lose so much heat in that short time period when temperatures drop below freezing. And your pipes are likely to be fine if you have a nonelectric source of heat capable of heating the areas through which the pipes run. You might, for example, have a centrally located woodstove that sends some heat into your bathroom and kitchen; you could open the doors under sinks to expose the plumbing pipes to that heat. You might also have a furnace that keeps your basement, and therefore your water heater and supply pipes, above freezing.

If you have no heat, or if your pipes run through uninsulated spaces or exterior walls, you should open all faucets to a fast drip, because moving water will not have a chance to freeze.

If temperatures in the house drop below freezing, pour a small amount of any automobile antifreeze (about eight ounces; read the instructions on the antifreeze container label) into the toilet bowl to protect that water from freezing. Make sure to keep pets and children away from the toilet, as drinking that water would be fatal.

If the power outage is prolonged and temperatures remain below freezing, you may need to drain your plumbing system.

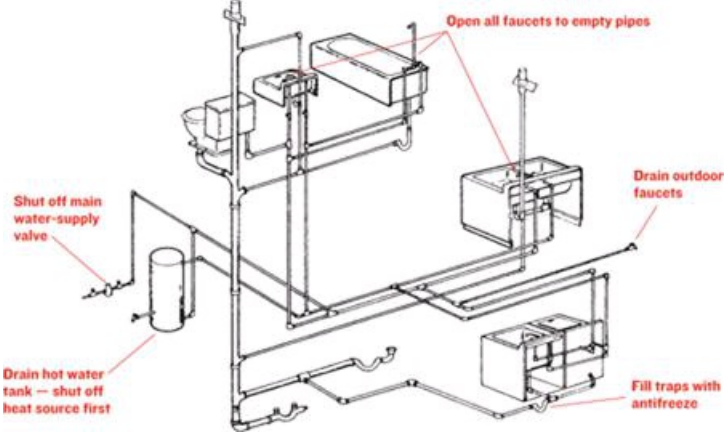
### KNOW YOUR PLUMBING

If you don't know how your plumbing works, you may find yourself frustrated in trying to drain your pipes during a power outage. It's a good idea to look closely at your plumbing system now, before any power outage, and perhaps even to practice draining it, so that when you need to, you can do it with confidence. If you find there is no easy way to drain the entire system, talk to your plumber about other solutions, such as installing additional drains and shut-offs.

Using the manufacturer's instructions for your appliances, and perhaps the guidance of a good plumber, go through your home and figure out where all your plumbing equipment, pipes, drains, and shut-off valves are. Label everything with tags, and assemble a tool kit with all the wrenches and other equipment you'll need to drain the system. Keep the tool kit near your home's main water supply shut-off valve.

### DRAINING YOUR PIPES

The particulars of draining your plumbing system may vary depending on your equipment and setup. The following general instructions are a good starting place, but be sure to examine your own home's unique plumbing to make sure you know how to drain it completely and safely.




**DRAINING THE PLUMBING SYSTEM**

1. If you have a hot water tank, turn off its heat source. Then shut off the water supply to the tank.

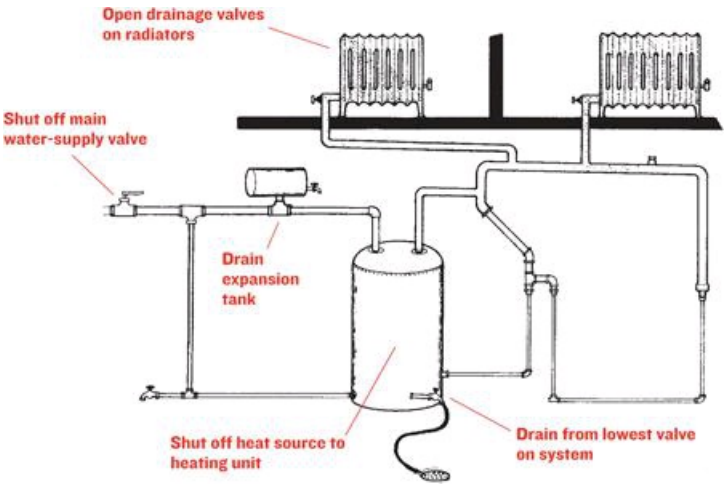
2. Close the main water-supply valve.

3. Turn on all the faucets in the house; save this water if water is in short supply. Be sure that this includes the lowest faucet in your house (it might be in your basement, attached to your boiler or a laundry washing machine). Flush all the toilets, then dip out any water remaining in the tanks or bowls with sponges. Run the dishwasher and washing machine for a few minutes to drain out any water they might contain. If you have ice makers or humidifiers, drain them as well.

4. Showers, sinks, and tubs have drainage traps. Pour antifreeze (about 2 to 3 ounces; follow the recommendations on the label of the antifreeze container) into these traps to prevent that water from freezing.

5. If you have a hot water tank, you'll need to drain it. Make sure the heat source for your water heater is turned off and the shut-off valve between the heater and your water supply is closed. When the water inside the tank has cooled, attach a rubber hose to the drain cock near the bottom of the tank, and run the hose to a floor drain or outside. (Don't use a plastic garden hose; the heat from the water will ruin it.) Make sure a hot water faucet somewhere in the house is open. Then open the drain valve on the tank.

6. If you have a hot water heating system, which circulates heated water from a heating unit, like a boiler, through pipes and/or radiating units, you'll need to drain it. It's a lot like draining a hot water tank. Shut off the heat source to your boiler, and make sure the shut-off valve between the boiler and your water supply is closed. Attach a rubber hose to the lowest valve in the system, which will generally be on the boiler, and run the hose to a floor drain or outside. Then open the drainage valve at that spot. Open the drainage valve on the boiler expansion tank, if you have one; you may need to drain it with a hose separately. Also open the drainage valves on all the radiators, after positioning a pan under them to catch the water.




DRAINING A HOT WATER HEATING SYSTEM

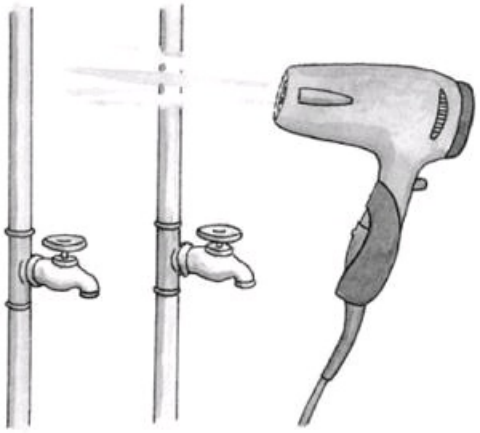
There will still be water in the pipes between the main water supply shut-off valve and the boiler. Look for a drainage valve in that section of pipe, and open it.

You may not have to drain your entire system if only some pipes are in danger of freezing. This might be the case if you have heat inside the house but it's well below freezing outdoors and some of your pipes run through an exterior wall. Take whatever steps are necessary to drain just those pipes; you may need to install special drains and shut-off valves now so that when the time comes you can isolate those pipes from the rest of your plumbing system.

Knowing how to drain your plumbing system is invaluable in the event that you have to abandon your home in cold weather. In that case you'll want to drain the entire system so that you can be sure that you won't face a flood resulting from broken pipes when you return home.

**THAWING FROZEN PIPES**

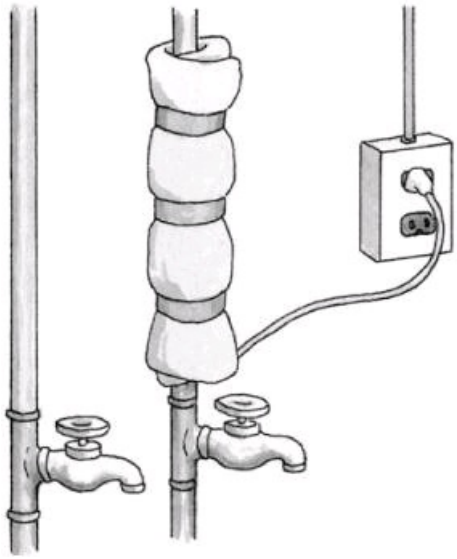
**IN SPITE OF** your best efforts, your pipes may freeze anyway, especially in places where they are exposed to the cold, such as uninsulated spaces or exterior walls. If this happens, shut off your main water supply, so that if any of the pipes have broken, they won't leak when they thaw.



**THAWING PIPES WITH A HAIR DRYER**

You'll know a pipe has frozen when you turn on a faucet and get no water. Usually pipes freeze at certain points, rather than along their entire length. To find the spot where a pipe has frozen, follow it back to a juncture with a second line. Then turn on the faucets on this second line. If they work, the frozen section is between the juncture and the first faucet. If they don't work, the frozen section is between the juncture and your main water supply. Once you have identified the section of pipe that is the likely culprit, you can probably pinpoint the freeze-up with your hand, simply by feeling for the coldest section.

There are a couple of different ways to thaw pipes. If you have power and an electrical outlet nearby, you can heat the frozen section with a hair dryer or wrap it in a heating pad. You can also wrap rags around that section of pipe and pour hot water over them.



A HEATING PAD

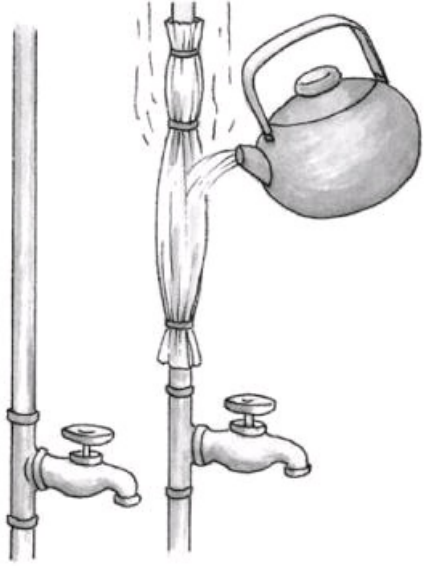
## WHEN POWER IS RESTORED

**WHEN THE POWER** is restored, you'll need to plug in all the electric appliances you had unplugged and evaluate your refrigerated and frozen food for spoilage. You may also need to restart your heating system and hot water heater.

If you've drained your hot water tank, you will need to fill it with cold water before turning the heat source back on.

You'll need to do the same if you have a boiler and hot water heating system; keep the venting valves open until water issues from the hot water faucets in the house. Then close the venting valves and restart the heater. After the system has started providing heat again, vent all the valves to release any air from the system.

You may need to relight the pilot light if you have a gas-fired boiler or water heater. Most gas appliances have instructions for this posted on a label on their front; if you're at all unsure, ask a technician from your gas company to show you how to do this safely.



… OR HOT WATER

# CHAPTER 11 FIRE IN THE HOME

House fires kill more people every year than most natural disasters combined. Every two and a half hours someone dies in a home fire. That adds up to more than 3,500 deaths a year. Another 2,000 people are seriously injured each year. With these statistics in mind, fire safety must be a part of every family's preparedness plan.

## SAFETY EQUIPMENT

**EVERY HOME NEEDS** a few pieces of fire-safety equipment. Each floor of your home, including the basement and attic, must be equipped with both smoke and $CO_2$ detectors. Carefully follow the manufacturer's instructions about where to install these detectors, as installing them in drafty spots, such as near windows, doorways, and ductwork, may render them less reliable. The ceilings outside bedroom doors and in hallways are the preferred locations. Be sure to test your smoke and $CO_2$ detectors every month, vacuum their surfaces every six months, replace their batteries every year, and replace the units themselves every five to ten years.

Keep extra batteries for the detectors on hand. Should the battery in a smoke or $CO_2$ detector run low, the unit will begin to chirp every few minutes. The sound is meant to be annoying, and it is. If you don't have the batteries on hand, you may be tempted to remove them altogether until you shop again. It is too easy to forget about replacing the batteries, and this will leave you with a unit out of commission.

A fire extinguisher in the kitchen can be a lifesaver, but there are a few things to keep in mind before you run out and purchase one. Fire extinguishers are categorized by their ability to put out different types of fires:

- Class A fires involve ordinary combustible material such as paper and some plastics.
- Class B fires involve combustible liquids, including gasoline, kerosene, and grease.
- Class C fires involve electrical equipment, such as toasters and microwaves.
- Class D fires involve combustible metals, such as titanium and sodium.

Class D fires are unlikely to occur in the home; extinguishers capable of putting out such fires are generally found only in chemical laboratories. But class A, B, and C fires could all occur in a kitchen, so make sure you purchase a multipurpose extinguisher, rated for A, B, and C fires.

Install any extinguisher where you can easily reach it. Finally, know how to use it. This might take some training.


**MULTIPURPOSE FIRE EXTINGUISHER**

The final piece of equipment you could consider is an escape ladder for rooms above the first floor. The ladders are usually stored under the window where they would be used. Some of the more expensive brands come in a box that can be bolted to the floor. It is then only necessary to open a window and drop it out. Otherwise, the ladder will hook over the sill. Be sure to teach anyone who might need to use the ladder how to do it, and have your family members practice exiting the house with one. I would not be inclined to leave a ladder in a room with a child who might be

tempted to use one as a plaything.

### ALWAYS CALL FOR HELP

Should you have a fire, always call 911 first. Only then, if the fire looks small and easily contained, should you attempt to put it out. If you have any doubt, evacuate. Do not risk your life trying to save your home.

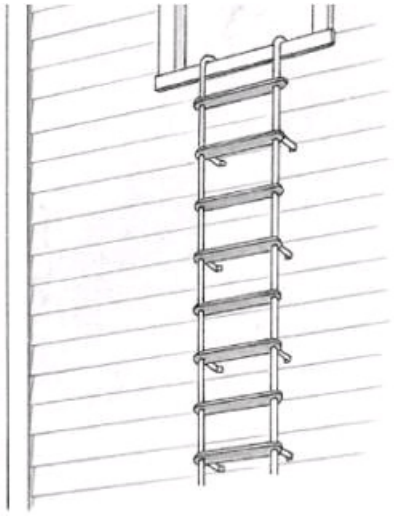
For a ladder to work, you have to be able to get it (and yourself) through the window, so make sure your designated windows can be opened easily. Regardless, you might consider giving family members a lesson in how to break a window safely. A window should be broken from the top down, using something heavy and long enough to keep you well away from shattering glass. Sweep the glass from the base of the window and then cover the base with a blanket so you can get through it.

### FIRE PREVENTION

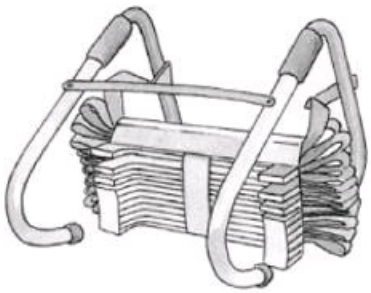
**PREVENTING FIRES IS** just as important as being prepared for them, if not more so. Set aside some time to take a walkthrough of your home, looking for potential fire hazards.

In the kitchen, be sure the area around the stove is clear of clutter. In my own kitchen I found a basket of napkins set far too close to my range top. If your stove has knobs on the front and you have small children, cover the knobs with childproof covers. Get all family members in the habit of setting pots with the handles facing toward the back of the stove so you can't knock a pan off as you walk by.

As you walk through your home, check all outlets and cords. Cords should never run under carpets. Outlets not in use should have plug covers. Electrical cords must never be nailed or stapled or frayed. Do not allow cords to be pinched by doors or drawers. Extension cords are not for permanent use. If you need extension cords or plug-ins that expand the number of outlets at a spot, you probably have too many things running on one circuit. Overloading outlets is never a good idea. If an outlet feels warm to the touch, stop using it and call an electrician.



FIRE LADDER IN ACTION



**FOLDING FIRE LADDER**

Check all heating units. Wood, propane, pellet, and coal stoves must be installed according to your local building codes and the manufacturer's specifications. Keep the area around these stoves clear of clutter. Open fires must be protected by a fireplace screen. If you have small children, keep them away from stoves and fireplaces with a sturdy gate. Plan to have your chimney cleaned by a professional every year before the beginning of the heating season.

In the laundry room, check your dryer for accumulated lint, both in the lint trap and in the drum. Gas dryers should have the flexible gas line that is checked for leaks and damage every year. Do not store combustibles next to your dryer, and don't run your dryer when you are not home. Do not dry rags that have been used with cleaning solvent in a dryer.

Outside, locate grills at least three feet from walls, and keep a three-foot kid-free zone around them. If you have a fire hydrant on your property, keep the area around it free of snow in the winter, and brush and clutter in good weather. Make sure that your house numbers are large enough to be easily read from the street.

Children playing with matches still cause many fires. Keep lighters and matches in a designated spot well out of reach of curious little ones. Do not allow candle or incense burners to be used in children's bedrooms, and use them in the common areas only when supervised by an adult.

## FIRE EVACUATION PLANS

**DEVELOP AND PRACTICE** a fire evacuation plan with your family. Have at least two means of egress, whether by door or by window, from each room in your home. Have family members practice escape by both routes, so they know what to do and so you can be certain that windows are not stuck and that screens can be easily removed. Have your children listen to the smoke detector go off, so they know what it sounds like.

Having an evacuation meeting spot, such as a neighbor's porch or a nearby large tree, will ensure that you don't have to look for a family member who is already safely outside the house. Make sure everyone in the family knows the designated meeting spot, and make sure everyone meets there during your practice drill.

If anybody, such as a small child or elderly person, will need help exiting, assign one competent adult to that person. Precious moments can be lost if everyone does not understand exactly what his or her role is in an evacuation.

Teach your children basic fire escape safety. In the event of a fire:

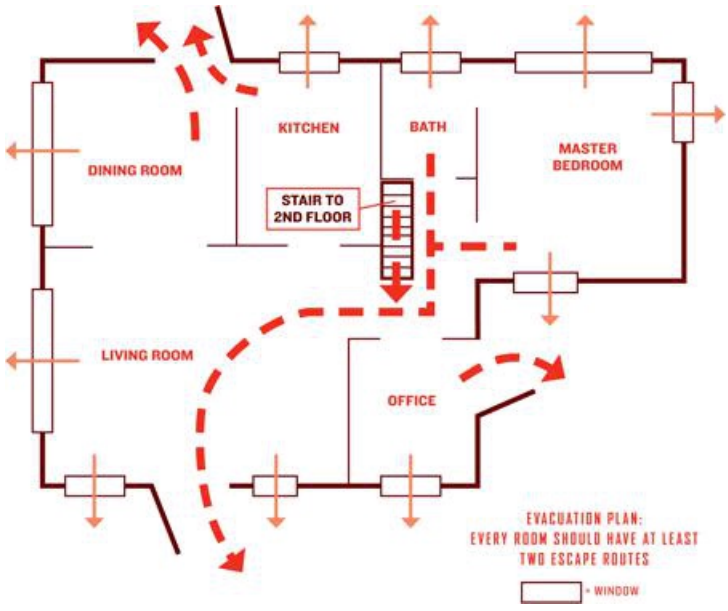
- They should feel doors before opening them. If a door is hot, they should not open it. If smoke or heat comes in when they do open the door, they should shut it immediately and use another exit.
- If they must escape through smoke, they should stay as low as possible, since smoke and heat rise and the area closest to the ground will have the best air.
- If their clothing catches on fire, stop, drop, and roll. If they see someone else whose clothing is on fire, they should cover that person with a blanket and help them to drop and roll.

## NIGHTTIME ROUTINES

Every night, pick up toys, clothing, and clutter from bedroom floors. You shouldn't have to navigate an obstacle course to get your kids safely out of the house. Have everyone keep a pair of shoes or slippers next to his or her bed, as well as a flashlight.

Take children on a fire-station field trip, or arrange for such field trips through their schools. Kids should be familiar with the look and sound of firefighters in full gear and be taught not to hide from them.

Finally, all family members must agree that once you are out of a burning building, you stay out. Let the fire fighters do any necessary search and rescue missions.



# CHAPTER 12 NATURAL DISASTERS

The natural forces that sustain us are at times capricious. The warmth of summer, so delightful here in the Northeast, can become extremely dangerous during a heat wave. The waters that irrigate our lands can rise from their banks and flood us from our homes. The winds that carry the weather can turn into violent maelstroms of tornadoes and hurricanes. The very earth beneath our feet can move and shake and quake.

Though they are reported so widely that seldom a day goes by without some news story about death and destruction due to natural disaster, severe weather events are actually rather rare. If you have established a good preparedness program, as outlined in the preceding chapters, you will be in good shape to manage severe weather and its effects. And if you take the time now to evaluate which, if any, of the natural disasters we discuss in this chapter are likely to occur in your area, you can take steps to prepare and protect your household.

A note about terminology: When local and national agencies issue warnings about possible dire weather, they do it in two stages. A watch means that a weather event is possible in your area. This is your signal to get ready to take action. A warning means that a weather event is occurring or will occur soon in your area. This is your signal to take action, whether by seeking shelter or evacuating.

## EXTREME HEAT

**EXTREME HEAT, WHETHER** for a period of a few hours or extending over many days, is quite dangerous, especially for the very young, the very old, and those with chronic health problems. In fact, heat kills more people each year than hurricanes, tornadoes, or winter storms combined.

## SURVIVING THE HEAT

When the temperature rises, there are a few steps you can take to beat the heat:

- **Drink!** Drink cool water, even if you don't feel thirsty. Avoid alcohol and caffeine.
- **Eat lightly.** Eat smaller, more frequent meals rather than a few large ones.
- **Avoid sunburn.** Protect yourself from sunburn by wearing loose, light-colored clothing and a wide-brimmed hat. Having an insulating layer of air between you and the hot outside air will keep you cooler than removing all your clothing. Apply sunscreen before going out; applying it thirty minutes beforehand will ensure that it offers the utmost protection.
- **Stay cool.** If you don't have air-conditioning at home, head out to find it. Malls, libraries, and other public air-conditioned spaces can be good places to hang out when it's sweltering outside.
- **Take it easy.** Avoid strenuous activities, or limit them to the early morning or late evening when temperatures are slightly cooler. Do not take salt tablets unless advised by your physician.
- **Transit alerts!** Never leave children or pets in a closed vehicle. Temperatures can climb from 78°F to l20°F in under 8 minutes. And keep extra water in your car in case you're stranded.

## HEAT-RELATED AILMENTS

Extreme heat can cause medical problems that require immediate intervention. Being aware of these symptoms and knowing how to respond can save a life.

### SUNBURN

The seriousness of a sunburn is determined by its depth, its size, and its location on the body. Sunburn is always serious in an infant or small child and in the elderly.

Symptoms: Skin redness and pain, possible swelling, blisters, fever, and headache.

Treatment: For mild sunburns, take a cool shower, using soap to remove oils that may block pores and prevent the body from cooling naturally. If there is blistering on the skin, apply a dry, sterile dressing and seek medical attention, as burns are prone to infection.

### HEAT CRAMPS

Heat cramps are often the first signal that the body is having trouble with the heat.

Symptoms: Muscular pains and spasms, usually in leg and abdominal muscles, and heavy sweating, due to heavy exertion.

Treatment: Get the victim to a cooler location. Lightly stretch and gently massage the affected muscles to relieve spasms. Give sips of up to half a glass of cool water every fifteen minutes. (Do not give liquids with alcohol or caffeine.) Discontinue liquids if the victim feels nauseated.

### HEAT EXHAUSTION

Heat exhaustion typically occurs when people exercise heavily or work in a hot, humid place where body fluids are lost through heavy sweating. Blood flow to the skin increases, causing blood flow to vital organs to decrease. This results in a form of mild shock. If not treated, the victim's condition will worsen. Body temperature will keep rising, and the victim may suffer heat stroke.

Symptoms: Heavy sweating, but the skin may be cool, pale, or flushed. Weak pulse. The victim may have a normal body temperature, but his or her temperature is likely to rise. Fainting, dizziness, nausea, vomiting, fatigue, and headache are possible.

Treatment: Have the victim lie down in a cool place. Loosen or remove clothing. Apply cool, wet cloths. Fan, or move the victim to an air-conditioned location. Give the victim sips of cool water, up to half a glass of water every fifteen minutes. Be sure the water is consumed slowly. Stop administering water if the victim feels nauseated. Seek immediate medical attention if the victim experiences vomiting.

### HEAT STROKE

Heat stroke, also known as sun stroke, is a life-threatening condition. The victim's temperature control system, which produces sweating to cool the body, stops working. Heat stroke is a true medical emergency.

Symptoms: High body temperature (105+); hot, red, dry skin; weak, rapid pulse; and rapid, shallow breathing. The victim will probably not sweat, unless he or she was already sweating from recent strenuous activity. He or she may become unconscious.

Treatment: Call 911 or emergency medical services, or get the victim to a hospital immediately. Delay can be fatal. In the meantime, move the victim to a cooler location, preferably air-conditioned. Remove clothing. Bathe in cool water — by immersion, by sponging, or by wrapping in a cool, wet sheet — to reduce body temperature. Fan. Watch for breathing problems.

### WINTER STORMS AND EXTREME COLD

**WINTER STORMS AND** extreme cold are only a problem if you are not able to stay warm and at home. However, if the power goes out and you can't heat your home, or if you must take to the roads, a winter storm becomes a real problem.

At home, preparation begins well in advance of an approaching storm. In fact, getting ready for a storm is the heart of all family emergency preparedness. Can you keep your family warm? Will you have light to see by? Can you manage a medical crisis? Can you prepare warm, nutritious meals if the power is out for several days?

The winter of 2006-2007 saw ice storms that crippled much of the country for weeks on end. Many families had to seek refuge in crowded, uncomfortable shelters. If you're reading this book, I assume you would rather stay at home in that situation. Your options come down to how well you've prepared.

#### IF YOU LIVE IN AN AREA OF THE COUNTRY WITH EXTREME WINTER WEATHER :

- Have an energy audit of your home done. This will show you where your energy leaks are. It will be easier to heat your home with an alternative heat source if it is tight.
- Have a supply of well-maintained shovels and ice picks on hand.
- Keep a bucket of sand and a small shovel near your main exit door.
- Make sure your general preparedness program is in place.

#### IF A SEVERE WINTER STORM IS IMMINENT:

- Check your emergency stocks and replace as needed, but be forewarned: Everybody else will be getting ready too. The shelves at your local market will be quickly depleted of candles, bottled water, batteries, and canned soups. It's best to stay up-to-date with your OAR (organize, acquire, replace) program on a regular basis, so that you're well stocked at all times and don't have to scramble when a storm is forecast.
- If any family members have special needs, such as prescription medicine or diapers, make sure you have an adequate supply.
- In anticipation of the power going out, consume the most perishable foods in your refrigerator, saving nonperishables for future use.
- Most important, if at all possible, plan to stay at home. Storms are unpredictable and can begin several hours ahead of the forecasted arrival time.

#### DURING A SEVERE WINTER STORM:

- Stay warm. If your heating system is not up to the task of heating the entire home, congregate the family in the warmest part of the house. Dress in layers.
- If plumbed areas of your home are cold, make sure your pipes don't freeze. See page 106 for more information.
- Remove snow from the entrances to your home before it has a chance to build up. It is easier to remove six inches of snow several times than it is to remove two feet of snow at one time. The only time you might let the snow build up some is if the forecast calls for a switch to freezing rain. In that case, leaving a layer of snow on hard surfaces, such as steps or porches, will make the ice easier to remove.
- If you have a fire hydrant in your yard, keep the area around it clear of snow.
- If the power goes out, follow the guidelines in chapter l0.

#### IF YOU MUST GO OUT DURING A STORM:

- Dress in several light layers. The air trapped between layers serves as insulation, keeping you warmer than a single heavy layer. Always wear a hat, as most of your body heat is expelled from your head.
- Extreme cold can lead to dehydration. Be sure to drink an ample amount of fluids.
- Do not drink alcohol, as it will depress your central nervous system; you may feel temporarily warmer as the blood vessels close to the surface of your skin expand, but that will draw heat away from your core, resulting in an overall cooling. Instead, drink warm beverages such as tea, bouillon, or cocoa.

• Watch exposed skin for signs of frostbite, including a loss of sensation and a white or pale appearance, especially in the extremities such as fingers, toes, earlobes, and the tip of your nose.

• Watch for signs of hypothermia, including uncontrollable shivering, disorientation, incoherence, slurred speech, and drowsiness. Hypothermia can set in after just twenty minutes of extreme cold.

• If you're on foot and visibility is extremely poor, rope yourself to your companions or to your base of operations, such as your house, so that you can find your way back.

• If you intend to drive (which you should do only if you absolutely must), make sure your car has an emergency kit (see page 88), full winter gear for everyone who will be in the car, and a full tank of gas.

### AFTER THE STORM:

• Check on neighbors, especially the elderly or infirm.

• When you're shoveling out, don't take on more than you can handle. Heart attacks can be brought on by the exertion of snow removal, especially if you're not used to that much exercise.

• If electric or phone wires are down in your area, call your local power company or police department. Do not approach them yourself, and keep your kids away from them as well.

## FLOODS

**THE SUMMER OF** 2007 saw much of England under water as a month's worth of rain fell in less than an hour. The problems of so much water went beyond the loss of property. Water supplies were contaminated; many thousands of people were many days without power; and people died in flash floods because they made bad decisions, either through panic or a lack of knowledge.

Flooding is probably the most commonly occurring natural disaster. Flooding can affect one home, a neighborhood, or an entire region. A severe flood, such as the one in England, can make entire communities unlivable, shut down vital businesses and services, destroy crops, and put people at risk for serious illness.

Flooding develops in several ways. It can build slowly, for example, as steady rains cause rivers to overflow their banks or a hurricane pushes ocean water far inland. It can also develop quickly, as in the case of a flash flood, a sudden, dangerous, moving wall of water that can occur when a dam breaks, a levee is breached, or sudden, torrential rain cannot be absorbed by already saturated land. Flash flooding is the most dangerous, because it can happen with little warning and even without sign of rainfall. You have to be prepared to act quickly to get yourself and your family out of harm's way.

### FLOOD INSURANCE

One important piece of information that you must be aware of is that regular homeowner's insurance does not protect against losses due to flood. You must purchase flood insurance separately. This will be very expensive if you live in a flood-prone area. There is a national flood insurance program that you can access through your local insurance agent or your emergency management office. There will be a thirty-day waiting period before coverage kicks in, so don't wait to look into it. For more information go to www.fioodsmart.gov.

