

Family Readiness Center Preparedness Handbook

By Jerry D Young

With the able assistance of
Family Readiness Center Members
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& Wolfbrother

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Section 1: The Philosophy of Survival

Chapter 1: The Will to Survive

The will to survive exists in all of us to one degree or another. It is usually considered a strictly personal reaction to danger. I believe it to be much more complex. Most believe that dying to protect your family, home, country, and ideals is a suppression of the will to survive. I believe it to be an extension of the will to survive to include those things that are important to the person.

My point is less about what a person will do to avoid dying, or what he will die for, but rather what a person will do to prevent harm or death from coming to his family and community.

“If it happens, I hope I die in the first blast! I don’t want to be around during the aftermath.” I have heard this statement often when mention is made of the possibility of being on the receiving end of a nuclear attack. They probably mean it when they say it. From lessons learned from other cases of widespread destruction, the reality of the matter is that if they do not die, their inborn will to survive kicks in. They search for ways for themselves, their families, and their communities to survive.

During the simple “It can’t happen to me” emergencies, calling the proper emergency authorities is usually sufficient to provide the best possible care. Normally, if you need food, water, or medication, you simply go to the grocery store, open a faucet, or visit the pharmacy. These options are not always open to you in a true emergency.

“Why should I spend good money and waste my time preparing? It will never happen, and if it does it will probably kill me anyway.” Those that express this opinion are usually the first ones in line at Red Cross or community emergency supply lines.

I will admit that the system usually works adequately. Unfortunately, when large scale or extreme disasters occur, no governmental or civic functions will remain intact. Under those conditions, the ordinary, law-abiding, church-going citizen patronizes the black market to feed the family and put coats on the backs of his children.

If a parent cannot purchase the items his family needs, even on the black market, then desperation may set in. Since a mother or father will do almost anything to prevent their family from suffering, if the item they need exists, but is not for sale or handout, they will lie, cheat, steal, and yes, even kill, to provide the items they need.

Chapter 2: The Convenience Factor

There is always a chance for a major disaster, as will be shown later, but troublesome, non-life-threatening situations occur with some regularity. The water is off to repair a water main; a storm knocks out the electricity; a heavy snow makes you think twice or three times about going to the store for a can of tomato paste for the spaghetti sauce. These situations are not inherently dangerous, but inconvenient, and with the potential to become dangerous depending on decisions made and actions taken.

Children might enjoy the excitement of a power outage for a few hours, but then get restless without TV, lights, flush toilets, and access to the refrigerator and microwave. Adults are seldom much better, becoming annoyed and upset without the accustomed creature comforts.

All these inconveniences are unnecessary. Most of them can be eliminated with simple preparations, and allow you to live confidently in the midst of the odd minor disaster or circumstance.

Chapter 3: Hoarding versus Storing

One of the toughest obstacles I encounter when suggesting disaster preparedness is the accusation of hoarding. When I suggest keeping a rotating supply of food and fuel, someone usually says, “But that is hoarding!” No, it is not. Making realistic preparations in advance is not hoarding. It is just good common sense.

Hording is drawing from a scarce supply more than your fair share to the detriment of others. Storing or Prepping, as we use the term, is storing in times of plenty for use in times of scarcity. This means you will not be drawing from already scarce supplies when they are needed by others. Prepping is really anti-hording.

Running into the store and grabbing as much of everything you can get your hands on before someone beats you to it, is hoarding. So is holding back supplies that have been pledged to others. If you have agreed to share, and don't, that is hoarding.

After the hoarding accusation, someone usually pulls the, “It is not fair for some to have much and others to have none” routine. The realities of human nature are that the more people that have made preparations, the less competition there is for the remaining resources of a community. It makes little difference to the grocery store owner if you have six cases of tuna stored in your pantry, or absolutely none. The store will still have the same number of cans of tuna on the shelf when a disaster occurs. If you did not prepare before the disaster you will probably be at the store trying to get your share of tuna before someone else does.

Not only do preparations reduce the competition for available resources, it increases the total resource base of the community. Most people will share what they can with friends, neighbors, and even total strangers who really need help, if they have adequate supplies for their family.

Chapter 4: Chance and Random Occurrence

Another argument I often run into when suggesting disaster preparations is that no matter what preparations you may make, there is still a chance you will be killed or injured. That is quite true. I will never deny it. If you are at “ground zero”, you are going to die, but most people will not even be in a targeted city. Even then, the missile may malfunction, or just plain miss the target.

You live a hundred miles from a target. You have food for a year, means to obtain more, a fallout shelter, and more, but the missile meant for that target a hundred miles away lands a hundred miles short. You’ve done everything right, but you still wind up dead. Still, the odds are heavily in your favor that this will not happen.

The reverse is also true. The poor homeless person that has been living in a drain pipe when the warheads start going off, has his grocery cart full of scavenged items, because he never knows where his next meal is coming from. He’s in a Protection Factor 100 (PF 100) shelter, and can live for two weeks on what he has, since he’s used to getting by on the minimum.

You never know exactly what will happen. However, there is a wide range of possibilities between nothing happening and your death. You can definitely reduce the possibility of death from most disasters and greatly increase your chances of comfort and survival after the disaster actually occurs.

You should consider something else, as well. What about your family if you are killed or injured? Should they suffer just because you thought you might die and did not want to make preparations? If you do die, without making preparations, they are even worse off, since you are not around to help provide for them. If you are injured, not only must they fend for themselves, they must also care for you.

Many elderly and disadvantaged people are afraid they will be useless after a disaster due to age or physical problems. If they can help others with their preparations, who in turn help them, they will have made a worthwhile contribution to the community, rather than becoming a burden upon it. It may well be the finest possible inheritance you can leave your children and grandchildren in any case.

Chapter 5: Cost Considerations

This chapter is about more than just money. It includes money, of course, but also the psychological costs of your preparations.

It would be nice to be in the position to go out and buy exactly what you want for your emergency preparations, all at once. That simply is not possible for most of us. You must weigh all the factors and then decide how much you can spend to achieve your aims over whatever period of time you decide is best for your circumstances.

However, the psychological costs are just as important. If worrying about a gun in the house keeps you awake every night, or the thought of the neighbors laughing behind your back about you having a fallout shelter bothers you, you are probably better off not taking these precautions. The point is, know yourself and your feelings. Making all the preparations in the world are useless if you become so uncomfortable and worrisome that you run your family off and wind up in the hospital with ulcers.

Make what preparations are comfortable to you in both monetary and psychological costs. Read all you can about the subject. Do not take my advice and recommendations, or anyone else's, blindly. Study, evaluate, and try out all practical possibilities and select those that fit your personal financial and psychological needs.

You must make decisions, preferably beforehand, concerning the legalities of some survival preparations that described in this text. Many government laws hold no moral authority and are ripe for misuse.

Do you report all your gold and silver holdings? Do you get amateur, CB and Business Band radio licenses or bootleg on those frequencies? Do you register all your guns or hold them illegally? Do you report all your provisions and stocks to the martial law officials knowing that much of what you have accumulated will be taken to provide for others you might prefer not to help?

These are serious questions that only you should answer. I am not advocating breaking the law. I am trying to point out options. This book is about options. Again, I can not stress this strongly enough. Do what is within you financial and psychological comfort zone.

Chapter 6: Life Styles

It matters little to spend a fortune on emergency preparations if you allow them to deteriorate, or have them locked away out of reach, or go out blindly without thinking of the consequences during a riot or some other trouble. You will have spent the money and the preparations will turn out to be of no value.

You should adjust your lifestyle to reduce the chance of trouble. This usually does not entail drastic change. The primary adjustment is being aware of the consequences of all your actions and the effects that external events have on your life.

One small example: Be aware of the fact that when the electricity is off, the gasoline stations cannot pump fuel unless they have an emergency generator, which most do not. Therefore, when you hear the National Weather Service, local radio station, or TV station forecasting severe thunderstorms, it is only prudent to have your vehicle filled with fuel before the storm hits and possibly knocks out the electrical power and the availability of gasoline.

That is a physical example. Most of the things you must do are simply attitude changes. Know the trouble spots around your area. If you travel, plan your trips to avoid as many potential or actual problem areas along your route as possible. Use your communications equipment to stay in touch with your family and keep track of events occurring locally, nationally, and globally.

Do not just have the equipment. Use it. Close your shutters during storms. Practice with your weapons occasionally. Rotate food stocks periodically by obtaining replacements and using the old items in your regular meal planning. Run emergency drills every so often to remain familiar with them. Think out all the possible consequences when you plan to do something out of the ordinary.

Activate and use your contingency plans during minor emergencies like strikes, blackouts, and storms. Do not wait until something real happens before you use your equipment, supplies, and knowledge. It is easy to forget how to effectively operate your equipment when not using it regularly. During an actual emergency, tension, fatigue, and fear make it many times more difficult to operate effectively. Familiarity with the equipment can help overcome these problems.

Get into, and stay in, good physical shape. Try to reduce your dependence on doctors and medications. Develop a good relationship with your doctor, dentist, and pharmacist to get advice for medical kits, prescription medications, and expedient medical methods.

Learn to conserve energy, water, and other resources that are likely to be in short supply during an emergency. Have contingency plans for when you are away from home and for when the children are away at school or events. Teach everyone in the household how to handle any weapons you have or, at the very least, how not to use them.

Encourage local and state emergency preparedness projects. After all, the stronger the community, the more you can depend on their help if needed. Reduce your dependence on those commercially produced products which may be difficult to find in hard times. Try a few practice meals from your emergency food stocks, since while their use is not difficult, they can be different from your normal foods and may take some getting used to. This also helps you find trouble spots in the food plan and correct them.

Never stop learning. Continue to research all aspects of being prepared. Read prep websites, and particularly prep forums. New information and new points of view are posted regularly.

The point of all these activities is to get into the habit of living a prepared lifestyle. Then when, not if, something happens, (unless it is The Big One), it will simply be another day in the life of a well-prepared family.

Section 2: Are Preparations Really Necessary?

Chapter 7: Lessons of History

In the first draft of this work, started in 1977, I enumerated a long list of historical events, going all the way back to the formation of the very earth itself, to show how history tends to repeat itself. Among these events: political upheavals and revolutions, wars, financial and natural disasters, are just a few.

In the 25 years and more that have passed, I've come to believe that I do not really need to list the events for you. Anyone choosing to read this book has already at least thought about why preparations are necessary.

You don't have to be a professional student of history to remember some of the things you learned about it in school. And those are only the things of note that happened before you entered school. You've lived through quite a few more since then, growing in the awareness that preparedness eases the strains that some historical events produce.

Just think of the historical events in terms of preparedness. Remember past experiences the same way. There isn't that much that can happen, that hasn't happened some time in the past.

Chapter 8: Cycles

The preceding chapter points out how history can repeat itself. Part of that repetitiveness is cyclical in nature. Certain of these cycles pertain to events that are more easily dealt with if preparations are made before they occur.

Most people are at least aware of the 11-year sunspot cycle which so affects radio and television reception. There are indications that the 11-year and 22-year sunspot cycles correspond, and perhaps even cause other physical events.

There are documented 170-year and 510-year drought cycles. There is a 50-year economic cycle. The Bible states in Leviticus 25 that there is a 50-year cycle of wealth. The 54-year wheat production cycle is widely accepted as accurate. It has been valid since 1500.

One of the most widely accepted cycles is the Kondratieff Cycle, which accurately matches real world events since the 1800's.

Take a few minutes at the library, or on the internet, and look up some of these cycles. Decide for yourself what they may mean for our future. Even if we are on the good side of some of them, that will change. After all, they are called cycles for a reason.

Chapter 9: Current Troubles

As I did in the chapter Lessons of History, I originally created a long list of current troubles. They are now in the history books. Anything I would list here would be old news by the time you read this. Simply said, watch, and listen to the news. Look around you. I'm sure there are plenty of things that you recognize as events that could be much better dealt with if you have made preparations.

Here is a short list of categories for you to think about. At the time I'm writing this, several of these are of no great importance. As that has changed in the past, it could change again.

- The Government
- racial problems
- ethnic problems
- religious problems
- philosophical problems
- militant groups
- world tensions
- terrorism
- crime
- accidents
- natural disasters
- technological dependency
- climate change
- economic shifts

Section 3: Survival Situations

Chapter 10: War

We live under the constant threat of war. World war, civil war, police actions, limited objective wars, race war, religious war, war on terrorism, and war for personal reasons.

Nuclear War: Since Hiroshima and Nagasaki, the fear of total annihilation has worried most of the people of the world. We are currently in a position to totally destroy all major military, industrial, and population centers in the world during a full scale nuclear exchange by the major nuclear powers; namely the United States, Russia, Great Britain, France, and China.

While definitely possible, full-scale nuclear exchanges are no longer as likely due to communications hot lines and various other factors, including the understanding of the awful consequences by world leaders. However, limited use of tactical battlefield nuclear weapons is a definite probability during a major war. I also feel that the tactical use of ballistic missiles, say from one to ten weapons, is possible if one of the major nuclear powers suffers a significant set-back during a conventional war. Such a use of nuclear weapons is possible, as a means of warning the prevailing side that extreme measures will be used to ensure survival. And I believe that most governments would be willing to accept a few detonations without full-scale retaliation to avoid escalation to a worldwide exchange of strategic nuclear weapons.

To me, the most likely use of nuclear weapons, as things stand now, would be by a power not even considered a nuclear power. Such a power would be either a smaller government or political faction in a civil war; or a terrorist, any of which might either steal a warhead or two, or buy a few older models from one of the major powers. The possibility also exists that weapons-grade plutonium would fall into the hands of terrorists or governments who could build their own device.

The newest threat is the proliferation of nuclear weapons to somewhat unstable nations. Pakistan, India, Israel, South Africa, North Korea, some of the former Soviet Republics, and in the future almost certainly Iran, Brazil, and Venezuela. Any of these countries could start a regional nuclear war that could escalate to the majors.

A subset of nuclear war is the possibility of an EMP (electromagnetic pulse) attack. This is an attack in which a nuclear device is designed to produce the maximum amount of EMP to destroy electronic and electrical apparatus. If detonated in the upper atmosphere (HEMP – high altitude electromagnetic pulse) the damage could be extremely widespread. Perhaps as much as affecting the contiguous states if detonated over Omaha at three-hundred miles altitude.

Chemical War: Most of the ideas about nuclear weapons apply to chemical weapons as well, especially the possibility of use by terrorists, and a faction involved in some type of civil war. Many of the chemicals used in daily life, and for commercial applications, could be adapted or even used as is, in weapons. Especially probable is the contamination of drinking water, both as a threat, and as an actuality. The destruction or contamination of crops and other food infrastructure is also highly probable, and easily accomplished with chemical agents. Note the recent use of anthrax mailed to various agencies.

Biological War: Biological weapons are in a slightly different category. Whereas many chemicals can be used effectively as weapons, only a few biological agents are even remotely useable as a weapon. Those that are, however, are awesome to think about. Those agents that might conceivably be stolen from a hospital to be used against humans are usually fairly slow acting and would not be an effective weapon for terrorist use, other than as a water system contaminate, perhaps. Of course, the governments of the major powers, as well as some smaller countries, have many highly effective biological and chemical agents for any conceivable purpose. However, I do not really expect them to be used in any major quantity against human targets by enemy agents during peacetime, but it is possible, especially as suicide terrorist attacks, so precautions should be taken.

Civil War: Ever present is the danger that increasing polarization based on race, culture or religion could erupt into civil war as it has so many other places in the world. Quite probably, it would be fought with conventional firearms and explosive weapons. However, if the military divides along partisan lines, heavy weapons and some limited use of chemical agents are possible.

Chapter 11: Natural Disasters

Natural disasters present the most immediate and continually occurring need for emergency preparations. Some can occur in any part of the world, others only in some localities. But every area is subject to at least a few types of natural disasters.

Tornados: Every state in the Union has suffered the ravages of nature's most violent storm. Of course, some states are more prone than others, but you cannot rule out the possibility, no matter where you live. Tornados occur most often in the spring and summer, but have been known to develop in the dead of winter.

Hurricanes: Hurricanes and cyclones cause tremendous amounts of damage along the Gulf and Atlantic coasts of the United States. In addition, they occasionally travel inland many miles, usually causing extra severe damage, since they are rare in these areas and no preparations have been made for them. They also disturb weather patterns over all of the United States east of the Rockies, causing heavy rain, flooding, hail, and often spawning tornados many miles distant from the hurricane.

Blizzards: Some of the great killers in the northern states are the heavy blizzards, severe ice storms, and extreme cold snaps which occur yearly in these areas, especially in the last few years. Occasionally, a really great blizzard occurs, lasting several days and the dig out takes weeks. Every winter, many people die from exposure, asphyxiation in homes tightly closed for warmth, and heart attacks from strenuous exercise digging out cars or shoveling snow. The severity of winter storms seems to be increasing and moving farther south each year. Home heating fuel supplies are shrinking, and costs are going up.

Heat Waves: Almost the reverse of blizzards and extreme cold snaps, but with many of the same results, are heat waves. When the midday temperatures run around 110 to 115 degrees F, and nighttime temperatures stay in the high 90's, many heat strokes and cases of heat exhaustion, as well as heart attacks occur. It has been proven that, during heat waves, more violent crimes take place. Electrical supplies are strained, due to air conditioning loads. As with severe cold, extreme heat adversely affects many types of critical machinery and equipment.

Floods: Most people have seen television coverage or newspaper and magazine pictures of what large flash floods can do. Much more common are the slow building floods along rivers during the local rainy seasons, such as along the Mississippi River. Of course, the deep widespread floods inflict huge amounts of damage, but even two or three inches of muddy water, such as occurs during a heavy storm, ruins furniture, carpets, and appliances. Not to mention the inconvenience and dangers associated with flooded sewers, escaped chemical products, contaminated drinking water, and downed power and telephone lines.

Tidal Wave/Tsunami: These are ultimate coastal floods. Towering walls of water 10, 50, even 100 feet high wash onto shores and sometimes deep inland, sweeping everything above ground with them.

Volcanic Activity: These are one of nature's most spectacular activities. Volcanoes are somewhat rare, but there have been several instances of eruptions in the last few years resulting in evacuation of nearby populations, most notably that of Mount St. Helen. The possibility of even distant volcanic activities affecting the weather as it did in 1815-1816 also exists.

