

JUST IN CASE

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HOW TO BE SELFSUFFICIENT WHEN THE UNEXPECTED HAPPENS

BY KATHY HARRISON



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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 jimmyed 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 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 disrupted?
- Do you have a source of light if the power grid goes down during a storm?
- 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



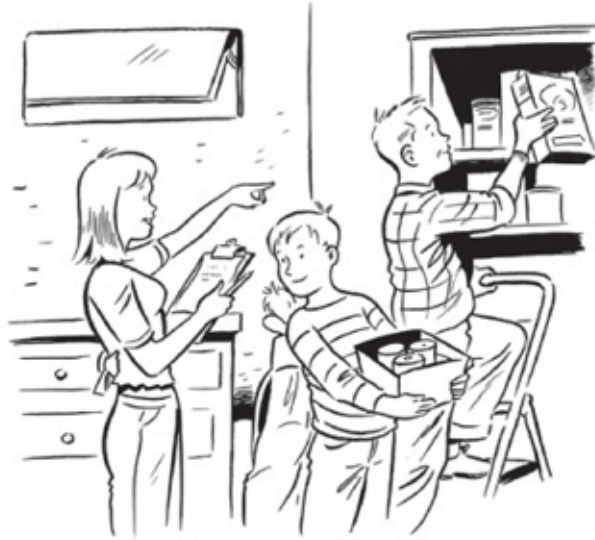
WHEN I BEGAN TO TAKE PREPAREDNESS SERIOUSLY, more than twenty years ago, I knew I needed a place to collect and store my supplies so I would have what I needed in places I could easily access. I needed a way to purchase supplies without doing serious damage to my finances, and I wanted to be sure that 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.



“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.

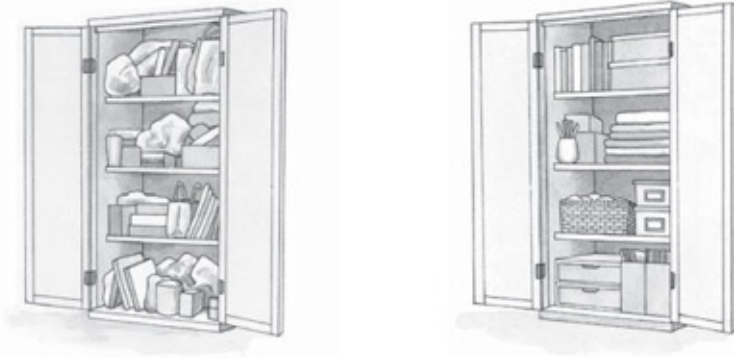
The organizing process also provides the perfect opportunity to determine your family’s individual needs. After all, your family’s must-have list is not likely to be exactly the same as mine or anyone else’s. Organization will also allow you to figure out your equipment and storage-space needs. Having 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, just 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 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 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 4 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 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.

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.

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 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.

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.

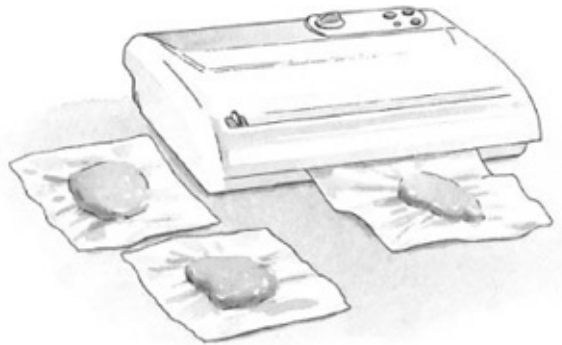
Glass gallon jars are wonderful to look at, but they leave you with the problems of breakage and light permeability. If you're going to use them, handle them carefully and store the jars in paper bags to keep out unwanted light.

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 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.

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