Every region in the country has some flood risk, but the most significant risk is to those areas that are very low-lying, downstream from a dam or levee, in a coastal area, or in a river basin. Even a very small stream or dry riverbed can turn into a wall of water under the right conditions.

Obviously, there will be times when you will have the luxury of securing your home and belongings to minimize the effects of a flood; other times your only concern will be getting yourself and your loved ones to safety as quickly as possible. The essence of family preparedness is to take steps now, when the sun is shining, to protect your family.

### IF YOU LIVE IN A FLOOD-PRONE AREA:

• Make sure you are fully prepared for evacuation, as described in chapter 9. Make sure your planned evacuation routes take you to high ground, rather than through low-lying areas.

• Make sure you have copies of all vital records and an inventory of your household goods and valuables stored in a safe place, such as a safe-deposit box or in the care of a relative or friend in a distant location (see page 52). Do the same with your treasured photographs.

• If your furnace, hot water heater, and electrical panel are in your basement, elevate them if possible.

• Install a check valve in any sewer traps to prevent flood water from backing up into the drains of your home.

• Be sure you know the location of all electrical panels and gas and water shut-off valves and how to shut them down, as described in chapter 9. Local authorities will notify residents if such a shut-off is necessary in an emergency.

• Make sure you have a hand cranked radio that receives NOAA weather alerts.

• Pay special attention to storing water, as flooding can contaminate tap water.

• Prepare sandbags and have them ready to position if high water threatens.

### IF A FLOOD WATCH HAS BEEN ISSUED, MEANING FLOODING IS POSSIBLE IN YOUR AREA:

• Stay tuned to your NOAA station or a local radio or television station for emergency updates.

• Make sure your car has a full tank of gas.

• Place your evacuation kits in your car or by the front door.

• Bring in outdoor furniture and move essential or irreplaceable items to an upper floor.

• Remember: When in doubt, evacuate! You can always return home, but you may have only a small window of opportunity to get to safety.

**IF FLOODING OCCURS AND YOU MUST LEAVE YOUR HOME:**

• Wear sturdy boots, preferably high rubber boots.

• Watch carefully for downed electrical wires. Do not approach them, and do not approach any water into which a downed line has fallen.

• Never walk through moving water. Even six inches of moving water can topple an adult. If you must walk through standing water, probe the area in front of you with a long stick or broom handle for hazards.

• Never drive into a flooded area. You do not know what the surface is like under the water.

• If flood waters rise around your car, abandon the car and move to higher ground. Six inches of water will reach the bottom of a passenger car. Your car may then stall and you can quickly become trapped. Only one foot of water will float many cars. Two feet of rushing water will sweep away even a heavy SUV or pickup truck.

**AFTER THE FLOOD:**

• Do not drink from your municipal water supply or from well water from a flooded area until you know it is safe.

• Avoid standing water. It will likely be contaminated with raw sewage. It is even possible that downed power lines may cause standing water to be electrically charged.

• Approach all animals with extreme caution. Fear may cause even normally docile pets to become aggressive.

• Stay out of a building that has been surrounded by floodwaters. The foundation could be damaged and the whole structure unsafe.

• Do not return home until local authorities have declared it safe to do so.

• Clean and disinfect everything that got wet before using it. A ten-to-one water/bleach solution can be sprayed on colorfast, solid surfaces. Wash clothing and other fabrics in hot water with a strong detergent. Dry at the highest temperature possible.

**WILDFIRES**

**THE WILDFIRES THAT** ate through much of California in the summer of 2007, causing more than a dozen fatalities and destroying many homes, serve to remind us that wildfire is a very real danger in today's environment. Though wildfires tend to be common only in certain areas of the continent — and if you live in one of these areas, you're sure to know it — they are possible just about anywhere. You are particularly vulnerable to wildfires if your house is located on a wide expanse of open field or in a remote location with abundant vegetation. Nevertheless, wildfires spread so quickly, especially in hot, dry, windy conditions, that even living in the suburbs is no guarantee of protection.

**SAFE BURNING**

Most wildfires are triggered by lightning or accident, but an unfortunate number are caused by a disregard of local burning ordinances. No matter where you live, follow local fire and burning laws. These laws were designed not to make your life more difficult but to protect homeowners and property.

When you do burn, make sure you have a fire extinguisher or garden hose on hand. And always have two adults present. One can burn and the other can watch to ensure that no flames escape. If you have a problem, one person can stay to fight the fire, if he or she can safely do so, and the other can summon help.

**IF YOU LIVE IN AN AREA AT RISK FOR WILDFIRES:**

• Make sure the entrance to your home has appropriate, easy-to-see signage so emergency vehicles can find you if necessary.

• Keep your lawn trimmed. Rake and dispose of leaves, lawn trimmings, and brush piles. Do not allow dead limbs to accumulate.

• Stack firewood well away from your home.

• Thin trees and brush within thirty feet of your home. Beyond that, remove dead wood and low tree branches.

• Plant fire-resistant vegetation. Check with a local nursery for appropriate choices. In general, evergreens are more likely to burn than hardwood trees.

• Ensure that water sources such as swimming pools, ponds, and fire hydrants are accessible to firefighters.

• If you're building, consider using brick, stone, and metal, which are noncombustible.

• Cover all exterior vents and eaves with J^-inch metal mesh screens, which can keep sparks out.

• Consider installing fireproof shutters to protect your windows from radiant heat.

• If you have attic or ground vents, obtain covers for them. You can purchase premade covers or you can cut them from plywood.

• Be particularly careful of storing flammable items. Keep them in appropriate containers in a shed or outbuilding at least thirty feet away from your home and other wooden structures such as fences.

**IF YOUR HOME IS IN THE PATH OF A WILDFIRE, TAKE THE FOLLOWING STEPS, IF TIME PERMITS:**

Fire travels fast and can be unpredictable. Err always on the side of caution.

• Shut off gas at the meter. (Note that you will need to call a qualified technician to have it turned back on later.)

• Seal attic and ground vents with covers.

• Turn off propane tanks. If you have a gas grill, position it well away from your residence, preferably in a distant shed.

• Connect your garden hose and lawn sprinklers. Turn them on and position them to wet your roof and fuel tanks.

• Wet shrubs near your home or cut them away.

• Open the fireplace damper but close the screens. Close windows and doors. Take down any combustible drapes.

• Move furniture to the center of rooms, away from windows. Close all interior doors and vents. Your object is to slow the spread of fire as much as possible.

• Pack your evacuation kits in the car, along with any other essentials. Corral your pets so that you can grab them on a moment's notice. Park your car facing the street, with the garage door open, and keep the keys in your pocket.

• Heed calls for evacuation. Drive away from the fire, keeping your eye on changes in wind speed or direction.

If you find yourself trapped by a wildfire, a pool, pond, stream, or any large body of water will be the safest location. Submerge yourself as much as possible in the water. Place a wet cloth over your face to protect your nose, mouth, and eyes from smoke.

### THUNDERSTORMS

**THUNDERSTORMS MAY NOT** have the drama of hurricanes or tornadoes, but they can still be very dangerous. They can reduce visibility, making driving hazardous. They produce lightning, which is a very real hazard; each year, an average of 300 people are injured by lightning, and about 80 people a year die from lightning strikes. Thunderstorms can also cause flash flooding.

Thunderstorms occur primarily in warm, humid weather in the late afternoon. They may occur singly or in a cluster. Though thunderstorms may occasionally affect one location for an extended period of time, they typically produce heavy rain for less than an hour. About 10 percent of thunderstorms are classified as severe, meaning that they have winds of 58 mph or higher and often are accompanied by large hail.

Lightning, the most dangerous part of a thunderstorm, may occur as far as ten miles away from any rainfall. Heat lightning is actually the lightning from a thunderstorm that is too far away to be heard. However, pay attention to it, because the storm may be moving in your direction.

There is often little time between when a watch changes to a warning and when a storm actually hits. Treat a watch like a warning and take necessary steps to protect yourself and your family as soon as one is issued.

### IF A THUNDERSTORM WATCH IS ISSUED:

• Get inside, if possible.

• If you are in your car, stay in it. Your car will provide some protection from lightning. Contrary to popular belief, it is not the rubber tires that provide protection, but rather the steel frame, as long as you're not touching metal.

• If you are in a forest, look for shelter in a low area or in a thick growth of small trees.

• If you are stranded in the open, find a low place, such as a valley or ditch, but be alert for flash floods.

• Do not stay in open water. Get to land, and find shelter immediately.

• Avoid natural lightning rods such as isolated tall trees, any open area such as a beach or field, small structures in open areas such as a boat on the water, or anything metal such as golf clubs, bicycles, and metal-framed backpacks.

• Close windows and doors.

• Avoid showering or bathing. Plumbing and bathroom fixtures can conduct electricity.

• Avoid corded telephones. Cordless and cellular telephones are safe to use, but a corded telephone can conduct electricity and should be used only for emergencies.

• Unplug televisions, computers, air conditioners, and other home electronics to protect them from a power surge that can occur with a lightning strike.

• Prepare for a power outage by assembling your emergency supplies.

• Stay tuned to your NOAA weather radio or local radio and television stations for updates.

If lightning is striking near you, crouch low to the ground, make yourself the smallest possible target, and minimize your contact with the ground. Do not lie flat.

If you have been hit by lightning, get medical attention, even if you are feeling well. Lightning strikes can disrupt heart rhythms and cause burns that can become infected.

### LANDSLIDES

**LANDSLIDES CAUSE ROCK,** earth, or other debris to move down a slope. A landslide can be large or small. Its descent may be quite slow and then suddenly accelerate. Slides can be caused by a number of things, such as storms, earthquakes, and soil erosion. Sometimes the debris becomes saturated with water during a storm or in a rapid snowmelt. As the flow moves, it picks up speed and can accumulate huge amounts of debris.

The best defense is a good offense. Do not buy or build a home located at the base of a steep slope or in a natural erosion valley. Check with a professional if there is a question about your site's vulnerability to landslides.

Landslides are often preceded by warnings. These include changes to the landscape, such as small slides, leaning trees, and obvious signs of storm-water drainage. Ground at the base of a slope may begin to bulge. Fences, walls, trees, and utility poles begin to tilt. In your home, doors and windows beginning to jam or new cracks in the walls may indicate a shift in the foundation. Widening cracks may appear in paved surfaces. All of these changes can signify dangerous ground shifts. If you see any of these indications, contact local authorities. Early intervention can lessen the impact on your property and even save your life.

If a slide begins, you may hear a rumble as it approaches, and the ground may begin to slope or shift. If you notice these signs, evacuate to a safe location until engineers assess the safety of the location. If there is time, shut off utilities if instructed to do so.

### TORNADOES

**TORNADOES ARE ONE** of nature's most violent weather events. A tornado is a rapidly rotating tunnel of air that extends from the bottom of a thundercloud and drops to the ground. The whirling winds can reach speeds of 300 miles per hour. When tornadoes occur over open water, they are called waterspouts.

A tornado can be nearly transparent until it has picked up enough ground debris to look like the dark funnel you see on television. It may touch

down on the ground for a minute, for several minutes, or not at all. The devastation is unpredictable. Some tornadoes seem to jump around, leveling one street and leaving houses on the next block untouched. Tornado paths can be over a mile wide and fifty miles long.

Every state has some risk for tornado activity, but the areas of greatest risk are east of the Rocky Mountains during the spring and summer. In the north, a tornado is most likely in late spring and early summer. In the southern states, March through May is the most active time. And though late afternoon into early evening is the most likely time to see a twister touch down, it is important to note that one can occur any time.

Certain phenomena have been associated with tornadoes. The winds may die down and the air become unnaturally still. The sky will darken and may appear greenish. There is often a large, dark, low-lying cloud visible on the horizon and large hail. An approaching tornado may sound like a freight train. If you notice any of these signs, prepare to take cover immediately, even if a warning has not been issued. Tornadoes require you to make split-second life-and-death decisions. Being prepared mentally as well as physically will take you a long way toward staying safe.

- Hold tornado drills with your family. Know exactly where you will go should a tornado threaten.
- Take a first-aid course. Consider additional training such as EMT or first-responder classes.
- If you do not have access to a storm cellar, prepare a safe room (see page 135).

Devise a good family communication plan (see chapter 5).

- Contact your children's school to obtain its emergency plan to shelter in place. If the school does not have such a plan, petition the school board to put one in place.
- Check with your place of employment to obtain its emergency plan to shelter in place.

### IF A TORNADO WATCH IS ISSUED:

- Keep your emergency pack at arm's reach.
- Avoid places with large expanses of flat roofing, such as malls. These can collapse under the assault of high winds.
- Bring in outdoor furniture and toys that can become airborne in high winds.
- Carry a flashlight and a whistle on your person. These can be used to signal for help if you are trapped in a building and need assistance.
- Gather family and pets and prepare to go to your shelter or safe room.

### IF A TORNADO WARNING IS ISSUED:

- If you are in a building such as your home, a school, or a store, go to the designated shelter area. This might be a basement, storm cellar, or safe room. If there is no basement or designated shelter, go to the center of an interior room on the lowest level, away from windows, doors, and outside walls. A closet, interior hallway, or bathroom might work. Your goal is to put as many walls between you and the outside as possible. Get under a heavy piece of furniture if you can. Protect your head (and small children) with a thick blanket or several towels.
- If you are in a car, truck, trailer, or mobile home, don't try to outrun the tornado in your car. Get out immediately and seek shelter in the nearest sturdy building or storm cellar. Mobile homes and vehicles offer little protection from tornado-force winds. They tend to roll over easily.
- If you are outside and no shelter is available, lie as flat as possible in a ditch or depression, and cover your head with any clothing or material you can find. You are actually safer in a low, flat area than you are under a bridge or overpass.

### AFTER A TORNADO:

- Call 911 to alert authorities to the location of the tornado.
- Do not use any appliance, including the phone, if you smell gas.
- Use the phone only for emergency calls.
- Check on your neighbors, but exercise caution when entering buildings. The high winds of a tornado may make them structurally unsafe.
- Take pictures of any damage for insurance purposes.

## HURRICANES

**A HURRICANE IS A** low-pressure weather system that forms in the tropics. In the northern hemisphere, a hurricane comprises a severe thunderstorm accompanied by a counterclockwise circulation of air near the earth's surface. Hurricanes often spawn tornadoes and cause coastal flooding. The heavy winds and torrential rains account for significant property damage and take many lives each year.

All Atlantic and Gulf Coast states are subject to hurricanes, although the more southern states are at highest risk. Hurricane season begins in June and runs through November, with the peak season from mid-August to late October.

Hurricanes are rated 1 through 5 based on their strength, with a category 5 hurricane being much stronger than a category 1. But hurricanes gain and lose strength as they travel over land or open water, and a particular storm's strength may rise and fall as it moves. The hurricane that was a category 2 one day can be a category 4 a day later. Another thing to keep in mind is that, although the big category 3s and 4s are the ones we tend to remember, even a 1 or 2 can be deadly if you are in the wrong place or don't take the recommended precautions.

If you live in hurricane territory, take steps to secure your property and plan for possible evacuation and power disruptions well before storm season.

- Make preparations to protect your windows. Storm shutters offer the best protection, but you can also board up windows with to 7/16 to ½-inch exterior-grade marine plywood. Cut a piece of plywood to fit each window, and label it with indelible marker or paint so you know which piece fits which window. Depending on your home's construction, lay in a supply of double-headed nails, wood screws, bolts, or wood or masonry anchors, with any nuts or washers you may need for installing the plywood covers. Keep the plywood in a dry place, and consider painting or staining to further protect it from moisture. Have all these supplies ready well in advance of any storm warning.
- Prepare a safe room (see page 135).
- Be diligent about keeping your property in good condition. Inspect trees and shrubs for weak or damaged limbs, and remove any you find.

Also remove brown fronds and seed pods from palms. Don't leave the debris lying around. It could be a hazard in high winds.

• Pay special attention to storing water, nonperishable food, and dry goods such as batteries, matches, and candles. Prior to a storm there will be a run on these items, and immediately after a storm they may be completely unavailable.

• Have a plan for evacuation (see chapter 9), with a destination at least fifty miles inland. Make sure you include pets in your plan.

• Keep your car in excellent condition and equipped with emergency supplies (see chapter 8).

• Review your insurance paperwork to make sure that you have flood insurance. Flood insurance is not part of most regular homeowners' policies. Many people who thought they were covered for flood damage after Hurricane Katrina found out the hard way that they had no coverage for their damages. See the box on page 122 for more information.

• Hold family hurricane drills.

**IF A HURRICANE WATCH IS ISSUED:**

• Fill your car with gasoline. Put your evacuation packs in your car, and keep the keys in your pocket. Park your car facing the street, with the garage door open.

• Clean rain gutters and downspouts.

• In anticipation of the power failing, clean out your refrigerator and freezer and turn them to their lowest temperature setting. Eat any perishable food.

• Store as much drinking water as possible. Fill bathtubs and sinks if you don't think you have enough water on hand.

• Tune in to local radio or television for updates. Storms often change course, and landfall times and locations can change suddenly.

• If you are considering evacuation, do it now, well in advance of an emergency order, when the roads are less congested.

**IF A HURRICANE WARNING IS ISSUED:**

• Listen to your NOAA radio or tune in to local TV for information.

• Close shutters or board up windows. Move all outdoor loose items and equipment indoors. These include birdbaths, birdhouses, hanging plants, awnings, toys, and outdoor furniture.

• Turn off utilities if authorities instruct you to do so.

• Avoid using the phone except for serious emergencies.

• If you have a pool, shock it with a heavy dose of chlorine to reduce the risk of contamination if you are unable to care for it in the aftermath of a storm. Some people throw their lawn furniture into their pools to keep it from blowing away. It is okay to do this and certainly quicker than carrying it piece by piece into the house or garage, but remove it promptly after the storm to prevent rust marks from the steel parts from staining your pool liner. Do not lower the pool's water level before a storm; it won't help and may permanently damage the pool pump if the water falls below the level of the skimmer.

• Let family members know where you will go if you have to evacuate, and follow the general guidelines for evacuation given in chapter 9. If you expect a storm surge, take important documents and possessions to the highest point in the house.

**EVACUATE IF:**

• The authorities direct you to do so.

• You are uncomfortable remaining at home.

• You live on the coast, near a river, or on an inland waterway.

• You live in a mobile home, RV, or shoreline shelter.

• You live in a high-rise building.

• You or a family member has a special need that puts you at greater risk if power should go out.

**IF YOU DO NOT EVACUATE:**

• Stay indoors. A hurricane is not a spectator sport.

• Close all interior doors. Secure external doors.

• Take refuge in an interior room, closet, or hallway on the lowest level of your home or in your safe room (see page 136). If you do not have a safe room, get on the floor under a table or heavy piece of furniture.

• If the winds die down, remain inside. This could be the eye of the hurricane, and if so, the winds will pick up again.

**AFTER THE STORM:**

• Listen to the radio for weather and news updates.

• Check on your neighbors.

• Snakes and other animals may have been driven to higher ground when the water level rose. Be alert for their presence.

• Normally docile animals may become aggressive after a hurricane. Approach all animals, even familiar ones, with caution.

• Open windows and doors to aid in drying out your home.

• Take pictures of damage for insurance claims.

• Drive only when necessary. Emergency vehicles will be on the roadways. Avoid any flooded roads.

• Check for gas leaks. If you smell gas or hear the hissing sound of gas escaping, turn off gas at the outside source and leave home to call for assistance.

• If you see any downed power lines, report them to your local power company or police. If you see sparks or broken wires at your own home, turn off the electricity at your main electrical panel.

• If you suspect sewer lines have been damaged, call a plumber. Do not drink tap water until authorities tell you it is safe.

• If you have a pool, remove any debris and rebalance the chemicals. If there is any chance that your pool has been contaminated with salt water, call a pool service company for assistance.

### EARTHQUAKES

**AN EARTHQUAKE IS** a sudden heaving motion of the earth caused by the release of pressure that has accumulated in a tectonic plate beneath the earth's surface over a long period of time. If the resulting earthquake occurs in a populated area, it can cause many deaths and injuries and extensive property damage. In August of2007, an 8.3-magnitude earthquake devastated several small villages outside Lima, Peru. The most tragic sight was of families waiting in long lines for a single piece of bread in the days following the quake. Because all roads were heavily damaged, relief workers had not been able to reach most survivors. People slept in the open because they were afraid of aftershocks further damaging their homes. It really spoke to me about the importance of having an emergency pack at the ready to see you through those first critical days. A tube tent, essential medication, and some nonperishable food would have made such a difference to those people.

We often think of earthquakes as happening only in areas of known faults, but there are faults all over the world. Just because a quake has never struck where you live does not mean one will never hit there. That said, if you live on a known fault line, there are several steps you should take to protect your family and your property.

• Bolt down or secure to wall studs your water heater, refrigerator, furnace, and other heavy appliances. Do this also with top-heavy furniture such as armoires, entertainment centers, and bookcases.

• Equip all cabinets with childproof locks to keep them from opening during a quake.

• Fasten mirrors and large picture frames securely to wall studs. Do not place items such as these over sleeping spaces.

• Store breakable items on low shelves or in cabinets that fasten shut.

• Avoid chandeliers, which are more likely to break free than securely anchored flat light fixtures.

• Have a contractor ensure that your residence is securely anchored to its foundation.

• Be certain your property is in good condition with up-to-date wiring and utility connections. You might consider having a technician install an automatic gas shut-off valve that is triggered by the strong vibrations of a quake.

• Locate a safe spot to weather out an earthquake in each room. This might be under a piece of heavy furniture or against an inside wall. Make sure your family members know them all.

• Hold earthquake drills with your family.

#### IF YOU ARE INDOORS:

• Take as few steps as possible to a safe spot, such as underneath a heavy piece of furniture or against an inside wall, preferably in a corner.

• Crouch down and cover your head with whatever is available. Avoid windows, mirrors, and exterior walls.

• If you are in bed when a quake hits, stay there, covering your head with a pillow.

• Stay inside until the shaking stops. Most injuries occur when people are hit by debris as they enter or leave a building.

• As in most emergencies, do not use elevators. If the power goes out, you will be trapped.

If an earthquake occurs and you are outside, stay put. Do not seek shelter in a building. In fact, move as far from buildings, utility poles, and large signage as possible.

If you are in a vehicle, pull to the side of the road and stay in your car. Do not stop under bridges or near trees, buildings, or utility poles. Proceed carefully after the shaking has stopped. Roadways and overpasses may have structural damage.

#### IF YOU BECOME TRAPPED IN DEBRIS:

• Do not use a match or lighter. Gas lines may have been ruptured. Lie still and try not to stir up dust and debris.

• Use a handkerchief or piece of clothing to cover your mouth to keep from inhaling dust.

• Avoid calling for help. Yelling may cause you to inhale dangerous amounts of dust. Use a whistle or bang on a pipe. Yell only as a last resort or if you hear rescuers calling for you.

#### AFTER AN EARTHQUAKE:

• Be prepared for aftershocks. Although usually less violent than the first quake, a secondary quake can still do considerable damage.

• Check on neighbors.

• Use care when reentering your home. Open cabinets with caution and do not use an open flame until authorities assure you it is safe to do so.

• Tsunamis are a possibility in coastal areas following earthquakes. Stay tuned to your local radio or NOAA station. Stay away from the beach until you are certain that it is safe.

• Stay off the roads except for emergency travel.

• Do not use the phone except in an emergency.

• Look out for downed electrical wires. If you see any, call your local power company or the police to alert them to it.

• Before entering your home, smell the air for the odor of gas. Also listen for the hiss of escaping gas. If you suspect a gas line has ruptured, turn off the main supply valve outside and notify the authorities. Do not call until you are well away from the house, as the use of any electrical

appliance can cause a spark that could set off a flash fire.

• Do not drink from your tap until authorities assure you that the water has not been contaminated from broken sewer pipes.

• Be mindful of animals. Even familiar, normally docile animals can be aggressive after an earthquake.

### TSUNAMIS

**NOT TOO LONG** ago, many people had never thought about the dangers of tsunamis, or tidal waves, a series of enormous waves created by an underwater event such as an earthquake, landslide, meteor strike, or volcanic eruption. Then tsunamis hit Indonesia, and our awareness changed. The death toll was staggering. Property damage was measured in the billions. The face of the landscape was forever altered.

Following an underwater earthquake, waves travel outward, like ripples in a pond. As the waves approach the shore, the water recedes, then rushes ashore, leaving many with no opportunity to escape.

All tsunamis are potentially dangerous. At greatest risk are those areas less than twenty-five feet above sea level and within a mile of the coast. The west coast of the United States has seen several tsunamis.

Aside from warnings through NOAA and local news and radio stations, you'll have little foreknowledge of a tsunami. However, if the water on a shoreline recedes from the beach in a notable way, take heed. This is nature's own early warning system. Seek higher ground immediately.

In all cases of tsunami watches or warnings, grab your evacuation pack and move to higher ground. Following a tsunami, stay away from flooded areas until officials advise you that it is safe to return. Debris in the water and the potential for disease may make it unsafe for some time.

### SAFE RDDMS

Shelter will be your most important consideration in any crisis. A safe room is shelter within shelter. It is an area in your home designed to provide additional safety in dangerous situations such as a chemical or biological attack, a nuclear accident, or natural disaster when you do not have the time to evacuate. In effect, a safe room buys that time, allowing a situation to stabilize while you remain in a safe location. In Florida, some luxury condominiums are requiring safe rooms in the construction process. The more people who can safely remain home during a nonmandatory evacuation, the fewer cars clogging the highways and the fewer families requiring shelter space. A win-win for everybody.

Where you decide to locate your safe room will depend upon what disasters you consider most likely.

### TDRNADD SAFE RDDMS

If You live in a tornado-prone area, your safest location will be in an underground area, either a storm cellar or your basement. The underground location will protect its occupants from strong winds and flying debris. This room should be equipped with a means of lighting, such as a kerosene, battery-operated, or hand cranked lantern, and a radio to keep you apprised of outside events. Bottled water, nonperishable snacks, and some seating will make you more comfortable. Make sure to keep a whistle and flashlight with you so you can signal for help if necessary.

If no underground space is available, the next best option is on a concrete slab floor such as a garage. The safe room must be properly anchored to the slab to resist the force of very strong, uplifting winds. An interior room on the ground floor of a permanent residence, not a mobile home, can also be used.

**FEMA** publishes a manual on building tornado safe rooms: *Taking Shelter fromthe Storm: Building a Safe Room Inside Your Home.* It provides detailed construction information.

### FLDDD SAFE RDDMS

If you live in a flood-prone area, you will want to utilize space on the highest level of your home. Unlike a tornado safe room, which may shelter you for only an hour or two, a flood safe room will need supplies to last for several days, along with a means of sanitation.

**Supplies should include:**

• Bottled water, juice boxes, and shelf-stable milk, as well as food that requires no cooking, such as nuts, dried fruit, energy bars, jerky, cereal, snack pudding, fruit cups, and canned meals. Be sure to include a nonelectric can opener.

• Radio

• Flashlight

• Lantern

• Leisure activities such as hand crafts, books, cards, and board games

• Toiletries

• Signaling device

• Hand tools that will allow you to cut through the roof, should escape through the roof become necessary

### HURRICANE SAFE ROOMS

Hurricanes have both the high wind of tornadoes and the high water of floods. Therefore, a safe room should be on the ground floor of a residence that is located well away from the area of storm surge. It should also be in an interior room with as few windows and exterior walls as possible. If there are exterior windows, it is imperative that they be shuttered or boarded up. You should have on hand supplies for at least twenty-four hours for the immediate crisis, in addition to supplies to see you through a two- to three-week period without power or other services. These supplies should be stored in watertight containers.

### TDXIC-THREAT SAFE ROOMS

Beyond natural disasters, a safe room can provide you with a secure location to hole up in during a time when exposure to the outside air would be hazardous. Only you can determine how vulnerable you are to a chemical or biological threat. If you live in an isolated, rural location,

you might justifiably assume your risk is minimal. If you live downwind of a chemical plant, you might feel the expense and inconvenience of equipping such a space is worth while.

First, determine a location. As with all safe rooms, the less exposure to the exterior walls and windows, the better. A bedroom with adjoining bath is ideal, as it takes care of both running water (if the water remains potable) and sanitary facilities. A phone line and television are good additions. Have l- to 6-mil plastic sheeting precut to fit every opening, including doors, windows, and all air vents. Also have a roll of weather stripping, duct tape, and scissors stored inside the room. If you get any notification to take shelter in your safe room, grab your evacuation packs and move to that space without delay. Close doors and windows and shut off heating or air-conditioning units. Seal door and window frames with weather stripping. Finish sealing room openings with plastic sheeting and duct tape.

In a well-sealed room providing ten square feet of floor space per person, carbon dioxide will begin to build up in less than five hours. However, after two to three hours, contaminated air from the outside will begin to leak in. At that point, you will need to evacuate. Here's where having a radio is imperative; listen to local stations for information on appropriate steps to take.

A HEPA (high emission particulate) furnace return duct filter will remove particles in the 0.3 to 10 micron range, which includes most bacteria. If you are worried about biological threats, such a filter could be useful, but it will not filter out chemical agents. If you don't have a central heating and air-conditioning system, a stand-alone unit can be purchased.

If you are concerned about sheltering from nuclear fallout, you'll need not a safe room but a shelter with dense shielding. This shielding is rated according to its PF (protective factor). The minimum suggested PF is forty, which means that one fortieth of radiation with get through, although many experts feel more comfortable with a PF of one thousand. Getting this level of protection requires two feet of concrete and three feet of dirt. This is not something to undertake without some planning and expertise. If you are interested in learning more on this subject, I would suggest reading Jack A. Spigarelli's excellent book, *Surviving Terrorism. Nuclear War Survival Skills* by Cresson Kearny is another good book, but it is very hard to find.

**SAFE ROOM KITS**

It is possible to construct a safe room from a kit. The price will run between $5,000 and $15,000. The smallest is four feet square, which is only large enough for one or two people and has very little space to store anything, to a roomy ten-foot by twelve-foot model. These rooms have ventilation systems, plumbing, and electricity. The interiors can be finished to the owner's specifications. Some are even bulletproof.