Earthquakes: Californians are acutely aware of the destructive power of recent earthquakes, as are many Alaskans that experienced the 1964 earthquake. But only Reelfoot Lake and very sketchy reports of the 1811-1812 New Madrid earthquake along the Mississippi River Valley exists to remind us of the possibility of a very major quake there. Fossilized evidence and a few remaining Indian legends of a whole series of giant quakes in the area are convincing evidence of another giant quake in the area in some point in the future.

Earthquakes are one of the most terrifying disasters to experience. The very earth you have always depended on and considered so solid, (as in Terra Firma) can shake, undulate, and heave so forcefully, it literally throws you down.

There are a large number of earthquake forecasters in California that are predicting another major quake within the next decade. It is also believed that the new Madrid area could suffer a major shake that could possibly affect the entire Mid-West sometime in the near future.

Drought: Droughts are not limited to the summer months. Many parts of the country receive much of their moisture from the spring melts of winter snow accumulations. The Great Dust Bowl of the 1930's is the prime example of a sustained drought, coupled with poor agricultural practices which put profits ahead of conservation. The lack or scarcity of rain can be devastating to food crop production, and does not do non-food crop production much good. During a long drought, meat supplies suffer due to lack of water, feed, and heat associated animal health problems.

Climatic Change/Global Warming/Impending Ice Age: This problem should be fairly slow in developing, but many scientists, as well as many laymen, say we are already entering a period of high temperatures due to the reduction of the ozone layer, and an increase in atmospheric pollution, combining to create a greenhouse effect which captures, then holds, solar radiation. Others are saying an Ice Age is only a few years away.

The actual direction of the climatic change is still rather in doubt, but nearly everyone believes that some type of change is taking place. Therefore, preparations should include coverage for as many possibilities as possible.

Pestilence: Periodically, swarms of locusts, grasshoppers, and other destructive insects, ravish the West and Mid-West food production belts. In 1979, the farmers of Wyoming felt the effects of a grasshopper plague which destroyed many acres of grain and cattle pastures.

But this type of pestilence is not the only pest problem. We occasionally hear a new story about the threat that the infamous killer bees will reach the United States, leaving a trail of dead and dying in their wake. I do not believe it will be like that, but the killer bees are a threat if proper precautions are not taken. After all, people have lived with them in Africa for millennium.

One of the more frightening pestilences to me is the roving rat packs that abound in large disintegrating inner city areas. A woman was attacked on a street by a rat pack in New York City in 1979. She was bitten several times before being rescued. If food gets short in the cities for humans, that means less waste, and that means the rats get very hungry and mean.

In this same category are rabid animals, feral cats, and wild dog packs, especially in suburban and rural areas. There were several feral cats around my former home that caught and killed other cats, squirrels, and even an opossum. It seems that when a house cat is turned out, they get very large and downright mean. We also had at least one pack of dogs in the vicinity. They caused no great damage of which I am aware, but in hard times, where shortages occur or wild game is scarce due to bad weather or some other reason, feral animals come closer to humans and the chances of an attack increase, especially on small children and babies, but any unarmed human is at risk.

In addition, animals carry diseases, and vectors of disease such as fleas. Like cobras and anacondas that have established themselves in the Everglades, there are exotics that have found their way to the United States and pose a danger to humans while some threaten the survival of native species of animals or their habitat.

Plague: Supposedly unknown in today's society, any form of plague is still terrifying. Typhoid, Yellow Fever, cholera, dysentery, and small pox can still assume epidemic proportions when sanitation or medical facilities break down during any major widespread disaster. Plus, there are the yearly outbreaks of the current year's strain of flue that hit thousands each winter. Past examples were cases of Russian Flu, Chinese Flu, and Swine Flue. A current fear is that one of the strains of Bird Flu will become mutated and transferable from human to human.

Things such as Legionnaires Disease crop up occasionally. If terrorists ever obtain bacterial agents, they could easily spread a disease over a large section of the country. Ditto, in the case of bacteriological war.

Typhoid Marys could be used to spread diseases where terrorist volunteers or captives are infected with communicable diseases and sent into the general population to infect as many others as possible. Improbable, but used in the past, infected rats and mice could be released in the target area by terrorists, and let nature take its course.

I include things such as meningitis in school settings, illness outbreaks on cruise ships, and the many other conventional illnesses, that during a crisis might not be controlled quickly and efficiently as they are under normal circumstances.

Forest Fires: Forest fires, brush fires, and urban fire storms are truly terrifying. Forest fires destroy thousands of acres of prime timber each year. Many homes have been destroyed and people are occasionally injured or killed in the process. Stock animals suffer heavy losses, as do the wild animals in the fire area. And after the fire is long burned out the soil begins to erode with each new rain, causing landslides and floods.

In the cities, if a large fire breaks out and spreads to several buildings, a fire storm can occur. High winds rushing to the center of the blaze can sweep your feet from under you. When a firestorm develops, huge sections of the city can be totally destroyed.

Dangers from Space: No, not aliens, but Solar Storms, CMEs (coronal mass ejections), near earth objects, and the occasional yet-to-be-discovered comet or asteroid. Depending on the severity of the event, provisions to cope with the situation can be made.

Some of the disasters are more probable than others in a given area, but everyone is subject to at least several.

Chapter 12: Financial Disasters

I believe that the danger of a large scale financial disaster is the most probable disaster of a nationwide scale. Most other disasters are of a limited scope.

Runaway Inflation: This is the scary one. Imagine what it was like in 1923 Germany, where each morning prices had doubled from the night before and would double again before the day was over. Finally, no one accepted paper currency for food. In situations like that, either precious commodities such as gold, silver, and diamonds are used as currency, or bartering takes place. Food production and government services usually suffer first, and are felt most severely. These economies have also played out recently in Central Africa and Argentina.

Depression: Depressions vary in scope from very minor, to the 1930's type of world wide deep depression where unemployment is widespread, money supplies are very tight, and businesses cut back to protect themselves from financial hemorrhaging. With our accumulated nation, business and private debt, a modern Great Depression will likely be longer and deeper than any previously.

Recession: This is simply a short term, one or two year, slowing and tightening up of the economy during an inflationary period. It appears that government blames nearly everything on recessions, and uses them as an excuse for many of its more questionable programs.

Stock Market Crash: This was the first visible step in 1929 of the depression that followed. It was not the cause. The problems already existed and merely came to the attention of many investors in the stock market who sold out. Then the whole system avalanched into the panic selling now so famous. But where this concerns us is in the ripple effect. As the stock market attitudes go, so goes most business attitudes. If the stock market panics, most businesses begin their rapid rush to depression status. But a crash is not the problem, merely one of the indicators that the economy is beyond hope and must go through the necessary readjustments that keep it in balance.

As I write this, we are in the midst of another possible Stock Market Crash. Only time will tell if it is a disaster, or merely a glitch.

Strikes: Almost everyone has either experienced or seen the effects of a long strike on friends, relatives, or neighbors. Income stops, so people cut back on non-essentials first - things such as entertainment, snack foods, and the like. They spend their savings, and must then borrow just to live. These financial troubles often strain the family, and bickering and fighting among family members can become common. Additionally, there is the threatened violence that breaks out between the various factions and sides of the strike situation.

Boycotts: This is the tactic used by organizations to put pressure on other groups or individuals. The most well known recent boycotts were those organized by field laborers' union organizers against the producers of lettuce and grapes. The usual effect is a shortage of the particular product and the necessity of having to cross a picket line, or in some other way buck the group sponsoring the boycott.

Embargos: This is almost the reverse of a boycott. Rather than consumers refusing to buy, a producer refuses to sell. Witness the affects of the OPEC oil embargo. Shortages abounded, resulting in long lines at the fuel pumps and even the total absence of fuel in some locations. Whether the shortages were due to the embargo, or contrived by the oil companies, is moot. There was a shortage at the pumps. Of course, the most lasting affect was the rapid increase in the price of crude oil, and therefore gasoline and heating fuel. Embargos are usually a major governmental political weapon, but if the product embargoed is used in the production of everyday items, the effects of the embargo can reach the consumers.

Shortages: Sometimes natural, sometimes caused by a boycott or embargo, sometimes created by panic buying caused by a rumor. In most cases, shortages cause an increase in the price of the limited supplies left of the product.

Governmental Controls: Invariably, when a financial disaster such as a depression, runaway inflation, recession, or stock market crash happens, the government steps in with a series of actions to try and control the situation, but usually just makes things worse. We currently live under several restrictive laws

which severely limit the ownership of a foreign bank account, and the monetary crises would tighten them even more. Any businesses or persons that continue to make money during the crises are taxed, and taxed again, to try to get enough money into the government treasury to keep the program that caused the problem in the first place going, and finance new programs to try to reverse the problem.

Wage and price controls are often applied, which merely gives incentives for a black market, and the absenteeism of employees looking for free-wage work. A black market will also grow as a result of rationing.

In past cases of very heavy usage of the money supply, such as during a panic or crash, the government has closed the banks for several days to prevent people from withdrawing the money they have in those banks. Even when they reopened, withdrawals were severely limited. Hard to believe, but true.

In the same vein, was the 1934 recall of gold during the Depression. Gold was required to be turned in at an exchange rate determined by the government. For quite a while before the actual recall, gold sales and exchanges were recorded by banks. The federal agents then had these records available if necessary to help locate gold holders.

The possibility exists, although fairly slim, that if things get bad enough, the government will print a new currency and outlaw the use of our current bills. This way the government would have absolute control, at least for a while, of the Nation's finances. They could have a fixed exchange rate of new to old, or a variable rate, if they so desired for some reason. Say, the redistribution of wealth from the rich to the poor. Another aspect is the fact that by using income tax records, they could limit your exchange based on your yearly average reported income. This system would immediately wipe out any unreported assets you owned and wished to convert to the new currency.

Any time money becomes even slightly unstable, shortages begin to occur as people buy things they know they will need and/or can depend on to maintain their value no matter what the currency does. In addition, when people get panicky about money, they buy up things they are afraid they will not be able to acquire later.

Chapter 13: Major Accidents

Hazardous Materials: Almost every community has truckloads of hazardous cargos shipped to it, or through it. Many chemicals used by farmers are dangerous when in bulk quantities. Pesticides are highly toxic. Regular high explosives are transported every day on our roads, as are many other highly dangerous chemicals. Chlorine, liquefied petroleum gas, gasoline, liquefied natural gas, and much more exotic compounds are carried routinely in vehicles that meet only minimum safety standards. These standards are often disregarded. There are a great deal of low level radiation shipments, primarily medical goods, and many high level power plant waste and fuel rod shipments, as well. Weapons grade plutonium is also shipped routinely. Although in much fewer numbers than for chemicals or radiation shipments, are the occasional shipments of highly dangerous biological solutions.

That is just the transportation end of it. Manufacturing and warehousing operations are also subject to accidents, especially fires and explosions. And during floods, opened containers contaminate the floodwaters. Whole barrels, drums, or other containers, can be swept away and deposited at random.

A note here; I am not advocating stopping hazmat shipping, although more stringent enforcement of a few rules could help. We must have many of these items. What I am saying is, be aware of these items and the danger that exists, just as in the danger of driving a car exists.

Crashes and Collisions: On the highways and byways of the United States road system, traffic accidents are commonplace. Hazmat accidents have been discussed above, but that leaves the everyday type of accident. An accident involving a large truck or one involving several vehicles often results in tying up major thoroughfares for up to several hours and in some cases a day or more. One result is often a long, time-consuming, and confusing detour.

Pretty rare, but on the increase are aircraft crashes involving a multistory building being hit, or several homes in a subdivision being demolished. The main result in the surrounding area is huge crowds of sightseers and the blocking off of large areas for security until an investigation takes place.

Derailments: With the sad state in which our rail systems are in today, it is no wonder we are seeing the numbers of derailments in the news the last few years. Many of these accidents involve hazardous materials. All tie up the rails, often for weeks at a time. This can delay important shipments, although usually, most shipments can be rerouted. A large percentage of derailments occur at highway crossings, thus blocking both rail and highway traffic.

Structural Accidents: These includes major fires, collapses, damage by a car or airplane, and land slides affecting buildings. There are also construction accidents, usually involving large buildings or other mechanical structures such as cranes, storage tanks, radio/TV towers, and smoke stacks and cooling towers.

There have been several cases of large structures collapsing during construction which tie up emergency services, disrupt utilities, and often block roads.

Nuclear Power Plant Incidents: Chernobyl and 3-Mile Island are two of the known nuclear power plant incidents/accidents that resulted in the release of radiation. Though there are many safeguards, it is a fact that accidents can happen. And, just as importantly, nuclear power plants could be prime targets for terrorism.

Chapter 14: Local Disturbances

Usually short term and quite limited in scope, local disturbances are primarily just inconvenient nuisances.

Violent Crime: If a bank or large jewelry store or other high value establishment is robbed, it can disrupt the community. Sometimes hostages are taken or people killed. Buildings or other areas may be evacuated or sealed off with the occupants inside during negotiations with cornered criminals. The prime example is undoubtedly the September 11th, 2001 terror attack.

Crime Wave: Usually lasting a few days, although sometimes spread over several months, they can be as minor as a rash of stolen bicycles, to a series of hotel arsons, or rapes/murders. The more serious crimes often cause fear and suspicion to run rampant in the community. People are afraid to go out at night or to certain places associated with the crimes. Citizens often arm themselves and go out on night patrol, ready to shoot at anything that looks suspicious or is unusual in the community. Anyone who lived through Hurricane Katrina can attest to the dangers of rampant crime when law enforcement is unwilling or unable to intervene.

Riots: No matter what the cause, riots cause damage, quite often to downtown business areas, and occasionally residential areas. A small demonstration can erupt into a small riot which then can divide the community as people choose up sides afterwards. As a riot develops, they can be, and often are, artfully directed by a person or special interest group to perform some type of violence against a particular object, person, or group. Riots often snowball into widespread crime sprees, looting, and arson such as occurred during the Rodney King riots.

Utilities Failures: These can be, and occasionally are, widespread events, such as the regional power grid failure of August 14, 2003 which blanketed the northeastern United States and south eastern Canada. They are usually of a local nature due to inclement weather or equipment failure. Electricity, of course, is the most common outage. Water shut-offs occurred several times a year in my old home town. Natural gas shortages occasionally cause shutoffs or extreme reductions of business supplies, but occasionally also home service. Russia proved

she could simply turn off the natural gas supply to Europe. The danger exists here, too.

We must also put up with an occasional sewer breakdown. The severe winter in the northeast in 2008/2009 caused many water main breaks in the seventy-five to one-hundred year old water systems.

Telephone service can be knocked out by storms, earthquakes, and floods. The phone company is also a prime target for sabotage and vandalism. Plus, during a disaster, many people rush to phone family, friends, or the local authorities, and TV, radio, and newspaper offices to see what is going on, or to just discuss the situation. This heavy load can tie up lines and limit the number of calls that can go through. In severe cases the equipment overloads and goes off line when the protective devices are tripped. And some of the equipment can be damaged from these overloads.

The same is true of the cellular system. It can be, and has been, tied up during emergencies due to use that overwhelms the capabilities of the system. Utility failures often occur in conjunction with other dangers. For example, the 1977 NYC blackout resulted in riots. Cellular telephone and broadcasting utilities were destroyed in the 9/11 terror attack in NYC, compounding the danger and confusion. As technology is increasingly overburdened by population increase and aging infrastructure these failures will continue to become more frequent and more widespread.

Chapter 15: Terrorism

This is a growing problem internationally. Witness the 9/11 attacks. We will have more cases of it in the near future.

The most widely used tactic by terrorist groups is bombings. Anything can be a target for the bombs. Kidnapping is a ploy often used by terrorists to gain the release of comrades. Captives are often held for months. Many terrorists kill the hostage whether or not the ransom demands are met.

Often used in conjunction with hijackings and building takeovers, hostage situations can be used as a tactic in and off itself. Not used as often as bombings, snipers lack the news potential of a bombing. They are used by many of the small groups having limited access to explosives, and for assassinations.

Sabotage is used more and more as a terror tactic against opposing groups or businesses by special interest groups as well as by terrorists. Sabotage is suspected in at least one nuclear power plant incident. The blowing of roads and bridges and destruction of transportation and communications equipment is used as harassment.

Blackmail of a government agency or large business is another possible tactic. They threaten to contaminate water supplies or blow up objects important to the locality or business unless their demands are met. Of course, the normal small-scale bridges, dams, utilities, and stadiums have been threatened. What is really frightening is the possibility of nuclear, biological, or chemical agents actually being used. They have already been used as a threat in several locations, and used a couple of times. Authorities in some cities are worried enough to be drawing up contingency plans for just such an event.

Section 4: What To Prepare For

Chapter 16: Nuclear Warhead Effects

The severity of nuclear effects varies with the type of attack. There are four types of detonations; high altitude, near surface, surface, and subsurface. The height of the burst affects most of the resulting effects and damage from them to one degree or another. Also, the type of attack bears on where the warheads hit, the size of the warhead, and the altitude of the burst.

A great deal of speculation goes on in the military as to which type of attack is the most likely. Military targets only, military and industrial targets, military and population centers, or all three. There are other targets as well, in my opinion. Infrastructure targets like dams and nuclear power plants, and geological targets like earthquake faults and volcanoes. Also a big question is whether or not there would be an invasion and take over, or just an attack to eliminate the competition. If military targets alone are hit, it is probable that near surface bursts would be used to reduce the fallout threat to invading troops. This leaves most of the population alive and much of the industrial capability intact for them to use as they see fit.

If military and industrial targets are hit, ground or air bursts or a combination of both might be used. Either way, there would still be heavy losses in the population. Invasion is possible, but not a certainty.

If military and population centers are hit, a combination of surface, near surface, and air bursts would probably be used with great loss of life. But it would leave many industrial areas needing only fallout decontamination to be put back in operation by the invaders.

The strategic weapons available range from small weapons of 15 kilotons and perhaps smaller, to the giant weapons of 100 megatons. I understand that the majority of Russian strategic weapons are around one megaton in size. Quite probably, the hundred or so military targets here in the United States will receive the weapons of 5 megatons and over, with industrial areas and population centers receiving those smaller than 5 megatons.