**CAUTION**

Do not let a well-designed, well-equipped safe room lull you into complacency. Tornadoes, floods, and hurricanes can all be killers. If you have any doubt about your safety, evacuate. You can always return home, but if you stay, you may soon reach a point when leaving is no longer an option.

# CHAPTER 13 TOXIC HAZARDS

The preceding chapter addressed natural disasters, but here we're going to talk about manmade disasters, specifically those resulting from chemical or nuclear accidents. Of course, given the state of the world today, our concern must address not just accidents but also attacks on chemical and nuclear plants, transportation mechanisms, and so on, and attacks with chemical and nuclear weapons. Though I hope none of us will ever need this information, I also hope that, should the time come that you do need it, you'll feel some measure of confidence in knowing what to do and what to expect.

## CHEMICAL HAZARDS

**CHEMICALS SURRDUND US**. They fertilize our crops, treat our water supply, and fuel our transportation system. Chemicals abound in our hospitals, schools, farms, and homes. Traces of toxins turn up in playground sand and mother's milk. It is nearly impossible to avoid all exposure.

Because of their abundance, I fear we have become a bit cavalier about them. In fact, chemical hazards pose a threat to our safety every day as they are transported across the country on our road and rail systems. Aging and hidden toxic waste dumps have been discovered around the world. In most homes, deadly poisons abound, even in places we don't expect them to be. Even something as seemingly benign as toothpaste can be toxic if ingested by a child. It is prudent to take steps to protect yourself and to know what to do if a family member is exposed to a toxin.

Preparation for a chemical emergency should begin at both the home and the community level. Check with your local emergency management office to see what hazards your community might be especially vulnerable to. In a small town, it could be your local fire department who has this information. Ask if your community has a local emergency planning committee. This committee has the responsibility for collecting information about potential risks and developing a plan to deal with them. If your community has no committee, consider forming one. Check with your child's school. Do they have a plan to shelter in place in the event of a chemical accident? If not, ask your school committee to develop one.

## PREPARATION

It is unlikely that you will have any warning about a chemical spill or accidental release. Therefore, you must be prepared to protect yourself well in advance. The first step is to prepare a safe room in your home (see page 135), complete with 6-mil plastic sheeting, duct tape, and scissors. The next step is to be sure you are fully prepared for grab-and-go evacuation (see chapter 9).

## IN THE EVENT …

There are two different scenarios to consider if you are in an area affected by a hazardous material incident.

### IF YOU ARE DIRECTED TO REMAIN IN YOUR HOME:

- Close and lock all exterior doors, windows, fireplace dampers, and vents. If the vents cannot be closed, such as range hood exhaust vents, cover the opening with a double sheet of 6-mil plastic sheeting and duct-tape the edges securely.
- Close as many interior doors as possible.
- Take your emergency packs into a safe room. This room should be above the ground floor and have few or no doors and windows opening to the outdoors.
- Seal this room off from the rest of your home with plastic sheeting and duct tape. Any holes or cracks in this room should be sealed with plastic sheeting and tape.
- Listen to your radio or tune your TV to local stations to keep informed about what is happening outside.

### IF YOU ARE ASKED TO EVACUATE:

- Gather your evacuation packs and leave immediately.
- While driving, turn off the air conditioner or heater and close all windows and vents if it is necessary to drive through or near the affected area.
- Stay in your vehicle until you reach safe shelter.
- As much as possible, stay upwind of the incident.
- Do not touch any suspicious liquid or solid deposit and avoid any obvious mist.
- Return home only after local authorities have assured you that it is safe to do so.

**IF YOU HAVE CHEMICAL CONTACT:**

- Place all clothing, including shoes, underclothes, and jewelry, in a tightly sealed bag. Insert this into a second bag and seal again. Contact authorities to be advised on how to dispose of them.
- Seek medical treatment.
- Pay close attention to how you feel. Symptoms from chemical exposure can appear long afterward. Seek medical attention for anything unusual, and be sure to inform your physician of when and to what you were exposed.

**CHEMICALS IN THE HOME**

A chemical emergency can happen from exposure in your own home. Most homes have a wide variety of toxins and hazardous materials that can pose a threat. Take these steps to reduce your risk of exposure.

- Take an inventory of your household chemicals. Be sure to include the less obvious hazards such as makeup, toothpaste, and flea collars. All three of these things are within arm's reach of a child and all are poisonous. When possible, seek out nontoxic replacements.
- Check the labels on all containers to be sure that you are using and storing the chemical properly.
- Store any chemicals in a safe, locked cabinet if you have children or if any ever visit your home.
- Buy only as much of any necessary chemical as you will use at one time if possible. It may be cheaper to purchase the giant size of something, but if you need to dispose of half of a can, it is no bargain. If you do have leftovers and want to dispose of them, contact your local waste management office for advice. Do not pour any chemical down your drain or into the toilet. Do not bury it or toss it in with the daily trash. This is both dangerous and illegal.
- Keep all products in their original, labeled containers. Be especially careful to never put chemicals into old food containers. Small children may be tempted to sample whatever is in that old soda bottle, with tragic results.
- Never mix household chemicals. Many can have unexpected reactions.
- Do not use chemicals around an open flame or while smoking.
- Keep heavy rubber gloves, disposable rags, eye protection, and a face mask on hand to clean up household spills. When you're done, bring all these materials outside and let the fumes evaporate, then wrap the rags in old newspapers, seal in a plastic bag, and put them in the trash where children and pets can not get into them.

**KNOW THE SIGNS OF TOXIC POISONING:**

- Breathing problems, especially shortness of breath
- Tingling or itching of eyes, skin, throat, or lungs
- Pallor
- Headache
- Blurred vision
- Red or weepy eyes
- Neurological changes
- Cramping or diarrhea

Keep the number for poison control on your speed dial or post it on your phone. The number is 1-800-222-1222.

If you think a family member has been poisoned, don't waste precious time calling your physician. He or she will likely tell you to call 911 and then poison control. Have the poison container with you when you call. Follow the first-aid instructions from the emergency operator carefully; any first-aid instruction on the container may be out of date. Poison control has the best, up-to-date response for you, but they have to know exactly what was ingested in order to provide you with the proper first-aid instructions.

**NUCLEAR HAZARDS**

**MOST STATES HAVE** nuclear power plants. About 20 percent of our nation's power comes from these plants. Nuclear power plants use the heat generated from nuclear fission in a reactor to produce steam. The steam powers generators that convert the energy to electricity. The good news is that nuclear power produces no greenhouse emissions and therefore does not contribute to global warming. The bad news is that the nuclear waste is with us for centuries. The worse news is that a meltdown at a nuclear power plant is a true catastrophe. We have seen a few of these disasters in our lifetime. As our plants age, we will likely see more.

Nearly three million people live within ten miles of a nuclear power plant. The construction and maintenance of these facilities are closely monitored by the Nuclear Regulatory Commission, but accidents still happen. The two most likely to come to mind occurred at Three Mile Island in the United States and at Chernobyl in the former Soviet Union. Chernobyl is still unlivable, and the cancer rate is still climbing for those in the region.

A nuclear power plant will not blow up. It will melt down. The danger comes from the release of radioactive material into the environment. You may see a plume of radioactive particles and gases rising from a tower. This radiation can land on people and property, be inhaled, or be ingested if it settles on foods.

We are surrounded by low levels of radiation all the time. The sun, your television, microwave ovens, and X-rays all emit radiation. There is a trace present in food. The fallout from a nuclear meltdown would expose people and livestock in the area to much higher levels. The effects of radiation are cumulative. The longer one is exposed, the greater the effect. High exposures can lead to serious health conditions, including many forms of cancer, birth defects, and death.

Utility companies, aided by local, state, and federal agencies, have emergency plans in place in the event of a nuclear plant accident. The plans are divided into zones. The first zone covers an area within a ten-mile radius of a plant, where it is possible for people to be affected by direct radiation exposure. The second zone covers an area within a fifty-mile radius from a plant, where radioactive materials could contaminate water, food, and livestock.

If you live within ten miles of a nuclear power plant, your utility company will provide yearly emergency information packets. Make sure you receive and review this literature and keep it in an accessible place. Contact your children's schools about their policy on retrieving your child in the event of a nuclear emergency.

In the event of a nuclear accident, if you are told to evacuate, gather your evacuation pack, your folder of necessary documents, and leave at once. (See chapter 9 for more information.) You want to put as much distance as you can between yourself and the source of radiation.

If you are told to shelter at home, turn off the air conditioner, ventilation units, fans, furnace, and any other air intake port. Go to a basement or other underground area if possible. Otherwise, go the area of your home with the fewest areas of exposure to the outside. You want to put as much heavy, dense material between you and the radiation as possible. Keep your radio tuned to a local station for updates and instructions.

Fortunately, time is on your side. Most radioactivity loses strength fairly quickly. You will need to have a radio with you to monitor events on the outside so you will know when it is safe to emerge.

**IF YOU THINK YOU MAY HAVE BEEN EXPOSED TO RADIATION:**

- Remove all clothing, including shoes, underclothes and jewelry. Place clothing in a plastic bag. Seal it, then place in a second bag. Bring it to authorities for disposal.
- Take a thorough shower. Stand under running water for at least ten minutes. You may want to shower children at the same time to reduce the amount of time between exposure and decontamination. Do not forget to wash exposed pets.
- Seek treatment for unusual symptoms, especially nausea and diarrhea, which can be signs of radiation poisoning.
- If you are breastfeeding and have been exposed to radiation, switch to a canned formula until you speak with a pediatrician about the safety of breast milk.

# CHAPTER 14 PANDEMIC

In 1918, 20 million people died when an influenza epidemic spread across the globe. We now hear that another global epidemic, or pandemic, is coming. The question appears to be not if but rather when it will make its appearance. The smart money is on the avian influenza strain that has emerged in bird populations in Asia and Europe. So far we have been lucky, and that particular virus does not appear to spread easily from one person to another, but if it mutates, as viruses are prone to doing, that could change. International travel could quickly spread a virus from one continent to another before any traveler was displaying symptoms.

The Red Cross advises that if a pandemic were to strike the United States, we should be prepared to spend ten days confined to our homes. It also warns that we may be without essential services such as power, water, and trash pickup and that banks will likely close, hospitals will be overwhelmed, and even mail service could be spotty.

I am afraid that the estimate of ten days of confinement is pretty optimistic. A more likely scenario would be that going out in the public arena would be risky for at least a month, and there would certainly be viral outbreaks in previously unaffected populations for weeks beyond that. I also think that recovery from a breakdown in services would take considerable time, probably on the order of six to eight weeks. To be really safe, stockpiling a threemonth supply of essential goods is not an unreasonable goal.

If an epidemic or pandemic appears likely, there are some steps you should take. If at all possible, stay home. In particular, avoid large public places such as shopping malls and supermarkets. I would opt to keep my children home from school. Obviously, if you work in essential services such as public safety or public health, you're obliged to get to work if you can. But it might be safer for your family for you to remain there until the crisis is over rather than risk infecting your loved ones.

Be very careful about hygiene. Supervise your children when they wash their hands to ensure they are doing a thorough job. Hands should be washed with soap for a full three minutes, paying special attention to the areas between fingers and under nails. This would be especially important if you had been out in public. Surfaces such as the handles of shopping carts carry a pretty hefty viral load on a good day.

Get vaccines or medications as soon as they become available. Antivirals such as Tamiflu have not been field tested in a real pandemic, but they might help reduce the severity and length of the flu if taken as soon as symptoms occur.

Take special care to get enough sleep and to eat as healthy a diet as possible. Keeping your body in peak shape will give you the greatest chance of surviving an infection.

A crisis like an influenza pandemic is an excellent example of why preparedness is so important for the average family. This kind of crisis can happen with so little notice, and then all of a sudden, everyone is scrambling to get ready. There are runs on the kinds of supplies that a well-prepared family already owns. If more people are prepared to remain home and care for themselves, this reduces the number who will need to rely on government agencies for services. And this will free up aid for the truly needy. Preparedness benefits everyone, not just the prepared.

### MASKS ARE NDT HELPFUL

Do not count on painters' or surgical masks to provide influenza protection. Painters' masks are designed to keep you from inhaling the large particles of dust and paint that float around during building projects. Surgical masks are designed to protect the patient, not the doctor, from contamination. Influenza virus will float around and through these masks and enter the body through eyes, nose, and mouth.

# CHAPTER 15 TERRORISM

We used to think we were safe. Terrorism was something that happened far away, to people we didn't know. No one thinks that anymore. Terrorism can happen anywhere, anytime, to anybody. Even if you live, as I do, in a quiet, rural village, a terrorist attack can threaten your food supply, your ability to communicate with loved ones, your freedom to travel, and your access to your financial assets. For much of the world, this has been true for decades. The United States is just playing catch-up.

Preparing for a terrorist attack is not as simple as preparing for a winter storm. The threat could be biological, chemical, or radiological. It could come in the form of a bomb or explosion, or be as subtle as an attack on your computer system. Still, there are things you can do and information you must have to minimize your risk and vulnerability.

## THE HDMELAND SECURITY ADVISDRY SYSTEM

**WHAT FDLLDWS IS** the framework our government uses to assess the risk of a terrorist attack on a day-to-day basis. The risk level changes based on intelligence about the likelihood of terrorist activity. An alert may be issued nationally or just for a particular geographic location, for instance a specific bridge, building, or institution. In general, the United States runs on blue alert unless intelligence reports cause an upgrade. You can find out the alert level at any given time by logging on to www.ready.gov.

### LOW RISK = GREEN

At this level, the government recommends simply that you have a family emergency plan and supply kit. If you've developed a preparedness program, including an evacuation plan and communication plan, you're already there.

### GUARDED RISK = BLUE

At this level, the government recommends that you have adequate supplies in the house to deal with disaster. Again, if you're working with a preparedness program, you're already there.

### ELEVATED RISK = YELLOW

At this level, the government recommends that you be alert for suspicious activity and report any to authorities. It also recommends that you have disaster supplies stocked, a family emergency communications plan, and designated evacuation routes, all of which, of course, you'll have in place if you're following a preparedness program.

### HIGH RISK = ORANGE

At this level, the government recommends that you exercise caution when traveling and pay attention to travel advisories; expect some delays, baggage searches, and restrictions at public buildings; and check on neighbors and others who might need assistance in an emergency.

### RED = SEVERE RISK

At this level, the government recommends that you stay tuned to radio or TV for current information and instructions, listen to local emergency management officials, be prepared to shelter or evacuate as instructed, expect traffic delays and restrictions, provide volunteer services only as requested, and contact your school/business to determine the status of your workday.

## BDMBS

**BOMBS ARE OFTEN** a terrorist's weapon of choice for a number of reasons. A bomb is quite portable. One can be detonated from a remote location, and there seems to be no end to the number of people willing to sacrifice their own lives to deliver one. The directions for making bombs are easily available in bookstores and on the Internet. Even the raw materials for very deadly devices are readily and inexpensively purchased at hardware and feed stores. An attack on any public place such as a restaurant, school, mall, or house of worship can take many lives and have a devastating psychological effect, which is the main point. The terrorist wins when people are frightened.

I think we all should exercise due caution, especially in large, public arenas, but continue to enjoy our lives and important activities. Be prepared, but don't let fear win.

## IN THE MAIL

Mailing bombs is one common method of delivery. As a general guide, the following things should make you suspicious:

- An unexpected package from someone you don't know.
- A package with no return address.
- A package with misspellings of common words and places.
- A package using an incorrect business title or no name with a title, such as "President."
- A package for which the city and state on the postmark don't match the city and state on the return address.
- Packages with noticeable wires, foul odors, or stains.
- Packages with restrictions to the handlers such as "Do Not X-ray," "Confidential," or "To Be Opened Only By …"

If you are suspicious of any package you receive, do not open or move it. Contact your local police department immediately.

### PHONED BOMB THREATS

IF YOU RECEIVE A BOMB THREAT BY PHONE:

- Get as much information as you can from the caller.
- Record the call if possible.
- Keep the caller on the line as long as you can.
- Notify the police immediately. If the building you're in has its own security, notify them also.

### IN THE EVENT …

IF A BOMB EXPLODES NEAR YOU:

- If debris is falling, get under something sturdy and heavy, such as a table or desk.
- If you're indoors, for example at your workplace, exit the building as soon as debris settles. Do not stop to gather belongings, make calls, or retrieve files, as there may be structural damage to the building that could cause it to collapse. Do not use the elevators. Even if they are working, the power could be cut at any time.
- Move immediately away from buildings that have been affected by the blast. Falling debris could still pose a hazard.
- If you've been injured, wait in the triage area, and understand that the most seriously injured will be attended to first.
- Make notes of anything you may have noticed before an event. Your memory of the details may fade quickly.

IF YOU ARE TRAPPED IN DEBRIS:

- Do not shout unless you hear rescuers calling. Shouting will cause you to inhale dust and debris. Save it for when help is close by.
- Lie as still as possible to reduce the amount of dust stirred up.
- Tap on a pipe or wall to aid rescuers in locating you. If you have a flashlight or whistle, all the better; use them to signal your location.
- Cover your mouth and nose with a cloth if possible. Dense-weave cotton is best, but you should use whatever you have on hand.
- Try to stay calm. Remember that help is coming.

### BIDLDGICAL THREATS

**PEDPLE SEEM TO** fear biological threats more than any type of attack. Bacteria, viruses, and toxins are terrifying weapons because they come silently and kill indiscriminately. Protecting yourself from them is also very challenging. However, biological weapons are difficult to grow, requiring specialized laboratories and trained personnel. They are also hard to maintain, breaking down quickly unless kept in the right environment. Light, heat, cold, and time will degrade many biological agents. Still, some pose a considerable threat, and it is wise to know something about them.

Some potential germ warfare agents are anthrax, botulism, bubonic plague, Ebola (or other hemorrhagic fever), E. coli, and listeria. The list could be much longer, but these are thought to be among the most likely. There are vaccines for some, but not for others. Some are treatable, while others have very high mortality rates. There are few general rules that apply to all.

An agent may be transmitted to humans in one of four ways:

- **Aerosols:** An agent is transmitted as a fine mist that may drift on air currents for many miles.
- **Animals:** Many animals are vectors for disease. Fleas carry plague and mosquitoes carry malaria. Mice, livestock, rodents, and insects can all harbor disease.
- **Food and water:** Some toxins, such as botulism, salmonella, and E. coli, are transmitted through our food and water. Proper food handling will prevent the spread of some, but not all, food-borne pathogens.
- **Person-to-person:** The hemorrhagic fevers, influenza, and smallpox are just a few of the diseases spread from one person to another. With the ease and frequency of global travel, a terrorist attack using this type of biological agent could threaten the entire planet.

The government response to a biological attack will be slower than it would be to a bomb. First, officials will need to determine what the agent is, what disease it spread, and how to care for those who are ill. All of this will take time. Individuals will likely be responsible for keeping themselves as well as possible, not just for their own sakes but for the sake of the greater society.

### REDUCING YOUR RISK

Make sure you and your family are up-to-date on all suggested immunizations. Consider installing HEPA filters on all ductwork and ventilation systems. HEPA filters remove particles in the 0.3 to 10 micron range, which include most biological agents. However, it is nearly impossible to prevent these small particles from entering your home through the gaps and vents. After being dispersed, a biological agent will remain active for only a short window of time, so one option might be to seal off a room as tightly as possible and install HEPA filtration for the air in that room. You'd need to prepare for doing that now, before an attack; see page 135 for information on preparing a safe room.

Be sure your first-aid and home health kits are up-to-date. See chapter 2 for information on these kits.

### IN THE EVENT …

IF YOU BELIEVE YOU MAY HAVE COME IN CONTACT WITH A BIOLOGICAL AGENT:

- Leave the area immediately.
- Wash your hands well with plenty of soap and hot water.
- Contact local authorities.
- Remove all clothing. Double bag it and follow instructions from authorities about disinfecting or disposing of it. Burning clothing will kill all infectious organisms.
- Seek medical attention if you become ill. Bear in mind that health facilities may become overwhelmed in an epidemic.
- Stay home. You should isolate yourself from other family members if they were not exposed. A safe room can provide the space for a quarantine room.

## CHEMICAL AGENTS

**LIKE BIDLDGICAL THREATS,** a chemical agent can come in many forms. It can be a vapor, aerosol, liquid, or a solid. It can affect people, animals, or plants. An agent may wreak havoc on the environment. Chemicals may have a foul smell or be odorless and tasteless. It is possible to feel the effects of a toxic agent immediately, as in the case of sarin, or the effects may not become obvious for a day or two. Fortunately, most agents dissipate quickly outdoors and they are usually difficult to produce.

There would likely be no warning in a chemical attack. As always, general preparedness is your best defense. Make sure your disaster supplies include several rolls of duct tape, heavy scissors, and 1- to 6-mil plastic sheeting to aid in creating a short-term safe room (see page 135). To protect from a chemical attack, this room should be on the second floor or higher, as most agents are heavier than air and will accumulate at ground level.

### IN THE EVENT …

IF A CHEMICAL ATTACK OF SOME TYPE HAS OCCURRED:

- Remain indoors, unless that is where the attack took place.
- Close all doors and windows and turn off ventilation, including heating systems and air conditioners.
- Take your evacuation kit to an interior space and seal the openings (see page 137).
- Listen to your radio for instructions on when it is safe to emerge. In general, expect the usefulness of a safe room to diminish after two to three hours. If there is less than ten square feet of space for each person, $CO_2$ buildup will make the room uncomfortable very quickly. You will have to weigh your options when making decisions, which it why it is so critical to have a means of receiving reliable information.
- If you are outdoors and no immediate shelter is available, move upwind of the event as quickly as possible. Find shelter in a public building if possible.

IF YOU BELIEVE YOU HAVE BEEN EXPOSED TO THE CHEMICAL TOXIN AND MUST DECONTAMINATE:

- Remove all clothing including shoes, eyewear, and jewelry. Cut off clothing rather than pulling it over your head to avoid more contact with the sensitive areas of the eyes, nose, and mouth. Put clothing in a bag and seal it shut. Double bag and seal again.
- If you have eyeglasses, wash them in a solution of soapy water, rinse them in a ten-to-one water/bleach solution, rinse again under plain running water, and dry. If they cause irritation after this cleaning, dispose of them.
- Dispose of contact lenses.
- Flush your eyes under running water. Shower, lathering and rinsing several times.
- Put on clothing that has been stored in a closed unit such as a drawer or closet. It is less likely to have been contaminated.
- Seek medical attention.

## RADIDLDGICAL DISPERSIDN DEVICES (DIRTY BDMBS)

**ARADIDLDGICAL DISPERSIDN DEVICE** (RDD) combines a traditional bomb with radioactive material. The purpose of an RDD is to scatter dangerous amounts of radioactive material over a limited area. A terrorist is far more likely to use an RDD than a conventional nuclear weapon, for several reasons. First, the necessary material is readily available, as it is widely used in medicine, agriculture, and industry. Second, the knowledge one needs to build such a bomb is far less technical than that needed to build a nuclear weapon. Last, it would be easier to pass through security checkpoints with the smaller scale of an RDD. While the amount of radiation in a dirty bomb would be confined to a limited geographic area, the psychological and economic effects on us as a nation would be immense.

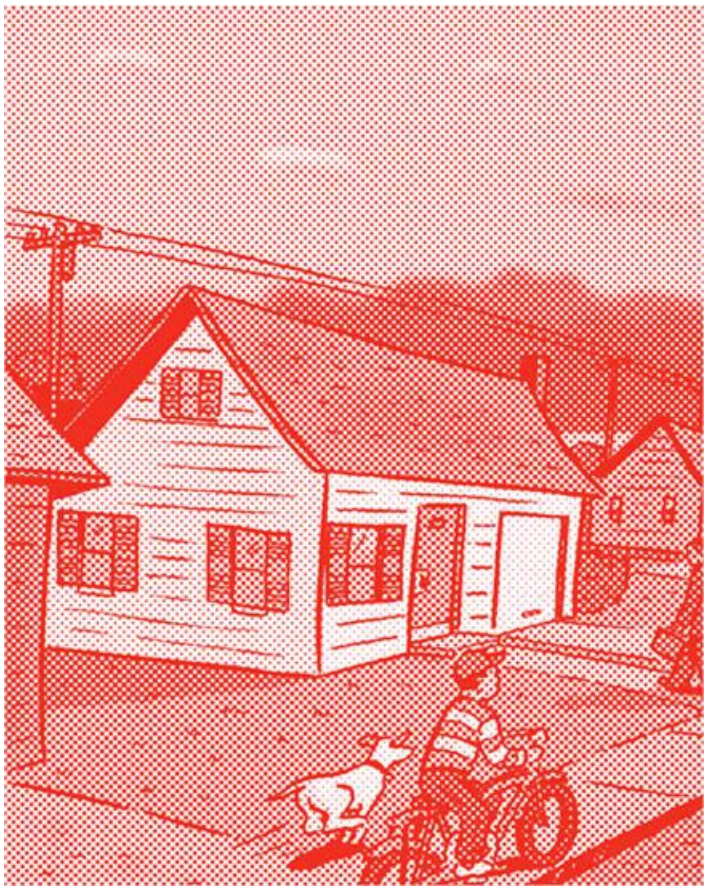
It is unlikely that there would be any warning before an RDD was detonated unless intelligence caused a rise in the security alert level, so good general preparedness and knowing how to respond to such an attack would be crucial. The population would, of course, be aware that an explosion had taken place, but the presence of radiation would not be apparent until the levels were measured. In any bomb attack, proceed as though the presence of radiation were possible - especially if you are near a likely target, such as a government installation, major port or airfield, military site, financial center, petroleum refinery, or chemical or power plant.

You always want to avoid radiation or at least limit your exposure to it. Think DDT. That means putting as much distance, as much density, and as much time between your person and exposure to the radioactive dust as possible. You especially want to avoid inhaling the dust particles that result from the explosion, as they will carry a high concentration of radiation. If you are in the area of an explosion and you can see dust particles in the air, cover your mouth and nose to limit your exposure.

If you find yourself outdoors after an explosion, seek shelter indoors in the nearest undamaged building, especially one with an underground or other safe space. If you cannot find such shelter, move upwind as quickly as possible. In an urban area, foot traffic may be moving faster than

automobiles. If so, abandon your car, in a lot if possible, and continue on foot, remembering to take your evacuation kit with you.

If you find yourself indoors, turn off ventilation and heating systems, close and lock exterior doors and windows, close fireplace dampers, and cover exhaust fans. Take your emergency kit to your safe room (see page 135). In the case of an RDD, plastic sheeting will not provide protection. You need as much dense, heavy material between you and the radioactivity as is feasible.



# PART 4 DOING IT YOURSELF THE ARTS OF SELF-SUFFICIENCY

WRITE ABDUT MANAGING A HDME FOR A PERIDD DF time without running water or electricity as though it is a given that such things are necessary for comfortable survival. In fact, people have lived without such luxuries for millennia, and all over the world, many people live without them now, either by choice or necessity. We turn these luxuries into necessities when we forget the skills we need to manage without them.

You can, and should, buy books on the arts of canning, dehydrating, bread baking, sewing, and any other skill you might need if you had to live without power for any length of time, but reading is one thing; doing is another. Try these skills now, preferably with a mentor. There are probably people in your community who would enjoy the opportunity to pass on skills in one of the arts that they fear will be lost in the sea of convenience. As you become more adept you will likely find that you experience a tremendous sense of pride in your new abilities. I know that one of the joys in my life is eating a tomato sandwich when I have grown the tomato and baked the bread. Rows of jewel-toned preserves in my cupboard are more beautiful than any precious stone, and an evening with my husband and kids, playing Clue in front of the fireplace and eating popcorn from the plants we harvested in the fall, is a lot more fun than a night on the town. I suppose canning and baking can seem like drudgery to some, but like beauty, drudgery is also in the eye of the beholder.

You may not want or need to use any of these skills in your daily life. It is a lot easier to run to the market for essentials. But I do think you should try each one out. You will be practicing preparedness and gaining confidence with every skill you master. When you pass such skills on to your children, you are giving them an incredible gift of self-sufficiency and independence.

# CHAPTER 16 SKILLS FOR INDEPENDENCE

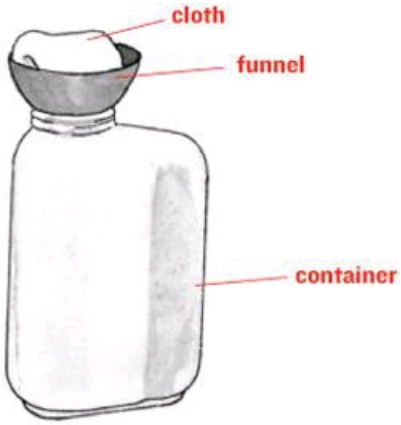
I am not a hard-core survivalist. I don't believe it's necessary for my family to live a completely independent life, feeding, clothing, and sheltering ourselves exclusively with provisions of our own making. But I do enjoy a certain measure of independence, so far as it allows me to feel confident that should we need to, my family could live well for quite some time without grocery and department stores, the power grid, and the oil delivery truck. I also am buoyed by the fact that should my children find themselves out in the wilds for any length of time, they have had a basic education in how to procure food, water, and shelter and how to stay safe.

The skills for independence, as they are called in this chapter, are varied. The range of skills I describe here are those I believe are necessary for my family. The list is not comprehensive; depending on where you live and your lifestyle, you may have different or additional requirements for independent living in the event of a crisis. I hope the discussion will inspire you to think about the skills and knowledge you would need in order to feel confident in your own ability to handle a crisis.

## PURIFYING WATER SP

**THERE ARE MANY** methods of water purification, but only three are practical for most families: boiling, disinfecting with bleach or iodine, or using a mechanical system, such as a filtering system or distiller.

Before purifying any water, remove any large debris that may be present. If the water is cloudy, let it sit for some time until the sediment has settled out, and then draw off the clear water from the top. If the water is very dirty, you can improvise a good filter from a canning funnel and a new white cotton sock or T-shirt, a handful of cotton balls, or several layers of cheesecloth. Wad your filtering material (the sock, T-shirt, cotton balls, or cheesecloth) up tightly and place it in the funnel, then run the suspicious water through it until it looks clear. This may take several trips through the filter and you may need to change the filter if it gets very dirty. If the water is foul smelling, you can freshen it by adding activated charcoal, such as you would use in a fish tank filter, sandwiched between two layers of cloth, to your filter. If you don't have a canning funnel, you can improvise one by cutting the bottom off a two-liter plastic bottle.