The primary point of all this is that no one really knows what targets will be hit. And missiles do not always work perfectly. If a nuclear attack does come, no

matter how bad, there will be survivors. You can increase your chances greatly by understanding the hazards and preparing for them.

Fireball: As the fission, or fission and fusion, takes place, tremendous amounts of heat are released. This heat begins rising, forming the familiar mushroom cloud. With this heat comes a blinding flash, brighter than the sun at high noon on a clear day. It can cause blindness if you are relatively close-in and temporary blindness if further out. It is this flash that burns shadows on brick walls as happened at Hiroshima.

Thermal Radiation: Associated with the light of the fireball is a tremendous amount of thermal energy. It can cause burns similar to sunburn, but much more severe in many cases. It can also ignite lightweight dark objects such as dry leaves and dark curtains even at the outer fringes of its range, and can ignite much heavier materials closer to ground zero. This will start numerous fires, especially in residential areas where light combustibles abound. Some of the fires will be put out by the blast wave following in a few seconds, but not reliably.

Initial Radiation: This effect is limited to about three miles from ground zero, so is not of much concern except in low yield weapons, since the zones of total destruction are that large or larger for five megaton blasts and above. Ninety-eight percent of the people would be dead anyway at these distances, even without the initial radiation.

But in yields of one megaton and below, initial radiation can become a factor. In the severe damage area of a forty kiloton weapon, a dose of 560 to 10,000 REMs will be absorbed. The severe damage area is the circular area around the blast in which overpressures are from 5 psi to 12 psi. And even though 12 psi overpressure is relatively survivable, if in a basement, the initial radiation contains a high percentage of neutron particles which penetrate the type of shielding basements provide. Any initial dose of over 150 REMs becomes dangerous, since the time spent in getting out of the totally destroyed zone, and subsequent exposure to fallout, will quite probably bring you over the 450 Roentgen dose in which 50% of people exposed die within six months.

Electromagnetic Pulse: Electromagnetic pulse (EMP) is an effect that has only recently been researched in any depth. The nuclear detonation triggers a pulse of electromagnetic energy spanning from zero kilohertz to about one hundred gigahertz, with the most destructive potential from power line frequencies of 60 Hertz to about 100 megahertz, just below the high VHF Public Service Radio band. In a five-megaton surface blast this pulse starts out with a potential of over one hundred thousand volts per meter, traveling at the speed of light. At thirteen miles one thousand volts per meter still exists. For exceptionally clear radio reception most radio receivers need no more than one one-hundredth of a volt.

A single high altitude burst (HEMP – High Altitude EMP) over Omaha would create over one thousand volts per meter over all of the forty-eight contiguous states. But even with a surface burst, conductors such as power lines, phone lines, railroad tracks, and metallic piping buried fairly shallow will carry this energy many miles and reradiate field strengths powerful enough to cause damage to unprotected sensitive equipment.

Things like motors and transformers are not too susceptible to EMP, except in situations where large amounts of energy are accumulated by long exposed lines leading to them. Handheld transistor equipment is not very susceptible if the antennas are less than forty inches long on bipolar transistor equipment, and thirty inches long on FET equipment.

Any equipment with an antenna or power leads exposed to EMP will probably suffer damage. Tube type equipment is less susceptible, but power lines and antenna leads can absorb more than enough energy to ruin even tube type equipment.

Mobile equipment survival will be dependant upon antenna lengths and energy absorption by the vehicle's electrical wiring either directly from the pulse, and/or from reradiated energy from power and phone lines, and railroad tracks and piping that the vehicle happens to be near.

In addition to the actual damage to equipment, the EMP will also cause a radio blackout. There would be some interference to the AM broadcast frequencies. The High Frequency (HF) band would be unusable for long distance communication for several hours. This affects Amateur Radio and shortwave broadcasts. The VHF Public Service Bands should be useable for their normal ranges in, at most, a few minutes after the EMP burst. UHF bands and above should have only momentary

disruption, or none at all. This pertains only to blackout effects to equipment that survives the EMP.

There are many items besides communications equipment and automobiles that could be affected by EMP. Almost anything with an internal computer or other sophisticated electronics, is at risk if EMP flows into the system through an actual antenna or power lines that can act as an EMP antenna. Electronically controlled cooks stoves, refrigerators, and HVAC equipment are the ones that come to mind first.

Blast and Shock: This is what causes the kinetic damage to buildings and other structures. The tremendous blast travels at enormous speeds initially, and gradually slows to less than one psi and 35 miles an hour at the outer edge of destructiveness. This outer limit varies with the size of the weapon. However, a five-megaton blast is not by any means five times more destructive than a one megaton blast.

Immediately after the blast, the shockwave starts traveling out from the center of ground zero at over 1400 miles per hour, with an over pressure of over 100 psi. It then rapidly drops to around 290 mph and 12 psi. This is about the upper limit of survivability in an ordinary residential basement. As shown in the illustration, this is 1.70 miles from the ground zero in a one megaton blast, 3 miles for a 5 MT blast, and 5 miles for a 25 MT blast. Within that area, almost total destruction will exist with no more than 2% of the population surviving, and all of them seriously injured. Only hardened military sites could survive within the 12 psi/290 mph wind area. An exception to this is in low yield weapons where blasts, pressure and wind last for only a second or so. In the megaton-plus weapons they last for 5 seconds or more. Objects that can survive a momentary blast fail rapidly under sustained effects of the larger weapons.

Overpressure alone is not lethal until about 30 psi is reached, but in a nuclear blast, the 670 mph wind is the major factor at the 30 psi level. Being thrown into hard objects, and shredded by missiles formed from debris are the major causes of death from a shock wave, not the actual overpressure. At 15 to 20 psi, approximately 50% of the people would have burst eardrums. 15 psi is the lower limit to cause damage to lungs. At 10 psi there is little likelihood of overpressure injuries except isolated cases of eardrum damage that can occur down to about 5 psi. But being thrown about by the wind and hit by flying debris are still the most serious threats to life. 3.3 psi is the threshold of being thrown the ten feet or more required to cause death. 2.3 psi is the lower limit causing skull fractures from impacts and

serious wounds from flying glass. 1.8 psi is the lower limit of being thrown about. At one psi and below the major danger is skin laceration from flying glass. Most buildings suffer broken windows and sprung doors at one psi. They may also suffer some damage to interior partitions at that pressure.

Trees are not as susceptible in the winter as in summer due to lack of leaves. With pressures of 2 psi and 70 mph winds, many branches would fall. 3 psi/100 mph would uproot shallow rooted trees and trees with restricted root systems, such as those in cities. Few trees would be left standing at 5 psi and over.

Power line and telephone line poles with the wires parallel to the blast wave front will begin to fail at about 3 psi. Those with lines traveling the same direction as the blast wave will begin failing around the 4 to 5 psi level. Well anchored and guyed antenna towers fail around 4 to 6 psi.

Railroad bridges are relatively resistant to the shockwave, not failing until about 12 to 20 psi. Highway bridges are considerably more susceptible, failing at 7 to 10 psi.

Vehicles are pretty resistant unless parked broadside to the shockwave, or parked inside buildings. Even if they can be started after any EMP damage, fire equipment and repair vehicles parked in garages are unlikely to be useable at pressures over 4 psi, although at 2 to 4 psi extraction from building debris and repair may make them usable. Other vehicle susceptibilities are listed in the table.

Standard residential housing begins to fail at one psi and begins to start forming debris at 2 psi/70 mph wind. Still little affect on basements at these pressures. At 2 to 5 psi the building collapses with much of the debris falling into the basement, but with sizeable voids remaining among that debris. Some of the debris will be blown down wind at 5 psi/160 mph and above. Most of the house will become debris and be blown away from the foundation, with only some falling into the basement. With 7 psi most of the debris will go offsite of a normal city lot. In this situation, debris from up wind houses could be deposited in your basement. Above 10 psi/240 mph winds can blow the occupants out of the basement.

In internally framed buildings such as high-rise office and apartment buildings the exterior walls and interior partitions begin failing at 1 to 3 psi. The high winds would blow the debris and furniture out the downwind side at 4 to 10 psi. Survival above the third floor would be unlikely. If subjected to pressures over 10 psi most of the internally framed buildings would collapse sideways. In areas of poor soil structure the air-blast induced ground shock could possibly shift or liquefy soils

with high water tables, and weaken foundations enough for lesser winds to tilt or blow over buildings which would otherwise stand.

The depth of debris clogging streets can range from 0.3 feet around individual single story light commercial buildings through 0.5 feet for two story frame or one story brick houses, three feet of debris from a three story duplex or row house, 7 feet for a five story framed apartment house, to 33 feet for a 23 story high rise. These depths will, of course, vary with the width of the streets and extent of destruction.

The weight of debris on a basement roof should not be much of a factor since most will be blown off and away. It is the actual blast pressure which could cause the most damage to basement roofs. Older buildings used the best system of basement roof structure consisting of a 4 to 5 inch reinforced concrete slab with a 2 to 3 inch drop panel where the round reinforced concrete columns used flared round capitals to distribute the weight. This type of construction was usually rated at one hundred pounds per square foot live load. In tests conducted under Civil Defense authorization, this type of basement roof construction began to partially fail at 12 psi overpressure. However, at this level of pressure, most of the concrete pieces were held together by the rebar with only some falling to the basement floor.

Since the 1950's many large buildings have an eight to ten inch reinforced concrete slab ceiling, but the posts go straight through this slab, concentrating all of the force on a small area highly susceptible to sheer forces. The whole roof slab of the basement can fail at 6 to 7 psi over pressure.

In areas with numerous tall buildings there would be some shielding effect, but not much. Hills affect the blast none at all.

The ground shock mention above is not a factor to those on the surface since the air shock is so much more severe. However, to those already in an underground shelter, it could be a factor if sitting next to or leaning against a wall. The people in an underground shelter should sit in a back-to-back row with the legs stretched out, and any children sitting between the legs of adults. One row should face the outer wall. If their feet touch the wall, the knees should be bent to absorb any shock from the wall. People suspended in hammocks, attached to walls at an angle, will possibly be tossed one way or another, or even upwards, but will not suffer any direct impact acceleration from a hard wall or floor.

People should avoid the entrances and any other penetrations into the shelter. Although the duration of the wind is not as much a factor inside a shelter as it is above ground, as the pressure builds to its maximum inside the shelter, there are a few moments in which a jet of air can cause severe damage and injuries. This jet can be as long as ten times the width of the entrance or exit.

If a purpose built blast shelter is unavailable, the best expedient shelters for blasts are subways, tunnels, mines, and caves with large interior volumes and small entrances. Also good are the basements of large, massively built reinforced masonry buildings, with preference for the older ones with strong basement ceiling construction and small entrances. Unless absolutely necessary, avoid those buildings with flat plate and through-column construction.

Fallout: Although the Federal Government furnishes little information to the general public on blasts or thermal radiation, they do disseminate general information about fallout in several consumer publications.

Another source is TACDA (The American Civil Defense Association) TACDA has a lot of current information, and is an excellent resource for readers to visit online.

When a warhead detonates at ground level, the tremendous temperatures blow a huge crater, vaporizing the material that occupied the space. The radiation emitting elements produced by the nuclear reaction are fused to the particles of this debris. These particles are carried by the rising gasses to great altitudes. 13 miles high in a 1 MT blast, 16 in a 5 MT, and 20 miles high in a 25 MT blast. The heavier particles begin falling to earth almost immediately, the light particles later.

The fallout begins arriving approximately 20 miles down wind from the ground zero of a 5 MT blast in about 15 to 20 minutes. Although the radioactivity is decreasing at the rate of a tenfold decrease for each sevenfold time span in the early stages, the rapidly accumulating fallout will cause the overall radiation level to increase until fallout ceases.

An example of the 7/10 rule is as follows: If the radiation is 1000 Roentgens at one hour after the peak, seven hours later it would be only 100 Roentgens. After another 49 hours (7x7), it has dropped to 10 Roentgens.

The time line of this effect is a steadily increasing dose rate, a short peak, and then rapidly decreasing radiation. In the area of the stem of the cloud rates exceeding 500 Roentgens per hour exists. In the region 20 to 60 miles downwind of a 5 MT blast, the dose rate also reaches 500 and peaks about 1500 R/hr about 3 to 5 hours after detonation. All figures are based on an effective wind speed of 15 mph. The relationship of weapon size, time, and fallout distribution are shown in the illustrations. The actual dose rates are affected by the structure of the ground. Rough surfaces reduce the dose rate, and accumulations in gutters and drifting of the particles increase the rates. Wind patterns vary with the seasons and in different parts of the country.

It is not the dose rate that is so dangerous to life, but the accumulated dose over a given period of time. Exposure to high dose rates of 100 - 500 R/hr for a moment or two, such as you would get running from a burning building into better shelter, is not usually fatal. But with continued exposure to 10 or 20 R/hr quickly accumulates a dangerous dose of 450 R or more. A given dose received over a long period, 4 months, is not too dangerous. The same dose received in less than a week can be debilitating and perhaps fatal. The following tables show the levels of illness and how they relate to time and dose accumulation.

It should be noted that radiation sickness is not contagious. You can not catch it from someone who has been exposed. However, anyone entering a shelter during the time fallout is arriving is likely to carry in fallout particles on their clothing, so precautions should be taken to decontaminate before entering a shelter. Brushing off clothing, or discarding outer layers such as overcoats, hats, and boots, will usually be sufficient. Any articles that can not be decontaminated should be placed in an area shielded from the shelter and disposed of when conditions permit.

Fallout can be hosed off smooth surfaces and either buried or mounded over with earth. Fields will be useable with scraping away a thin layer of topsoil or by turning the top layer under the surface. Of course, if there is time before fallout is expected to arrive, garden plots and small fields might be covered with sheets of plastic and weighted down.

Contrary to popular belief, many of even the more volatile elements will not immediately leach into the ground and be absorbed by our food plants. Much of the radiation producing elements have been fused to the grains of sand and earth. The products do not leach out easily. There undoubtedly will be some absorption by food plants, but the wholesale radioactive contamination envisioned by many will probably not take place immediately after an attack.

There would be great loss of life in any nuclear exchange, perhaps as much as 75 to 90 percent population loss in the most extreme worst case scenarios. But some areas would be almost totally untouched. Others would quickly become usable as radiation danger faded. More land could be used with decontamination. So life would go on. Some people will survive with little or no preparations made beforehand. But preparations can increase your chances dramatically. I do not recommend living within 50 miles of a possible target, but for those who must, there is still a chance the warhead will go off target, or it could be destroyed by a ballistic missile defense system, or knocked out on the launching pad. The reverse of that is also true. Even if you live miles away from any target, a missile could malfunction and land nearby. The vagaries of the wind could dump extra heavy fallout on your area. So no matter where you live, you still need protection and preparations.

In the case of a nuclear power plant accident, very few of the direct effects would be present. Fallout would be the main danger. There would also be the danger of high intensity direct radiation from the damaged plant. The fallout from a plant would probably not be quite the same as that from a warhead detonation. Since it is essentially impossible for the fuel in a nuclear plant to explode, any type of accident would involve primarily the release of radioactive gases and contaminated water from the cooling system. There could be possibly explosions of a chemical or physical cause, such as steam, hydrogen, or sodium compounds, that could eject fuel particles, but this material would land close to the plant.

Allowable Radiation Doses for a given time span

Effects \ Time	1 week	1 month	4 months
No medical care required	150r	200r	300r
Some medical care required but few deaths	250r	350r	500r
Most will require medical care, over 50% will die	450r	600r	

Estimated single radiation exposures that will cause a 50% incidence of symptom of radiation sickness

Sign or symptom of radiation sickness	Single exposure (Roentgens)	95% confidence range (Roentgens)
Loss of Appetite	180	150 – 210
Nausea	260	220 – 290
Fatigue	280	230 – 310
Vomiting	320	290 – 360
Diarrhea	360	310 - 410

Accumulated doses from a 5MT blast @ 30 miles down wind (15mph)

	In the open	In PF 46 shelter	In PF 76 shelter
1 week	11,400	248	150
1 month	13,500	294	178
4 months	15,000	326	197

Blast Effects on Vehicles

Type of Vehicle	Moderate Damage* (psi)	Inoperable (psi)
Auto	3 – 5	5 – 6
Buses	6 – 10	10 – 12
Fire truck	6 – 10	10 – 12
Repair truck	6 – 10	10 – 12
Earth movers	20 – 30	30 – 35
Truck mounted engineer equipment	12 – 15	15 – 17
Railroad cars	15	25
Locomotives	30	80

* Requires a few hours to repair

Most of the information was extracted from the DCPA Attack Environment Manual, CPG-2-1a1 through CPG-2-1a9. For additional information contact your local FEMA or Department of Homeland Security.

Chapter 17: Chemical/Biological Warfare Effects

There are many varieties of the two types of weapons. The chemical agents range from simple defoliants used by farmers, to poisonous gasses and exotic formulations for specific and special uses. The majority of biological agents are mostly special strains of known disease organisms. Botulism, typhoid, and black plague are a few of them. Most have been especially bred to be suitable for use as a weapon.

But all, whether used against people, animals, vegetation, or equipment, essentially result in one or more of the same six major effects.

Either contaminated air, contaminated water, or destroyed food, or a combination would be the primary effects that people would have to face if they escaped the application of the agent. All three of these, and of course, the direct exposure, would result in severe illness. This would quickly overload all available medical facilities. If chemical or bacteriological agents are used against food animals or plant foods, a shortage of food is inevitable. In the case of contagious diseases people tend to avoid any contact that could possibly affect them. This could conceivably reduce the manpower of business, government, or other services.

There is a great deal of information on chemical and biological weapons on the internet. A search with any major search engine will provide you with more details than can be delved into in this manual.

Chapter 18: Conventional Warfare Effects

Most people have some understanding of most of the effects of conventional warfare from news coverage of the current wars the United States is fighting.

Bombing and artillery fire can devastate whole cities.

Stray small arms fire is also a hazard but slim compared to the others.

One problem not discussed much are the actions of individual soldiers. They can and do commit atrocities against particular representations of ideologies, races, religions, and other groups of which they have a personal dislike.