**A SIMPLE FILTER**

Once the water is running clear, you are ready to purify it.

### WATER PURIFICATIDN EQUIPMENT

**The most basic equipment for purifying water includes the following:**

- **Two l-gallon water carriers for transporting water**
- **A large pot with a lid for boiling water**
- **Two l-gallon glass jars for disinfecting water**
- **A small amount of nonperfumed bleach (4 to 6 percent sodium hypochlorite)**
- **A funnel**

- **An eyedropper**
- **Activated charcoal (also called activated carbon) for filtering and freshening**
- **A good quantity of white cotton material**

### BOILING

There are pros and cons to this method. Boiling is cheap, quick, and reliable, killing both bacteria and viruses. It requires no equipment except heat and a pot. The downside is that it can use up a large amount of fuel at a time when you may not have fuel to spare.

Before boiling, filter out any large debris from the water. If it is cloudy, let it sit for some time until the sediment has settled out, and then draw off the clear water from the top. Heat the water until it boils, and keep it at a rolling boil for one minute (or for several minutes if you are at a high altitude).

Boiled water can taste flat. One way to restore the flavor is to pour the boiled water back and forth between two containers, allowing it to aerate a bit. A pinch of salt added to a gallon of water will improve the taste as well.

Since boiling water is not always possible, it is wise to have the means available for a second method of decontamination.

### CHEMICAL DISINFECTION

Both chlorine and iodine will kill most pathogens in water. They are not as effective as boiling, however. Their effectiveness against certain organisms, most notably giardia, depends upon water temperature, pH, and turbidity (cloudiness); in general, they are more effective when the water is warm and the pH is lower than neutral (7.0).

Chlorine is nothing more than household bleach. Iodine is available in a 2 percent tincture at most pharmacies. I've chosen to store only bleach, because iodine lends an unpleasant taste to water and is good for treating only small amounts. However, iodine has its uses, particularly when it comes in the form of lightweight tablets that are easy to carry. So I'll give directions for both methods here.

### BLEACH METHOD

Use only plain bleach, without any fragrances or other additives. The chlorine (sodium hypochlorite) content should be between 4 and 6 percent. The chlorine content diminishes once the jug is opened, so buy only small containers and don't open them until you need to.

Before purifying, if the water is cold, allow it to come to at least room temperature. If the water is cloudy, try filtering it, as described on page 157. Then add bleach according to the chart below. (If the water remains cloudy, you'll have to use double the amount of bleach called for in the chart below.) Stir the bleach and water briskly and let it sit for thirty minutes. If the water is cold and/or cloudy, more time will be necessary for the bleach to do its work; let it sit for at least an hour. When the appointed time is up, the water should retain a faint odor of bleach. If you don't smell bleach, treat the water again.

| Amount of Water | Amount of Bleach* |
|---|---|
| I quart | 2 drops |
| ½ gallon | 4 drops |
| I gallon | 8 drops |
| 5 gallons | ½ teaspoon or 40 drops |

One note about water disinfected with bleach: it cannot be used to reconstitute powdered milk for yogurt or cheese making until the chlorine has dissipated, as the bacteria necessary for both foods won't live in the presence of chlorine. If you leave the container open to the air, the chlorine will dissipate; the length of time this will take varies depending on the amount of water in a container and how much bleach you used to obtain clean water. Wait until all odor of chlorine has disappeared. I tried making yogurt with freshly chlorinated water, just to see what would happen, and ended up with some inedible glop. I have not tried to make yogurt with fresh iodine-treated water, but I assume it would not work either.

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### FLAVDRING PURIFIED WATER

Any water from a new source is an acquired taste that takes a while to get used to. If the water you purify chemically tastes unpleasant, you can add a powdered drink mix or a small amount of lemon or lime juice to taste.

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### IODINE METHOD

Iodine works to clean small quantities of water. You will need three drops of a 2 percent iodine solution for each quart of clear water, and double that amount if the water is cold or cloudy. Stir the iodine into the water and let it stand for thirty minutes. The bacteria will be killed, but the water turns a funny brown/red color and will taste a bit like iodine.

Iodine water purification tablets are available from sporting goods stores, but they are expensive. I would purchase them only for an evacuation kit.

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### IDDINE CAUTIDN

**Too much iodine can be dangerous for those with iodine allergies, people with thyroid problems, and pregnant and nursing women. In these cases the iodine purification method should not be used.**

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**MECHANICAL PURIFICATION**

If you have reason to be very concerned about your water supply, you might consider a mechanical filtering or distillation system. They range from pocket-sized models designed to be carried in a backpack to larger systems intended for whole-house use. Each has different capabilities and drawbacks.

Portable water filters are best for use with evacuation packs. They are small, lightweight, and inexpensive. Typically they resemble water bottles with a filter mounted on the inside. The drawback is that the filter needs to be replaced after about 100 gallons of water has been cleaned. If you are using the water for everything from drinking to washing, 100 gallons gets used up in a hurry.

PDRTABLE WATER FILTER

Another portable option would be an ultraviolet-light sterilizer. This is a small, battery-powered unit that is submerged in a container of water. In ninety seconds a burst of ultraviolet light will purify thirty-two ounces of water.

Other mechanical filters are large and designed to be used at home, attached either to your faucet or your home water supply. They range in price from somewhat to very expensive, but having at least one faucet able to produce clean drinking water can be helpful. Then again, if the municipal water supply or your well stops producing, you might not be able to use one of these larger filters to purify water from other local sources, such as waterways and ponds.

**REVERSE OSMOSIS FILTERS**

Reverse osmosis (RO) systems were originally designed to process water in submarines, as they will render salty water safe to drink. Basically, water is drawn through carbon prefilter traps that remove sediment and chlorine. Then the water passes through a very fine membrane that removes minerals and impurities. Finally water passes through two more carbon filters that remove any lingering foul odors or bad tastes. These systems cost several hundred dollars and have a long list of replacement parts. It takes a couple of hours to install one, and it will take up a lot of counter space, but an RO filter will provide you with very pure water. The biggest drawback in my opinion is that an RO filter is hooked directly to your water line. If you have no water flow, it doesn't work.

TABLETDP WATER FILTER

**TABLETOP WATER FILTERS**

If you want a water filtering system that is very effective, requires no electricity, and can be used anywhere in your home, with any water supply, consider one of the large units such as a Berkey or Katadyn. The unit will hold several gallons of water and can filter up to four gallons of water per hour. Each filter will purify up to 60,000 gallons of water before needing to be replaced. There is no installation: The units simply sit on a counter.

They are big, over two feet tall, and heavy, weighing up to twelve pounds, but for home use, that may not be a problem. They cost several hundred dollars.

### WATER DISTILLERS

In distillers, water is boiled in one chamber. The steam rises, leaving behind dead microbes, heavy metals, and mineral salts. The steam is condensed and the purified water collected in a storage container. With a good distiller you can purify sixteen gallons of water in twenty-four hours.

The distiller can be used anywhere, as it requires no electricity, but it does require a lot of fuel to keep the water boiling. A distiller will cost several hundred dollars but requires no installation and can be packed away when not in use.

Obviously, a mechanical water purification system is a big-ticket item, and you will want to do your homework to find the one that works best for your particular situation. However, as water woes worsen throughout the world, ensuring a supply of safe water must be a preparedness priority.

## GARDENING

**A DISCUSSION OF GARDENING** may seem out of place in a book about crisis planning, but having the ability to produce food in or around your home puts you that much closer to the goal of taking care of the needs of yourself and your family in good times and in bad. And that's really what family preparedness is all about.

A backyard (or windowsill, rooftop, or patio) garden will not substitute for all trips to your local supermarket, nor will a garden alone meet all of a family's needs during a crisis. However, learning to grow at least some of your own food will go a long way toward reducing your dependence on a food transportation and distribution system that cannot function without electricity and fossil fuel. My goal is not to be totally self-contained but rather to organize my home and property to be as self-reliant as possible in a crisis, whether personal, local, or global. I grow vegetables and fruit to eat fresh in season and to can, dry, pickle, or otherwise preserve for longterm storage. I also have a small backyard greenhouse for starting seeds and growing cold-tolerant vegetables for winter use, and every sunny window in my house is home to something green and edible.

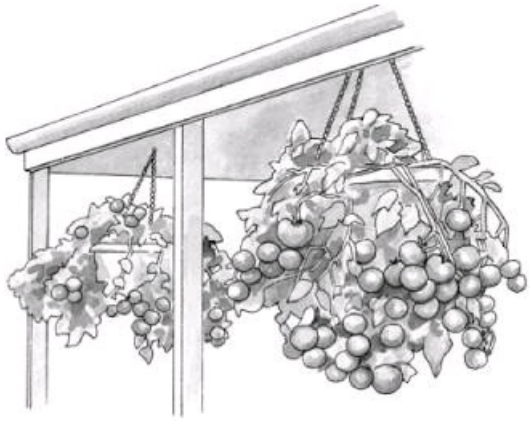
It is October as I type this. The first frost has claimed the last of the green tomatoes, but I have jars of sauce in the pantry, baskets of green tomatoes wrapped in newspaper ripening in the cellar, and in the greenhouse, cherry tomato seedlings that should start to produce fruit during the short, bleak days of January, just when we need it most. Bruce has moved the four dwarf citrus trees from their summer home in the greenhouse to a sunny indoor spot in front of the French doors. The greenhouse brassic as are nearly large enough to harvest and I expect to eat those until early spring, when the spinach and peas take their place. The cellar is brimming with cold-storage potatoes, onions, squash, and apples.

Over the past few years, we have begun to eat more locally and seasonally. What we can't grow ourselves, we purchase from local farms and orchards. I occasionally miss strawberries in February, but I believe eating this way will save money, energy, and possibly a family farm. It also means that I have food in my larder no matter what happens with the weather or the economy.

I do have one word of warning: gardening is addictive. Once you experience the pure pleasure of eating a ripe tomato, warm from the vine, it becomes nearly impossible to endure one of the little pink golf balls that passes for a tomato in a supermarket in December. In terms of preparedness, I much prefer the sight of a cabinet filled with the fruits of my own labor than any number of cans of food of questionable quality.

### FINDING SPACE

Take a look around your home. It is amazing what productive gardening space you can find, even if you live in a city or have only a postage stamp of a yard. Maybe you could grow some plants in containers on a sunny porch or patio. String beans, tomatoes, and cucumbers all do well in containers, as do many types of lettuce. Cherry tomatoes and strawberries will produce all summer in hanging baskets. Colorful peppers and berry bushes can be a part of your summer landscape. Dwarf fruit and nut trees take up very little room while producing large amounts of fruits and nuts in just a few years. A simple trellis can support several pea plants with a crop of pole beans to follow. An herbaceous border can set off flower beds.



**SMALL-SPACE GARDENING**

Plants don't have to be grown in traditional clay pots. I grew a wonderful crop of cucumbers in an old metal washtub. A plastic storage bin is large enough to support a squash plant that will keep you supplied all summer, and a reclaimed wading pool is just the place for some mixed greens.

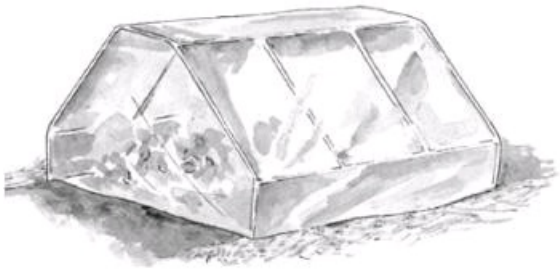
### GETTING STARTED

If you are a novice gardener, the first thing you should acquire, well before you put a single seed in the ground, would be a few good gardening books. Although you may peruse some selections at your local library, gardening books are something you want to have in your preparedness library. Bruce and I have gardened for years, but we still consult our library nearly every day for suggestions on soil requirements, pest problems, and harvesting. We also subscribe to three periodicals that offer excellent articles on new and heirloom plant varieties as well as gardening tips

and techniques. Scattered throughout magazines devoted to gardening you will find the phone numbers and order forms for dozens of seed and gardening catalogs; order several of these for inspiration.

The problem with too much inspiration is that you might be inclined to get carried away with your first gardening attempts. You can waste an awful lot of money on unnecessary tools and gadgets, not to mention finding yourself saddled with eighty packets of seeds, a twenty-thousand-dollar garden tractor, and a ten-foot-square garden patch. It is best to start small and hardy. Beans, peas, tomatoes, and leaf lettuce are a good place to begin. You can get them in the ground with little more than a good garden trowel. They are reliable, nearly everyone likes them, and they are easy to preserve if you have an overabundance. (Most people seem to start with zucchini, but I wouldn't bother. By August, there is so much free zucchini on the roadside that it seems silly to waste precious garden space on it.)

Before you decide what and where to plant, figure out what growing zone you live in. The continent is divided by climate into growing zones 1 through 11, based on average minimum temperatures. This information is available from the USDA Plant Hardiness Zone Map, which you can find online or in most seed catalogs. Bear in mind that just because your town or county is said to be in one zone does not mean that your particular home is not actually one zone different. For example, I live in zone 4, but my proximity to a low-lying river means that my garden is actually in zone 3 and prone to early frost. This information is valuable because seed catalogs often list plants, particularly perennials, as being hardy or able to produce in certain zones.



**CDLD FRAME**

It is possible to extend your growing season in one of the cooler zones with the help of cold frames and row covers and by starting seeds indoors weeks before they could survive outside. This is one of the many reasons good reference books are invaluable. I have used milk jugs with the bottoms removed and plastic storage tubs as mini greenhouses with great success.

Don't expect your first crops to look or produce anything like the seed packets claimed

MILK JUG GREENHDUSE

unless you douse your plants with a hefty dose of fertilizer and pesticides — and I don't recommend you do. For the sake of your own health and that of everyone else in the world, stick with organic methods and expect some losses to bugs, birds, and bunnies. Every year, I plant my beans and watch the rabbits eat off the tops and break my heart. But the tops always grow back, and I seem to end up with more beans than I need. We control Japanese beetles by picking them off each raspberry plant in the early morning and dropping the little devils into a can of water. Cutworms are stymied by a paper collar around the base of each bean plant, and slugs drown in saucers of beer. This is the kind of information you can get from gardening books and magazines and from other local gardeners.

When you need help, contacting your local agricultural extension service is a very good idea. Their gardening advice is free and extremely helpful when you are getting started. An agent may even be able to guide you to some classes and workshops. The other great resource is a good garden center. Don't bother with one of those places that caters to folks who collect exotic orchids, but find a center that serves the gardener who is planning on his garden to feed his family. The staff there will know what will really grow and what pests you are likely to have to deal with.

**OUTSIDE-THE-HOME OPTIONS**

If you wish to grow more food than you have space for, look into using a community garden plot or joining a community-supported agriculture (CSA) program. CSAs give people an opportunity to purchase a share in a large garden. Every week during the growing season, the shareowners get a portion of the harvest. Depending on location, the season may run from late April until early November. Some CSAs also offer eggs, honey, and meat for an additional charge. In some cases shareowners are expected to work a few hours a summer on the farm.

A community garden is owned by an entity, often a city or town, that offers the space to citizens for their personal gardening use for a nominal

fee. Each person is responsible for his or her own plot, deciding what to plant, how to care for the plot, and when to harvest. A community garden provides freedom of choice, but it is a lot more work than a CSA.

Both options offer the possibility of a community where skills, labor, and tools can be shared. In joining, you will likely also find others willing to preserve their harvest cooperatively.

### CDLD STDRAGE

**IN MY DREAM** home, there are two dedicated cold storage rooms. One is dry and just cool, for the storage of squash, sweet potatoes, and pumpkins. The other is moist and cold, for my apples, cabbages, and root crops. For now, I have to make do with what I have, which is a damp, slightly too warm basement with poor airflow, an unheated attic, and an outdoor shed.

In spite of my lack of an actual root cellar, I store as much as possible in its natural state. Cold storage is the least expensive, easiest, and most convenient storage method. It also offers the best opportunity for winter access to produce that is still at its peak in terms of flavor and nutrition. In terms of preparedness, nothing could be better.

When looking into cold storage, start with the basics. Examine your home for the places fruits and vegetables might be kept. The following conditions are desirable:

- **Even temperature.** Cool for some produce, just above freezing for others. Temperature swings are worse than a constant temperature a few degrees above or below what is optimal.
- **Good ventilation.** Good airflow will help control mold and mildew.
- **Protection from pests.** Rodents such as rats, mice, and squirrels can get into the tiniest openings and ruin a basket of apples overnight. They can also chew through wood and plastic.
- **Appropriate humidity.** Some produce needs dry air; some prefers some moisture.
- **Protection from light.** Light, whether sunlight or artificial, is the enemy of all stored foods.

An unheated garage, a well-ventilated attic, and a basement all offer possibilities for storage.

You must next determine what foods you are most likely to store and use, and match them to the appropriate space. I know folks who stored a dozen winter squash because they got them for free. The trouble was that squash was not a food they much cared for. They kept the squash in their basement, never giving them another thought until they all rotted, creating a dreadful mess. As with all things you store with the idea of preparedness in mind, use it or lose it. Food is just clutter unless you eat it.

Fruits and vegetable have very particular needs. They like just the right temperature and humidity to store well in peak condition. Even with perfect conditions, no food will last indefinitely. The maximum storage time for individual fruits and vegetables varies from a few weeks for asparagus to five months for winter squash. Those time frames will be greatly affected by only a few degrees above what is optimal. It is best to check your storage food often, removing any food that begins to show signs of spoilage. One rotted apple or potato can ruin an entire bushel, leaving you with a smelly mess.

The easiest foods to store are apples, potatoes, carrots, and winter squash. These are also easy foods to grow and are available for bulk purchase from farmers markets and roadside stands. Once you have some success with these crops, you can move on to others that have similar storage requirements. Try not to get carried away and attempt to do too much in the beginning.

### APPLES

Begin by choosing a variety that stores well. McIntosh, Cortland, Red Delicious, and Rome Beauty all store between five and seven months before getting mealy. Apples must be stored away from potatoes and onions. Do not store drops, the apples that have fallen from trees. They will be less expensive but they are bruised and will quickly spoil a whole crate.

Apples do best in temperatures as close to freezing as possible. Don't try to store apples in one large crate. The weight can spoil the apples on the bottom. I wrap each apple in a sheet of newspaper, then store them in boxes only a few layers deep. If the apples begin to get mealy, convert them to sauce.

### POTATOES

Store only mature potatoes. Pick out any that are immature or damaged or show signs of blight. Do not store potatoes near apples.

Spuds like it a bit warmer than apples. Even 50°F is not too warm. Their storage space must be dark. Light will turn potatoes green. The green part tastes awful and is not good to eat, although it can be cut away. I store my potatoes in baskets with an inch or two of clean, dry straw between each layer. I have had late potatoes last six months. The timing is just right: Just about the time they are getting soft and sprouting little eyes, it is time to plant them for a new crop.

### CARROTS

Store only perfect carrots. Imperfect specimens can be cut up and canned or frozen. The thicker the carrot, the better, as slender carrots dry out more quickly.

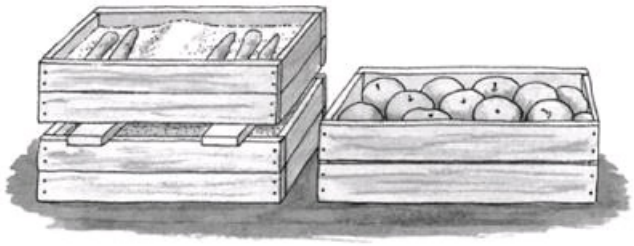
Don't wash carrots for storage. Just cut off the green tops, brush off as much dirt as you can, and then layer them in sand. You need to have about two inches of sand between each layer. The sand must be kept moist or the carrots will shrivel. I put in one layer of sand, mist with water, then a layer of carrots, then a layer of sand, and mist again. As I use up a layer of carrots, I re-mist the sand if it has dried out. If your carrots do begin to shrivel, you can bring them all out and can them rather than lose them.

Carrots like it on the cold side, and they store well with apples. In areas with less severe winters, carrots can be kept all winter right in the ground. Mulch deeply to keep the ground from freezing too solidly and dig up carrots as you need them. I tried this once but it didn't work for me; when the temperature is hovering around freezing and there is a foot of snow on the ground, it seems easier to do without carrots than to go outside and dig for them.

Carrots will keep four to five months in very good condition. Beets can be stored in the same way as carrots, but they don't last as long.

### WINTER SQUASH

Hubbard, butternut, and acorn squashes and pumpkins are all good choices for cold storage. Pick mature squash with tough outer skin. You shouldn't be able to pierce the skin with a fingernail. Squashes like it a bit warmer than freezing and do well stored with potatoes. They need to be stored on a shelf off the ground and not piled up. I used to have a problem with mold on my Hubbard squash after a few months in storage, but I started wiping off the shells with a ten-to-one water/ bleach solution before storing them and that took care of the problem. Squash will keep about six months.



CARRDTS AND APPLES: KEEP CLDSE TD FREEZING

### OTHER FRUITS AND VEGETABLES

Once you have had some success with cold storage, you may want to try storing other fruits and vegetables. Winter pears, garlic, onions, cabbage, and turnips are all easily stored for several months. If you want to go beyond the basics you will need to invest in a dedicated cold storage space in your basement or consider building an underground root cellar. In either event, you will need more information than can be contained here. Your county extension service will be able to provide plans. Excellent plans and advice are also available from *Putting Food By,* by Janet Greene, Ruth Hertzberg, and Beatrice Vaughan, and *Root Cell a ring,*by Mike and Nancy Bubel.

### HEATING WITH WDDD

**As fuel prices** continue to climb, many people are looking to wood as either a supplement or an alternative to traditional energy sources. There is a snug feeling to knowing that all of the fuel you need to see you through a long, cold winter is tucked away in the basement or stacked in a neat pile in your backyard, safe from the vagaries of an oil cartel and Mother Nature. But before you run down to the nearest home improvement store and drop a few thousand dollars on a Castiron behemoth, you would do well to explore all of the intricacies of woodstove options as well as the complexities involved with buying and storing firewood.

I have, over the course of many years, lived in several homes heated either partially or entirely with wood. The romantic memories are considerably dimmed when I remember getting up on frigid mornings when the stove had gone out in the night. It seemed to take forever to coax the few remaining embers into flame and another forever before the cast iron heated up sufficiently to thaw my frozen fingers. Still, I would trade my current self-cleaning, ceramic-topped, multifunction stove in an instant for that antique Majesty cookstove if I could get Bruce to go along with me. He is far more practical than I and has definite opinions about what the best wood-heat options are. The following information is based primarily on our own experience and personal preferences. Technical advice came from Frank and Stephen Philbrick, authors of *The Backyard Lumberjack.*

### OUTDOOR WOOD FURNACES

I became very interested in these furnaces after seeing my first one at a home show. The actual furnace can be located as much as a hundred feet from your house. These furnaces can take large logs, so there is a long burn time, which will save you some work in reloading. As the wood burns, the fire heats water, which is pumped either through a radiant heating system in the house or through a heat exchange system that blows heated air through ductwork.

Naturally, all of this pumping takes electricity, so when the grid is down, you have no heat. But that's not the biggest problem with this system. The real difficulty may be with your neighbors. The smokestacks on the shed like structures are short and the smoke hangs low, impacting everyone living downwind with the smoke and soot. The problem is so acute that many communities are enacting ordinances to prohibit the installation of outdoor furnaces in residential neighborhoods. If you still think this is the right stove for you, check with your local building inspector before you sign a contract, and talk with your neighbors. No heat source is as valuable as a good neighbor.

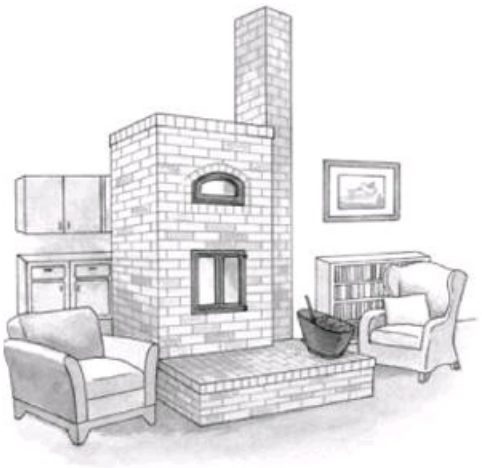
**DUTDDDR WDDD FURNACE**

**INDOOR WOOD FURNACES**

A wood furnace works like any other furnace except that you are responsible for making sure the fuel gets to the firebox. This is another big investment, and one that also relies on electricity to run the pumps and heat-distribution system. It is possible to install a combination furnace that will burn a combination of fuels, often either wood or oil. The benefit is that you can use wood when you are able, then switch to the alternate fuel if you are going to be away from home for a while and don't want the pipes to freeze.

**MASONRY HEATERS**

If I were building a new house, I would have one of these stoves. They are not only very efficient but downright beautiful. Bruce and I once went on an alternative energy tour and saw several in action. The heat is gentle and predictable and the stove has to be stoked only every twenty-four hours. These heaters are not small in either size or capital investment, and retrofitting one into an existing home will require expert assistance in both design and installation.



MASDNRY HEATER

**WOODSTOVES**

A woodstove is the option of choice for many first-time wood burners. It requires a smaller investment than a full furnace and will generally fit into an existing home with few structural changes. Woodstoves usually serve as an adjunct to a conventional heating system, allowing the homeowner to use it on an as-needed basis. It also has the advantage of offering a cooking surface, which will come in very handy during an emergency.

Woodstoves heat the air in a room directly, so location is very important. An exterior wall or, worse yet, a corner installation means that you are likely to lose a lot of heat to the outside. The ideal space is an interior wall toward the center of the house. Of course, that will work only if you happen to have a chimney there.

Wherever you install a stove, fire safety must be your first concern. Local building codes will determine what you need legally. At the minimum you will want floors and walls around a stove to be either ceramic or stone. This not only will be fireproof but will also absorb some heat and release it back into the air. Setback requirements must be carefully observed. Have your chimney inspected prior to any stove installation to be sure the flue system is up to the task of accepting an additional load.

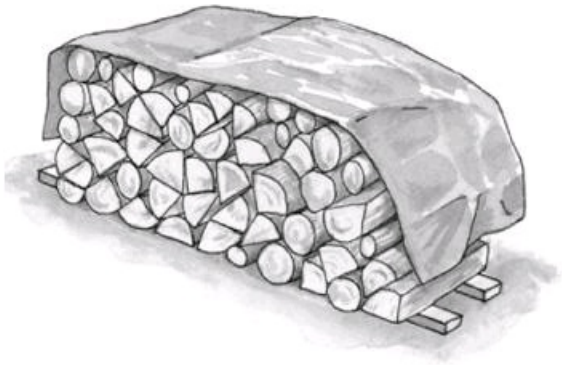
Cast iron is the traditional material for woodstoves. It is durable and retains heat well. If you want to spend the money you can get a Castiron stove with an enamel coating that comes in any number of colors and designs. Soapstone stoves are also very durable and hold heat well. Steel stoves are another possibility, and they cost less, but don't expect a steel stove to hold up like cast iron.

Woodstoves can be as simple as a small box stove designed to heat one room or as complex as a full cookstove complete with four burners, an oven, and a hot water reservoir. Something in between might be just what you need to see you through a crisis.

You often see used woodstoves on the market. However, have an expert evaluate any used stove before you purchase it. A stove in poor condition will be inefficient and may cause more pollution, both indoor and out, than necessary.

### FIREPLACES

This is the most lowtech option and one that many families already have, even if more for aesthetics than actual heat. There are a number of problems with relying on a fireplace to meet your energy needs, which is why it is rare to hear of anyone doing it. In fact, a lot of older homes have their fireplaces completely closed off to stop drafts and heat loss. Fireplaces are really inefficient, even with a roaring blaze, with much of the heat going up the chimney along with a good deal of the rest of the heat in a room. Fireplaces are also the most dangerous heating choice; an errant ember could land on something flammable, such as a sofa, and start the house on fire. And it is nearly impossible to cook much more than hot dogs and marshmallows in a fireplace without investing in some hard-to-find equipment. What I see most often is a woodstove set in the fireplace with the stovepipe attached to the existing chimney. It doesn't look as nice as an open flame and it is nowhere near as romantic on a snowy evening, but it is a heck of a lot more useful.



**STACKED WDDD SHDULD ALWAYS BE KEPT DRY**

### PURCHASING FIREWOOD

Only a lucky few have a real woodlot to provide the many cords of wood it takes to make it through a cold winter. Most of us have to rely on purchasing wood, so it is a good idea to understand basic wood terminology to avoid a costly error.

- **Cord.** Wood is purchased in cords. A cord is 128 cubic feet of wood, when stacked. This is four by four by eight feet. How the wood is cut makes a difference. A cord of round (unsplit) wood will have more airspace than a cord of split wood, which can be packed more tightly.
- **Face cord.** A face cord is a four-foot by eight-foot pile that is only one stick deep.
- **Green wood.** When wood is first cut it still contains all of its sap. Burning green wood will clog up your chimney with creosote, and it won't put out much heat.
- **Seasoned wood.** It takes a year for wood to dry enough to make good fuel; this is called seasoned wood. Get references from other wood burners to find a reputable dealer who sells only well-seasoned wood.
- **BTU.** A British thermal unit rating refers to the amount of heat given out by a type of wood. The higher its BTU rating, the better a wood is for burning in your stove.

According to Frank and Stephen Philbrick, tree types can be graded for heating efficiency as excellent, good, fair, and poor. In the excellent range are apple, ash, beech, yellow birch, hickory, ironwood, maple, and oak. Good ratings are earned by white birch, hackberry, larch, and swamp maple. Black cherry, Douglas fir and hemlock are only fair, while alder, aspen, elm, cedar, cottonwood, balsam, pine, spruce, and redwood are all poor. Keep these ratings in mind when you buy wood.

If you don't have a woodlot and you don't want to lay out a good deal of money for wood, there are a few ideas to consider. Folks who are having trees removed may be happy to have someone take away the wood. You will need a truck, a couple of strong helpers, a way to get it cut up and split, and someplace to stack it until it seasons. Someone may be willing to split it for you for a cut of the wood. This is where community comes in. Put the word out that you are in the market for some cordwood and see what happens.