In some conflicts the intent of the war is to inflict damage on a specific civilian population. If the intent is to destroy a people, it is referred to as genocide. If the intent is to force relocation it is known as ethnic cleansing. Examples of both occur frequently throughout both ancient and recent history. Soldiers also often loot and forage for supplies, even when genocide and ethnic cleansing are not their intent. These can result in the impoverishment and actual starvation of the civilian population.

Even in those areas not directly included in the fighting, refugees can be a problem. Also in these areas, people are subject to the disruption of normal procedures, as war priorities are met first, causing shortages and rationing. The disruption of transportation facilities and the shutdown of whole job categories as non-essential to the war effort, or to be converted to war production, are possible.

Civil War: Here the same effects are present, although in different proportions. More atrocities occur. The area of combat is usually smaller and often areas outside the actual fighting are affected very little.

Terrorist Activity: In terrorist attacks, small arms fire and homemade bombs are the primary threat. Also the disruption of local utilities and services can occur. If terrorists ever manage to obtain nuclear, biological, or chemical weapons, these effects will prevail.

Chapter 19: Natural Disasters

The possibility of death always exists in a natural disaster. But it does not seem to be the major effect during even severe natural disasters. A tornado or hurricane, usually kills at most 5 to 10 people. There are times when two or three hundred are killed, but that is fairly rare. But millions of dollars of damage to homes and businesses occur. Depending on the type of disaster, homes and places of business can incur damage to fixtures, carpets, up to and including complete destruction of the building and all of its contents.

Utility failures are common and there may be a potential for social disruption in direct proportion to the area affected by the natural disaster.

Flood and rain waters can ruin the contents and the finish work of homes without affecting physical integrity of the structure too adversely in some types of floods. Contamination of water supplies from flood damaged sewers, chemical storage sites, fuel sites, and dead bodies, both animal and humans is a big worry. Simple contact with the contaminated water can cause health problems, without drinking the water.

Flooding can damage or destroy crops, creating shortages of human and animal foods.

Lightning can destroy or damage electrical and electronic appliances and other equipment. Often it starts fires. Incidentally, lightning runs in on the power lines far more often than it does on CB or TV antennas. Amateur radios often have relatively larger antenna systems than CB or TV; therefore they stand a somewhat higher chance of lightning striking them.

Earthquakes destroy the above ground portion of residences, which then often fall into the basement. In both residential and business areas, even those buildings not completely destroyed are often damaged severely enough to make reentry hazardous and re-habitation impossible.

The problem with most residential structures in an earthquake situation is a poor foundation and the lack of bracing against racking forces.

In tornadoes the wind is the big destroyer. Here again, poor planning and poor construction practices are the prime reasons many buildings fail to survive. Good

foundations with all parts of the structure: foundation, floor, walls, and roof; tied firmly together, can prevent much of the damage associated with high winds, including translation (lateral shifting off the foundation), racking (general collapse sideways), material failure, and connection separation.

A great deal of the damage to buildings is caused by wind propelled debris. A 2 x 4 or piece of corrugated sheet metal roofing can cause tremendous damage flying around in the air at anywhere from 50 to 250 miles per hour or more.

It is interesting to note that trained observers have found little or no evidence that the low pressure within the center of a tornado does any damage. There have been a few cases where a sealed structure (no windows, vents, etc.) such as an airtight grain bin or silo can rupture from pressure differential. The warnings to open windows upon the approach of a tornado are invalid, and often dangerous due to the possibility of flying glass. In any case, even if potentially dangerous pressure differences occurred, windows would fail long before the structure could explode. Do not take a chance of blindness or severe cuts trying to save a window. However, if you have an early warning you can close shutters and open a small protected window or a vent to relieve any pressure difference.

During hurricanes, the storm surge and flooding are two of the major destroyers, in conjunction with the powerful winds. Further inland, some flooding from heavy rains can occur, and the winds can strip roofs and create hazardous amounts of flying debris. Hurricanes often spawn tornadoes.

In many cases, the only safe reaction to a potential natural disaster is speedy evacuation. Even if it is not necessary, or even wise, it is a favorite response by government officials. And they can get extremely nasty if you do agree to go as ordered.

In natural disasters, as in many other disasters, failure of services and utilities are a prime problem, but more on these later.

Although I played down the possibility of death, and it is relatively slim, injuries are common. Relatively minor injuries in everyday life can be serious if they can not be treated or cared for promptly under disaster conditions.

The big problem in weather disasters (besides the loss of utilities and services) is comfort and safety. Poorly insulated and non-weatherproofed houses are uncomfortable in both severe winter and severe summer weather. A tight house

with a good air filtration system can be extremely helpful in cases of pestilence and sand/dust storms. It is also good for normal high pollen situations, especially for those who suffer from sinus, lung, or skin disorders.

Severe or long lasting extreme weather also can create crop damage due to frosts, freezes, high heat, droughts, and other, more subtle effects.

Chapter 20: Financial Disasters

Even people worth a great deal can have trouble in a financial disaster, regardless of whether or not they lose any money. Depending on the type of disaster, of course, normally fairly liquid assets may not be so liquid. If you need food, and have \$10,000 in good worthwhile bonds, but the bond markets have been closed by government order, you may get your \$10,000 in a few days or a few weeks. Meanwhile, your family may get very hungry. Of course it is not just bonds, only a few items maintain their liquidity in troubled financial times.

Stocks, bonds, real estate, and artwork are often hard to sell unless you take huge losses, and sometimes impossible to sell at all. Witness the home mortgage burst bubble.

In a similar vein is the trouble that comes when the government, or a particular establishment, indiscriminately freezes the assets under their control. The government closed all the banks once, and some have closed their doors on their own. Other groups, such as Wall Street, the London Gold Market, Savings and Loans, Credit Unions, etc., usually have the power to stop transactions and money exchange temporarily. In cases of even suspected wrong doing concerning banks or money associated institutions, the doors are often closed until an investigation is conducted.

Anyone with money in that institution has had his or her assets frozen, often for considerable lengths of time. The same thing applies to a bank that has failed.

Governments have a history of seizing the banking assets of citizens of any nation they go to war with.

During the ongoing banking crisis banks failed, some were bought out or rescued, preventing some of the disastrous effects of the past. There is no guarantee that the same will happen in the future.

Troubles of any size concerning our currency usually result in many products developing temporary shortages or restrictions ordered by government officials for some reason or another.

Buying power may be limited either by inflation, shortages, and black market conditions. Rationing, either ordered by the government or instituted by individuals or trade associations, also effectively limits buying power.

In the case of strikes or layoffs, the lack of income is of prime importance. Even comparatively large savings accounts do not last long when called on to replace a full income for several weeks to several months.

It need not be a widespread lack of income to constitute a personal financial disaster. Poor investment choices, simple loss of employment, even unexpected medical bills can spiral into personal poverty rapidly unless steps are taken to prepare for and mitigate those losses.

Chapter 21: Local Disturbances

Where a relatively minor disturbance is local in nature, its effects are usually local in nature as well. Evacuation is common in physically dangerous situations. A hazmat train derailment is an example.

In situations of potential human violence curfews are almost always employed. No running out to the store at 10:30 for a bottle of milk for the kids. In the case of a truckers' strike, the potential for violence is bad enough. Not even having the bottle of milk available is even worse.

In accident cases, and cases of criminal activity, areas are sometimes cordoned off to keep spectators out and/or the potential trouble in. This often results in the disruption of services within the area and occasionally affects the whole town.

Chapter 22: Most Common Effects

In almost all disasters involving physical damage, the commercial utilities often, even usually, fail.

Electricity seems to be the most vulnerable, probably due to the fact that the majority of lines are still pole-mounted. We are so dependant today on electricity that it is a major disaster in and of itself when it fails. Many homes use electricity primarily for lights and small appliances, and use natural gas or propane for cooking and hot water heating. Often this other fuel is electric controlled by an electronic thermostat, electrically ignited, or circulated by an electrical fan. Many modern gas cook stoves use electronic controls, which can prevent their use without electric power. In rural homes, water is often supplied by an electric water pump. Some even depend on electric sump pumps as part of their sewer system. Dairy and poultry operations depend on electricity for critical operations.

In the towns, it can be even worse. Practically all use electric pumps for their municipal water supplies. And sewers often depend on electric sewer ejectors, not to mention the solenoid valves, gates, and other equipment in water and sewer treatment plants.

Where there are numerous traffic signals, traffic can be tied up for hours until local police begin manual direction.

The police and fire departments often rely on electronic communication and other aids which improve their effectiveness. Powerful base station radios, computers, teletype machines, microfilm and microfiche readers, and surveillance systems which can go out when power fails.

Much the same is true for many businesses. They rely on electronic cash registers, computer assisted record keeping, security systems, and of course, electric lighting. Those in larger buildings must use escalators or elevators for internal movement.

Credit, debit, and ATM cards, and also check scanners use electric power and the phone lines. Loss of either will put them out of commission.

Places like stores that have food chillers and freezers can lose large stocks of perishable goods. Gasoline stations rely on electric pumps, and some have totally electronic dispensing systems. Most banks currently rely on computers for

transactions, and some can not do business and must close their doors when the power goes out.

Information distribution is severely affected if power is out more than a few hours. Radio, television, and internet are all electronic, and if either the transmitting end or the receiving end is without power there is no transfer of news. Newspapers use presses run by electric motors, and many use all electronic word processing and typesetting. Therefore, no power means no newspapers. The same applies to Cable, DSL, and satellite news sources.

There are quite a few TV and radio stations that have auxiliary power systems, as do most hospitals, but they usually lack fuel to run them for more than a few days at most.

Sometimes even a temporary outage of three to four hours can become almost unbearable if kids or adults get restless with no air conditioning (or heat), no running water, now plumbing, no TV to watch, radio to listen to, and no lights to read by. Tension can quickly grow into anger. The same thing happens in heavy traffic jams, or where people are trapped in elevators or inside buildings due to the lack of electric power.

Short term lack of water is not usually as bad as lack of power. It is usually of more limited extent. Most homes have other liquids to drink, such as milk, fruit drinks, and soda. If it appears there will be a long period before water service is returned, the government may furnish water trucks to provide drinking water. Most toilets can be flushed with a pail of water as needed. This water can be water already used for hand washing or cleaning food, etc. Sadly, many people don't seem to realize this.

If fire occurs, in urban or forested areas, even short term water outages can become serious. Major fires just can not be fought with the amount of water carried in a pumper truck. Even tank trucks supplying water to the scene are not usually sufficient to deal with anything other than a small blaze.

After a few days without water supplies, things get worse. Hygiene and cleanliness become difficult. Communicable diseases can rapidly get out of control. Food is difficult to prepare without water and often gets contaminated from already dirty utensils or dirty hands. This is compounded by a lack of refrigeration during power outages.

If the sewers stop working, things get critical in a hurry. You can flush a toilet with a bucket of water if the sewer is working. But if the sewers are not working because of broken lines or inoperable ejector pumps, trying to flush with a bucket, or from the tank, the waste just overflows the bowl out onto the floor.

Anyone who has ever had a stopped up sewer or toilet for any reason knows how terrible that situation can be.

Disease rapidly becomes a problem when waste starts backing out. So do pests and rodents such as rats and mosquitoes.

The sewer problem does not just exist in cities. Rural areas that use cesspools and septic tank systems can have the same problem if the tanks flood during heavy rains or floods thereby preventing proper flushing.

Even if you live in a brand new, exclusive neighborhood and have never seen a hint of a rodent, you can bet there are at least several mice and rats around. And given the least amount of favorable environment they rapidly increase their population.

Natural gas is usually quite dependable as long as earthquakes are not involved. But supplies can be cut off if major controls are damaged in an accident, or for some other reason such as sabotage. And even if the supply is there, you can not always use it without electricity.

Where telephone lines are underground, service is also fairly reliable, barring earthquakes and deep flood water. But if overhead lines go down, good-bye telephones during tornados, hurricanes, and snow and ice storms. Another cause of telephone outage during a disaster is the extremely heavy usage by people trying to find out what happened, and by people talking to friends and relatives about what is happening. There have been several cases of telephone exchanges overloading and shutting down because of mass use.

Usually being out of telephone service is more annoying than dangerous, but when the phones are needed to report fires, call police, or request ambulance services, it can be critical.

Also, the government relies heavily on the telephone for emergency communications. The military also uses phone lines for critical communications.

Burglar alarms, fire alarms, and teletype links often use leased phone lines, too. So do broadcasting companies and new services, as well as the military.

The use of cell phones mitigates only some of this. If your battery dies, or the cell system itself is overwhelmed, they are useless.

Hard on the heels of utilities failures come the failure of critical services. Medical services such as ambulance and hospital bed availability are usually the first to go in a major disaster. If the disaster lasts for very long, doctors and nurses become exhausted. Hospital supplies such as blood, plasma, and medications rapidly run out in a disaster of any length. And if transportation is difficult for any reason, re-supply is next to impossible. When transportation is a problem it usually also affects ambulance runs. Those doctors and nurses caught in a disaster away from a hospital seldom have the supplies they need to make full use of their skills.

Police are inevitably tied up with traffic control, search and rescue, evacuation, and downtown looting prevention. They have little time or manpower for any calls outside those areas of responsibility. In a large physical type disaster they could not get too far anyway on destroyed or blocked roads and bridges. Looting and rioting are not always limited to those places the police can access quickly.

The same goes for fire protection. Blocked roads and lack of water are the prime problems. Such problems were seen in New Orleans on national TV during the aftermath of hurricane Katrina. But snipers can be a problem during times of war, such as the three year siege of Sarajevo or the World War Two siege of Stalingrad.

It is often impossible for repair crews to make even temporary repairs while a disaster is occurring. If the disaster is very widespread, crews quickly become exhausted and run out of repair parts. Here again, transportation problems can prevent the service vehicles even reaching the affected sites.

Not only do bad roads affect police, medical, fire, and repair services, they also affect the full gamut of transportation services. Rail, truck, barge, and aircraft transportation rely on huge fuel supplies. They also require complex support facilities. If the railroads or airports lack electricity for communication or are even destroyed, those transportation facilities are useless for a long time. The rail, barge, and aircraft systems are essentially linked distribution centers, with the final delivery usually made by truck.

Banking can be disrupted if employees fail to show up, computer service or electricity fails, thereby stopping computer use. Some vaults are electronically controlled. Papers must be prepared and many establishments have only computers or electric typewriters.

Any prolonged disaster, if it involves a very large area, inevitably results in anarchy. Crime is always a part of anarchy, but it is not conclusive evidence that anarchy has set in. Looting takes place in nearly all disasters and emergency situations. It just goes to show you how close we always are to anarchy. The most tempting targets of looting are liquor stores, establishments with drugs, places with large stocks of money, and then practically everything not tied down. Looters have been caught stealing washers, dryers, and refrigerators. The things taken are bad enough, but looters invariably destroy wantonly what they do not steal. Items that can be vital during the recovery period are often destroyed by the looters in their ignorance and anger.

If the disaster continues for several days or more, things will usually settle down somewhat. Many products become quite scarce or impossible to find. Paper money quickly becomes worthless as prices for scarce commodities reach ridiculous levels. Those with gold and silver coins will use them. Everyone else must beg, barter, steal, or do without. Barter can be a difficult and uneven process, especially for one with no experience at horse-trading. It is rather difficult to have an effective barter system, which is why money was invented in the first place. Only rarely do two people have exactly what the other wants in the quantities they each want.

With police and government authority gone or ineffective, armed bands begin raiding almost at will. These former drugstore cowboys, with a small core of hardened criminals, will kill, rape, and take food, liquor, and everything else they want.

Then comes the other side of the coin. Vigilantes and night riders stalk the land. While definitely getting rid of many of the raiders, they are always too eager and indiscriminate in their retaliation. Many innocent people wind up ruined or dead. During this process both the criminals and some of the vigilantes will take the opportunity to settle personal vendettas.

After a time, the local government is dominated by the strongest force, or an outside authority steps in and declares martial law. The outside authority may be the Federal Government in the case of localized lawlessness or neighboring

governments when the anarchy stems from, or has caused, the downfall of the previous government.

This is often almost as bad as the preceding steps. The military immediately implements curfews and travel restrictions with severe penalties for non-compliance. Confiscation of vital resources takes place, including weapons for personal defense, business property and inventory. Fuel, food, equipment, vehicles, and even personal property can be taken. Chits or other records may be kept, but later payment is often difficult to obtain. If your family is starving because your food has been confiscated, or needs special medical care and you can not take them to the hospital because your fuel has been taken, later payment is a minor worry, anyway.

What the military takes, they ration back to the people they have taken it from. Seldom is the distribution equitable, even in the area where they military tries its best to do a good job. Unfortunately there exists, even in the United States military, opportunists that will take advantage of any situation for personal gain. These individuals steal the items they can sell on the black-market profitably, or use them to gain other types of favors. Luxury items, especially liquor, are severely rationed, therefore prime targets for profiteers. And if food is in short supply, they will profit from even that.

To help prevent or control black-market operations, monetary controls are usually instituted. The local currency is declared either illegal or of an arbitrary value determined by the authorities, or a substitute currency or chit system is implemented. Often maximum or minimum sales limits are used to control the flow of both goods and the money supply.

In order to achieve their objectives, the military uses broad powers of search and seizure which in normal times would be quickly denounced as unconstitutional, and stopped. It seems that anyone who protests either gets beaten, jailed, executed, or more than the normal amounts are confiscated from them and they receive a smaller ration allowance.

Weapons and ammunition are usually ordered surrendered and severe penalties are used to enforce the order. This is to make it more difficult for the outlaws still at large to obtain arms (and harder for honest citizens to both defend themselves from the armed outlaws or to effectively protest the way they are being treated by the authorities) The controls only give those remaining outlaws an advantage over the

people they rob. The outlaws are armed and citizens complying with the laws are completely unarmed.

Some of these effects occur independently, while others are associated with only certain types of disaster. A few of the effects help counteract others. Most contribute to and reinforce the others.

Any one or two effects usually are not too bad. It is when several occur in sequence or simultaneously that the effects are multiplied and trouble really hits home.