State parks will sometimes allow a certain amount of dead wood to be harvested for a one-time fee. Check with your state parks commission to find out how this process works in your region.

Road crews and electric and phone companies sometimes clear roadsides and leave wood to be picked up. Check with your local utilities and public works departments to see if this is a possibility in your area. Be sure to get permission, though, before picking up any wood. Wood stacked on the side of the road may well belong to someone, and throwing it in the back of your van could get you in a lot of trouble.

### SAVING MONEY VERSUS INDEPENDENCE

I have to end this with a word or two about the financial benefits to burning wood rather than oil or gas. Unless you own your own wood lot, there aren't any, at least usually. Cordwood, cut, split, and delivered, is almost always as expensive as any other fuel and just as vulnerable to the laws of supply and demand. The main benefit, besides the pleasure you are likely to get from the smell of wood smoke, is that it is there. If, like me, you have a well-developed independent streak, owning my fuel is worth whatever I have to pay.

### WILD FDDDS

I AM A CDNSTANT, if not overly adventurous, forager. I take more pride in the elderberries I glean from an abandoned, overgrown field than I do from

the ones I harvest from the bushes I planted. I guess foraging appeals to the frugal Yankee in me. I love the idea of getting something for nothing. And like gardening, foraging for wild foods is a long step toward the goal of taking care of the needs of yourself and your family in good times and in bad.

If you are interested in learning enough about plants to harvest some wild edibles, you will need a good field guide, preferably one that addresses the plants in your geographical area. Some guides have photographs, while others have drawings. Usually, although not always, the drawings are in color. The quality varies rather dramatically from guide to guide. A book with clear photographs may be your best bet, especially if the photographs show the plant you are interested in at different stages of development, since a plant may look entirely different from one stage to another. A good drawing, however, is better than a poor photograph. You want to be able to clearly see leaves, stems, stalks, and flowers. The guide should also provide information about habitat, lookalike plants, possible toxicity, and methods of harvesting. The guide I use also offers information about cooking and preserving, which I really appreciate.

I would not recommend relying on a guide that is part of a larger book, such as the case here. There is no way to give enough information in the space of a single chapter to allow a novice forager to wander around his or her backyard and return to the kitchen with dinner. The most that can be accomplished, and what I hope to do here, is to provide an overview and hopefully stimulate your interest to investigate further.

### IDENTIFYING PLANTS

You don't need to be trained as an herbalist or have a degree in botany to find a bounty of edibles in the fields, riverbanks, roadsides, and marshes that still abound in both rural and urban areas, but it is helpful to have some basic knowledge of plant structure. If you happen to read a description of a plant that refers to the "frond" or the "node," you should know what that means.

### COMMON PLANT ID TERMS

- **Alternate:** Describes leaves that are arranged alternately on a plant stem, in contrast to opposite leaves.
- **Basal rosette:** Leaves that radiate from a central point at the base of the stem.
- **Clasping:** Describes a leaf with no stalk that is attached directly to a stem.
- **Frond:** The leaf of a fern.
- **Margin:** The outer edge of a leaf.
- **Midrib:** The large middle vein of a leaf.
- **Node:** The place where a leaf attaches to a stem.
- **Opposite:** Describes leaves that are arranged opposite each other, in contrast to alternate leaves.
- **Perfoliate:** Describes a leaf that surrounds a stem.
- **Rhizome:** The underground stem of perennial plants.
- **Sessile:** Describes a leaf without a stalk.
- **Shoot:** New growth.
- **Simple:** Describes a leaf with a single blade.
- **Teeth:** The saw-blade-like edges of a leaf.
- **Veins:** Lines radiating from the leafstalk.
- **Venation pattern:** The way veins are arranged on a leaf.

### TOOLS

Foraging requires very few tools. The few that are helpful are probably in your kitchen or garden shed. A trowel is useful for digging up roots. A jackknife or paring knife with a sheath is also necessary, as is a good pair of leather work gloves. You will need something in which to carry home your treasures. A basket or cloth bag is preferable to paper, which will fall apart when wet, or plastic, which will cause your tender greens to wilt.

### HARVESTING

There are two big issues to keep in mind when harvesting wild foods. The first is toxicity. Mother Nature is not always benign. Just because a berry is blue doesn't make it a blueberry. It may be a pokeberry, which is fatal if ingested in large amounts by a child. Don't eat anything unless you are absolutely certain about its identity and edibility. I stick to the plants I know well and try to learn about one or two new species each year. I rely on my excellent field guide in addition to the advice of an expert forager before I ingest something new.

I would also be extra careful about medicinal herbs. Many can interact with prescription and over-the-counter medications. For instance, St. John's wort, which is claimed to lift depression, should not be taken if you are already taking an antidepressant. Consult a physician knowledgeable in the subject before trying to treat yourself with homemade infusions and tinctures.

Even knowing that a plant is generally edible doesn't ensure that it is edible at every stage or that every part is edible. Some plants are tasty and healthful only when cooked, and a few require several changes of water. This is where a good field guide and knowledgeable mentor are essential.

Mushrooms require special consideration. There are a few that I consume without worry because I know them so well, but unless you are certain, stay away from mushroom gathering. The results of a mistake won't be just uncomfortable; they can be deadly. If you want to learn about mushrooms, join an established mushroom club and learn from experts. If you are interested in growing mushrooms, there are kits available that allow you to grow almost any variety you like. The kits are fairly foolproof if you follow the directions carefully. Mushrooms can be grown in basement areas that are not good for growing anything else.

While on the subject of protecting yourself, be sure to dress for foraging. Edible plants are often at their peak at the same time bugs are biting. Lyme disease from the common deer tick is a real threat in the Northeast. You will also be frequenting the same spaces that snakes and spiders prefer, so be sure to look before you touch and dress for protection with long sleeves, long pants, heavy shoes or hiking boots, and a pair of leather

gloves. A hat is always a good idea. Even with that protection, keep a close eye out for toxic plants such as poison ivy and oak. The New England rule is “leaves of three, let it be,” because the triad of leaves usually heralds one of those misery-producing species.

If you come home with a bounty of greens, wash them well in clean water. Greens gathered near waterways can carry giardia, a nasty intestinal parasite carried by beavers and passed into the water with their feces. Dirt can carry a number of germs and bacteria, not just on tubers but also on the leaves and stems of many plants. Fortunately, a good scrub with plenty of clean water will remove them.

The next issue in harvesting is protecting not you but the plant. Be sure to leave any plant on the rare or endangered list alone. If any plant is locally scarce, not necessarily endangered but just not abundant where you live, take small amounts from as large a grouping as possible. Leave enough of the plant behind that it can reproduce.

I HOPE I HAVEN’T discouraged you from adding some wild foods to your diet. If you exercise common sense and take the time to learn about the foods in your area, foraging is a wonderful way to get closer to nature and learn more about our place in it. Given the news coverage of food recalls due to salmonella and *E. coli* out breaks, I am actually starting to feel better about eating food from my own backyard than I do about eating the food from who-knows-where that I buy in my local supermarket.

And while I certainly hope I never need to rely on the woods, pastures, and streams near my home to provide me with all I need for sustenance, I am glad to know where there is a ready supply, free for the picking.

**WILD FOOD FAVORITES**

- Apples
- Blackberries
- Blueberries
- Cattails
- Cherries (wild)
- Crab apples
- Dandelions
- Daylilies
- Elderberries
- Fiddleheads
- Fox grapes
- Lamb’s quarters
- Leeks (wild)
- Milkweed
- Raspberries
- Rose hips
- Violets
- White pine (for tea)

In addition to the plant foods, we also enjoy all manner of fish, especially brook trout, and if we can get a couple of the kids to go to the river with a big bucket, we relish a meal of crayfish, the Western Massachusetts answer to lobster.

**WILDERNESS SURVIVAL**

I MAGINE YDU ARE on a camping trip. You are walking with friends along a wooded trail toward a remote waterfall. Dusk is fast approaching, but you want to get a picture of the falls, so when everyone else heads back to camp, you decide to continue on alone for the final quarter-mile push. You follow the blaze marks, but after a tough fifteen minutes realize that you have somehow lost the path. You attempt to retrace your steps, but nothing looks familiar. Another ten minutes goes by before you have to admit the truth: You’re lost.

Think about taking a road trip to visit a friend. A storm is forecast, but you think there should be plenty of time to make the five-hour trip before snow flies. When the sky turns ominously dark, it is apparent that the storm is going to hit much earlier than expected. You try to follow the directions, but it has gotten really dark. The snow is falling, heavy and persistent, and you aren’t at all sure about that last turn. It should have taken you to a well-traveled interstate. Instead, you seem to be headed farther and farther from civilization. You decide to head back to the main road and hole up for the night at a motel, but when you back up, your car slips over an embankment. It is clear that without a tow truck you aren’t going anywhere. You take out your cell phone to call for help but realize that you are in a dead zone. You are stranded, miles from the nearest phone, in the middle of a blizzard. What are you going to do? How can you reach help or manage to stay warm, comfortable, and safe until help finds you?

These are really scary scenarios, far more frightening than thinking about caring for yourself in the comfort and security of your own home. How well you manage depends in large part upon how well you prepared prior to leaving home. To an even greater extent, it depends on your psychological preparedness, your ability to keep a level head. In wilderness survival, panic kills.

**PREPARATION**

If you are a frequent hiker, a few simple items should always be in your pocket or daypack:

- ☐ Whistle
- ☐ Waterproof matches
- ☐ hand cranked flashlight
- ☐ Waterproof poncho

- ☐ Water bottle with filter
- ☐ Bug repellent
- ☐ Sunscreen
- ☐ Multifunction pocketknife
- ☐ Notepad and pen
- ☐ Large garbage bag
- ☐ Bandana
- ☐ Space blanket
- ☐ Compass
- ☐ Pocket survival guide
- ☐ Pocket first-aid kit
- ☐ Trail mix, granola bars, hard candy, and so on

This may seem like an extensive list, but all of this will fit into a couple of large pockets in a field jacket or in a daypack. None of it is expensive or hard to locate. If you are dressed in layers to accommodate changing weather conditions, you should be able to manage to wait for rescue for several days if necessary in relative comfort.

For longer hikes to more remote locations, a larger pack will provide space for more equipment. You could then include:

- Mess kit
- Folding camp grill
- Tube tent
- Small emergency hand saw
- Fish hook and nylon filament
- First-aid kit
- Sleeping bag

Always carry a cell phone, but be aware that we still have a lot of dead areas where cell phones will not work.

One final thought: Never set out on any excursion without telling someone where you will be and when you plan to return home. No one will come looking for you if they don't know you are missing.

The same rules apply to travel by car. Leave an itinerary, and don't vary from it without informing your contact person. Your car should be in top shape and equipped with an emergency kit (see page 88).

**WHAT TO DO**

Now suppose the worst did happen. What should you do first? What steps must you take immediately to ensure your survival and eventual rescue?

Stop! Before you let panic overtake your common sense, take a deep breath. Do not make a move until you have thought it through. Look around. Are you in immediate danger, for instance from rising water, or can you take some time to assess your situation? If you have prepared well, someone will know when to expect you and will launch a search when you don't arrive. Your only job is to remain safe and protected from the elements until then.

Look around. Take stock of your supplies and equipment. What do have with you that will assist you in your predicament? If you have carried an emergency pack with you, you will have everything you need to meet your needs for a few days. If not, you will need to get creative.

Next, prioritize. What is your most pressing need? How can you meet it? We tend to think of needs in the triad of food, clothing, and shelter, but in a survival situation the hierarchy of needs is actually shelter, communication, and water.

The priority is shelter for a couple of reasons. You must maintain a body temperature at or near 98.6°F. If you get too hot (hyper-thermia) or too cold (hypothermia), you will die. Extreme heat or cold will sap the energy from you very quickly so you must seek shelter as soon as possible while you wait for help. Do not put this step off, thinking that help will arrive momentarily. It may, in which case you can appreciate the practice in setting up a shelter. If it doesn't, you will be that much further ahead of the game if you have a warm place to spend the night.

If you are with your vehicle, stay there. It is an excellent shelter and will be much easier to spot than a single person trudging through the woods. If you are not with your car, improvise. Shelter can be as simple as a clearing under the branches of a large tree. You should avoid sitting on the bare ground. Remember that garbage bag? It will provide a dry place to sit or, lying across some branches, protect you from rain. Sitting on a layer of branches or a pile of dry leaves will insulate you from the damp and cold. More branches can form a windbreak. Try to mark the outside of the shelter with something such as an anchored bag or an extra piece of clothing (or that bandana) so a potential rescuer will not pass you by. A large X made with sticks or stamped in the snow will also signal help.

A small shelter is easier to keep warm than a large one. You can always curl up in a ball and cover yourself with your space blanket or, if you don't have one, dried leaves and branches.

Avoid moving too far from your shelter. Search parties look for lost people in a grid pattern. You don't want to move into an area that has already been searched. We teach our kids to "hug a tree" if they're lost so they don't go wandering around, deeper and deeper in the woods. Adults should heed the same advice. If you happen to be lost with a party, keep together. There really is strength in numbers. Stay within earshot of each other at all times.

Once you have improvised a shelter, your next priority must be communication. A flashlight and a whistle are invaluable here; both can be used to signal your location much more effectively than yelling. Blow your whistle every couple of minutes. At night the flashlight becomes useful. Go to the highest point practical and flash it in the SOS pattern: three short flashes, three long, then three short.

If you are stranded for any length of time, you will want a fire for warmth, cooking, boiling water, and/or signaling. The four things necessary for starting and maintaining a fire are spark, tinder, fuel, and oxygen. If you have carried waterproof matches with you, you need only find dry tinder to get started. Possibilities are:

- Small, dry twigs
- Dry leaves
- Dead plant heads (cattails are excellent)
- Pocket lint
- Shavings from dead wood
- Pine needles
- Cotton cloth
- Paper (remember that notepad?)

Pick the spot for your fire carefully. You'll benefit most from the heat if you sit between the fire and some sort of backing, such as a large rock, a downed tree, or a snowbank. Try to find a spot that is sheltered from the wind. Look for access to water or sand in the event that your fire starts to get away from you. Circle your fire pit with stones or a sand berm to keep the fire contained.

**WILDERNESS SURVIVAL RESDURCES**

- *Howto StayAlivein the Woods,* by Bradford Angier
- *SAS Survival Handbook: Howto StayAlivein the Wildin Any Climate on Land or at Sea,* by John Lofty Wiseman
- *US Army Survival Manual FM 21-76*
- *Wilderness Survival,* by Gregory Davenport

Prior to starting a fire, gather enough dry wood to keep the blaze going. Start with very small pieces of wood and work up to larger. If you place a teepee of small branches over your tinder, you should have enough oxygen to keep the fire going. When those pieces are burning well, add larger branches until you have a fire large enough to suit. Don't rush this process. Many a good fire has been smothered by the addition of too much fuel too quickly.

Once you have your fire going, keep it going. This will mean having a good supply of the driest wood you can find piled close by.

If you want to use your fire to signal your location, add a supply of wet wood. Wet or pitchy wood will smolder rather than burn and create a lot of smoke. It won't keep you warm, but it will serve to mark your location.

Once you have shelter and fire, your next consideration will be water. You court illness by drinking untreated water, however. A water bottle with a good-quality water filter will allow you to drink water from a stream or pond. If you have a pot or even a metal cup you can boil drinking water, but it will be a laborious process to get enough. You should consume at least two quarts a day (more if it is very hot) and a greater amount is preferable in a stressful situation. If you gather water from rainfall or melt snow, it does not need to be boiled before drinking. Don't ration water. Drink what you need, then search for more. Dehydration will sap your strength and put your survival in question.

Finding food does not need to be a consideration for several days. You may be uncomfortable, but you won't starve. As long as your water needs are met, you can remain healthy. Gathering wild edibles is possible in most locations, but that is a skill you need to practice in a nonemergency situation (see page 171). Unless you are positive about plant identification, it is better to go hungry for a few days than to take a chance with a questionable food.

Obviously, this is not a complete wilderness survival guide. Rather, it is meant to get you thinking about what your needs might be so you can adequately plan before you set out. Consult any of the excellent guides listed above for more comprehensive information.

# CHAPTER 17 FOOD FROM SCRATCH

It is certainly possible to purchase all your storage food, neatly canned or dried and packaged, but doing so will cost you a considerable amount of money. Learning the various methods of preserving the bounty of your garden or the produce you purchase locally and in season will go a long way toward ensuring your food supply during the long, cold days of winter. Learning to make your own staples, such as bread, cheese, and yogurt, is another way of ensuring your fresh food supply. Not only will you be confident in your ability to put cheese and bread on the table even during a time of crisis, but you'll earn the great gratitude of anyone who happens to be sitting here — homemade cheese and fresh home-baked bread are among the world's most delicious treats!

## CANNING

IF YOU LEARN to can produce when it is in season you will save a lot more than money. When you buy strawberries in Massachusetts in January, you are, in essence, gulping oil. It takes oil to plow the land, fertilize the soil, harvest the crop, treat for storage, package, store, and then transport those berries to your local market. Next, you use your car to go to the market, where you pick up the berries, return home with them, and then complain that they are expensive and tasteless. Buy them from a local farmers' market in season and preserve them for winter's use and you can enjoy a taste of summer without contributing to global warming, and you'll keep more of your hard-earned money in your own community. It's a win-win-win situation.

I know some people are afraid of canning. They worry about botulism and exploding canners and all sorts of calamities. But if you follow the directions, are careful about cleanliness, and exercise reasonable common sense, home canning is perfectly safe.

The most important issue in canning is knowing which foods can be safely canned in a water bath and which require a pressure canner. In general, high-acid foods such as most fruits and tomatoes can be canned in a water bath. Vegetables and meats need the higher temperatures achieved in a pressure canner to be safely canned.

I would suggest three books as excellent choices for novice canners: *The Ball Blue Book, The Busy Person's Guide to Preserving Food,* and *The USDA Complete Guide to Home Canning.* All list the ways foods can be safely preserved and have clear, accurate directions that demystify the whole array of food preservation, from canning to dehydrating to pickling. What follows is only a primer, but it will give you an idea of what equipment you will need and how the processes work.

## CANNING PRECAUTIONS

All around us are invisible microorganisms. Beneficial yeasts, molds, and bacteria make our bread rise, our cheese tasty, and our yogurt firm up. Other microorganisms can

### BASIC CANNING EQUIPMENT

- **Water-bath canner or pressure canner**
- **Large bowls**
- **Timer**
- **Wide-mouthed funnel**
- **Jar lifter**
- **Heavy towels or something to protect your countertops**
- **Measuring cups and spoons**
- **Pot holders**
- **Scrub brush**
- **Strainers (at least two)**
- **Squeezo strainer (not a necessity until you use one — then you can't do without it again)**
- **Sharp paring knives**
- **Teakettle**
- **Ladle**
- **Chop stick or non metal spatula**
- **Pint or quart canning jars and lids**

• **An experienced friend to help you the first few times**

### CANNED FDDD SAFETY

Look closely at canned food, whether home-canned or store-bought, before using it. A can that bulges, spurts liquid when you open it, or contains food with an off odor or discoloration is a sign that you should discard both the food and the container in a place where children and animals cannot get at them. A wasted can of tomato sauce is a small price to pay for protection from illness.

make us very ill. Learning how to eliminate these pathogens is the key to understanding the canning process. These are the rules that really matter.

• Always wash any food prior to canning to remove surface contaminants. Cut away any area of discoloration.

• Use only top-quality, fresh produce. Canning only preserves. It does not improve.

• Use only canning jars. Commercial jars such as the ones that spaghetti sauce comes in may look like canning jars, but they are not designed for home canning. They can crack or shatter under the high heat and pressure.

• Don't use any jar larger than one quart. You can't get the interior temperature high enough to safely process foods in bigger jars.

• Use modern recipes adapted for current canning standards. Do not experiment with your grandmother's recipes.

• Know which foods need to be canned in a water bath and which need to be canned in a pressure canner. Keep good references on hand to give you this information, such as those listed on the opposite page.

• Use new lids every time.

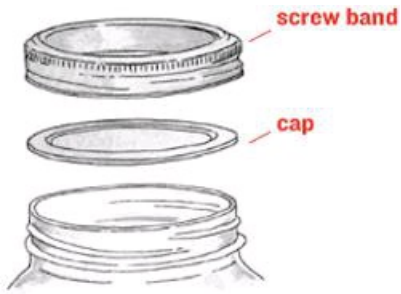
• Check every jar for nicks in the rim. Just run your finger around the edge to be sure it feels smooth.

• When filling jars, leave the recommended headspace or your seal may leak.

• Don't fudge or guess on timing. If a recipe calls for twenty-five minutes, it means twenty-five minutes, not twenty-four and a half minutes. Don't start timing until the water is boiling hard.

• Lift the jars from the canner one by one. Don't try to lift out the whole rack, as it's both heavy and very hot.

• If you think a jar may not have sealed (if its lid is not depressed), use its contents right away or put on a new lid and reprocess it. If a jar has leaked, either freeze the contents or use them right away.

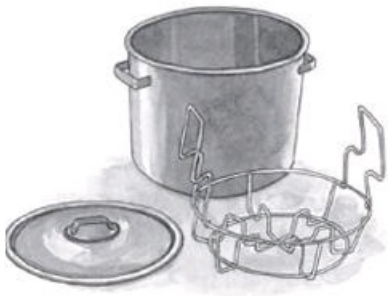



TWO-PART CANNING JAR LIO

### PROJECT

### WATER-BATH CANNING

The process can vary a bit from one food to another. Some delicate foods such as peaches can be cold packed, or packed in jars without being cooked first. Most foods must be cooked first and ladled while still hot into hot jars before being processed. After that, the basic steps of water-bath canning are the same.



1. Assemble all your equipment.

2. Wash the jars, even if they are new, in hot, soapy water and rinse well. Keep the jars hot by holding them in a l50°F oven. You can save time by running them through the dishwasher and keeping them in there while you prepare the food.

3. Fill your canner with water and, with the rack in place inside the canner, begin to heat to a boil.

4. Place the lids in a small pan of water. Bring almost to a boil, then remove the pan from the heat. Leave the lids in the hot water until you need them.

5. Prepare food for the canner according to your recipe instructions.

6. Fill the jars with the food, leaving about an inch of headspace at the top of the jar.

7. Poke gently through the food with a chopstick or nonmetal spatula to release any air bubbles. Wipe the rims with a clean, damp cloth, and then put on the lids.

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**KEEP THE JARS HDT**

As you're filling and loading the canning jars, work quickly enough so that your jars are still quite hot when they are placed into the canner. Otherwise, they may crack when they hit the boiling water.

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**8.** Now it's time to load the jars into the canner's rack. You can either load the jars into the rack after it's already immersed in boiling water inside the canner or remove the rack and load it outside the canner. If you load the rack outside the canner, lower it gently into the canning kettle, taking care to avoid splashing the boiling water. (I usually put the rack in the canner before loading it, because it is far too easy to drop a fully loaded rack as you're trying to set it into the canner.) Add more water, if necessary, so that the water rises to at least two inches above the tops of the jar lids.

9. When the water in the kettle returns to a full, rolling boil, start timing. Boil the jars for the recommended processing time, being careful that the water never drops below a boil, in which case you'll have to start your timing all over again. The table below shows how many minutes to boil a range of foods. (If you live more than I,000 feet above sea level, adjust the processing time as indicated in "Altitude Adjustments for Water Bath Canning.")

10. When it's time to remove the jars, leave the rack inside the canner and use a jar lifter to take out the jars one by one. Set on a rack or other heatproof surface until cool.

11. Check every seal for tightness before storing the jars. (See page 185.)

**ALTITUDE ADJUSTMENTS FOR WATER-BATH CANNING**

If you live at a high altitude, you'll need to process your canned food for longer than recipes call for. Make the following adjustments.

| Altitude | Processing Time |
|---|---|
| Under I,000 feet | Time called for in recipe |
| I,000 to 3,000 feet | + 5 minutes |
| 3,00I to 6,000 feet | + I0 minutes |
| 6,00I or more feet | + I5 minutes |
| Above 8,000 feet | + 20 minutes |

**HOME-CANNED APPLESAUCE**

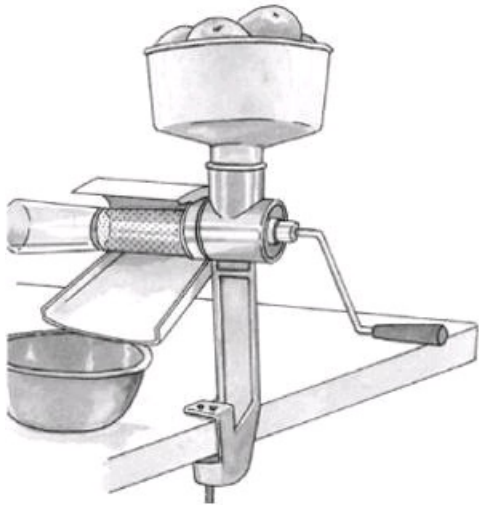
It is helpful to begin canning with something that is fairly simple, such as applesauce. It takes a little time to can applesauce, but the results are so delicious and the savings so dramatic that you may never purchase another jar of sauce from the market again.

You need twenty to twenty-three pounds of apples for seven quarts of sauce, which is a one water-bath canner load. You don't need perfect apples. Even though I use organic apples, I still wash them well to get rid of dirt, bugs, and whatever organic sprays the orchard may use.

I run my jars through my dishwasher on the sanitizing cycle just before I start. This keeps them hot while I work. I quarter the apples but don't bother to peel them or remove the seeds. Then I simmer the apples in a bit of water or apple juice, stirring often to prevent the apples from sticking to the bottom of the pot. While the apples cook, I begin heating the water in my canner. I heat water in a teakettle as well, and when it is hot but not boiling, I pour that water over the jar lids in a pan.

When the apples are soft, I run them through a hand cranked strainer. I use a Squeezo, which does a wonderful job, but for many years I used a cone-shaped strainer with a wooden auger. It worked just fine and cost less than twenty dollars. A food mill would also work. You can add some sugar to the sauce if you want to, but this is a matter of taste.

Now I pack the hot sauce in the hot jars, leaving about an inch of headroom at the top. Using a wide mouthed funnel and a ladle makes this step a lot easier. I wipe the rims of the jars with a damp cloth, since any little bit of mess on the rim will keep the jars from sealing. Then I put on the lids and tighten just until I meet resistance.



RUNNING APPLES THRDUGH A HAND CRANKED STRAINER

I use the jar lifter to set the jars in the rack in the canner. I put the top on the canner and wait until the water comes back to a rolling boil. Then I start timing, counting off twenty minutes for both pints and quarts. I use a timer for accuracy. When the time is up, I remove the jars with the jar lifter and set the jars to cool. The sound of a pop as the lids retract means they are well sealed. After several hours, I check the seals on the jars. If any jar has a lid that has not retracted (see box at right), I refrigerate that jar and use up the sauce over the next few days.

When the sealed jars have cooled, I put them in my storage pantry.

This whole thing may sound like a lot of work, but once you do it a few times you won't even need to look at the instructions. In a weekend you can put up a three- to six-month supply of the best applesauce you can imagine.

**PRESSURE CANNING**

High-acid food does well in a water bath canner, but if you want to can vegetables or meat you need to use a pressure canner. Botulism is a nasty, potentially deadly toxin that loves an oxygen-free, low-acid environment. Its spores are not killed until temperatures reach 240°F. Since that is higher than the boiling point of water, you need pressure to get the temperature up to the appropriate level.

A lot of the pressure-canning horror stories come from the 1940s, when there was a resurgence in pressure canning because of the war. Low-quality materials and shoddy workmanship in equipment were common at the time, because the higher quality materials were being used in the war effort. This did lead to some disasters, but such events are uncommon today. Excellent-quality canners and readily available information have made pressure canning a safe procedure as long as you follow the rules.

I am a pretty frugal person, but I would not recommend borrowing or buying a secondhand pressure canner. You want to have full confidence in your equipment, and buying new in this case is a good idea.

**TESTING SEALS FOR TIGHTNESS**

After the jars have cooled, you can test the seals for tightness in one of three ways. First, remove the screw band. Then:

- Press the middle of the lid with your finger. There should be no give. If the lid springs back up when you remove your finger, the seal may not be tight.
- Tap the lid with the bottom of a metal spoon. It should make a high-pitched ringing sound. If it makes a dull sound, the seal may not be tight.
- Bring the jar to eye level and examine the lid. It should have retracted, so that it is concave (curving down slightly in the middle). If it is fiat or convex (bulging slightly in the middle), the seal may not be tight.

If the seal is tight, replace the screw band and store the jar. If the seal is not tight, you can reprocess the jar, first checking the lid pieces for defects. But I usually don't bother; instead I store the jar in my refrigerator and make sure it gets consumed in the next couple of days.

**PROJECT**

**PRESSURE CANNING**

Before you begin, be sure your canner is clean and working properly. Follow the safety checklist that comes in your canner's instruction book. Then follow these steps for successful pressure canning.

Pressure canners today are available with either a dial gauge or a weighted gauge. The dial gauge allows you to increase pressure in increments of one pound, which is helpful for canning at high altitudes, but it must be checked for accuracy once a year. (Most county extension services can check your gauge for you.) Weighted gauges, on the other hand, do not need to be checked annually for accuracy, and they are less fragile than dial gauges.

WEIGHTED GAUGE DIAL GAUGE

1. Assemble all your equipment.

2. Wash the jars, even if they are new, in hot, soapy water and rinse well. Keep the jars hot by holding them in a l50°F oven. You can save time by running them through the dishwasher and keeping them in there while you prepare the food.

3. Place the lids in a small pan of water. Bring almost to a boil, then remove the pan from the heat. Leave the lids in the hot water until you need them.

4. Prepare food for the canner according to your recipe instructions.

5. Fill the jars with the food, leaving about an inch of headspace at the top of the jar. Poke gently through the food with a chopstick or nonmetal spatula to release any air bubbles. Wipe the rims with a clean, damp cloth, and then put on the lids.

6. Fill the canner with two to three inches of hot water (or follow the instructions in your recipe). Place the rack in the canner and place over your burner.

7 Place the filled jars in the rack, using a jar lifter. Then fasten the canner lid securely.

8. Leave the weight off the vent port or open the petcock. Heat the canner at the highest setting until steam flows from the petcock or vent port. (See next page.)

9. Maintain the high heat setting and exhaust steam for ten minutes. Then place the weight on the vent port or close the petcock. The canner will pressurize during the next three to five minutes.

**STEP 8: STEAM FLDWING FRDM A PETCDCK**

10. Start timing the process when the pressure reading on the dial gauge indicates that the recommended pressure has been reached, or when the weighted gauge begins to jiggle or rock (you might have to tap it slightly).

11. Regulate the heat under the canner to maintain the pressure at or slightly above the level called for in your recipe. You don't want the pressure to rise and fall during the canning process, as such pressure variations may cause unnecessary liquid losses from jars. On a canner with a weighted gauge, the pressure regulator should rock gently throughout the process. Different canner models work a little differently, so check your owner's manual to find out how to be sure you are maintaining adequate pressure. Follow the instructions for exactly how much and how long pressure should be applied.

12. When the timed process is completed, turn off the heat, remove the canner from the heat if possible, and let the canner depressurize. Do not force-cool the canner. Forced cooling may result in food spoilage. Cooling the canner with cold running water or opening the vent port before the canner is fully depressurized will cause loss of liquid from jars and seal failures. Forced cooling may also warp the lid of older model canners, causing steam leaks. It's best to time the depressurization of older models; standard-size heavy-walled canners require about thirty minutes to depressurize when loaded with pints and forty-five minutes with quarts. Newer, thin-walled canners cool more rapidly and are equipped with vent locks. These canners are depressurized when their vent-lock piston drops to a normal position.

13. About ten minutes after the canner is depressurized, remove the weight from the vent port or open the petcock. Wait another two minutes, then unfasten the lid and remove it carefully. Lift the lid away from you so that the steam does not burn your face. (Since I generally do my canning at night, after the kids go to bed and the kitchen is cooler, I do away with this step altogether by leaving my jars in the canner overnight. By morning, everything is cool.)

14. Remove the jars with a lifter and place them on a towel or rack to cool.

15. Test every seal for tightness before storing jars. (See page 185.)

### HDME-CANNED TDMATD-ZUCCHINI SAUCE

We always have more zucchini than we know what to do with. It isn't great frozen, so I developed this sauce recipe to use it up. The amounts are not exact. It depends on what the garden is producing and what looks good at the farmers' market. My tomatoes are never ripe as soon as the squash, so I use a #10 can of diced tomatoes instead of fresh tomatoes.

Olive oil

**2-3** onions, chopped

**2** garlic cloves, minced

1 cup diced green pepper

2 summer squash, cut into chunks

A potful of tomatoes, either canned or fresh and chopped

Basil or oregano

• Warm the oil in a pan, then add the onion, garlic, and green pepper, and saute. When the onions are soft but not brown, add the squash. Cook until the squash starts to lose some liquid. Now add the tomatoes and basil or oregano to taste. Simmer for about twenty minutes. Altogether you want to end up with about $5^1/a$ quarts of sauce. (This is a bit too much sauce for the jars, but it is so good that I keep out the extra and eat it the next day for lunch.)

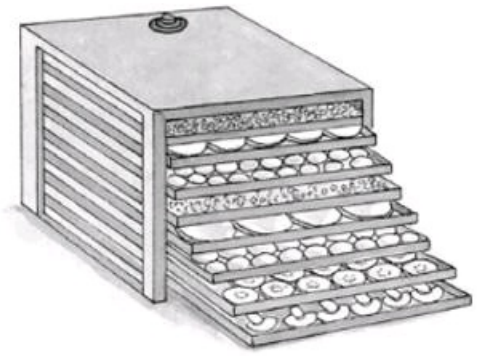
• Fill five hot quart jars with the sauce. Following the general directions for pressure canning, process the quart jars for 40 minutes at 10 pounds of pressure.

### DEHYDRATING

I AM A CONVERT to dehydrating. The finished product is so convenient and the process so simple. It is especially good for families with limited time and storage space. You can make do with little equipment beyond a dehydrator, and if you live in a warm, sunny, and dry climate, even the dehydrator is optional. You can also dry in your oven if you don't mind tying it up for twelve hours.

I dry a lot of fruit and several vegetables, including mushrooms and some herbs. Dried apples are my family's favorite, although dried blueberries run a close second. (I plump up the blueberries in a cup of boiling water before adding them to pancakes or muffins.) I used to store all of my berries in my freezer, but then my power went out for three days and I lost about twenty quarts of blueberries. I freeze only a couple of quarts now and dehydrate or can the rest.

Most home dehydrators come with instructions for drying a wide range of foods. You can also find good instruction in many food-preservation books.



**DEHYDRATDR**

### THE BASIC PROCEDURE

While you should follow the instructions in your manufacturer's instruction manual or a food-preservation book for individual fruits and vegetables, these general instructions for using a dehydrator are useful to know.

1. **Set up your work area.** You need a selection of sharp knives, a vegetable peeler, a cutting board, bowls and pots for blanching, and a dehydrator. Pull out your fruits and vegetables and sort out any that are of poor quality; they will not be improved by the drying process.

2. **Wash.** Prepare your fruits or vegetables by washing them well and letting them dry on absorbent towels.

3. **Preheat.** Plug in the dehydrator to preheat.

4. **Prep and pretreat.** Slice, dice, or otherwise prepare your food as necessary. Small fruits or vegetables, such as peas, can be dried whole. Larger fruits or vegetables should be cut into uniform smaller pieces. As is the case for freezing, some foods benefit from a pretreatment before being dried. If a recipe or drying instruction calls for *blanching,* that means you must heat the food in boiling water for a few minutes and then cool it rapidly, usually by plunging it into cold water. Blanching slows the enzyme action that causes food to spoil, sets the color, and speeds the drying time by softening cell walls and allowing water to escape more easily. The other widely used pretreatment is *dipping,* which calls for dipping food in salt water, ascorbic acid, or lemon or other acidic juice. Dipping is used especially for cut fruits, which may otherwise discolor and be unappealing.

5. **Dry.** Place the food on the dehydrator trays and dry according to the manufacturer's directions. The amount of time it takes to dry a food is determined by many factors, including the food's size and original moisture content, ambient humidity, and the drying temperature, so it is difficult to give hard and fast rules about drying times. Most drying charts give ranges rather than exact drying times. Serious dehydrators weigh produce to determine when enough moisture has been released, but I don't have the equipment or the inclination. I dry string beans until they are tough and leathery, peas until they are hard, and onions and peppers until brittle.

6. **Store.** Package dried food in small batches in airtight bottles or plastic bags. Store in a cool, dry, dark place. (Note: Dried foods are not heated at a high enough temperature to kill all insect eggs. If I plan to store dried foods for more than two to three months, I freeze them before storing to kill any insect larvae.)

7. **Use up.** Home dehydrators will not remove enough moisture to match the indefinite storage life of commercially dried foods. Mine start to look a bit old after three to four months.

### DRIED APPLE RINGS

As I said, apples are my family's favorite dried food, and they're popular with most people, including kids. Apples are fun to dehydrate, but it takes time to cut them up unless you have an apple peeler/corer. I don't peel my apples, which saves a lot of time. And I dry them as follows:

• Cut your apples into !4 -inch rings and remove the cores.

• Pretreating is only necessary if you are drying in the sun. If so, soak the apples in diluted lemon juice, about !4 cup lemon juice to 4 cups water, for about an hour.

• Wipe off as much of the surface moisture as you can, then dry the slices in your dehydrator for 6 to 8 hours, or until the slices are leathery and chewy.

• Store in an airtight container, where the apples will last a long time — if you can keep the kids out of them. I can't, so length of storage is not something I worry about.

### FRUIT LEATHER

Supermarket fruit leather is primarily sugar and artificial thickener along with a hefty dose of artificial color. Real fruit leather is easy to make and tastes terrific.

• Prepare a thick fruit puree in a blender.

• Spread the puree either on oiled trays to dry in the oven at 120°F or on special fruit-leather inserts for a dehydrator. The length of drying time will depend on the thickness of the puree and other variables; it takes about six hours for a thin sheet to dry in my dehydrator. Turn the sheet over in the last hour so that it dries evenly.

• Once the leather sheet is dry, dust it with cornstarch and roll it into tubes.

• For longterm storage, keep fruit leather in a very cool, dark, dry location. However, this is one of the foods that never sticks around long enough at my house for length of storage to be a problem.

### JERKY

I have never dried meat, although I have friends who make their own jerky that is very good. I include the recipe in case you want to try it. You might want to try it with someone who has some experience for the first few times. If you find yourself with an abundance of meat to preserve and no freezer, knowing how to make jerky will come in handy.

• Start with fresh, very lean meat. Trim any excess fat. You can't make jerky from raw pork or any fowl, but beef and game such as venison or bear is good for jerking.

• Cut the meat into very thin strips. This may be easier to do if the meat is very cold or even partially frozen.

• Boil the meat briefly, just long enough to get the pink out.

### DRIED FRUITS VERSUS VEGETABLES

While dried fruit, which most kids like and are familiar with, is one thing, dried vegetables are another. They have two problems: they look funny (read: unappetizing), and they don't measure up to fresh in the same way canned or frozen vegetables do once cooked. But do not dismiss them too quickly. As long as you don't expect a dried pea to look or behave like its fresh counterpart, you will find the dried variety has its uses, especially in a food storage system. For instance, if my home-canned spaghetti sauce is a little thinner than I like, I will toss in a half to one cup of dried summer squash. This thickens up the sauce without changing the flavor. In long-cooking soups and stew, dried vegetables such as peppers, onions, peas, and string beans hydrate as they are cooking and taste as good as fresh.

• Combine the jerky blend (see recipe below) with just enough water to cover the meat. Marinate the meat in the mixture overnight.

• Pat the meat dry and put it in your dehy-drator. Do not let pieces touch. The meat will drain a bit, and you will want to keep this cleaned up. The meat may also sweat. Blot off these beads of oil with a paper towel.

• When the meat is dry but still pliable, it is done. Store it in airtight jars or plastic bags or freeze it for longterm storage.

### JERKY BLEND

**1** teaspoon ground black pepper

**8** tablespoons tamari

**16** cloves of garlic, crushed

**4** teaspoons balsamic vinegar

**1** teaspoon parsley

### DRYING HERBS

Herbs are probably the easiest thing to dry. They can simply be hung in a dry, airy location or put in a dehydrator for a few hours. If you use a dehydrator, be careful not to let them burn. I dry mint, dill, basil, sage, and thyme with excellent results.

When you use dried herbs in your recipes, remember that they are more concentrated than fresh herbs. In general, when a recipe calls for fresh herbs, you can use dried in one-third to one-half the amount called for.

### RECONSTITUTING DRIED FOODS

Not all foods need to be reconstituted, or rehydrated, before use. Jerky can be eaten as is, as can most fruits. If you're going to use a dried vegetable in a soup and it will cook in the broth for more than twenty minutes, generally it won't need to be rehydrated, as the long soak in the hot soup will do the job for you. If you want to eat a dried vegetable in a different type of dish or as a side dish, though, you must rehydrate it first; even vegetables intended for stews will benefit from being rehydrated first. Cover the vegetable with boiling water and let sit for twenty minutes. As the water is absorbed, you may have to add more to keep the vegetable submerged. Bring water and vegetable to a boil again and cook until tender. The taste and texture can be improved with the addition of a sauce. Fruits can be rehydrated in the same manner before being added to a recipe or consumed warm.

### RECDNSTITUTING FDDDS

If a recipe calls for a food you have in dried form, reconstitute first, then proceed as directed.

*All measurements given in cups, except where otherwise indicated*

| Dried Food | Amount | Water | Yield |
|---|---|---|---|
| Apple granules | 1 | 3 | 3 |
| Apple slices | 1 | 1½ | 2 |
| Apricot slices | 1 | 2 | 1½ |
| Beets | 1 | 3 | 2½ |
| Bell peppers | 1 | 1½ | 2 |
| Buttermilk | 1 | 1½ | 2½ |
| Cabbage | 1 | 2½ | 2 |
| Carrots | 1 | 2 | 2 |
| Celery | 1 | 1 | 2 |
| Cheese | 1 | ½ | ⅔ |
| Corn | 1 | 3 | 2 |
| Dates | 1 | 1 | 1⅔ |
| Fruit blend | 1 | 1½ | 1½ |
| Gelatin | 1 | 4 | 4 |

| Dried Food | Amount | Water | Yield |
|---|---|---|---|
| Green beans | 1 | 2 | 2 |
| Margarine | 1 | 2 tbs | ¾ |
| Milk | 1 | 4 | 4 |
| Onions, minced | 1 | 1½ | 2 |
| Peach slices | 1 | 2 | 2 |
| Peas | 1 | 2½ | 2½ |
| Potato, diced | 1 | 3 | 2 |
| Potato granules | 1 | 5 | 5 |
| Potato, sliced | 1 | 2 | 1 |
| Sour cream | 1 | 6 tbs | ¾ |
| Spinach flakes | 1 | 1½ | 1 |
| Tomato powder | 1 | 1½ | 1¾ |

### PICKLING

**PICKLES ARE JUST** the thing to spice up an otherwise mundane meal, and in the winter months they can provide a taste of summer when you really need a lift. Pickling is not just for cucumbers. It is a great way to keep many fruits and vegetables, especially for your storage pantry, as the process not only preserves but actually enhances many nutrients. My family is particularly fond of pickled beets, carrots, pears, and sauerkraut. Pickling has been documented as early as 1000 BC, but clearly modern techniques and improvements in equipment have made the process much easier.

In general, vegetables are pickled by salting them, letting them sit, then packing them into jars with pickling spices. The jar is filled with either boiling syrup (for sweet pickles) or brine (for salty pickles), and the jars are processed in a water-bath canner (see page 182). You can also find recipes for refrigerator or freezer pickles and some brined pickles that don't require water-bath canning.

There are several excellent guides to making pickles and relishes, including *The Joy of Pickling,* by Linda Ziedrich, which is my tried-and-true reference. I give here some of my favorite recipes, which will allow you to get a sense of the basic process and, hopefully, a taste for the joys of pickling.

### PICKLING SPICES

It will be helpful to make up batches of mixed pickling spices ahead of time so you can make pickles when the mood (or the cucumbers) comes on you.

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### SWEET AND SPICY MIX

**1 or 2**cinnamon sticks, broken into pieces

**5**bay leaves, broken up

½ teaspoon dried red chiles, chopped

**1** tablespoon black peppercorns

**1** tablespoon dill seeds

**2** teaspoons fennel seeds

**2** teaspoons whole allspice berries

**2** teaspoons whole coriander seed

**1** teaspoon yellow mustard seeds

**1** teaspoon whole cloves

½ teaspoon small pieces nutmeg

• Mix up all the spices and store in a canning jar in a cool, dark place.

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### MILD PICKLING MIX

This is another good mix that is a bit milder than the mix above.

**6** bay leaves, crumbled

**2** tablespoons mustard seed

**J** teaspoon whole cloves

**2** teaspoons allspice berries

**2** teaspoons black peppercorns

**2** teaspoons dill seed

**2** teaspoons coriander seed

• Mix up all the spices and store in a canning jar in a cool, dark place.

### PICKLES

To make pickles, you'll need both white vinegar and pickling salt. Table salt will not do, as it often contains iodine and always has other additives that can ruin the look, if not the flavor, of your pickles. Kosher salt will work, but its crystals are large and you will need about one and a half times as much as you would of pickling or canning salt. If you are just learning how to make pickles, stick to true pickling salt for more reliable results.

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### BEN'S FAVDRITE SUNSHINE PICKLES

Like so many favorite recipes, I have no idea where it came from. My mother-in-law made these a lot, and they are my youngest son's favorite.

6 dozen small pickling cucumbers

2 or 3 fresh heads of dill

1 onion, chopped

4 cloves garlic

Dried chiles (optional)

1 quart vinegar

1 quart water

⅔ cup pickling salt

1 tablespoon sugar

• Loosely pack the cucumbers in a 2-gallon jar. Add the dill, onion, garlic, and if you like a pickle with some heat, chiles. Combine the vinegar, water, salt, and sugar in a saucepan, bring to a boil, and pour over the cucumbers. Seal the jar with a lid, then set it in the sun for three days. After that, you can repack the pickles in quart or pint jars and process them in a water-bath canner for 20 minutes (see page 182), or you can just refrigerate them. (They don't last long enough around here to bother canning.)

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### EASY PICKLED BEETS

Even kids who hate beets like these.

**20-30** medium-size beets

**1** quart cider vinegar

**1** cup water

⅔ cup sugar

**2** tablespoons pickling salt

• Cut the tops off the beets and scrub them under running water. Boil the beets until you can pierce them easily with a skewer. Let them cool, then slip the skins off. Pack the beets in about six or seven hot, clean 1-pint canning jars. You may have some leftover beets or not quite enough, depending on how big your "medium" beets are and how many you eat before they hit the canning jars. Combine the cider vinegar, water, sugar, and salt in a saucepan and bring to a boil. Pour the brine over the beets. Place the jars in a preheated-water bath canner and process for 30 minutes.

## MAKING YDGURT

**ONCE YOU FIND** out how easy it is to make yogurt, you may never buy it in the market again. With nothing more than powdered milk, water, starter (which can be purchased dried) or a couple of tablespoons of already-made yogurt, and a warm place for the mixture to sit undisturbed for a couple of hours, you can turn out a quart of yogurt every day. It is the perfect crisis food because it is so versatile. Plain, it can be used as a sour cream substitute in dressings and sauces. Sweetened, it makes a delicious dessert. With fruit and granola, it is a filling breakfast. It can substitute for buttermilk in most recipes, with excellent results. It can also be drained and made into a soft cheese that can be used like cream cheese; this is especially good with a little salt and some dried herbs.

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### PLAIN YDGURT RECIPE

1 quart milk (any kind will do, whether whole, skim, or reconstituted)

¼ A cup powdered milk (as a thickener)

2 tablespoons plain yogurt with active cultures or yogurt starter

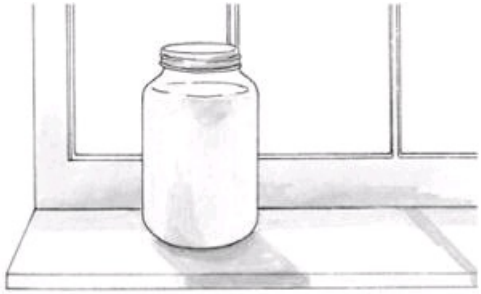
• Warm the milk over medium heat until bubbles form around the edge of the pan. Stir in the powdered milk. Remove from heat and let cool until the milk is lukewarm. You should be able to comfortably hold a finger in the milk for ten seconds.

• Add the yogurt and stir until well combined. Pour the mixture into a wide-mouthed jar. If using a powdered starter, follow package directions. Place the jar in a warm spot, and let it sit for 4 to 6 hours. Don't disturb it, or you risk breaking the yogurt's structure and it won't set.

That's all there is to it. You can use a yogurt maker if you want, but it really isn't necessary and it won't work if the power is out. Some people use a thermos for the setting up, as it will keep the temperature uniform.

The only precautions are to use stainless-steel utensils and glass or stainless-steel pans for heating, as yogurt is acidic and will react with copper or aluminum. You can let it set up in plastic containers, but I prefer glass because it is easier to keep really clean. Plastic also can hold odors that can transfer to your yogurt. Be sure everything is very clean so you don't pick up unwanted bacteria. I once turned out batch after batch of yogurt that refused to set up and smelled terrible, until I sterilized my yogurt-making cups. Something was obviously in there that didn't belong.

For an even thicker yogurt, with a texture more like that of store-bought yogurt, you can add 1 tablespoon of gelatin to the milk



YDGURT SITTING IN A WARM SPDT

with the starter. You can use Jell-O powder the same way and wind up with a fruit-flavored yogurt.

My kids don't like the plain yogurt by itself, but they love it with a little honey and some fruit. On a hot summer night, yogurt layered with fresh fruit and granola makes a good supper. You can mix it with fruit-flavored gelatin and canned fruit for a nutritious dessert. And with the addition of savory spices, it makes a tasty salad dressing.

## MAKING CHEESE

**FOR MONTHS I** had a section neatly partitioned off in my preparedness notebook for cheese making. In truth, I had no idea where to begin. I was simply afraid of cheese making. I had visions of complicated processes and expensive equipment and some vague idea about needing a supply of raw milk. The whole thing seemed impossible for the home cook. Then I read *Home Cheese Making* by Ricki Carroll, self-styled Cheese Queen and owner of New England Cheesemaking Supply Company (www. cheesemaking.com), and I was hooked.

Knowing how to make cheese greatly enhances my ability to turn out tasty food from my stored supplies. My first attempts were limited to yogurt cheese, which involves nothing more complicated than letting a cup of plain yogurt come to room temperature and then wrapping it in cheesecloth and suspending the bag for a few hours, allowing the yogurt to drain. I added some salt and a few chopped chives and called it a success. I next went on to farmer's cheese and finally mozzarella. The only problem is that I can't stand that hard, plastic-wrapped, tasteless stuff that passes for cheese in a supermarket anymore. Fresh mozzarella is a real treat! And I have my order in for a real cheese press because I am such a cheddar fan.

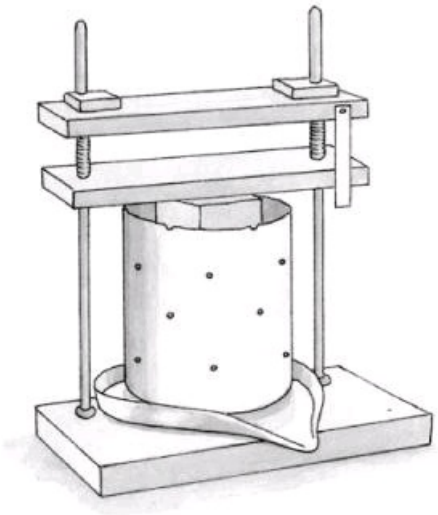
### CHEESE-MAKING EQUIPMENT

People made cheese for centuries without any special equipment, but having the right tools does make it easier. Other equipment and ingredients may be necessary for making more complicated cheeses, but I have gotten along fine with just these things.

- Cheesecloth: a cotton cloth with a very loose weave used to drain curds and to line molds for hard cheeses
- Butter muslin: a tighter-weave cheesecloth for draining soft cheeses; the tighter weave prevents the soft curds from slipping through
- Dairy thermometer: a thermometer with a temperature range from 0°F to 220°F; you can use any thermometer with that range, but a dairy thermometer has some other features such as a bracket to hold it to the side of the pot and a stainless-steel and glass head designed to react

quickly to temperature changes

- Glass measuring cups
- Measuring spoons
- Curd knife: I used a long cake spatula on my first attempt and it worked just fine
- Perforated cheese ladle
- Stainless-steel, glass, or unchipped enamel pots, large enough to hold 1 to 3 gallons of milk
- Cheese press: to make a hard cheese; you can buy a ready-made press or order press-building plans from a cheese-making supply house



CHEESE PRESS

And, of course, to make cheese you'll need milk. You can use low-fat, skim, or even reconstituted powdered milk for many soft cheeses, but I have not had good results unless my milk has some fat in it. Raw milk is great if you can get it. Some grocery-store milk is ultra pasteurized, which won't work for making some cheeses, so read the label carefully before purchasing.

Cheese making will be easier if you find a class or an experienced cheese maker to give you some guidance on your first few attempts.

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**BASIC WHITE CHEESE (QUESD BLANCD)**

Most of the supplies you need to turn out this simple cheese are probably already in your kitchen. The ingredients could not be more basic.

**1** gallon whole milk

⅛ cup apple cider vinegar

• In a large pot, heat the milk, stirring to prevent scorching, until it reaches 200°F. Add the vinegar in a thin trickle, and continue to stir until the curds separate from the whey. Do not let the milk boil or the cheese will be ruined.

• Line a colander with butter muslin and ladle the curds into the colander. Tie the four corners of the muslin into a knot and hang the bag to drain for several hours. Refrigerate for several hours, until the cheese sets. Store in the refrigerator.

HANGING CURDS TD DRAIN

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**CHEDDAR CHEESE**

Ricki Carroll has a wonderful recipe for a real cheddar cheese in her book, but I was looking for a way to make a cheddar from ingredients you might have in storage and came up with this. It isn't the same as a properly aged cheddar made from fresh ingredients, but in an emergency it passes quite well.

**1** cup vegetable oil, plus extra for greasing the pan

**6**cups warm water

**4**½ cups powdered milk

**2** 5/s cups white vinegar

**1 to 2**teaspoons salt (to taste)

**9** tablespoons cheddar cheese powder (I get mine from a food co-op)

• Grease a large saucepan with a bit of vegetable oil. Blend the oil, water, milk, and vinegar and heat in the saucepan, stirring to prevent scorching, until the mixture reaches 115°F and curds begin to form.

• Line a colander with butter muslin and ladle the curds into it. Let drain. Then rinse, first in warm water, then in cold. Place the curds in a bowl and add salt to taste, then mix in the cheese powder. Wrap the cheese in cheesecloth. Set the cheese between two plates with a weight, such as a brick, on the top plate; press until all of the liquid is expelled. This will take a few hours. Wrap the cheese in a vinegar-soaked cheesecloth and store in the refrigerator.

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**MDCK PARMESAN CHEESE**

This isn't real Parmesan cheese, but it will substitute if need be, and it does add a nice touch to a pizza or a pasta dish.

**1** ½ cups boiling water

½ cup powdered milk

**4** ½ teaspoons lemon juice

Salt

• Blend the boiling water, dry milk, and lemon juice in a saucepan. Heat over low heat until the milk boils. Place the mixture in a cheesecloth bag and strain. Then rinse the curds under cold water and let drain.

• Use your hands to break up the curds until they are very fine. Spread them on a cookie sheet and dry for two hours on low heat, about 200°F. (You can use a solar oven for this, but you will need to prop open the top to keep the heat low enough.) You want the curds to dry, not cook. When they are dry, add salt to taste and blend the curds into a powder.

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**THIRTY-MINUTE MDZZARELLA**

This is a Ricki Carroll recipe from Home *Cheese Making.* I couldn't believe this wonderful cheese took only thirty minutes to prepare. The only downside is that six adults ate the entire block in one sitting.

**1** gallon pasteurized (but not ultra pasteurized) whole milk

**1** ½ level teaspoons citric acid dissolved in ¼ cup cool, unchlorinated water 1/8-1/4 teaspoon lipase powder dissolved in J/4 cup cup cool water and allowed to sit for twenty minutes (this is optional but will improve flavor; lipase can be purchased from a cheese supply company)

¼ teaspoon liquid rennet (or ¼ rennet tablet) dissolved in ¼ cup cool water

**1** teaspoon cheese salt (optional)

• Heat the milk to 55°F. While stirring, add the citric acid solution to the milk and mix thoroughly. If you are adding lipase, do it now. Continue heating the milk over medium-low heat until it reaches 88°F. The milk will begin to curdle. Gently mix in the diluted rennet, stirring in an up-and-down motion. Continue heating until the milk reaches 100°F-105°F.

• Turn off the heat and let the mixture sit for 5 to 8 minutes. The curds will be pulling away from the sides of the pot. They should look like thick yogurt and have a bit of shine. If the whey is still milky instead of clear, wait a few more minutes. Scoop out the curds with a perforated ladle and place them in a 2-quart micro wavable bowl. Press the curds gently with your hands, pouring off as much whey as possible. Reserve the whey.

• Microwave the curds on high power for 1 minute. Drain off all excess whey. Gently fold the cheese over and over, as if you were kneading bread, with your hand or a spoon. This distributes the heat evenly throughout the cheese. Microwave two times for 35 seconds each. After each heating, knead again and drain away the excess whey. You may want to wear rubber gloves; the curds will become too hot to touch with your bare hands. Add the salt to taste after the second microwave. Knead the cheese quickly until it is smooth. When the cheese becomes elastic, start to pull and stretch it as you would taffy. If it breaks, the curds need to be reheated.

• When the cheese is smooth and shiny, roll it into a log or small balls. Eat while still warm, or place the cheese in a bowl of ice water for about a half hour to produce a consistently smooth texture. If you must wait, cover it and store it in the refrigerator.

Note: If you don't have a microwave, heat the reserved whey to at least 175°F. Add !4 cup of cheese salt to the whey. Shape the curds into one or more balls. Now, put on heavy rubber gloves. Place each ball in a ladle or strainer and dip it into the whey for several seconds. Knead the curd with spoons between each dip. Repeat this process several times, until the curd is smooth and pliable.

## BAKING BREAD

**HOMEMADE BREADS AND** rolls have the ability to turn an ordinary meal into an event. If you've never made bread you may think that there is some magic involved, but it really is a simple, if somewhat lengthy, process. But since most of the time is spent waiting for the bread to rise, it doesn't need to take that much time from your day. Even if you don't want to bake bread on a day-to-day basis, you should know how to do it, so that you can do it without much fuss if you need to.

Basically, all you need is flour, some sweetener, some oil, yeast, salt, and some liquid. The flour can be white, whole wheat, or a combination of the two. Honey, sugar, maple syrup, or molasses will do as a sweetener; it isn't used for flavor so much as to give the yeast something to work with. Any liquid fat, such as melted shortening or butter, will do for the oil; though you don't need much, it usually helps to have some.

Yeast refers to active dry yeast. You can buy those small packets in the market, but it is a really expensive way to make bread. I buy SAF instant yeast in one-pound bricks from a big-box store. The bricks store well unopened and freeze almost indefinitely. Yeast is a plant and will die in temperatures that are too hot and become inactive in temperatures that are too cold. The water that you dissolve yeast in should feel comfortably warm when sprinkled on the inside of your wrist. If you want to test your yeast's liveliness, dissolve a teaspoon in a quarter cup of warm water. Add a teaspoon of sugar and let it sit for ten minutes. You should see bubbles, indicating that the yeast has begun to work. If the mixture just sits there, the yeast is too old and needs to be replaced. Rotate!