Section 5: The Preparations

Chapter 23: Secrecy

It matters little if you have made extensive preparations for your family's survival if everyone knows about it and comes knocking on your door. After handing out material to those who need it, confiscation by the military, and attempts by armed raiders to take what remains, you have nothing left and your family will starve.

The fewer who know that you have resources which are in short supply, the more secure you are. Undoubtedly, it is impossible to keep your disaster preparations completely secret. But be selective about who knows how extensive they are. Even if a few people know you have some water stored for emergencies, they need not know how much. To people who are thirsty, two or three gallons of water would seem like a great deal.

Close friends and relatives could probably be told much more. However, unless they agree with you and make preparations of some kind themselves, those people tend to either brag or scoff about your preparations whenever the subject comes up in a group. They mean no harm, but the seed can be planted and grow to come back to haunt you later. Later in this section, I explain a good way to help overcome the damage of too many people knowing you have made preparations.

One easy way to keep your preparations as quiet as possible is to pay cash for everything and get a cash ticket, rather than a ticket with your name and address on it. This may be difficult sometimes, but do it wherever possible, especially for really critical items.

Credit card and mail order purchases have extensive documentation. If the authorities check on purchases of certain classes of materials at stores they have got you if you used a credit card or time payment. And the government has been known to use this tactic before. If some things must be bought on credit, try to buy less important items, or things that can be used immediately. You do not necessarily have to use them immediately, but if it is plausible that you could have, you do at least have an excuse to not produce them if asked to do so.

If you operate on a continuing loan situation normally, and many people do, try to avoid listing your emergency equipment as collateral. Either borrow enough on other household items, or use the loan for everyday items and use your cash for

emergency supplies. I cannot recommend borrowing heavily for emergency equipment and supplies. For, despite popular literature disaster scenarios, it is not too likely you could get away with buying on time and credit card, and taking out large loans just before an emergency. Primarily because, unlike most of the disaster novels, in reality, the disaster ends and things return to more or less normal, including debt collections.

Try to spread out the purchases you make to several stores, in more than one town or area if possible. This reduces the chance of anyone noticing that you are making extensive preparations. It also is a good idea to make any credit card or time payment purchases at these out of town stores to make it a little harder to trace back to you.

There is one exception to this rule. There are a few stores and mail order establishments specializing in survival supplies who maintain records for only the minimum amount of time, or who deal in cash only, with no names or records wherever possible. The risks are much smaller if you do business with such establishments.

Chapter 24: Shelter

Whether or not you ever suffer the effects of a disaster, you still need a good shelter for everyday living. Ease of maintenance, economy of operation, and comfort are all important. That is especially true if a disaster reduces the normal availability of fuels and other supplies.

Therefore, a well designed, strongly built house is a must. Almost all types of common residential construction modes are suitable if properly adapted. That includes frame, frame with brick or rock veneer, masonry, wood truss, steel truss, A-frame, or log construction. Each has advantages and disadvantages for each of the particular types of disaster effects.

First of all, choose a good site. Try to stay at least one hundred miles from any major Air Force base or missile site. Ditto, for major naval bases. Large military staging and training areas are also poor choices to be near. Not only are they targets during a war, the towns associated with them are usually known for being fairly wild, with a large percentage of liquor stores, pawn shops, and clip joints, all making a living on the servicemen's trade.

Major cities are prime military targets. Terrorist activity usually takes place in the larger cities. Cities are totally dependent upon truck, rail, and/or barge transportation, all of which are easily destroyed or damaged in a disaster or by sabotage. The larger cities are subject to labor union problems and municipal workers' strikes. The various racial, religious, and philosophical hatreds are often just below the boiling point and erupt in violence periodically. Further, cities are more prone to violent crimes.

A small city or town of twenty-five thousand population or less, with a diversified economic base, is best. A small town with an economy depending on one or two crops, or just one major plant or factory is in serious trouble if that particular industry or crop has a bad year or reversal of some type. Agriculture does not have to be the primary industry, but there should be at least some types of food production locally. Small truck farms are better than a huge single crop plantation.

Preferably, the town will own and operate its own power generation plant, as well as the water supply and sewer disposal facility. In some smaller towns, this is not possible, or even likely - but check anyway. You might get lucky.

If you prefer, or must have a rural site for some reason, make sure the town or towns you are close to meet the above requirements.

Stay at least fifty miles from a nuclear power plant or research center, much more if downwind. Check on any dams nearby, particularly if they are upstream from your site.

Avoid places with concentrations of potentially dangerous businesses. Refineries, bulk fuel plants, industries using chemicals in bulk quantities, airports, rail interchanges, etc.

Areas prone to controversy, such as government offices, ethnic group meeting places, prisons, assembly plants (auto, aircraft, and ship, among others) should be avoided. They attract all types of pickets, demonstrators, and worse.

You may need to consider climate as well. Many survivalists recommend only areas with a mild climate and plentiful rainfall. While I do not recommend extremes, I do think that as long as you understand the local weather patterns and make provisions for any special local problems, practically any type of weather area is okay.

It is true that tornados are more likely to occur in a few states than in the rest, but they do occur in all and with the proper preparations you can greatly reduce the possibility of damage and injury from tornados. If you have a phobia or deathly fear of storms and tornados, by all means stay out of the south and Midwest. But do not allow the possibility of tornados to be the only factor you consider.

Much the same is true concerning earthquake areas. By avoiding places particularly subject to earthquake damage, like built up areas, mud banks, dams, cliffs, etc., you can build an earthquake resistant house and need have little fear of earthquakes.

After locating the best area for you and your family, you must choose the actual site. Avoid low lying areas subject to flooding during heavy rains. Choose a site with a good southern exposure. Avoid tall buildings, evergreen trees, or a mountain to the south. Get a lot large enough to handle at least a small vegetable garden, whether you plan to have one right now or not.

If you are in a rural environment, try to get a forested area or at least a patch of woods on your property, preferably to the north of the house. Flowing water is also a good idea, but unusual to find on small lots.

Determine potable water availability. Is the city water reliable? Does it have to be heavily treated, which depends on a huge, hard to maintain water treatment plant? How deep would a well have to be? What is the static water level? Must you drill through solid rock, earth, or unconsolidated gravels and sands? What flow rate can you expect from the well? Can you use a shallow well jet pump or must you use a deep well jet pump or a submersible pump? Will the well water have to be treated?

The ideal water situation would be a reliable city or rural water district supply of high quality untreated water, backed up by a twenty-five to fifty foot shallow well with a static water level of seven to fifteen feet and a flow rate of fifteen hundred gallons per hour or more of soft, uncontaminated water. This should be supplied with a three-quarter horsepower to two horsepower shallow well pump, and kept in a forty-two to one-hundred-twenty gallon pre-pressurized storage tank. Finally, with a hand pump kept in good repair on the well, you are ready for any emergency.

This situation is rather hard to find, so you must balance the available options in the area or find another. I will outline the best compromises in a later chapter.

The sewer disposal situation is a little different. Very few areas permit installing a septic system if a city sewer line is within two hundred to five hundred feet of the property line. You have either city sewer or a septic system. You cannot have both of them. An exception is where a new sewer line is installed in an area not formerly served by city sewers. There is usually a period of two to five years to allow everyone time to make hookups before the septic systems are declared illegal to use.

If you must hook to the city sewer, be sure that the system is reliable. If it is not reliable during normal times, you will really have problems in a disaster. If reports indicate poor sewer service, either find another place in the same town with better service, if possible, or find another area.

Actual septic system installation will be discussed later.

If you are way out in the boondocks you should check on the availability of telephone, natural gas, and electric service before purchasing the land.

Besides room for a garden, there should also be space available for burying small amounts of human waste and garbage for a short time, if it ever becomes necessary.

Space provisions for dogs, cats, rabbits, and chickens, bees, etc., should be made if you keep, or plan to keep, these animals. Space should be allocated for any special items you may have. Plan your layout to fit your current and future identified needs, and make allowance for more.

You must decide the type of construction you want. The land itself may dictate to some extent what type of house you build. Local building codes may also limit your choices.

My personal favorite is the underground house in hilly areas, or a mounded earth house in the flatlands. These are basically reinforced concrete boxes (or domes) either built into the hill, or mounded over with dirt after construction. Properly designed and built, it is difficult to even tell that you are in an underground house when inside. They need not be damp, dark, and dirty. All it takes is the understanding that it is possible, and a little planning.

This type of house is extremely energy efficient. Plus, it is easily defensible and proof against most physical disasters. You are actually living in a combination fallout shelter and storm cellar. In addition, since it is of reinforced concrete construction it will withstand severe earthquake, explosive, and impact type shocks very well.

Where direct burial is not permitted, reinforced masonry construction consisting of either reinforced poured concrete or grout filled concrete blocks, with horizontal rebar in every other layer, and vertical rebar each sixteen inches with a poured concrete roof is a good choice. This lacks the natural insulation and cushioning of the earth, but is still proof against most disasters.

Of the more or less conventional frame building methods, with or without brick or rock veneer, truss-framing is by far the strongest. Prefab roof trusses have been around a long time, but this systems uses a truss floor joist design firmly tied to the roof truss with studs. The truss frames can be pre-built at a factory, which is the intention of the original designers, and shipped to the building site. Optionally, the truss frames can be built on-site using plywood gussets or formed plates and nails, instead of the pressed plates a factory uses. Each truss assembly is firmly fastened

to the foundation wall or basement, with exterior and interior work completed as desired.

Conventional framing methods augmented with pre-formed steel framing plates, to tie rafters to ceiling joists, ceiling joists to the top plates and stud, studs to the floor plate and floor joist, floor joist to sill plate and foundation wall is not as strong as the preceding methods, but is very much stronger than construction without the plates.

Even plain framing beats a well-tied-down mobile home. Mobile homes not tied-down are strictly death traps. Study the various factors and choose the best balance for your location.

During the land acquisition, complete blueprints of the house should be drawn. These should include plumbing, electrical, HVAC, foundation, sectionals, as well as detail plans and the floor plan. A complete materials list giving brand names and designs for appliances and fixtures is also a must.

After obtaining the lot or rural acreage you have decided upon, obtain all the proper permits necessary and begin any work that will take any considerable time, and any preliminary work that must be finished before other work can be started. This includes the drilling of wells, cutting and repairing of streets and roads, installing culverts, or grading roads.

Basements and or foundation walls should be dug and poured, and the lot graded or roughly landscaped. Sewer, natural gas, and water taps of city mains should be made, or septic systems, propane tanks, and a well and pump should be installed if city services are not available, or are to be used in conjunction with city services.

Electric power and phone drops should be installed. If any specialty earthwork is to be done now is the time. Cisterns, swimming pools, and retaining walls are much more easily installed with no house in the way of the heavy equipment. Pour any other concrete work now, such as driveways, patios, fence supports, foundations, etc. Then proceed with the construction of the house. (Some builders will not pour things like driveways until the house is completed.)

Most builders of residential building use concrete reinforced with three-eighths to five-eighths inch rebar for basement and tall foundation walls, but only welded wire fencing in the slabs for driveways and patios. Welded wire might be all right for driveways, but I believe that floors, walls and ceilings should have reinforcing

rods spaced appropriately for the load. I prefer that all slabs have rebar as well as welded wire.

Foundation footings should be at least twelve inches below the current frost line. That gives some leeway for severe winters and a minor climatic change toward colder weather. The footings should be a minimum width of three times the width of the foundation wall and as thick as twice the width of the wall. If built on a hill, provisions should be made to divert runoff from the uphill side and channel it around the foundation to avoid washing out or undermining the structure.

Basements should be waterproofed when first installed. Many areas do not really require this, but it is much easier done during construction than later if a leak is discovered. Anywhere runoff or heavy rain could ever conceivably be a problem, and in areas with a high water table, special provisions should be made to avoid leaks. This includes extra care in the waterproof coatings, diversion of all runoff away from the basement walls, and the installation of drainage tile in a gravel bed around the basement footing. This should either lead to a gravity discharge of some type, or have provisions for automatic sump pump removal of accumulated water.

All penetrations through the basement or foundation wall should be sealed with a flexible sealant. This helps reduce the chance of damage to the lines entering the basement during a ground shock. Do not pour concrete directly on or around any type of pipe, wire, or other line. Where lines must go through concrete, use sleeves with enough clearance to allow you to easily pull through lines if repairs are ever needed. The main reason for the sleeves is the ease of later repair work and protection from corrosion from the acids in the concrete. A plus is that it is much easier to seal a pipe or wire to another pipe than it is to bare concrete.

Use threaded rod bent into a J-hook shape to provide tie-down points along the top of the foundation or basement wall. And I believe it is a good idea to use two or three of these J-hooks through the foundation wall to provide a tie point for ground rods. There should also be J-hooks inside to provide earth ground tie-points for the electrical system and for other electronic equipment. If all rebar junctions are welded or securely wired together this helps provide EMP protection.

If the building is to have a basement, enclose at least one large area with reinforced concrete walls and ceiling for a fallout/storm shelter. The entry should have a baffle wall to increase the radiation protection factor. The basement should have both an inside and a good outside entry.

The house should be planned around the kitchen and bathrooms. These are the two most expensive areas and the most difficult to rearrange.

The next most important area, if you are considering survival actions, is a warm room. This is essentially a living or family room, heavily insulated, with access to a bathroom and the kitchen. It usually has a fireplace or wood stove for auxiliary heating. This room, especially in winter, is the hub of family life. In the summer, if a window air conditioner is installed in this room in addition to the central units, the rest of the house can be maintained at eighty degrees or more during the day, while keeping this special room more comfortable. And in the winter, with the auxiliary heat source, you can maintain this room much warmer at less cost and lower fuel consumption than if heating the entire house. If conditions are severe, you can shut off the rest of the house completely and actually live in just this small complex of kitchen, bathroom, and family room. During a real emergency, with various utilities cut off and sources of supply low, this room may be the difference between suffering through or taking it easy during the disaster.

I have seen many houses, built even in the last few years, added to, or remodeled, to achieve this warm room situation, primarily due to heating fuel shortages and costs, with people often spending several thousand dollars in the process. But with the proper preparations it can be a real money and energy saver all year round.

If a major disaster ever makes repairmen or repair parts hard to obtain, the ease of repair of fixtures could be vitally important in the continued function or even livability of your house. Choose sturdy and reliable fixtures and appliances. If the house is to be of slab floor construction use a perimeter water line system. That is, run all main hot and cold water lines around the outside edge of the house and run lines under the floor to the individual fixtures. This way, if repairs are needed, very little digging underneath the house must be done. Avoid faucets and bathroom fixtures with gimmicky features. They are extremely hard to find parts for in a year or two after they are installed. Try to get matching faucets for all areas of the house. That way a minimum number of spare parts need be kept. Repair kits and /or parts should be kept for all waterworks products. All water lines should be valved below the fixture they feed. That way, if you must work on one faucet or fixture, you still have water everywhere else. Bathtub faucets should back against a closet with an access panel to the connections and valves.

The hot water heater should be easily accessible for service. The inlet and outlet should be valved and have unions so the heater can be easily changed when necessary. If you use an electric hot water heater, spare elements should be

obtained and kept in reserve. Extra temperature and pressure relief valves, or their serviceable components, should also be kept.

By increasing the number of electrical circuits, and decreasing the number of items on each, when any one circuit is damaged or cannot be used for some reason, you will still have power elsewhere. All appliances, including built-ins, should have receptacle and plug connections to ease installation and subsequent replacement or repair.

Even if you do not plan on things like icemakers, a dishwasher, and garbage disposal, appropriate plumbing and electrical hookups should be provided during construction. It is much easier and a whole lot cheaper then, and allows quicker and easier installation later, if you decide to buy them. It is a selling point as well, if you ever sell or move out.

Extensive wiring for telephones, computer network, cable, and TV antenna distribution should also be done for the same reasons. Not only are these more convenient, but money savers as they eliminate long specialty extension cords. The same goes for home automation wiring, and central vacuum systems.

Plenty of electrical outlets should be installed in each room. At least two should be installed on a carport and/or patio walls. You need several more exterior outlets to cover the rest of the perimeter of the house. There should be several frost-proof water hose connections as well.

Remember, when reading plans and suggestions from your loan agent, whether local, national FHA, VA, etc., codes specify minimum values and standards for wiring, plumbing, and HVAC specifications. You definitely do not want the very minimum.

I strongly recommend such luxury items as an ice maker, hot water dispenser, built in vacuum and intercoms systems, since they can often save you money, time, and convenience. And in the case of the intercom, it is also safer to answer the door remotely, rather than opening it to strangers. Fire alarms, burglar alarms, and closed circuit surveillance systems should be considered. If the possibility exists that any of the systems might be desired later, any wiring, mounting, and plumbing connections should be installed during construction. Then it is easy to install working components later.

Other items I recommend include:

- solar assisted hot water heating
- wind turbine attic exhausts
- guttering system and cistern
- water based heat pumps
- multi-fuel furnaces
- airlock entryway
- zoned HVAC
- multi-fuel auxiliary stove or fireplace,
(note that some fuels require special chimney construction)
- large pantry opening to the kitchen
- automatic exterior security lighting
- roof wash-down system
- wall wash-down system
- exterior wall lighting for security
- steel clad doors
- double or triple glazed windows
- heavy shutters
- weather sealing of all joints on exterior surfaces.

Remember, if you weather seal your house you must have adequate ventilation from other sources, preferably a heat/moisture exchanger.

If at all possible, the house should be built far enough away from the street and sidewalk that a brick or firebomb cannot be thrown at the house without entering the home owner's property line. This can discourage vandals. Avoid shrubs planted right up against the house walls. Not only does this contribute to dampness around the foundation, but it provides hiding places for potential burglars and vandals. However, one system I do like is a walkway around the house with a planter on the street side. Hedge or trees, or whatever, can be planted as a screen. If several windows and/or vandal proof cameras monitor this lighted area, it might be okay.

Other security procedures I recommend include the following: Use of five pin cylinder locks on all exterior doors. Use a one-hundred-eighty degree viewer in each entrance door and religious use of them before admitting anyone into your home.

If you do not have sixteen gauge steel clad doors, have several seven and one-half inch lengths of one-quarter inch steel rod inserted into the edge of a solid core door above and below the lock, and in between locks if there is more than one lock.