Liquid for bread is usually water or milk. If you're using a lot of milk, you should scald it first to denature some of the milk proteins. Otherwise the dough may feel sticky and heavy. Scalding refers to heating the milk until bubbles form around the edge of the pan. Scalding is not the same as boiling; if the milk is allowed to boil it will taste terrible and ruin the bread. I am a lazy cook, so rather than scald my milk I usually don't add more than half a cup to any recipe or I add a quarter cup of powdered milk to the flour. This improves the crumb and makes the loaf keep better but doesn't take as long.

Yeast breads need to be kneaded to develop the gluten in the flour. Bread that is not kneaded adequately will not rise well, and the texture will be heavy and unpleasant. Kneading involves using the palms of your hands to push the dough down and away from you. After a push with your hands, you give the dough a quarter turn and repeat the process. It takes ten to fifteen minutes to fully knead dough by hand.

The dough will need to rise before baking. The ideal place is warm and draft free. An unlit oven is a good spot for rising (as long as you don't forget and preheat the oven to cook something else without removing the dough first). Cover the dough with a damp cloth to keep the top from drying out. I like to let the dough rise twice. Lots of people omit the second rising, but I think it makes the texture of the bread much better. In each case, the dough should be allowed to rise until it has about doubled in size, and then it should be punched down. The first rise takes about an hour. The second rise should take place in the baking pan and will take a bit less time. If you forget and let the dough rise for too long, it will fall. If this happens you can punch it down again and let it rise a third time, although the dough may develop a bit of a sour flavor.

Bread dough is very forgiving. You can add some soy flour, rolled oats, uncooked hot cereal, or leftover cooked cereal. The substitution is usually measure for measure; just don't substitute for more than a cup of flour. (Soy flour should not account for more than a quarter cup of the flour or the taste and texture will be adversely affected.) I have tossed in leftover oatmeal from breakfast, the final quarter cup of milk in a carton, or an egg without changing the taste much, although the amount of liquid needed to be adjusted.

Bread needs to be baked in a 425°F oven. I cook mine in my solar oven only if the weather is very sunny and I can get the temperature up that high. Even then I usually cook the dough as rolls or breadsticks rather than large loaves. Bread can also be baked on a stovetop in a well-greased, preheated, and covered Castiron pan. Bread can also be fried in oil.

With the basic ingredients, I can turn out a pizza crust, topping for a pot pie, or cinnamon rolls. Without yeast, I can make a variety of quick and flat breads, including tortillas, dense fruit breads, and dumplings (see chapter 18 for these recipes). These easy-to-make breads can turn meals from stored foods into some of your family's favorites.

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### BASIC YEAST BREAD

The amounts listed here will make two loaves of bread.

**7**½ cups flour

¼ cup powdered milk (optional)

**1** tablespoon salt

**2**½ cups water

**2** teaspoons yeast dissolved in V2 cup warm water

**2** tablespoons oil

**2** tablespoons sweetener (honey or sugar)

• Measure 6½ cups of flour into a large bowl. Add the powdered milk, if you're using it, and the salt and mix well with a fork. In a small bowl, mix together the water, dissolved yeast, oil, and sweetener and then add it to the flour. Mix this all together by hand or with a mixer (electric or hand cranked) with a dough hook. You will end up with a soft, sticky ball of dough.

• Now you will adjust the consistency of the dough by kneading in the rest of the flour. A mixer will do the job in about 10 minutes. It will take about 15 minutes of real effort to do it by hand, !4 cup of flour at a time. You want the dough to feel firm and elastic. If it is too stiff, the loaf will be heavy and dense; if it is too soft, it won't hold up. Too soft is better than too heavy, so don't knead in more flour than you have to.

• Shape your dough into a ball. Cover it, set it in a warm place, and let it rise until it has about doubled in size. After the first rising, punch down the dough and then let it rise again. After the second rising, punch down the dough again, shape it into two loaves, place in loaf pans, and let them rise one last time. Then bake the loaves in a 325°F oven for 45 to 50 minutes. The loaves should be nicely browned and sound hollow when you tap on them. Let them cool on wire racks for ten minutes, remove them from the pans, and let them finish cooling. Cool loaves slice better than warm ones, if you can keep the kids out of them that long.

These are pretty basic directions. If you're interested in playing around with different ingredients and baking techniques, I would recommend that you work with one of the many excellent bread-baking books that are now available. *The Laurel's Kitchen Bread Book* by Laurel Robertson is one of my personal favorites.

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### BASIC PIZZA DDUGH

Basic pizza dough is a good recipe to have at your fingertips. You can shape any loaf of bread dough into a pizza crust, but for a really good crust, use olive oil as your oil and eliminate any milk or extras to the mix. I usually replace a cup of the water with a cup of flat beer for better flavor. Pizza dough can be frozen in a ball or flat disk. Let it thaw in the refrigerator, then bring to room temperature, shape into pies, and let rise.

Before putting any toppings on the pizza crust, brush the dough with oil to keep the crust from getting soggy. You can, of course, bake a pizza in a traditional oven range or bread oven. You can also bake a pizza right on a grill; just line the grill with aluminum foil and keep the top closed while the pizza's baking. You can even bake pizza in a solar oven, but as you might expect, small pies cook better than large ones do. If all you have is a stovetop, you can let the dough rise a bit, then fry both sides in a greased pan. Heat the sauce and any vegetables in a pan before spreading them on the pizza. Add the cheese and cover the pan for a minute or two to melt the cheese.

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### BASIC SWEET BREAD

Every cook should have a basic sweet bread recipe in his or her repertoire. Doughnuts or cinnamon rolls will really cheer up kids who have been housebound for days in a storm, especially if they get to help with the mixing and frying. For information about kneading and rising, see page 200.

**2** teaspoons yeast dissolved in ¼ cup warm water

½ cup scalded milk, cooled

**2** eggs, beaten

⅔ cup vegetable shortening (preferably nonhydrogenated)

½ cup sugar

**4** ½ cups flour

**1** teaspoon salt

**1** teaspoon nutmeg

• Mix together the yeast, milk, eggs, shortening, and sugar. Add 3½ cups of the flour and the salt and nutmeg, stirring until well blended. Knead in the final cup of flour. Knead for 10 minutes, then let the dough rise for about an hour. Punch down.

• **For doughnuts:** Roll out the dough to M>-inch thickness. Cut the dough with a doughnut cutter. Carefully lift the doughnuts with a spatula to a greased cookie sheet. Let rise again for about 45 minutes. You can either bake the doughnuts at 425°F for 8 to 10 minutes or fry them in hot oil. As the doughnuts fry, they will rise to the surface. Turn and fry the other side until brown. These doughnuts can be sprinkled with cinnamon and sugar or glazed with a milk and confectioner's glaze.

• **For sweet rolls:** Roll out the dough into a M>-inch-thick rectangle. Spread with melted butter, brown sugar, raisins, and cinnamon. Roll into a log and slice into 1-inch-thick rounds. Let rise for about 45 minutes, then bake in a 425°F oven.

### SPRDUTING

**ICONSIDER SPRDUTING SEEDS** to be one of the cornerstones of the preparedness pantry. They are inexpensive, take up very little room, and do not need fancy equipment to process. After a diet of canned and dried food, our bodies will crave something green and alive. Sprouts will fill the bill nicely. Sprouts add crunch to sandwiches and a vitamin boost to scrambled eggs and casseroles. They are tasty eaten right out of hand and make a terrific addition to a stir fry. I have even added a handful to bread batter with excellent results.

Sprouts contain vitamins, proteins, minerals, enzymes, and fiber. All of these may be in short supply if you are eating for any length of time out of storage. If you have a bag of lentils in your panty, you have what you need to get started.

Most, although not all, seeds and beans are good for sprouting. The following is a list of the best.

• Alfalfa
• Amaranth
• Barley (hull-less)
• Broccoli
• Buckwheat
• Cabbage
• Clover
• Flax
• Lentils
• Oats (hull-less)
• Peas

- Pumpkin
- Radish
- Rye
- Soy
- Spelt
- Sunflower
- Wheat

Each sprout has a unique flavor. Lentils and alfalfa are mild, for example, while radish has a bite to it.

As is usually the case, you can purchase rather complicated equipment for sprouting. I have seen a couple of these, and while they look pretty impressive and do a fine job of sprouting seeds, I did not find that they did a better job than I was able to do with a few things I already had in my kitchen. I not only saved a bit of money, but also saved the space a sprouter would take up in my kitchen — and that's just as important.

The equipment is as simple as a glass jar, a rubber band, a piece of cheesecloth, and some seeds.

Sort out any foreign matter from the seeds. Soak two tablespoons of seeds in warm water for an hour or two. Drain, then place in a quart jar. Secure a piece of cheesecloth around the top with a rubber band. Put the jar in a dark cabinet. Two or three times a day, rinse the seeds with warm water and drain through the cheesecloth. In two or three days you will have sprouts. If you leave them in the sun for a few hours, the sprouts will turn a lovely green and will increase their vitamin content. I have started to make my last rinse in very cold water, and the sprouts seem crisper. Harvest sprouts when they are about three times longer than the seed they came from.

There are a couple of things to know. Tomato and potato seed sprouts should never be eaten, as they are poisonous. Do not use any seeds that have been treated with fungicides or pesticides for agricultural use. Bean sprouts have the same protein-binding substance as beans, but they must be cooked for a couple of minutes to make it available.

The biggest challenge will be keeping your sprouts from going sour. You will know by the slimy texture and foul odor that a batch has gone bad and you need to dispose of it. You really have to be diligent about rinsing your seeds. The problem is that the jar of seeds should be kept in a dark cabinet. I used to forget about them until it was too late. I finally set up a system of rinsing my sprouts before each meal. After a few weeks it became a habit, and I rarely forget anymore.

SPRDUTS IN A JAR

I also had a problem of finding myself sprout deprived. Sometimes I wanted sprouts and they weren't quite ready. I solved that problem by staggering my sprouts, beginning a new batch every other day.

Sprouts will store in a perforated plastic bag in your refrigerator or any other very cool, dark spot for a few days. You shouldn't have to throw any out if you get in the habit of popping a few into whatever you are cooking.

# CHAPTER 18 THE STORED FOOD COOKBOOK

Now that your pantry is looking pretty full and you have some experience with some basic recipes, it is time to put your stored food plan into service. All that lovely food will go to waste if you don't follow through with the OAR principle of organizing, acquiring, and rotating. The logical way to rotate is to use your stored food on a regular basis, at least once or twice a week, then replace what you have used.

I cook from my food storage at least twice a week. That no one in my family is aware of this fact is a testament to how easy it is to eat well from food that keeps without refrigeration and can be cooked in a solar oven, on a grill, or on the top of a woodstove. The recipes that follow, all of which can be made at least primarily from stored foods, are things we eat often. Some of these come from an old family recipe collection, others from Depression-era cookbooks, and still others from friends and relatives who know the kind of recipes I am always on the lookout for. I always keep an eye out for Amish and Mennonite cookbooks, as their recipes are always prepared without using electricity, so the directions work well for me.

If you cook, and by cook I do not mean just opening a can but really cook, you will be several steps ahead. Cooking is all about improvising, substituting, and experimenting until you have the results that work for you. Crisis cooking will draw on those skills because, no matter how well prepared you are, you will likely find that there are things you have forgotten or just not had time to pick up.

A word about the directions: I often list baking times and temperatures as though I am cooking in a standard oven. Times and temperatures are difficult to predict when using alternative cooking methods, so these are only approximations. You will have to experiment some with the cooking methods you choose to use. Bear in mind that some methods such as solar cooking take longer, while a woodstove may run hotter and take less time and need more careful watching.

## SEASONING MIXES

**PACKAGED SEASONING MIXES** are very helpful when cooking with stored foods. With the addition of a cup of water they turn out predictable sauces and gravies that transform otherwise bland meals into something special. Their only drawback is cost; those little packets are an expensive way to buy spices. It's easy to make your own from spices you probably have in your kitchen right now. I'll give here the ingredients for three of my favorites.

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### MEXICAN SEASONING MIX

This mix is good for flavoring beans or chicken.

1 tablespoon dried onion flakes

2 teaspoons dried green peppers

**1** teaspoon chili powder

**1**teaspoon cornstarch

**1**teaspoon dried garlic

½ teaspoon cumin

¼ teaspoon dried hot pepper

½ teaspoon oregano

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### ITALIAN SEASONING

This mix is particularly good in sauces or meatloaf.

**1** tablespoon cornstarch

**1** tablespoon dried green pepper

**1** tablespoon dried onion

**1** tablespoon parsley flakes

½ tablespoon garlic powder

¼ teaspoon basil

¼ teaspoon marjoram

¼ teaspoon oregano

¼ teaspoon sage

¼ teaspoon thyme

## ONION SOUP FLAVORING

This mix is also good in meatloaf or as a sauce for pot roast.

**4** beef bouillon cubes

**8** teaspoons dried onion

## SUBSTITUTIONS

This chart will help you figure out how to subtitle what you have for what you need, focusing on storage foods.

| Item | Amount | You Can Substitute |
|---|---|---|
| Baking powder | 1 teaspoon | ¼ teaspoon baking soda and ½ teaspoon cream of tartar |
| Butter or margarine | 1 cup | 1½ cups margarine or butter powder rehydrated according to package directions |
| Chocolate, unsweetened | 1 square | 3 tablespoons cocoa powder plus 1 tablespoon butter |
| Cornstarch | 1½ teaspoons | 1 tablespoon flour |
| Corn syrup | 1½ cups | 1 cup sugar plus ½ cup water |
| Egg | 1 whole | 2 egg yolks plus 1 tablespoon water |
| | | 2 tablespoons dehydrated eggs plus 2½ tablespoons water |
| Green pepper | 1 medium | ¼ cup dehydrated green peppers |
| Milk, whole | 1 cup | ½ cup evaporated milk plus ½ cup water |
| | | 1 cup reconstituted milk plus 2 tablespoons butter |
| Onion | 1 medium | ¼ cup dehydrated onion |
| Shortening or butter | 1 cup | ⅘ cup vegetable oil (this may alter the amount of liquid needed) |
| Sour cream | 1 cup | 1 cup milk plus 1½ tablespoons vinegar |
| Sugar | 1 cup | ¾ cup honey (reduce liquid by ¼ cup or add ¼ cup flour) |
| Sugar, powdered | 1 cup | 1 cup sugar and ½ teaspoon cornstarch, blended in blender until powdered |
| White flour | 1 cup | ¾ cup whole-wheat flour |
| | | ⅞ cup rice flour |
| | | 1 cup corn flour |
| | | 1 cup cornmeal |
| | | 1½ cups rolled oats |
| | | ¾ cup buckwheat |
| | | ⅞ cup barley flour |
| | | ¾ cup rye flour |
| Yeast | 1 package | 1 tablespoon yeast |

| Item | Equivalencies |
|---|---|
| Bread | 4 slices = 1 cup crumbs |
| Butter | ½ pound = ½ cup |
| Cheese | 1 pound = 4 cups grated |
| Flour, sifted | 1 pound = 4 cups |
| Graham crackers | 14 squares = 1 cup crumbs |
| Macaroni, uncooked | 4 ounces = 2¼ cups cooked |
| Rice | 1 pound = 2⅓ cups uncooked |
| Spaghetti, uncooked | 7 ounces = 4 cups uncooked |
| Sugar | 1 pound = 2 cups |
| Sugar, brown | 1 pound = 2¼ cups |
| Sugar, powdered | 1 pound = 4 cups |

## BREAKFAST

**IN A TIME** of crisis, you want to start the day with a good breakfast. Not only will you need the calories and nutrition, but the morale boost is invaluable. And though these are all traditional breakfast foods, of course they don't have to be limited to breakfast. Pancakes for dinner can be a welcome treat.

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### CORNMEAL MUSH

Cornmeal mush sounds awful but it is really delicious on a cold winter morning. The leftovers, packed in bread tins and cooled, can be sliced, dipped in flour, and fried crisp and delicious in oil for an evening meal or bedtime snack, served with syrup.

**1** cup cornmeal

**4** cups water

**1** teaspoon salt

• Combine the cornmeal and water. Bring to a boil, add the salt, and simmer for at least 30 minutes. Serve with evaporated milk and sugar.

YIELD: Ten ½-cup servings

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### BUTTERMILK JOHNNYCAKE

We like these cakes served with eggs for a hearty breakfast.

**2** cups cornmeal

**1** teaspoon baking soda

**1** teaspoon salt

**2** tablespoons vegetable oil or other fat

**2** eggs, well beaten

2 cups sour milk (add 2 teaspoons vinegar to 2 cups milk), 2 cups buttermilk, or 1 cup milk mixed with 1 cup plain yogurt

• Preheat oven to 350°F. Combine the corn-meal, baking soda, and salt. Warm the oil or melt the fat, then stir in the eggs, milk, and cornmeal mixture. Pour into an 8-inch square greased pan or into muffin tins. Bake for 20 to 25 minutes, until the cake is cooked through and the top is golden.

YIELD: Six servings

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### SWEET CORN BREAD

A good corn bread recipe should be in every cook's collection. This recipe, along with the johnnycake recipe above, is from a Depression-era cookbook.

**1** cup flour

**1** cup cornmeal

3 tablespoons sugar

**2** teaspoons baking powder

½ teaspoon baking soda

½ teaspoon salt

**1** cup sour milk (add 1 teaspoon vinegar to 1 cup milk)

**4** tablespoons vegetable oil

**1** egg, beaten

• Preheat the oven to 425°F. Grease a 10-inch Castiron skillet and put it in the oven to warm. Combine all ingredients and mix well. Pour the batter into the hot skillet and bake for 25 minutes, or until lightly browned on top.

YIELD: Four servings

**BREAKFAST IDEA**

Plain cooked rice, served with evaporated milk and sugar or honey, makes a good breakfast.

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**SCRAMBLED FRENCH TOAST**

You don't want to waste anything during a crisis. This recipe uses up leftover bread, like the heel pieces. You can even toss in stale biscuits or corn bread.

**2 or 3** eggs (dehydrated eggs will work fine)

1/2 cup milk

Nutmeg

Cinnamon

Bread, torn into small pieces or crumbled

• Beat the eggs in a large bowl. Mix in the milk. Add generous sprinkles of nutmeg and cinnamon. Stir in pieces of torn bread or crumbled biscuits until the mixture cannot absorb any more liquid. Fry about *1/4* cup at a time on a hot, greased skillet.

YIELD: Four servings

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**HOT CEREAL**

This recipe calls for rice or wheat powder, which you can make by processing rice or wheat berries in a blender (a few spoonfuls at a time) or with a hand cranked grain mill. The powder will not be as fine as flour. Rice and wheat powders are excellent storage foods; you can make them in batches and store them in airtight containers. Brown rice and wheat powder should be stored in the freezer or in the coolest location in your home, while white rice powder can be stored at room temperature. Use regular rice, not instant.

**2** cups water

Dash of salt

⅔ cup powdered milk

½ cup rice or wheat powder

• Bring the water and salt to a boil. With a wire whisk, slowly stir the powdered milk and rice or wheat into the boiling water. Cover and simmer for 6 to 8 minutes, or until thickened.

YIELD: Four servings

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**BUTTERMILK PANCAKES**

Pancakes are an obvious choice for breakfast, as all of the ingredients are easily stored. If you don't have a mix on hand (see the mix recipe on page 218), try this easy recipe. Save the leftovers. They are tasty rolled with peanut butter and jelly for lunch.

**1** cup buttermilk, sour milk (1 cup milk mixed with 1 teaspoon vinegar), or yogurt

**1** ½cups flour

**1**tablespoon vegetable oil

**2**eggs

**1**tablespoon sugar

**1**teaspoon baking soda

½teaspoon salt

• Mix together all ingredients. Fry ladlefuls of the batter in batches on a hot, greased griddle.

YIELD: Four servings

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**SQUASH PANCAKES**

These taste a lot better than they sound, and they carry a hefty dose of vitamins.

**2** cups pureed squash or pumpkin (whether from a can or pureed from squash or pumpkin you have in storage)

**2** cups milk

**1** cup flour, sifted

**1** tablespoon sugar

**1** egg, beaten

Dash of salt

• Mix together all ingredients. Fry ladlefuls of the batter in batches on a hot, greased griddle.

YIELD: Six servings

### BREAD AND MILK

Bread and milk is a routine breakfast at my house. Toast some bread and spread with butter, cinnamon, and sugar. Tear into pieces and eat with warm milk.

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### OATMEAL AND APPLES

Old-fashioned oatmeal is a great storage food. A lot of kids want only the gummy stuff that comes in single-serving sizes. It is absurdly expensive: a 1 ½-ounce packet of oatmeal with a little sugar and some cinnamon costs over forty cents! A 42-ounce canister of rolled oats, on the other hand, costs just over three dollars and makes thirty-one servings, at a cost of about ten cents apiece. You can buy rolled oats in bulk from a co-op for even less. If your kids must have the little packets, blend some oatmeal with the spices they like, a few raisins, maybe some chopped dried apples, and a teaspoon of sugar and pop it in a sandwich bag. It cooks up in boiling water just like the expensive stuff. Better still, save the bags and try this recipe.

**1** cup oatmeal (not the quick-cooking kind)

**2** cups water

½ teaspoon salt

Apples (grated if fresh, chopped if dried)

½ teaspoon cinnamon

• Combine the oatmeal, water, and salt. Bring to boil, cover, and let simmer for 10 minutes. Stir in the apples and cinnamon. Cover and cook till apples are done. Serve with honey and milk or brown sugar and cinnamon. If you like, top with raisins or walnuts.

YIELD: Four servings

### SOUP

**SOUPS ARE AN** ideal family survival food. They cook well in a solar oven, and the recipes are not fancy. A bit more or a bit less of anything won't matter, and diners can season their own bowls as they see fit. Soup is easy to stretch; add an extra can of mixed vegetables and another cup of bouillon and you can feed two more. Leftover soup from lunch, thickened with some cornstarch and water, is the basis for a supper casserole. Add a loaf of bread or a pan of biscuits and everybody is happy. What follows are just soup ideas to get you started.

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### CREAM SOUP MIX

I use a lot of soup in my storage recipes. A cream soup can form the base for any number of casseroles. Canned soups are a great time saver, but they do have an extraordinary amount of added salt and often monosodium glutamate (MSG), which a lot of people can't eat. This cream soup base takes up little storage space; salt can be added at the table.

**2**cups powdered milk

¾ cup cornstarch

½ cup chicken bouillon granules

**2**teaspoons dried basil

**2**teaspoons dried onion flakes

**2**teaspoons pepper

• Mix together all ingredients and store in an airtight container in a cool, dry location. To reconstitute, mix M> cup of this mix with 2 cups of water. This equals 1 can of commercial cream soup.

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### CHICKEN NOODLE SOUP

You can substitute rice or dumplings (see page 225) for the noodles in this recipe.

**6** cups broth (canned is best, but you can use bouillon also)

**12** ounces canned chicken

Carrots

Peas

Celery (dehydrated is fine)

Onion (dehydrated is fine)

Parsley (dehydrated is fine)

**1** (12-ounce) package egg noodles

• Bring the broth to a simmer. Add the remaining ingredients, bring back to a simmer, and cook until the noodles are done.

YIELD: Four servings

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### TOMATO SOUP

Canned tomato soup should be in everyone's pantry because it's inexpensive and so versatile. But you can also make your own, using fresh, canned, or frozen tomatoes. I promise that it will be superior to any commercial canned soup you have tasted.

**1** quart canned whole tomatoes, peeled

½ teaspoon baking soda

**2** cups milk

Salt, pepper, dried basil, and butter to taste

• Pour some of the liquid off the tomatoes. (Once you've made this soup a few times, you'll get a feel for how thick you like it

**CREAM OF TOMATO SOUP**

You can turn your tomato soup into cream of tomato soup by adding 3 tablespoons of butter (if you're using butter powder, reconstitute it first) and 3 tablespoons of flour to the warm milk. Stir until thickened, and then add the hot tomatoes and season to taste.

and, thus, how much liquid to pour off the tomatoes.) Then mash the tomatoes with a potato masher or put through a food mill. Stir in the baking soda. In a separate pot, heat the milk (but do not boil). Pour the hot tomatoes into the hot milk, and season to taste. Serve with soda crackers.

YIELD: Four servings

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**GERMAN POTATO SOUP**

**3 or i** potatoes, peeled and diced

¼ cup celery or 1 teaspoon celery salt

**1** chicken bouillon cube

**4** cups milk

**1** tablespoon parsley Salt and pepper to taste

• Cook the potatoes and celery in 1A cups of water. Do not drain. Add the bouillon, milk, and seasonings. For a creamy texture, mash the potatoes.

• You can also make this recipe using 2 cups prepared instant mashed potatoes; cook the celery in 1A cups of water and then add the remaining ingredients, mixing well.

YIELD: Four servings

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**EASY SPLIT-PEA SOUP**

**12**ounces dried peas

**7**cups water A good-sized piece of canned ham

**1**onion, chopped

**2**bay leaves

**12**peppercorns

**½**teaspoon salt

• Combine all ingredients in a large pot. Boil gently for 1 hour, or until the peas are soft. Remove bay leaves and peppercorns with a slotted spoon. Whip the soup with a wire whisk, if desired, to blend the peas.

YIELD: Six servings

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**QUICK VEGETABLE SOUP**

1 cup leftover cooked vegetables (spinach, peas, cauliflower, carrots)

1 cup chicken broth

**½** cup evaporated milk Curry powder (optional) Worcestershire sauce (optional)

• Mash the vegetables. Blend with the broth and evaporated milk, and if desired, season to taste with the curry powder and/or Worcestershire sauce. Heat and serve.

YIELD: Two servings

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**HEARTY SOUP STORAGE MIX**

1 pound split peas

1 pound pearl barley

1 pound macaroni

1 pound lentils

1 ½ cups basmati rice

• Combine all ingredients and store in a glass jar in a dark, cool location.

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**HEARTY SOUP FROM STORAGE MIX**

You can use home-canned tomatoes in place of the tomato sauce if you cut back on the water.

**6** cups water

1⅓ cups Hearty Soup Storage Mix (see above)

**' ½**tablespoons salt

**1**onion, chopped

**2**carrots, sliced

**2**stalks celery, chopped

**1 ½**cups shredded cabbage

**2**(15-ounce) cans tomato sauce

**1** (24-ounce) can vegetable juice cocktail or canned tomatoes

**1** pound canned ham or canned beef

• Combine the water, soup mix, and salt in a large saucepan. Bring to a boil, reduce heat, and simmer for 1A hours. Add the remaining ingredients and simmer for 30 minutes. Serve hot.

YIELD: Eight servings

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### CREAM OF ONION SOUP

½ cup (1 stick) butter

**2**cups onion, chopped

½ cup flour

**1** ½ teaspoons salt

½ teaspoon pepper

**4**cups milk

• Melt the butter in a pot. Add the onion and saute until translucent. Blend in the flour, salt, and pepper. Stir in the milk. Bring to a boil, stirring constantly, and allow to simmer 1 minute.

YIELD: Four servings

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### CHEDDAR CHOWDER

**2** cups water, or enough to cover vegetables

**2**cups diced potatoes

¾ cup chopped onion

**2**carrots, sliced

½ cup diced celery

¼ cup (half a stick) butter

¼ cup flour

¼ teaspoon pepper

**1** teaspoon seasoned salt

½ teaspoon dry mustard

**1** tablespoon Worcestershire sauce

**2**cups milk

¾ cup shredded cheddar cheese

• Combine the water, potato, onion, carrot, and celery. Bring to a boil, reduce heat, and simmer until the vegetables are tender. In a separate pot, melt the butter, then blend in the flour, pepper, salt, and dry mustard. Then stir in the Worcestershire sauce and milk. Bring to a simmer and cook until thickened. Add the cheese and cooked vegetables. When the cheese has melted and the soup is hot, serve.

YIELD: Four servings

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### CASSEROLES

**CASSEROLES ARE EASY** to make from storage foods, and they're great dishes to turn to when the power is out, since they can be cooked not only in a traditional oven but also in a solar oven or on the back of a woodstove.

Most casserole recipes follow a basic format. You start with a cup of a main ingredient, such as chicken, seafood, or ham. Next, you add a cup of a second ingredient, such as celery, mushrooms, peas, or a mix of vegetables. Usually you also add a starch, such as potatoes, noodles, or rice, unless you plan to top the casserole with dumplings or potatoes. (If you are going to add rice or potatoes, it helps to precook them before adding them to the casserole, as they take longer to cook than the other ingredients.) A cream soup or white sauce is often used as a binder. Toppings can be as simple as crushed potato chips or buttered breadcrumbs. All of these foods can be purchased dried or canned and therefore have a place in your storage pantry.

These are few of our favorite casseroles.

**BAKING TEMPERATURES**

Some of the casserole recipes don't list a specific temperature. This is because the specific temperature doesn't matter; they need only to be heated until bubbly or browned. And remember, if a specific temperature is noted but you're not using a traditional oven, you may need to adjust the baking time.

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**CHICKEN AND MUSHROOM CASSEROLE**

½ cup Cream Soup Mix (see page 211) reconstituted with 2 cups water, or 2 cans cream of chicken soup

**12** ounces canned chicken

**1** (4-ounce) can mushrooms

**8** ounces plain yogurt

**1** (15-ounce) can peas

**1** cup buttered breadcrumbs

• Combine the soup mix, chicken, mushrooms, yogurt, and peas in a casserole dish. Top with the breadcrumbs and bake until bubbly.

YIELD: Six servings

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**TUNA NOODLE CASSEROLE**

½ cup Cream Soup Mix (see page 211) reconstituted with 2 cups water (2 undiluted cans of cream of celery, chicken, or mushroom soup may be used instead but you will need to thin them with about J/2 cup water)

**1** (12-ounce) package egg noodles, cooked al dente and drained

**12** ounces canned tuna

**1** (4-ounce) can mushrooms

**1** (15-ounce) can peas

• Mix together the soup base and water. Combine the soup with the noodles, tuna, and vegetables in a pan or casserole dish and bake in an oven or a solar oven or cook on a stovetop, until bubbly.

YIELD: Six servings

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**FISH CASSEROLE**

Butter

Filleted fish of any kind

Milk

Fine breadcrumbs

Peas, cooked

• Butter a casserole dish well. Arrange the fish in it, and pour just enough milk over the fish to cover it. Top with fine breadcrumbs. Bake until the fish flakes and the crust is brown and bubbly. Serve with cooked peas arranged around the dish.