Remove one hinge screw of each hinge and replace it with a headless twenty-penny nail sticking out one-half inch to prevent entry by slipping the hinge pins.

Use security hardware on all exterior doors to include heavy duty strike plates, extra long screws, shims behind the jambs and studs. Use vertical sliding bolts in the edges of double doors. If you have many valuables you may want to consider a strong room. This consists of a special room, in the shelter perhaps, constructed of masonry or of close spaced two by sixes and covered inside and out with one-half to one inch plywood, finished with material matching the rest of the house décor.

A heavy steel clad door is installed with a view hole and double locks. With a telephone on a separate line to prevent the intruder from lifting a receiver and putting the phones out of commission, you can retreat to this room if an intruder does gain entrance to the premises. Trigger the alarm if not already sounding, and call the police. If you then tell the intruder you have called the law, it is not likely he or she will stay around long enough to break down the heavy door or knock through the thick walls.

Have all utility lines as protected as possible. They must be accessible to service personnel, but either put them in plain sight from inside the house, or in an area that would otherwise discourage vandals.

Remote reading gas and electric meters are available, so the actual lines are in a protected area and damage to the reading head will not disrupt service. Fortunately, most curb stops for water service take a special wrench, which you should have. But the actual meter base is easily turned off with a common crescent wrench or even a pair of pliers in some cases, so it should be in view or protected.

If you use a meter pole and underground lines (the best system), insist on metallic conduit on the pole. If the conduit runs up the side of the house use metal conduit there as well. Plastic can be easily cut through or broken with a sledge hammer and your service lines cut. Of course, metallic conduit can be cut, but it does discourage vandalism. For the same reason, the telephone line should also be underground and the junction box in a protected place, not only to keep it from being disconnected, but to prevent unauthorized use. I have seen these junction boxes right out by the street in a dark area. All anyone needs is a phone with alligator clips on the cord to use the telephone line and run up a huge bill on long distance, or even use it in a criminal activity.

The sewer line is much less susceptible to vandalism, but any cleanouts, (and you need several), should be two or three inches underground and not too obvious. A sack of lead shot, a large rubber ball, or a quart of cement poured down the cleanout can totally block drainage.

By putting all utility access relatively close to each other, (though codes and safety do set limits), and having them in view of a window or door, they can be protected with a monitoring system, security system, and covering fire if necessary.

Externally installed items like air conditioning condensers, heat pumps, and furnaces should either be completely inaccessible to vandals, (though you must have room to service the units), or be in an open latticework brick room with a roof. If the room is large enough and the latticework open enough, with large wind turbines on the roof of the enclosure, adequate ventilation of the equipment should be insured, but will eliminate the dangers from bricks and firebombs while also protecting the equipment from severe weather. It also gives repair personnel a better place to work.

The roof of your house should be of as fire resistant materials as possible. I recommend against wood shakes or wood shingles. Fiberglass based shingles are a good choice. Metal roofs are even better. Clay or concrete tiles are good, except I worry about breakage from hail or vandalism.

Flat roofs of concrete are naturally fire resistant. But for flat built up roofs of building paper and tar, a finish of gravel or marble chips not only reduces solar heat pickup, but also increases fire resistance.

The inclusion of a wash down spray system on the roof can help reduce fire hazards, and in the case of fallout, can eliminate one source of radiation by washing it off the roof. With fire resistant exterior walls, steel clad doors, functioning steel shutters, and an under eave sprinkler system, firebombs against the walls can be controlled.

Joel Skouson has some excellent ideas in how to harden a home against attack in his book "The Secure Home."

A meter pole away from the house feeding a separate line to a high capacity pump on a good well, or tied into a swimming pool, can give very good fire protection. But have plenty of hose or a grid of larger diameter pipe (2" to 4") feeding standpipes so you can get the water where you need it. If you do not have a secure

enough electric supply, (most power plants will not handle a pump large enough for fire protection) there are gasoline engine-powered fire pumps available.

All large capacity pumps, of course, need a very good supply of water. Small wells seldom supply enough to justify buying a fire pump, but a swimming pool certainly will. And if the fire department has access to it, particularly in rural areas with no hydrants, they can do a much better job of fighting the fire. Either provide a way to get to the swimming pool with the fire truck, or have large diameter pipe, three inch or larger, to a stand pipe with the proper connection for the suction line on the pumper. The standard two and one-half inch canvas hoses often run from the hydrant to the pumper are under city water pressure. They can not be used for hard suction, as in pulling the water from a pool. That requires the large diameter, semi-rigid short hose generally carried on the side of the fire truck. That is the reason you must provide a standpipe or clear access to the pool. Driving down the side of a burning house is not clear access.

In the matter of fire protection, I highly recommend smoke detectors, fire extinguishers in critical areas, and an evacuation plan regularly practiced; any one of which could save your family members' lives, and might allow you to save your house.

Keep flashlights beside each bed, and if you have visitors, familiarize them with the proper escape route from their room and the sound of the fire alarm. Sleep with your doors closed to prevent the spread of fumes and smoke as much as possible. Have an arranged meeting place outside, and if possible, a phone in a protective box located there. Only after making a head count and calling the fire department should you even consider trying to fight the fire. If you think you can fight it with hoses, or have a good fire pump, be sure to work in teams. Never enter a burning building alone.

Like fires, most burglaries that take place with someone home happen at night. By sleeping with exterior doors and windows locked, and having a good security system with a loud siren and bright light will scare off most burglars and avoid dangerous confrontations.

In the daytime keep doors latched or locked and answer with the intercom or check the door viewer before letting anyone in. Check all identity cards carefully with the door on its safety chain, or by CCTV, even those of police and repairmen, before you let them in.

If anyone does try to force their way in, head immediately for a meeting point in the strongest room and sound the burglar alarm with a panic switch. This strong room should be predetermined in advance. Your shelter is probably the best. Everyone should know which room is to be considered the strong room.

The room should preferably be an inside room with no outside access. It should have two non-adjacent exits with easily operated sturdy locks. There should be a phone there, preferably a separate line with one button dialing to the police. Immediately call the police and give your name and address and the situation. If the doors are strong and the locks secure it will take a burglar considerable time to enter. And usually if the burglar alarm is ringing and you tell the intruder you have called the police, he or she will usually not stick around very long.

I have not mentioned security bars so far. I believe they need a special caution statement. Only get security bars that are quickly, easily, and absolutely reliably removable from inside, even by small children. If they do not open quickly each and every time by children, you are taking much too large a chance of death by fire. Fires are much too common, and other security systems too cheap, to take a chance of being trapped inside during a fire because of security bars. There are bars available that are reliable and I recommend their use. But make absolutely sure before you buy that any advertisement of easy opening is true. Try them out in the store yourself.

I also believe you need operating shutters. These are not to keep out burglars but flying objects. These might be debris blown about by tornados or hurricane winds. Or it could be objects thrown by vandals. For protection against this type of object stout wooden shutters are adequate. But if you want protection from firebombs and small arms fire you need shutters made of steel. I prefer custom installations where the shutters slide sideways, or up and down, rather than swing, as they are easier to unlatch and close without exposing yourself to hostile fire. Another good choice are wood and steel roller shutters in which the shutter rolls up into a small box above the window by electric push button or by hand crank.

All of the security and safety features matter little if vandals, burglars, or armed raiders can easily get within a few feet of the house. Efforts to defeat security features can be accomplished, given enough time and if they are conducted under safe conditions. This dictates having a clear field of fire in all directions. This does not mean you cannot have trees and shrubs in your yard, but you should consider placement. Make sure anyone trying to get to your house must cross two or more patches of ground without cover.

While I call it a field of fire, it actually means being able to see clearly, without shadows or major obstructions. At night, perimeter alarms or inside switches should trigger lamps to illuminate at least these open patches and preferably the whole yard. It need not all be lit at once, but could be illuminated by sections if limited power supplies are available.

Whereas being able to see the enemy is vitally important to you, his not seeing you is also important. So make provisions to have a total blackout if the situation calls for it. That is not just for an attack though. You might want to hide the fact that you have power when everyone else's is out. This is simply a matter of having curtains on rods that allow them to completely overlap the edges of the windows.

Heavy curtains are also an energy saver, keeping heat transfer through windows to a minimum, especially if insulating curtains are used. Curtains of any size (really all curtains) should be of fire resistant construction. For blackout, either have dark enough curtains on all windows, which is unlikely, or have liners handy to hang behind your regular curtains.

With the provisions made above, you are ready for most emergencies. To complete your protection, you need a tornado and fallout shelter. If you have a basement, this protection is easy to provide. As stated before, merely add two more walls and a ceiling of reinforced concrete in the deepest corner of the basement. Add a baffle wall at the entrance to prevent radiation coming in there. I repeat here, you need both inside and outside exits from the basement.

The shelter should be at least PF 1000. That is, if the radiation level outside is 1000 R/hr, it would be only 1 R/hr inside the shelter. This is relatively easy to obtain in a basement using reinforced concrete and sandbags. If you need all the basement space for other uses you can have the actual shelter in a concrete box outside the basement wall with that one wall extra thick.

Overpressure protection is desirable, especially if near a target. This requires an extremely heavy door, and blast valves on all air ducts, as well as special anti-blast precautions on all other penetrations. As long as you are outside the twelve psi limit of a nuclear detonation, and in a strongly constructed shelter, you have little to fear from actual overpressure. For those who want or require more protection, you should obtain information from the internet or from an architect or engineer certified for shelter construction.

Keeping out contaminants is a slightly different matter. Large government and military hardened sites use hermetically sealed doors and vents, usually of massive construction for blast protection, and often have provisions for running completely on recycled air or compressed oxygen mixtures. But a relatively simple procedure can be used to prevent fallout, chemicals, or biological agents from entering the shelter. This involves only using a tight fitting door of sturdy construction and by having all air handling ducts sealed tightly, with dampers to control flow, a simple CBRNE air filter, and a blower with provisions for hand operation. By maintaining a slight overpressure of filtered air inside the shelter, any minor air leaks will be outward. No contaminants can enter against this gentle flow. You do need a reasonably tight room sealed at all times. Special care must be taken in ductwork. Average residential ductwork develops numerous leaks as it ages.

A good filter consists of a pre-filter consisting of a regular good quality furnace filter for dust, a HEPA filter sized to catch one-half micron biological contaminants, and an activated charcoal filter to remove chemicals and smoke.

You may have difficulty finding the filters locally. But try large HVAC companies and other air movement businesses. You should get all the individual filters the same size so as to make building a frame to hold them easier. The filtering area should be relatively large in comparison to the duct size since there will be considerable head loss in the filters, and so the air can move more slowly through the filter to increase filtering effectiveness and make the filters last longer before they need replacing.

Now, this system is not absolutely reliable against all poisonous gasses and there may be biological agents smaller than one-half micron, but this system does provide protection against many agents.

There are now commercially available CBRNE filters, making it easy, if a bit expensive, to get good air filtration.

The outside air intake to either of these filters should be in a protected area, and baffled and screened to prevent entry of insects, animals, and blown contaminants. It should be far enough off the ground or roof to prevent pulling any dust lying on the ground into the unit, or from pulling ground hugging vapors and gasses into it. Twenty-four inches is a minimum distance from the ground or roof.

A separate exhaust pipe or duct should be installed, in addition to the natural exhausts of the various air leaks. This allows better control of the amount of

overpressure and to quickly vent any fumes that might get into or be generated inside the shelter.

If you plan to have any electronic equipment, other than a simple AM/FM radio in your shelter, you need to make provisions against EMP. The first step is connecting all rebars to each other and to a good earth ground. The door frame should have a grounded rim, a radio frequency (RF) gasket, and the door itself should be of metal or metal-clad with a grounding strap.

All penetrations into the shelter should have grounded baffles. To provide better protection, a mesh liner grounded and connected to all metallic parts of the structure should be installed. All penetrations by power, water, antenna leads, or other lines should be through a metal plate fastened soundly to the mesh with good electrical connections. Each conduit should be welded rigidly to this plate.

All lines entering the shelter should be as short as possible outside to prevent picking up any more of the EMP as possible. If at all possible, they should have disconnects just inside the plate so if an EMP is expected to occur, all lines can be pulled and grounded, not just switches turned off - but complete isolation.

Remember that any unprotected line entering the shelter can carry enough EMP surge to transfer to those lines inside the shelter even if they are disconnected.

Probably a better solution for anyone with only a small amount of radio equipment would be to build a small sheet metal box to totally enclose the equipment and keep all equipment disconnected from antennas, power, and control wires unless in actual use.

For more detailed information on blast, air filtration, and EMP protection check the internet.

For those who cannot build new or already own a fairly new home, many of the preceding suggestions can be implemented by an addition or during any extensive remodeling.

I highly recommend the fallout /storm shelter to be inside the home. There are too many cases of injuries to people making a mad dash to a storm cellar fifty to three hundred feet away from the house. The reasons vary, but are usually that the people hesitate to leave the comfort and information sources inside the house to

enter a small, dark, damp, and cold storm cellar and be completely cut off from all communications.

I stated previously that I recommend a shelter designed into the basement of a new home, but if that is not possible there are various alternatives available. The government supplies very good plans for simple fallout shelters for single story homes without basements. Many of these can be retrofitted into existing structures at fairly low costs. And by modifying them with wind resistant building techniques they make excellent storm shelters as well.

And for those who cannot remodel, there are plans for outside shelters of all masonry, mounded earth, and triple wall construction. Most are designed to be completely detached, but I believe it is better to have an entrance from directly inside the house.

There are some risks with basement shelters and outside shelters with inside entrances. Debris from the house, or adjacent houses, could block the entrances. That is one of the reasons for shelters separated from the house. I believe in two entrances; One inside the house, and an entrance, or at least emergency exit, at a point some distance from the house.

Also available are plans for community and public buildings such as day care centers, cafés, meeting hall/community centers, and apartment complexes, each with private or community shelter spaces designed in for those of you involved in public projects and community planning.

Again, the internet is an excellent source for more information.

All of my suggestions about shelter pertain to your home. Where you live day to day and commute to and from work each day.

Many people advocate living in a more or less average home, and by watching a series of complex factors, judging the proper time, and heading for an individual or group retreat prepared in advance with food, water, and weapons.

Others suggest taking off now, abandoning all established items and essentially living off the land in a self-sufficient manner off somewhere in the boondocks, either individually or in a commune.

I feel that both ideas are unrealistic. As for the first, there are too many disaster situations that do not require, or even dictate against, leaving your home. The second is essentially impossible. You cannot get far enough away to avoid the impact of disasters involving finance, race, philosophy, technology, and all the other disasters involving aspects of our civilization. And some of the physical disasters occur everywhere. If you are already living at a marginal subsistence level, any upheaval or disaster can be totally devastating. For whether we want to admit it or not, modern technology is so entrenched and intertwined in our lives that it is impossible to completely separate ourselves from it.

Whether or not you have a retreat, I believe you should first develop your home into a safe place against all disasters.

If you then can afford the high cost of duplication of so many important resources, go about constructing the retreat as I outline for a home. If you choose an isolated site, you might want to consider camouflaging the purpose of the structure, since when you are not at the retreat it is susceptible to vandals. You can, of course, take measures to prevent forced entry, but if someone suspects there are supplies or valuables inside, and make a determined effort to get inside, they will. If the place does not look too inviting and they try to enter and fail to do so easily, then quite probably they will leave with only external vandalism. But if they know from the looks of the place it is worth entering, no amount of security arrangements will keep them out if there is no one there to prevent it.

If you decide to leave your house and go up to the retreat until things blow over, the same type of vandalism can occur to your house. On the other hand, if the retreat survives the disaster, it can become your permanent residence if you must leave your home permanently. But it is expensive to maintain.

Either way, try to leave each residence ready for extreme weather, particularly freezing weather. Drain the water pipes and add RV anti-freeze to the sink, shower, bath tub, and stool traps. Or provide a means to keep the building and utilities above freezing.

If you must live close to your work or cannot afford a second home, you would probably be better off constructing one or more minimal camouflaged retreats with provisions caches.

By making the retreat look like a simple vacation or hunting cabin, and burying or hiding all provisions and equipment not associated with the indicated purpose, and

not making it too difficult to enter, you can reduce the likelihood of the place being totally destroyed by vandals. They may live in it for a few days and use all the visible (available) supplies, but they probably will not be searching for anything beyond that, and your hidden cache will be secure. By building it of sturdy nonflammable material, you reduce the possibility of it burning it down. Heavy vandalism is probably the worst it would suffer, and that would be to unimportant objects you place there for window dressing.

By having ammunition, food, and water hidden away, and the assurance of a roof over your head, you have a place to run to as a last resort. If it is a short-term problem you can survive on your hidden supplies until you can go back home, but if your house is occupied or damaged, you will be ready and able to retake it if necessary, or to repair any damage.

This method reduces the duplication and expense of necessary resources. And by having more than one of these minimum retreats, you have a choice of places to go if necessary, depending on the circumstances, or if one is damaged beyond repair, or discovered.

Chapter 25: Equipment

I have already stated that a stove or fireplace capable of using both wood and coal is a good idea. Most are either or. Never burn coal in a wood stove. Only burn wood in a coal stove so rated. It should be as energy efficient as possible and put as much heat as possible into the room while maintaining a safe flue temperature to prevent creosote buildup and fire. There are many choices available from the inexpensive fifty-five gallon drum stove to highly expensive European Tile stoves. The choices are covered in several handyman and Do-It-Yourself (DIY) magazines. Even some of the national news magazines have carried detailed articles due to the price and shortages of heating fuels.

If you are a handy man or woman, and plan to build your own, I am sure you have access to the proper literature. If you must buy factory-made models visit the various stores that sell the types of stoves or fireplaces you prefer, after studying the magazine articles, and get advice about prices from the stores. As in every situation concerning stores, shop around and determine if the sales and installation people know what they are talking about.

A word or two about add-ons for stoves and fireplaces; There are several methods of extracting extra heat from fireplaces and stoves. Avoid any that could cause the fire to burn too cool, thereby producing excessive amounts of creosote, and those that cool chimney gasses, which also results in excessive creosote buildup in the chimney.

Some of these devices put the extra heat directly into the room. Others are designed, or could be adapted, to put this heat into a storage medium, either air or water, to be used later. I believe the best place for a heat extractor for the stove or fireplace is at the very top of the chimney just as the fumes exit. This maintains a hot flue, reducing the dangers of creosote and allowing you to extract a maximum amount of heat with minimum danger. But it should be installed so as to allow easy removal for cleaning away creosote deposits.

Be sure the flue has a good damper that can be completely sealed off, or install a chimney cap device.

I mentioned a solar water heater earlier in the chapter on shelter. In a home using electricity for hot water heating, but not for space heating, as much as fifty percent or more of the electric bill is for hot water. Using a solar assist can dramatically

reduce this, and substantial savings are gained even for homes using propane or natural gas. I prefer simple systems over the highly complex, even if it means a slight reduction in efficiency. Again the internet is a good source to learn about the products available and their costs. Cost is not the only factor. Solar may be the only power source available to heat water in a disaster.

Much the same applies to auxiliary electrical power. It is not usually practical to run a complete house with an electric generator, particularly if space heating and hot water heating is electric. Even electric cooking units cannot be run at anywhere near capacity. But it can be done.

So you must balance practical needs and costs to obtain the proper size power plant. Somewhere between a three kilowatt unit to a fifty kilowatt or more unit will suffice. You can get along with a small unit if you accept doing without some of your appliances during the time you are dependent on your power plant.

Before discussing actual sizes of power plants, let me discuss wiring hook-up, as they can be a factor in choosing the unit.

Most units come with several receptacles. You can, of course, run drop cords to the various appliances that have accessible plugs. However, this is inconvenient and dangerous, partly due to the fact that long cords reduce the capacity and invite getting a cheaper cord since you are buying so many, which is probably undersize for the draw that will be on it.

Another method is to direct the power through the complete breaker or fuse box. If you do that you must throw breakers or pull fuses to keep automatic equipment from coming on and burning out the power plant, and remembering not to use too many other appliances. This is often hard to do, especially for children so used to using anything they want in any combination.

A third system is to install equipment such as lights, fan, hotplate, etc., connected only to the power plant. This equipment would operate only when the power plant is running. This method is impractical for most homeowners.

A fourth method, and the one I prefer, is having all non-essential items too large for the power plant in the main fuse box or breaker box. This main box would have a sub-feed to a transfer switch. The power plant would also feed this transfer switch. The transfer switch would feed another breaker box that controls all important circuits. This way either commercial or private power can be switched at will.

Do not hook up a power plant to your house wiring without a transfer switch. This eliminates frying a power company repairman working on the commercial lines. Without the transfer switch the possibility exists of connecting the power plant to the feed lines and having the power go into the mains. Not only is this dangerous to repairmen, but it will burn out your power plant as it tries to power all your neighbors. And if the commercial power comes back on with your power plant, your power plant is ruined for sure. And will probably burn your house down in the resulting fire.

Put important circuits on this supply.

- furnace controls
- freezers, refrigerators, microwave oven circuit
- several lighting circuits to allow at least one light in each room
- security and fire alarm system
- at least one outlet circuit in the kitchen
- at least one outlet circuit in the warm room for radio, TV
- all the circuits supplying power to communications equipment
- solar heating controls.

You may also put the electric cook-top or range on this supply if you remember to use only one of the small coils. Do not try to use more than one at a time, or the oven. Use the cook-top only when most other things are off.

If you have a gas oven, you might need to have the circuit to the stove on the emergency supply since some newer stoves use electronic ignition, electronic thermostats, and other electronic controls.

The clothes washer can be used if only minor lighting is on. Do not use it whenever other heavy equipment is being used. Unless you have a very large power plant you will not be able to use an electric dryer, and then only if you turn everything else off. However, if you have a gas dryer you can use it if other units are turned off since a gas dryer uses only a small amount of electricity to run the timer and a motor to turn the drum.

Water pumps are a rather special situation. Most jet and submersible pumps are 3450 rpm, capacitor start, capacitor run motors. Capacitor start/Capacitor run motors take a bit more running wattage than universal motors, and a great deal

more to start. Being 3450 rpm increases the starting draw by up to another 25%. So if you have a water pump of any size you need one of the larger power plants to enable you to use the water pump. You will quite probably have to keep the pump turned off until you need water, since, as the pump operates on an automatic switch, it could kick on when some other heavy draw load is on and overload the power plant.

I would suggest not even attempting to run hot water heating units. You may want to have a power plant large enough to run your dryer if everything else is turned off. It takes some planning but can be done. Similar is the situation for air conditioners. You probably cannot run the central unit, but might be able to run a window unit in the warm room, or perhaps in a bedroom. But you will need one of the larger power plants.

If you or your family has some special needs, such as asthma or allergies you may need the air conditioner, or if you have a baby you may need the dryer. Or special medical equipment may depend on electricity. Be sure to take these special needs into consideration and plan accordingly.

But make sure you turn off those breakers feeding other equipment when you are using one of the heavy draw appliances to prevent overloading the power plant.

I also suggest that whether you install the unit now or not, make provisions to attach a power plant from outside, just in case you ever get a larger unit or borrow or rent one. If the provisions are there it is a simple matter to hook up and run.

Now to the actual units. Many types are available. Inexpensive manual start one-hundred-twenty volt only models starting at about three hundred watts and going up to fifty kilowatt units that require a farm tractor or industrial engine to run.

Fuel choice can be gasoline, diesel, propane, or natural gas. For those interested in alternative energy and for DIY people, some of these units can probably be converted to run on alcohol or methane. For smaller power plants, gasoline units are by far the most common with diesel a distant second. So check with dealers for choices other than gasoline.

The heavy duty, continuous duty generators (more than three or four days use) are often slow speed diesel units designed to increase engine life. If you contemplate this type of use, these are the units to get. But for occasional short term use the standard duty units are fine.

Large institutions often have units running on natural gas, but I feel that the loss of gas service during physical disasters is likely, therefore I cannot recommend that fuel for home generators. Plus, many areas have no natural gas service anyway.

Propane is much the same situation. Places using large amounts of propane generally run a power plant, if they have one, on propane. And those that use propane as their main household fuel could use a propane fueled power plant.

But for an all new installation needing a new fuel storage tank I suggest diesel. It is safer than gasoline or propane by far. The fuel will last longer than gasoline if treated with solutions available for that purpose. Diesel is usually cheaper and, so far in the fuel shortages, has been a little more available than gasoline. If you own a diesel powered vehicle, it is the only way to go.

All units over about three thousand watts (three kilowatts) produce both one-hundred-twenty and two-hundred-forty volts. Usually all the power can be drawn from one plug of either voltage or split among several one-hundred-twenty volt receptacles, and one or two two-hundred-forty volt receptacles. With a full power receptacle feeding the transfer switch, the hook-up is simple. Some of the larger units have no receptacles. These use wiring lugs similar to the ones in the transfer switchbox. These are wired direct.

Some units require you to fill a built in one-gallon to three-gallon tank. Others use an outside buried tank. For serious use, an outside buried tank is safer and more convenient. If the unit is mounted inside a utility room, make sure all exhaust connections to the outside are secure and cannot possibly leak.

I also believe an extra quiet muffler and a spark arrestor is a good idea for either inside or outside installation.

Valve the fuel line with a valve rated for the particular type of fuel. This allows you to unhook the unit if necessary. Maintain adequate supplies of the proper oil and spare parts for the unit.

Electric start is available on most models of power plants and comes standard on medium and larger capacity units. It is your choice.

Automatic start and switchover is available on a few of the larger models. This system monitors the commercial power supply. If commercial power fails the

control opens the transfer switch, cranks the electric start power plant, and then connects the power plant to the load. If commercial power comes back on, it switches the load back to commercial power, idles the power plant for a short while, and then stops it - all automatically. Most units also stop the process if the power plant fails to start with-in a preset time of cranking, usually one minute, or if oil pressure is too low, or if overheating occurs or for some other reason that could damage the engine. Most are designed to restore power within ten seconds of commercial power failure. This option is expensive and available only on selected models.

Although you need a supply of bottled water stored for immediate use and for evacuation, you should have a reliable long-term source of water for long-term emergencies.

If you live in an area suitable for shallow wells you do not have much of a problem. By installing a hand-pump on the well in addition to the regular electric pump you will have water even if all power is out. Besides, a hand-pump makes priming the electric pump so much easier. Although not needed if installed on a well by itself, a check-valve should be used between the hand-pump and the tee going to the electric pump and its check-valve.

Another good system is a hand-pump connected to a cistern fed by well maintained gutters on your roof.

If you use city water and have either a deep-well backup or must treat your water for some reason, either a cistern or power plant and small electric pump is the answer. And if you worry about the reliability of rain for the cistern, a well is the only answer. For strictly standby or backup use, a simple one-quarter to one-half horsepower pump is sufficient. If it is manually controlled, it will not overload a medium sized power plant. Two good choices are the Lario piston pump, which is fairly expensive and must be rigidly supported if connected to plastic pipe, and the Gould Balanced Flow jet pump. Both pumps are reliable, but provide at most three to four hundred gallons an hour. Neither will operate in deep-well situations. That is, pulling water from deeper than twenty-two feet.

This situation requires either a submersible or a deep-well jet pump. If you use the pump for daily use, a one-third to one-half horsepower pump probably is not adequate. So you must balance normal needs, emergency needs, cost, and practicality. A cistern or large storage tank with one of the shallow well pumps or a hand pump might be the answer. By keeping the large tank full with the regular

pump you can use this water in an emergency with the small shallow well pump. Incidentally, this is a good everyday system in areas with low producing wells. A small pump in the well can run enough to keep the storage tank full, and a larger pump used on the tank to supply adequate water in the house. This requires two pumps for everyday use and a third for standby.

If a cistern is installed, be sure and always allow all contaminants to flush out on the ground before diverting rainwater into the cistern. Be especially careful if aerial application of farm chemicals occurs in your area. If accidents have occurred anywhere near you, involving hazardous substances, take extra care to flush the system when it rains. The larger the cistern holding tank, the better.

Nearly as important as adequate water supply, is a reliable waste disposal system. As stated previously, if you are on a city sewer, you probably cannot legally have a septic system. The best backup for an inoperable city sewer is a chemical toilet available for between fifty and three hundred dollars. They are convenient and reliable. They use a minimum amount of water. The waste accumulation must be disposed of periodically either in an operating sewer, or by burial at least eighteen inches below ground away from anything it could contaminate.

A well designed, properly installed, and regularly serviced septic system is very reliable. The key factors being not burying the septic tank too deep, installing a large enough tank, having an adequate amount of field tile, and most importantly, installing the field tile properly.

I have seen several septic systems with a large tank buried at the correct depth, and with plenty of drain field. But the drain field was not properly installed and the people had trouble constantly.

Starting at the inlet, here are a few recommendations for the installation of the septic system.

The closest point of the septic tank should be at least five feet, but not more than ten feet from the house. It should have enough earth cover to allow good grass growth. Four to ten inches is adequate. A tank of at least five-hundred gallons for two people is adequate, but for a family a tank of one-thousand to two-thousand gallons is best. I prefer concrete tanks as they last longer than steel, and usually have one or more cleanout holes built in. Fiberglass tanks are also a good choice.

No matter which tank material you choose, be sure that access holes are installed to allow routine maintenance. The inlet should have a tee installed inside the tank with a pipe extending approximately halfway down the sidewall. The tee is not necessary if the tank has a built in baffle. A tee should also be placed on the outlet, which is two to four inches lower than the inlet hole. A solid pipe should go from the outlet to a distribution box. The lines of perforated pipe or tile, run from this distribution box. A short section of solid pipe should be used on each field line to prevent the waste water from getting around the outside of the distribution box.

A trench not less than two feet wide, or more than three feet wide, should be dug deep enough to allow a four to six inch layer of washed gravel, not rock, beneath the pipe. Lay the pipe, and cover with more gravel to within six to twelve inches of the surface. The pipe should be level. Do not slope it at all. Place a permeable barrier over the gravel to prevent earth settling down into the gravel. Tar paper is not permeable. It prevents water from going up. The best choice is uncoated felt building paper, but you may have to use a layer of straw or similar substance. Fabric goods are now available specifically for disposal fields. Fill the rest of the way with loamy soil.

Probably the two major mistakes people make is to have the field tile too deep, (usually the result of a septic tank too deep), and putting tarpaper over the gravel. This prevents the upward movement of the water. In a properly installed system, a large percentage of the moisture evaporates or is used by the grass growing above the line.

For special circumstances, such as poor soils, hilly areas, or high water tables, see a septic system specialist or contact your county extension agent. The government has several very good pamphlets on alternate sewage disposal systems.

The best backup for a septic system is a good chemical toilet. Other alternatives for when the normal sewer is inoperable are chamber pots of simple to sophisticated design. This waste should also be put into a working sewer, or buried.

You should maintain a set of extrication tools in your shelter. In a very bad disaster, doors and exits may be blocked, or you may have to move heavy debris away from the house or clear roads or do other work requiring heavy tools.

You need both long and short handled shovels, crow bars, saws, sledge hammer, and perhaps a pick. Chains and a block and tackle or come-along should be

included for pulling and lifting chores. Add a jack to force emergency exit doors up and open.

A set of household maintenance tools is also a good idea. It is impossible to repair and maintain the electrical, plumbing, carpentry, and air movement installations of your home without the proper tools. General tools will make up the bulk of your kit, but get the specialty tools you may need for plumbing, automotive, electrical, and air movement problems.

Another major problem will be the lack of doctors and hospital beds, and access thereof. You will need more than a first-aid kit and thermometer. A stethoscope and sphygmometer for checking blood pressure can be a great help in keeping track of your everyday general health. You will need good anal and oral thermometers, and more than one of each. A small flashlight for testing eye reactions is a good idea too. An otoscope for checking ears and the nose is also recommended. You should also stock splints, bandages, and other medical consumables in as large quantities as possible.

I also recommend syringes and a set of basic operating instruments. With several good practical medical books, you have the means for a doctor to take very good of you. Even if he (or she) has not made any emergency preparations himself or herself, you will have the tools he or she needs to take care of you.

You need a good working relationship with your doctor, partly because he can care for you much better, and he or she may be the only place you can order some of the medical instruments through. Also, the doctor can instruct you in their use and help you understand your medical books. Complete surgical kits and field trauma kits can now be purchased online. I'm not suggesting you plan on operating yourself. The kits are for use by trained personnel.

One other factor is if your doctor likes you and can rely on your knowledge of how to take and use medicines and medical instruments, he may be more willing to help you in a major disaster. He may recognize that a little of his help will go a long way with you, instead of spending his time and effort in a lost cause.

It can be vitally important to have the most precise information as possible about your immediate environment.

Weather instruments are fairly common, but be sure to buy good ones. Inaccurate instruments are worse than none at all. A reliable thermometer, hygrometer for

humidity, wind speed and direction indicators, a good reference work on the weather, and a table of climatic averages for your area, can allow you to make fairly accurate short-range forecasts and fair guestimates for long term effects.

Additional sensors can provide more information in some of the available units. Rainfall gauges, soil moisture sensors, and several other options are available, depending on the weather instrument you buy.

A little more difficult to find are radiation instruments. You need at least one rate meter. You also need a dose meter, and a dosimeter “recharger”, for each member of the family, plus a few spares. Your best bet in my opinion is “The Package” from the radmeters4u website. Add a CDV-717 remote reading survey meter and you have a very good set up to detect and monitor fallout radiation.

Burglar and fire alarms, and surveillance systems are recommended to maintain physical security around your home. I suggest you obtain several of the fine books on this subject, or have a reliable security analyst plan, with your help, a suitable wiring diagram and choice of devices for your particular needs.

One of your more important assets may be a reliable communications system. You can often avoid or prepare for something that is going to happen if you receive an early warning from reliable sources. Knowing what is happening as it happens is much more reassuring than not knowing what is happening around you.

The prime warning device in weather emergencies, and major national disasters, is the NOAA National Weather Service All-Hazards warning radio. Have at least one that will run on rechargeable batteries. If you are some distance from the NWS transmitter you may need an external antenna, and definitely will if the receiver is in a shelter. Not only are local warnings given, but the NWS transmissions are the only unified method of national warning dissemination and broadcasting of Presidential Statements in time of national emergency.

Every shelter and vehicle should have a good battery operated AM/FM radio. The shelter should have an antenna wire to the outside, since the radio will not receive very well, if at all, underground or through thick concrete walls. A small twelve-volt or internal battery operated TV is also a good idea. The normal broadcast stations can give pretty good reports of a running disaster. But I have found that they tend to be somewhat inaccurate on details. Even the national TV networks vary considerably sometimes on the facts and figures of a disaster. The things-to-

do reports of local radio and TV are fairly dependable for the general public, however.

A better source of information, although you have to interpret it yourself, is the communications of fire, police, and other government agencies using VHF-Lo, VHF-Hi, and UHF FM transmissions.

For the frequencies used by these agencies, you need a good public service bands scanner, preferably one that will run on both one-hundred-twenty volts AC and twelve volts DC. Many jurisdictions are going to trunking type radio systems. If your area is now using the system, on contemplating switching over, get a scanner with trunking capability.

If you can, have a second to use for searching for additional frequencies while the first is monitoring your main set of frequencies. You will also miss less during busy times with more than one scanner going. With only one scanner you can hear only one thing at a time, but with several scanners you can keep track of several different situations at the same time. With two or more scanners you can avoid the tactic that some agencies use to try to avoid people listening in. A dispatcher will key up on one frequency to lock up the scanners in the area while the actual information is transmitted a few moments later on another frequency while everyone's scanner is locked up on the other channel.

This same type of programmable scanner can also receive business band and FM marine transmissions, as well as the AM aircraft band.

For the larger picture around the world you need a good quality general coverage high frequency (HF) receiver. A short wave receiver covers most of the same bands but a general coverage receiver will also receive the Amateur Radio bands, which can be a good source of information. Many countries have at least some news programming in English. It is rather enlightening to hear of the happenings here in the United States, and of events abroad from a standpoint other than American. You can keep up on world events rather easily by tuning in on various international news broadcasts. Plus you can hear other types of communications, including international maritime and aircraft.

A receiver should be one-hundred-twenty volt AC and also use twelve volt DC power. A few models will also use several C or D size batteries. You need an outside wire antenna coming into your shelter to use the receiver there.