YIELD: Six servings

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**HAM AND SCALLOPED POTATO CASSEROLE**

This dish is very salty. If you want to reduce the salt content, rinse the ham after cutting it up.

**3** cups thinly sliced potatoes (five or six potatoes)

**2** tablespoons flour

4 tablespoons butter
A small canned ham, cut into bite-size chunks

½ teaspoon dry mustard

2 tablespoons diced onion

**1** cup hot milk

• Boil the potatoes until just cooked, about 8 minutes. Layer in a 10-inch baking dish. Sprinkle with the flour and dot with the butter. Add the ham and toss until evenly distributed. Stir the mustard and onion into the hot milk, then pour over the casserole. Bake for 30 to 35 minutes, until bubbly.

• You can substitute a box of dehydrated scalloped potato mix, prepared according to package directions, for the potatoes, flour, and butter.

YIELD: Six servings

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**BAKED MACARONI AND TOMATOES**

**1** (14.5-ounce) can diced or stewed tomatoes

**2** cups cooked macaroni

Buttered breadcrumbs

• Arrange the tomatoes and macaroni in layers in a casserole dish. Cover generously with buttered crumbs. (You can add dried basil or grated Parmesan cheese to the breadcrumbs for more flavor.) Bake in a hot oven until the casserole is heated through and the crumbs are brown.

YIELD: Four servings

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**GARDEN CASSEROLE**

This is a good casserole if you have to use up sausage from the freezer.

**2**onions, sliced thin

**1**potatoes, sliced thin

**3**cups canned corn

**1** pound pork sausage, browned and drained

**1** teaspoon salt

¼ teaspoon pepper

**2** cups canned tomatoes
Buttered breadcrumbs

• Grease a casserole dish very well. Add the onions, potatoes, corn, and sausage. Then add the salt and pepper and stir well. Pour the canned tomatoes over everything and top with the buttered breadcrumbs. Cover and bake for 30 minutes, or until heated through. Then remove the cover and continue baking until the topping has browned.

YIELD: Six servings

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**POTATO CASSEROLE**

¼ cup (half a stick) butter

1 medium onion, chopped

2½ tablespoons flour

2 cups milk

Salt and pepper

3 cups cubed cooked potatoes

½ cup shredded mild cheese, plus more for topping

• Melt the butter in a skillet over medium heat. Add the onion and saute until limp but not brown. Add the flour to the skillet, then pour in the milk and add salt and pepper to taste. Cook until thickened. Combine the onion mixture with the potatoes and cheese in a greased casserole dish. Top with more shredded cheese. Bake until bubbly.

YIELD: Six servings

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**HAMBURGER STROGANOFF**

½ onion, chopped, or 1 teaspoon onion powder

**1** pound ground beef (canned is fine)

1/4 teaspoon paprika

1/4 teaspoon pepper

½ teaspoon salt

2 tablespoons oil

1 cup plain yogurt

1/4 cup white wine

1 (12-ounce) package egg noodles, cooked and drained

• If you are using onion rather than onion powder, saute it in a little butter or oil in a large saucepan over medium heat until just browned. Combine the onion, ground beef, paprika, pepper, salt, and oil in the large saucepan and cook over medium heat for 20 minutes. Add the yogurt and wine and cook until hot, but do not allow the mixture to boil. Serve over warm noodles.

YIELD: Six servings

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**DRIED-CORN PUDDING**

3 cups boiling water

¾ cup dried corn

2 eggs, lightly beaten

2 tablespoons butter, melted

2 cups half-and-half

2 tablespoons finely chopped onion

3 teaspoons sugar

1 teaspoon salt

½ teaspoon pepper

Pour the boiling water over the corn and let stand for 20 minutes. Then simmer the corn until tender; this will take about an hour. Drain.

• Preheat oven to 325°F. In a large bowl, combine corn, eggs, butter, half-and-half, onion, sugar, salt, and pepper. Pour into a greased 1-quart casserole and bake for 30 to 40 minutes.

• This a good recipe to use with a solar oven, although the cooking time will need to be adjusted upward.

YIELD: Six servings

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### CANNED-CORN PUDDING

1 (15-ounce) can corn

2 eggs, beaten

1 teaspoon salt

1/8 teaspoon pepper

2 tablespoons melted bacon drippings

2 tablespoons sugar

• Preheat oven to 350°F. Combine the corn and eggs. Stir in the salt, pepper, bacon drippings, and sugar. Pour into a greased baking dish and bake until a knife inserted in the center comes out clean, about 35 minutes.

YIELD: Four servings

## BREAD AND GRAINS

THERE ARE SO many breads that will nourish your body and spirit during a time of crisis. A word of warning: Once your family gets used to home-baked breads, they will not want to wait for an emergency to enjoy them. And it's not just loaves that will hold this appeal. Noodles and pastas, flat breads and fried breads, doughnuts and dumplings — all will enhance your ability to turn out tasty meals from your stored food.

---

### BISCUIT AND PANCAKE MIX

One of the easiest foods to purchase and store are boxes of pancake and biscuit mix that require only water to prepare. If you have to get up in a cold, dark kitchen in the middle of a January blizzard and prepare breakfast for a troop of hungry kids, nothing could be easier than pulling out a box of pancake mix. Breakfast is ready in a few minutes and you don't need to bother with measuring cups and spoons, mixing up a quart of powdered milk, or looking for the eggs when you really don't want to open the refrigerator if you don't have to. The downside to the convenience is that these mixes are quite expensive when you consider the ingredients, and all are nearly devoid of nutrition. That probably doesn't matter if you use them only on occasion, but if you had to make do for a month or two, you might want a healthier and less expensive alternative. I make up my own mix and store it in gallon-sized plastic jugs. I store the jugs in my freezer because I use whole-wheat flour, which stays good for only about six weeks at room temperature. If the power went out I would move the jugs to my basement storage area, where it remains cool and dark. I have tried a couple of different recipes from a few different sources and finally settled on this as our family favorite.

**4** cups white flour

1 cups whole-wheat flour

2 teaspoons salt

**½** cup sugar (optional, but it makes a better pancake)

**2** cups powdered milk

⅓ cup baking powder

**2** cups shortening (preferably nonhydrogenated vegetable)

#### STORAGE MIXES

I make a lot of mixes. I can make a large batch of a mix and store it either in single-serving sizes or in larger containers and remove only what I need to prepare a meal. This saves me time, money, and energy. Having the directions printed on the label of the storage container means that Bruce or one of the kids can put together a meal with very little trouble too. Making my own mixes rather than buying them premade also means that I am in control of the salt and I can leave out the hydrogenated oils if I want to. The Biscuit and Pancake Mix and the Cornmeal Baking Mix are two standbys.

• Mix the dry ingredients until well blended, then cut in the shortening. The mixture should look like cornmeal.

• **For rolled biscuits:** Stir together 1 cup of the mix and ½ cup water. Handle the dough gently. Knead just until the dough holds together, then roll out to a V-inch thickness. Cut into rounds and bake at 350°F until browned.

• **For dumplings:** Stir together 1 cup of the mix and V cup water. Add just enough additional water to make the dough drop-pable. Drop by the spoonful into soup or stew. You can also add a bit more sugar to the mix and drop over stewed fruit.

#### BUTTERMILK PANCAKE MIX

A buttermilk mix can be made by substituting 1 ½ cups of buttermilk powder for the 2 cups of powdered milk. This makes a terrific pancake.

• **For pancakes:** Stir together 1 cup of the mix, V cup water, and 1 egg. Thin the mixture with enough water to allow you to ladle it into a skillet. For a richer pancake, you can substitute milk for some of the water.

YIELD: Four servings

---

**CORNMEAL BAKING MIX**

**8**½ cups flour

**5** cups cornmeal

**3** cups powdered milk

½ cup baking powder

**3** cups shortening (preferably nonhydrogenated vegetable)

• Sift the dry ingredients together, then cut in the shortening. Store in an airtight container in the refrigerator or freezer. As you use up the mix, transfer it to a smaller container to exclude as much air as possible.

**THE SHORTENING DILEMMA**

I struggled with shortening as an ingredient for quite a while. Some recipes, especially for baked goods like pie crusts and biscuits and many kinds of cookies, do not turn out right without it. But traditional solid shortening is full of trans fats, the worst of all possible fats, and I don't use it. I substitute a nonhydrogenated, solid vegetable spread and have found it to work well as long as the mix I use it in is kept cool. My favorite brand is Earth Balance; there are other brands available, however, and more coming on the market all the time as trans fats gain notoriety. The downside is that nonhydrogenated solid spreads must be kept cold, unlike shortening, which has a long shelf life.

• To make bread or muffins, combine 1 cup of mix with V cup water, adding just enough water to get a proper batter consistency. Pour into a greased loaf pan or muffin tins. Bake at 350°F until the tops are golden, about 25 minutes.

YIELD: One loaf or six muffins

Note: Some people prefer a sweeter corn-bread. If you are one of them, you can add a cup of sugar (or to taste) to the mix.

---

**CANNED BREAD**

In preparation for a winter storm, you could double this recipe and put up a dozen jars of bread in the time it would take to drive to the supermarket, battle the crowds, and return home with six loaves of bread that wouldn't keep for long. For equipment, you'll need six wide mouthed pint canning jars and two-piece canning lids to match.

**2** ⅔ cups sugar

⅔ cups vegetable shortening

4 eggs

⅓ cup water

2 cups shredded carrot (or chopped apple or mashed, ripe banana)

**3**½cups flour

¼ teaspoon ground cloves

**1** teaspoon cinnamon

**1** teaspoon baking powder

**2**teaspoons baking soda

½teaspoon salt

**1** cup raisins

½cup walnuts

• Preheat the oven to 325°F. Cream together the sugar and shortening until very fluffy. Beat in the eggs, one at a time, then add the water and beat well. Add the carrots or fruit. Mix together the dry ingredients and add to the wet mixture. Add the raisins and nuts and mix only until blended. Set the mixture aside. Grease the insides of the jars, taking care not to grease the rims. Fill each jar with 1 cup of the batter. Do not overfill. Place the jars on a cookie sheet and bake for 45 minutes. Carefully remove the jars from the oven, one at a time. Wipe the rims and top each with a two-piece canning lid. The jars will seal. I do not know how long the bread will last in storage because my kids eat it all within a few weeks. It stays good at least that long and probably much longer.

YIELD: Six small loaves

---

**QUICK BREAD**

This wonderful quick bread can be made entirely from stored food if you have powdered eggs. If eggs are in short supply, you can substitute 1 tablespoon of soy flour mixed with 3 tablespoons of water for one egg; you could also substitute ¼ cup of applesauce. Don't substitute for more than three of the eggs, however.

**3** cups sugar

**4**eggs

**2**cups pureed pumpkin or squash

**3½** cups flour

**2** teaspoons salt

**½** teaspoon cinnamon

**1** teaspoon nutmeg

**½** teaspoon ginger

¼ teaspoon ground cloves

**1** teaspoon baking powder

**2** teaspoons baking soda

**1** cup oil

⅔ cup water

1 teaspoon vanilla Nuts or dried fruit (optional)

• Preheat oven to 350°F. Beat the sugar with the eggs until fluffy. Add the pumpkin or squash and beat again. In a separate large bowl, combine the flour, salt, cinnamon, nutmeg, ginger, cloves, baking powder, and baking soda. In another container, mix together the oil, water, and vanilla, then add it to the flour mixture in the large bowl, along with the pumpkin mixture. Mix well. Stir in nuts or dried fruit if you like. Bake in greased pans for 35 to 45 minutes, or until a toothpick inserted in the center comes out clean.

YIELD: Three small loaves, two large loaves, or two dozen muffins

Note: If you are using a solar oven or cooking on a stovetop you will want to make the muffins or the smallest loaves you can.

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**COFFEE CAKE**

**2** cups Biscuit and Pancake Mix (see page 218)

**½** cup sugar

**2** eggs, beaten

¾ cup water

Brown sugar

Raisins

Cinnamon

• Mix together the biscuit mix, sugar, eggs, and water. Put a good spoonful of batter in each of a dozen well-greased muffin tins. Add a layer of brown sugar, a few raisins, and some cinnamon, then another layer of batter. Sprinkle some more cinnamon and sugar on top and bake at 350°F for 12 minutes, or until the tops are just browned.

• If you don't have a way to bake the muffins, you can fry them in a skillet. Brown one side in a covered skillet, then flip and brown the other side. These have to be kept on the small side to cook thoroughly. They come out rather like fat pancakes.

YIELD: Twelve small cakes

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**RAISIN BREAD**

**2** teaspoons dry yeast

½ cup lukewarm water

**1** ½ cups boiling water

**1** cup rolled oats, uncooked

½ cup molasses

⅓ cup oil

**1** tablespoon salt

**2**eggs, beaten

**3**cup raisins

**5**½ cups flour

• Dissolve the yeast in the lukewarm water. In a separate container, combine the boiling water, oats, molasses, oil, and salt. When the oats are lukewarm, stir in the yeast, eggs, and raisins. Gradually mix in the flour. Cover and refrigerate at least 2 hours. When the dough has chilled, shape it into two loaves, place into greased loaf pans, cover, and let rise in a warm place until the loaves have doubled in size, about 2 hours. Then bake for 1 hour at 350°F.

YIELD: Two medium-sized loaves

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**PRETZELS**

**1** package yeast

**1** ⅓ cups warm water

**3** tablespoons oil

**1** tablespoon honey

**1** teaspoon salt

**1** cup whole-wheat flour

**2** cups white or whole-wheat flour

**1** egg, beaten

Coarse salt or sesame seeds

• Dissolve the yeast in the warm water. Beat in the oil, honey, salt, and 1 cup whole-wheat flour. Stir in the white or whole-wheat flour, using just enough to make a soft dough. Let the dough rise in a warm spot until it has doubled in size, about 45 minutes.

• Preheat the oven to 400°F. Stir down the dough by beating it with twenty-five strokes. Turn the dough out onto a floured board. Divide into twenty-four pieces. Roll each piece into a 9-inch rope and place on a greased cookie sheet. Brush with beaten egg and sprinkle with coarse salt or sesame seeds. Bake until golden brown and crisp, about 15 minutes.

YIELD: Twenty-four pretzels

---

**CHIPPEWA FRY BREAD**

2½cups flour

1 ½tablespoons baking powder

1 teaspoon salt

⅓ cup warm water

1 tablespoon dry milk

1 tablespoon oil, plus more for frying

• Combine the flour, baking powder, and salt. In a separate bowl, combine the water, dry milk, and oil. Then combine the liquid and dry ingredients, mixing until smooth. Put the dough on a floured surface and knead four or five times, then let it rest for 10 minutes. Form into eight balls and flatten into rounds. Make a doughnut hole in the center of each round. Lightly flour them, stack them, and cover. Heat 1 inch of oil in skillet. Fry each round one at a time for 1 to 2 minutes on each side, then drain and pat dry. Sprinkle with cinnamon and sugar for a sweet bread or tomato sauce and cheese for mock pizzas.

YIELD: Eight servings

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**PITA BREAD**

1 teaspoon yeast

1 ¼ cups warm water

3 cups flour

2 teaspoons salt

• Dissolve the yeast in the warm water, and mix with flour and salt. Remove the dough from the mixing bowl and divide into six balls. Knead each until smooth and round. Flatten each ball with a rolling pin until it is X inch thick and 5 inches in diameter. Cover the rounds with a towel and let them rise in a warm place for 45 minutes. Turn the rounds upside down and arrange them on a baking sheet. Bake in a very hot oven (450 degrees) for 10 to 15 minutes, until puffed and just beginning to brown.

• You can also fry the pita rounds, which will produce something more like a thick tortilla than a pita pocket.

YIELD: Six pitas

---

**CORN TORTILLAS**

2 cups flour

2 cups cornmeal

1 teaspoon salt

4 tablespoons oil

1 ⅓ cups warm water

• Mix together all ingredients. Place the dough on a floured board and knead until it is pliable and no longer sticky. You may need to add a bit more water to get the dough to a kneadable consistency. If so, add only a teaspoonful at a time. Break off golf ball-size pieces of dough. Roll them out into circles about 6 to 8 inches round. Fry on both sides in very little oil, flipping the tortillas when they begin to brown.

YIELD: Approximately twelve tortillas

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**FLOUR TORTILLAS**

**5** cups flour

½ cup shortening (preferably nonhydrogenated vegetable)

**1** teaspoon salt

**1** ½ **-2** cups hot water

• Combine all ingredients, and mix until the dough feels pliable. Pinch off golf ball-size pieces of dough and roll each into a ball. Roll each ball flat into a 6-inch round, and fry on both sides in a dry skillet. ¼ Castiron skillet works best.)

YIELD: Approximately twelve tortillas

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**BEER BISCUITS**

2 cups flour, sifted

3 teaspoons baking powder

½ teaspoon salt

**4** tablespoons cold shortening (preferably nonhydrogenated vegetable)

**3** tablespoons sugar

**1** can beer (even warm or stale beer works fine)

• Preheat the oven to 425°F. Combine the flour, baking powder, and salt. Cut in the shortening, then mix in the sugar and beer. Drop into muffin tins or knead in a bit more flour, roll out, and cut into biscuits. Bake for 10 to 12 minutes, until browned.

YIELD: Twelve biscuits

---

**NOODLES**

**1** egg, beaten

½ teaspoon salt

**2** tablespoons milk

**1** cup flour

• Combine all ingredients, using enough flour to make a very stiff dough. Roll out the dough very thin on a floured board; let stand 20 minutes. Roll up loosely; cut into strips. Spread out to dry, which takes about 2 hours. You can cook the noodles at this point, or you can let them dry until they are crisp and then store them in an airtight container in a cool place.

YIELD: Four servings

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**RICH EGG NOODLES**

**6** egg yolks

**6** tablespoons water

**1** teaspoon salt

**3** cups flour

• Beat the eggs with the water. Mix in the salt and flour, using enough flour to make a stiff dough. Divide the dough into four pieces. Roll out very thin on a floured board. Let the dough dry for a few minutes. Cut into even strips. Cover the back of a chair with a fresh, clean dish towel, and hang the strips of dough over the towel until dry, about 20 minutes. You can cook the noodles in water or broth or add them as-is to soups at this point, or you can let them dry until brittle and store them in an airtight container in a cool place.

YIELD: Four servings

---

**DUMPLINGS**

I always add these dumplings to chicken and gravy. They can also be cooked in fruit sauce.

**1** ½ cups flour

**2**teaspoons baking powder

¾ teaspoon salt

**3**tablespoons shortening (preferably nonhydrogenated vegetable)

⅓ cup milk

• Sift together the flour, baking powder, and salt. Cut in the shortening, then add the milk, stirring only until blended. Add spoonfuls to hot stew and simmer gently for 10 minutes uncovered and 10 minutes covered. Serve at once.

YIELD: Twelve to fifteen dumplings

---

**YEAST CORN BREAD**

**1** package yeast

¼ cup warm water

**2**cups milk

⅓ cup lard

⅓ cup sugar

**2**eggs, well beaten

**1** teaspoon salt

**4**cups flour

½ cup cornmeal

• Dissolve the yeast in the warm water. Scald the milk by placing it in a pan over medium heat until bubbles form around the edge of the pan. Be careful not to let the milk boil. Put the lard and sugar in a mixing bowl, and pour the milk over them, stirring until the lard melts. Let cool, then add the eggs, salt, and yeast. Mix well, then stir in the flour and cornmeal. Let rise in a warm spot until the dough has doubled in size.

• Preheat the oven to 350°F. Divide the dough between two greased loaf pans and bake for 45 minutes, until quite brown on top. Let this bread sit for about 20 minutes before you slice it.

YIELD: Two loaves

---

### QUICK SOURDOUGH BREAD

**3** tablespoons instant potato flakes

¾ cup sugar

**2½** cups warm water

**1** teaspoon dry yeast

**½** cup plus 2 tablespoons oil

**1** tablespoon salt

**6-7** cups flour

• Mix the potato flakes, sugar, 1 cup of the warm water, and the yeast in a large bowl. Cover and let stand overnight.

• The next morning, combine V cup of the oil, the salt, the remaining 1V cups warm water, and the flour, and stir into the yeast mixture. Cover and let rise until doubled, then punch down and divide into thirds. Knead each piece a few times and shape into loaves. Place in small, 8- by 4-inch loaf pans. Brush with the remaining oil and let rise again.

• Preheat the oven to 350°F. Bake the loaves for about 30 minutes, until browned. The loaves should feel quite dry on the top.

YIELD: Three small loaves

## DESSERTS

**IT TAKES ABOUT** 2,000 calories a day to keep an average adult up and running. During a crisis, a person who is hauling wood and water or shoveling out a couple of feet of snow will need more. Desserts can fill in gaps not just calorically but also nutritionally.

---

### EASY LAYERED BARS

½ cup butter

**1** ½ cups graham cracker crumbs

**1** can sweetened condensed milk

**2** cups chocolate chips

**1** cup flaked coconut **1** cup chopped walnuts

• Preheat oven to 350°F. Melt the butter in the bottom of a 9- by 13-inch cake pan. Sprinkle on the graham cracker crumbs and pour the condensed milk over the crumbs. Next, layer the chocolate chips, coconut, and walnuts. Press down firmly. Bake about 30 minutes, until set. Cool before cutting into bars.

YIELD: Approximately eighteen bars

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### PEANUT BUTTER BALLS

**1** ¼ cups honey

**1** ½ cups peanut butter

**4** cups powdered milk

Chocolate chips, coconut, nuts, crushed graham crackers, raisins, or any other extras you may enjoy

• Mix together all ingredients and roll into walnut-size balls. Chill until firm.

YIELD: Approximately eighteen balls

---

### PEANUT BUTTER FUDGE

**1** tablespoon cornstarch

**1** teaspoon water

½ cup milk

**1** tablespoon butter

**1** pound brown sugar

**3**tablespoons white sugar

**1** teaspoon vanilla

**1** (8-ounce) jar peanut butter

Whisk the cornstarch into the water and set aside. Warm the milk and butter in a heavy saucepan over medium heat, and then stir in the sugars until dissolved. Heat the mix until the temperature reads 234°F on a candy thermometer, or the mix is at the soft-ball stage ¼ thread of the mix dropped into very cold water should hold its shape until you pick it up, at which time it will flatten out). Stir in the corn-starch mixture and remove from heat. Stir in the vanilla and peanut butter. Pour into an 8-inch square pan. Let cool, then cut into squares.

YIELD: Approximately nine servings

---

**BREAD PUDDING**

**4** cups leftover bread, cubed

1 cup raisins

**4** eggs

½ cup sugar

1/8 teaspoon nutmeg

2 cups milk

½ cup maple syrup or molasses

• Preheat oven to 350°F. Spread bread cubes in a greased 8-inch square pan. Sprinkle with raisins. Beat eggs in a mixing bowl with sugar, nutmeg, milk, and syrup. Pour this over the bread and bake for about an hour. When done, the pudding should be brown and crispy on the top but still moist on the inside.

YIELD: Four servings

---

**PEANUT BUTTER CORNFLAKE COOKIES**

**1** cup sugar

½ cup dark corn syrup

**1** cup peanut butter

**5** cups cornflakes

• Combine the sugar and corn syrup in a pan. Cook over medium heat until the sugar dissolves. Add the peanut butter and blend thoroughly. Pour over cornflakes and mix well with your hands. Spread on a buttered or greased cookie sheet with raised sides. Cool and cut into squares. You can add raisins, coconut, or nut pieces for variety.

YIELD: Approximately eighteen cookies

## Epilogue: Could We Really do it?

**In late may**, in the aftermath of a nearly monthlong period with no power, the Miller family decided that they needed to pursue a family preparedness plan. They purchased several books on the subject and settled on the OAR program of organizing, acquiring, and rotating as the system that offered them the best chance of success.

It took several weeks to organize their large home. They held a tag sale, which freed them of an enormous quantity of useless stuff and provided them with the space they needed and the seed money to begin acquiring what they now knew they needed to remain comfortable during a crisis.

Their first purchase was an airtight box stove. They placed it in the existing fireplace. It was so efficient that it heated both the living room and kitchen nicely and kept the bathroom warm enough to prevent pipes from freezing. The stovetop provided an excellent spot for cooking, especially when they bought a portable oven that fit on top. With the addition of some Castiron cook-ware, there was little food they would not be able to prepare, even without electricity. The children found plans for a solar oven online and spent an entire afternoon in the basement, working happily together to make one as a surprise to their parents. This one positive act went a long way toward helping them heal from the trauma of their weeks of deprivation and fear.

The next big purchase was a set of metal storage shelves. The whole family worked as a team to install the shelves along a wall in the garage. This transformed the space into a storage pantry. They joined a food cooperative and began buying food in bulk. Every week, Mrs. Miller bought duplicates of toiletries and staples. They put in a small garden and found they were eating less fast food. The savings was put into equipping each family member with an evacuation kit. In October, well before the start of the winter driving season, Mr. Miller updated all the maintenance for both family vehicles and stocked each with an emergency car kit.

Piece after piece fell into place, especially when the Millers joined a local preparedness group. The group supported each other's efforts, shared skills and resources, and saved money by purchasing some things at a group discount. In October, they got together and went apple picking. They spent the next day canning applesauce in a church kitchen, followed by a potluck dinner. When one of the members found a deal on hand cranked flashlights, he bought twenty of them and gave them out at the next meeting. Another member, a physician, gave a workshop on preparing a first-aid kit. The group contacted the Red Cross and scheduled a CPR and first-aid training.

On occasion, a relative or acquaintance made a negative comment about the Miller family's decision to make crisis preparedness a family priority, especially when they gave up a vacation trip to put their time and resources into joining a CSA garden, but the Millers remained firm in their commitment to preparedness. The following February, when a three-day blizzard followed by an ice storm knocked out power to their neighborhood for nearly two weeks, the Millers were glad of that resolve. Not only were they able to remain at home and comfortable, they were also able to offer help to those who were not prepared.

This book has primarily been devoted to advice on meeting the needs of an average family such as the Millers during short-term emergencies, specifically those lasting less than a month or two. Many people, however, are looking longer. There are those who look at some of the challenges facing our global community and are assessing their ability to be self-reliant and self-sustaining should they find themselves without the comforts and luxuries that we have come to believe are necessities. Several recent events have brought many of us to the unpleasant realization that we have allowed complacency to override our common sense.

Certainly, September 11 was one of those events. It became clear in an instant that we were no more immune to the actions of terrorists than anyone else on the planet. While this incident only disrupted transportation and finances for the short term, it opened our eyes to the reality that the next attack might be far more devastating. Any hope that things would work out anyway, thanks to the prompt and professional response of FEMA and Homeland Security, quickly evaporated when we watched the aftermath of Katrina. We waited in vain for the cavalry to arrive on white horses and rescue those left hungry, sick, and homeless. We are still waiting. In fact, as of this writing, Habitat for Humanity, a private, nonprofit organization composed primarily of volunteers, not the federal government, is the largest home builder in New Orleans. It is clear that, in a large crisis, there are just too many of us to expect a central government to have the capacity to put the safety nets in place to rescue all of us.

Next we heard about avian influenza, or bird flu. Experts are talking about not if, but rather when, we will be faced with a pandemic that will overwhelm our healthcare industry. Absenteeism could quickly shutdown our systems of education, energy, and food distribution, as those not ill may be unwilling to leave their families to go into the larger community.

The final blow was the realization that global warming is real and already influencing our climate. The winter of 2006-2007 saw record warmth in the Northeast followed by record cold. Upstate New York had to close schools and businesses as snowfall reached depths of ten feet in a matter of weeks. Colorado was virtually shut down as storm after storm closed highways and airports. The Northwest saw ice storms that left families without power for weeks at a time. Tornadoes leveled schools and homes in the South, while wildfires forced evacuations in California. We watched the spinach crops rot in the field because of E. coli outbreaks and citrus crops freeze on the West Coast. All of this happened against a backdrop of nuclear testing in North Korea, China, and Iran.

The world has always been a scary place, but this is the first generation that has allowed itself to become totally dependent on a fragile web of interdependent systems. If one piece goes down — whether food, transportation, communications, finance, power, workforce, fuel, or weather — the whole system will collapse in a domino effect that could bring our usual lives to a screeching halt. The shelves will be empty, the money will dry up, the lights will go out, the cars won't run, and people will stay home.

In generations past, most people could put their hand to any number of tasks. Granted, most roles were very gender defined. Women could milk cows and turn the milk into butter, cheese, and ice cream. They could sew, tend the sick, and preserve the bounty of the gardens that lay behind every house. Women knew how to use herbs, bake bread, and make jelly. Men knew animal husbandry, carpentry, and hunting and fishing. Even if they didn't use these skills all the time, they could if it was necessary and they saw that teaching their children these things was a fundamental responsibility.

By the early fifties, these skills were no longer respected. People became specialized, willing to trade their labor for money to pay someone else to provide them with food, clothing, and shelter. Now we have a perfect storm brewing. We are both dependent on a network of services and goods to meet nearly every physical need and isolated from nurturing, sustainable communities as the storm clouds threaten.

But I see some really hopeful signs on the horizon. Many communities have committed groups working on the issues of sustainabil-ity. They are coming up with ways for towns to meet their own needs, as independently as possible of the global marketplace. It is the essence of family

preparedness taken to the community level. What do we need? What do we have? How can we manage if we have to provide it for ourselves?

## Acknowledgments

For years, my bookshelves have been filled with publications from Storey. It is only natural that writing for them would feel like a homecoming. My special thanks to Margaret Sutherland, Nancy Ringer, and Amy Greeman. You took an idea and helped me create a book. Thanks to Ricki Carroll for editing the chapter on cheese-making and to Stephen Philbrick and Frank Philbrick for the wood heat education. My dear husband, Bruce, not only provided much of the technical information for this book but also puts up with the considerable inconvenience of a spouse who writes. This book only exists because of our shared life.

I must also thank Alice and Amy and the Old Creamery for providing the foundation for the Hilltown Sustainability Group. We learn much and laugh often. What more could I ask?

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# JUST IN CASE

## HOW TO BE SELF-SUFFICIENT WHEN THE UNEXPECTED HAPPENS


KATHY HARRISON
BEST-SELLING AUTHOR OF
*ANOTHER PLACE AT THE TABLE*

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