It should receive AM, CW, USB, and LSB modes. It should have continuous coverage from at least 540 KHz to 30 MHz . 100 KHz to 30 MHz is better. All the major radio makers have good models widely available in many retail outlets. (Grundig, Kenwood, Yaesu, Icom) The two-hundred-fifty to seven-hundred-fifty dollar price range probably has a model for most. But some models go for over ten thousand dollars if you are so inclined.

If you can understand Morse Code by ear, so much the better. If not, there are interfaces for connecting the receiver to a computer to do the decoding for you.

HF general coverage receivers can pick up the transmissions of WWV, the US Time Standard Transmitter in Colorado, or WWVH, the time standard station in Hawaii to cover the Pacific area. These stations transmit continuously, 24/7, simultaneously on 2.5, 5, 10, 15, and 20 MHz. In addition to time, WWV and WWVH disseminate amateur and shortwave signal propagation forecasts, that is, “skip” conditions. They also give weather summaries and forecasts of a general nature. They give emergency warnings for weather and other disaster situations.

You may want a separate WWV receiver to allow continuous monitoring without tying up your main receiver.

Information input is important, but there will be times that you will need to communicate with others. Telephones should be installed in the shelter, but you cannot rely on phone service during an emergency. The service is just too apt to go out.

AM Citizens Band, the well known CB, will be crowded and there will be a lot of unfounded rumors flying around on the channels. SSB, single side band CB, is much less crowded and generally more stable with less of the wild rumors and more responsible people on the air. An added fact is the double or triple range of SSB over AM.

There are a few areas that have only a few sidebanders, but since sideband radios also have AM capability, you will have both options covered anyway. CB is okay for casual local use as long as you do not depend on it too heavily.

For long distance communications amateur radio is the answer. Amateurs have long been known for their work during disasters. They relay messages for civilians, and even the military depends on them occasionally. I highly recommend that you

become an amateur radio operator since it is illegal to operate equipment on the amateur bands without the proper license.

Equipment is available in all price ranges. From low priced simple kits for fifteen or twenty dollars up to ten thousand dollars or more for state of the art equipment.

Equipment for disaster communications can be relatively simple. A good transceiver covering the HF bands is probably adequate for most long range uses if a good commercial beam antenna is used.

One-hundred to four-hundred watts power output is also preferred. Yaesu, Drake, Kenwood, and Collins all make excellent equipment, as well as several lesser known companies.

Both twelve volt DC and one-hundred-twenty volt AC power supplies for the radios should be obtained. A separate VFO on transceivers allows you to transmit and receive on different frequencies, an important tactic when static or other interference is a problem. Separate transmitter and receiver combos have this capability built in. Linear amplifiers can be a help, but few that are designed for amateur service can run on twelve volt DC power. Give amplifiers low priority. Get a good transmatch, an electronic device that matches the output of your radio to non-standard antennas, so you can run simple-to-build antennas if your main antenna is damaged.

For short range communications the amateur radio 2 meter, 1¼ meter, and the 70 centimeter band units, especially the walkie-talkie units, are ideal. These amateur bands are close to the police bands and give comparable service. Hand held, base, and mobile units are available. Coverage up to ten miles between hand held units is reliably achieved with some units. 2 meter operators often use repeaters to extend the range of both mobile and especially hand held units. These are base stations that receive a signal and retransmit it simultaneously on a different frequency. While repeaters can dramatically extend the range at these frequencies, they are not too common in rural areas, and in a major disaster, they are vulnerable to damage or loss of power. Do not count on their use in emergencies.

2 meter units usually have more range than 1¼ meter or 70 centimeter units, but the band is much more crowded than these higher bands. Choose a couple of popular frequencies in your area, and also a couple of not too common in your area for a little more private communications.

If you prefer reliable communications to be at least a little more private, you can probably get a Business Band license. This is not the private radio band so many people think it is. Several people in other parts of the country will have the same assigned frequency, but are usually spaced so that there is only minimal interference. However, anyone in your area with a programmable scanner that finds your frequency by searching the bands will be able to listen to your conversations.

Being a much more limited market, business band radios are usually relatively expensive, especially hand held units, but they are highly reliable and give good service if you stick to the major brands.

I prefer the VHF-Low band for increased range, but the UHF band, with slightly less range, is subject to less interference and they are almost immune to EMP damage. I particularly like the Motorola series of hand held units. AC and DC quick chargers are available.

There are a myriad of companies manufacturing Family Radio Service (FRS), Multi-Use Radio Service (MURS), and General Mobile Radio Service (GMRS) short range radios that are adequate for short range use. Some are listed as capable of operating for twenty or more miles. Don't count on it. For around the home, family outings, and convoying, they are a good choice.

There is an important legal fact regarding monitoring of the various bands. You may not disclose to a third party what you have heard, nor may you profit from it for any personal gain. The situation is a little different concerning CB and Amateur Radio, but it is still a good idea to be rather closed mouthed about anything you hear.

As much of the electronic equipment as possible should run on twelve volt DC as well as on one-hundred-twenty volts AC. By keeping an automatic twelve volt battery charger or solar battery charger connected to one or two deep discharge type batteries you will have power for communications gear and emergency lights in case both commercial and emergency power plant sources fail, or you do not want to be running the power plant.

This also allows you to disconnect everything from outside lines yet still have power to some equipment, and with only one antenna connected, still provide good EMP protection for essential equipment.

You need a good quality, filtered, automatic battery charger of eight to fifteen amp capacity. But keep only one battery at a time on the charger just in case the charger malfunctions. The batteries should be heavy-duty twelve-volt deep cycle batteries, with the sealed type being preferred. They need to be well ventilated so, if you must keep them in the shelter, put them in a protective box where air flow is across them and out the exhaust vent.

If you opt for deep discharge batteries, be sure and use the special chargers made for them. All other cautions apply.

Attach a voltage regulator and a filter to prevent any interference that gets through the charger, or that is produced by the charger, from getting to your equipment if you plan to use the batteries with the charger attached and running.

For reliable internal communications in and around your home and grounds, provide outlets generously both inside and outside for sound powered phones. These are cheap on the surplus market and new ones are reasonable. All it takes is a couple of wires and you are ready to go. Several phones can operate on one set of wires, thereby linking all areas of the house and grounds in a reliable communications net.

With all the various communications equipment you are likely to have, you need a good antenna system to get the maximum use from your equipment.

For simple AM/FM portables, string a length of just about any kind of wire outside the shelter, and run one inside. Just bring the radio close to the part of the wire inside the shelter. This is an absolute minimum antenna system.

Most general coverage receivers have a terminal for a single long wire antenna, the longer the better for reception. This same wire, of course, would do also for your AM/FM radio.

Even if you live in the city and can use rabbit ears for TV reception, you will need an antenna outside the shelter if you plan to have TV inside the shelter. The type and size depends entirely on the reception characteristics of the area. A set of rabbit ears just outside the door might be sufficient, or you may need a super-fringe antenna as high as you can get it.

For CB, a well constructed ground plane will do for strictly emergency use. During high sunspot activity, you may need some type of directional antenna, particularly if you use the CB on a daily basis.

Scanners generally use a small pullout antenna similar to that on an FM radio. Again, if the scanner is to be used inside the shelter, you will need an external antenna. Besides, you will hear much more with one, especially the mobile police, fire, and ambulance units. A strong, well constructed ground plane will do. And you can use coaxial tees to feed all your scanners from one or two antennas without too much loss in performance.

The National Weather Service radios use the same antennas as the police scanners.

For VHF amateur bands, a simple vertical ground plane for each band will do.

To get the maximum from your HF amateur gear, you need a versatile antenna system. There are ground planes cut to work on the 10 through 80 meter bands that do a good job. They are designed to cover just those frequencies that amateurs use. There are beam antennas with from two to six elements designed the same way, to cover only the amateur bands of 10, 12, 15, 17, 20, 30, and occasionally 40 meters. These factory made antennas are excellent for everyday use, but the beams tend to be susceptible to physical damage in a disaster. With a good antenna matcher (transmatch), you can use any reasonable length of wire and two or three insulators for an antenna and still do a good job for emergency use and, in fact, this is all many amateurs use anyway. Single or multi-band dipoles are acceptable for emergency or everyday use.

A beam for use with both shortwave and amateur radios requires a wide bandwidth configuration instead of the limited width of most amateur beams. The only practical beam I have seen is a log periodic array. They are very large and expensive. They are rather difficult to build from scratch, unlike most other types of antennas. Continuous coverage from 3 MHz to 30 MHz is available in various combinations. If you want a directional antenna for shortwave and amateur frequencies, this is the way to go.

The various antennas should be mounted on a strong tower. Avoid the common TV mast. It is much too flimsy. I do not particularly like the various TV store variety of telescoping poles either.

A three leg tower using zigzag bracing is best. There are several strength ratings available and most look essentially alike, so ask about the strength. If you mount very many antennas on the tower or if it is over forty feet tall it should be firmly guyed to properly installed ground anchors using steel cable, not light clothesline wire, and using steel turnbuckles to maintain the proper tension. The tower should have a hinged base to allow easy tilt-over, so you can work on the antennas without the need for climbing and working from a somewhat exposed and precarious perch.

There are retracting, fold over antenna towers taller than forty feet that do not need to be guyed. They are very expensive.

The base of the antenna should be grounded to a good ground rod. Galvanized conduit running underground from the tower into the shelter should be fastened to earth grounds at each end.

The coax lines feeding into the shelter should be in conduit, and run as close to the radios as is practical before exiting the conduit. Expose no more than enough cable to easily go to the individual equipment. For EMP protection, install Gas-Gap protectors on a coax tee fastened to the radio and fasten the coax to the other arm of the tee. All power lines and all other lines entering the shelter should have Thyristors across them, and to ground, for EMP protection. Confer with an experienced electrician for more information on the use of Gas-Gap protectors and Thyristors.

You should maintain an extensive spare parts inventory for each piece of equipment where it is practical to do so. You also need to keep spare antennas to replace any damaged during a physical disaster.

Chapter 26: Provisions

Although the following suggestions will be some of the least expensive preparations you will make, they are also some of the most important. Essentially these are simply common sense ideas done, at least in part, by many people. Yet, to achieve maximum effect for your time and money, more than random choices should be made in stocking your larder.

In its old Civil Defense literature, the US government recommends a two week reserve of food and water. Department of Homeland Security recommends from a three day supply to two weeks, depending on the specific piece of literature you see.

The two-week supply should be your everyday kitchen pantry supply. Fresh produce and meats kept in your refrigerator and the items stored in your freezer should also be counted in this two-week supply. Also, part of this two-week supply are the canned and packaged items used regularly by your family. Make sure you have a two-week supply of non-food consumables such as paper towels; kitchen, laundry, and bath soaps; toilet tissue; toothpaste; shampoo; and other kitchen and bathroom necessities.

Also maintain a two week supply of special medical supplies, as well as an extensive first-aid kit. If you have a baby, you should include baby items such as formula or milk, bottles, powder, oil, and diapers. Even if you do not have a baby in your family, it is a good idea to stock baby items, since you undoubtedly have relatives, friends, or neighbors that do.

If someone in your immediate family, or any other relatives, friends, or neighbors have special medical problems, handicaps, or other special problems, you should store the various special products they might need. It is impractical to keep special medication that deteriorates, unless the person lives nearby and can rotate the medicine as part of their regular usage. Large expensive items are also probably impractical, but things such as bathtub seats, crutches or walkers, rubber sheeting, and similar items are not all that expensive. Even if no one in your immediate family needs them now, they may if injured or they develop other problems.

Do not forget water. At least fourteen gallons per person for the two-week period. It should be in plastic jugs of some type. Do not reuse milk jugs. Rigid five-gallon, six-gallon, and seven-gallon containers such as used by campers are suitable.

Check the water at least every six months. More often if the water in your area is less than perfect.

Keep spare can and bottle openers in your pantry. Stock trash bags; and dog, cat, or other pet food. Add extra water for the pets. This two-week supply can be your blind, if you choose to not reveal your true holdings to miscreants or the authorities. Think about this now, and decide if you will or won't. If looters, DHS, or martial law investigators, or even the actual confiscation squad, come looking, this is what you show them. With your basic preparedness literature also there in plain sight, and no other visible signs suggesting otherwise, they will hopefully accept the obvious and take only part of this stock.

Of course, if you have bragged indiscriminately, or the word has otherwise been put out that you have much more stored, those who wish to take what you have will not be stopped at a two week supply, but will search for more. That is why you need to be somewhat secretive about your preparations.

Most canned and packaged foods not ordinarily requiring refrigeration can be rotated on a yearly basis, and if kept at ideal temperature and humidity conditions, would be useable much longer. Exceptions to this are milk, condensed soups, berries, citrus fruits, citrus fruit juices, dried fruit, tomatoes, and sauerkraut in cans.

Other canned foods, when kept under seventy degrees Fahrenheit, last longer than the recommended time. Fifty-five to sixty-five degrees is the ideal temperature range. Packaged foods should be kept in tightly closed metal containers to insure freshness, and also kept at fifty to seventy degrees.

The ideal storage would be in a dark closet in the basement, preferably in an unheated section, in or as close to, the shelter as possible. Just be sure it can not freeze.

Here again, store one year supplies of both food and non-food consumables including all household use items such as sponges, mops, brooms, vacuum cleaner bags, trash bags, and other cleaning products. Also, first-aid supplies and routine medicines and any special medicines you require.

The best way to build up this stock is to buy from a grocery store supply house if possible, in case lots. As you near the end of a case of your two-week supply, move the oldest case up from the one-year supply, and then on your next shopping trip replace it. Date the new case and place it in the one-year stock. If you cannot

buy direct from a wholesaler or big box store, try buying case lots at your local store, or else buy large quantities when items are on sale.

You will probably be better off building the stock gradually, rather than going out and buying a full one-year supply at one time. Unless you are sure you can use the extra quantities before they go bad, avoid the extra large commercial quantity sized cans and packages of food. While undoubtedly cheaper, if you can not use them before they spoil, you actually lose money.

You also need to have on hand a year's supply of any special products for your shelter or other strictly emergency products, including shelter air filters, chemical toilet chemicals, and radio and flashlight batteries.

There are other reasonable options for Long Term Storage (LTS) foods. Several companies, including some that sell through the internet, offer freeze-dried foods and dehydrated foods packaged for long term storage in either #10 cans, or Super Pail buckets with mylar liners that have an oxygen absorber included. Other foods not specially processed are also available in LTS packaging. Many types of grains and beans, as well as other staples like sugar and salt are available in the #10 cans, regular buckets and the Super Pail buckets.

Some of the products have shelf-lives of thirty-years or more. Others don't. Check the recommendations of the suppliers as to the life-span of the LTS foods and plan to rotate them out on some type of schedule.

Before you invest hundreds or thousands of dollars in these products, try small samples of them to decide if you like them or not. By trying the products, you see how far they actually go. Most companies determine the quantities of servings based on a three or four ounce portion. This is not enough for me for a serving. You will quite likely need from fifteen to fifty percent more than the quantities recommended. Also, by trying the various foods you can determine whether you prefer the freeze-dried or dehydrated versions.

If you are a single person, avoid the number ten cans, if possible. They contain a large amount of food which begins to deteriorate as soon as the can is opened, even if covered with the snap-on plastic lids. If you do not think you'll consume the contents of the opened can within approximately three months, get the size 2½ cans, nitrogen packed, with no more than two percent oxygen content for maximum longevity.

The various bean and grain products will provide most of your bulk and food value with the meats, vegetables and fruits as the necessary variety and specialty nutrient source. You therefore need plenty of wheat to go along with the other grains and beans which make up a large part of a food storage plan. Eating a wheat product such as bread with a bean dish such as chili allows the body to use valuable nutrients locked up in the food. Eating either one without the other will of course keep you from starving, short term, but the combination allows more of the nutrients from each to be used by the body than otherwise possible.

Whereas beans are easily stored in usable form, wheat is not. Flour just does not keep well. But grains of wheat do. Hard red winter wheat will last for a lifetime and longer if stored correctly. By storing the wheat and a hand mill, you may have whole wheat flour anytime you want. The Diamant 525 grain mill is one of the best, but expensive. A Country Living mill is the second best, in my opinion.

You do want a hand crank model, in case the power is out. Not all models on the market are even equipped with hand cranks, and some that are, are difficult to grind practical quantities of flour with. Try them out in the store if possible.

While designed to last a very long times, LTS foods can lose potency with long-term storage. For that reason, consider storing a good protein supplement. Buy a good tasting (to you, not the salesman) protein supplement with a high PER (protein efficiency ratio) of 2.0 or more, which mixes easily by spoon stirring, and contains good percentage of lysine and tryptophan. The best sweetener for the supplement is fructose. Avoid supplements listing milk or wheat as the first or second ingredient, and those with a very gritty taste.

It is also a good idea to stock vitamins and mineral supplements along with the protein supplement. Get an all natural formula, in soft gelatin capsules. The supplement should contain vitamins, minerals, and essential fatty acids (lipids and sterols). The capsules should be packaged and vacuum canned for long-term storage.

Vitamin C should be stored separately. Here again you need an all natural formula based on citrus fruit concentrate, or a combination of citrus fruit, rose hips, and acerolaberries. They should be in hard pressed tablet form, and canned. Allow at least two hundred to five hundred milligrams per day per person, more if you believe in vitamin C in mega-dose quantities for therapeutic uses.

In a diet containing large amounts of grains, you will need extra calcium. Your regular vitamin supplement probably will not supply enough, so store calcium tablets containing calcium and hydrochloric acid.

You may wish to store just one year's supply, or as much as a five year supply of LTS food in your shelter, well hidden, of course. Whatever amount you store, you should occasionally live on your LTS food exclusively for a week or two at a time. Partly to maintain fresher supplies by rotating and re-supplying the items as you use them, but even more importantly so you will know how to use them and what to expect as to taste and texture and so they will be familiar to your family if you must ever actually live on them for long periods.

Many companies push textured vegetable protein (TVP) as the perfect all around survival food. It is not. Avoid it as much as possible, except as an additive or as flavoring, or to make broth, and for special occasion meals where you want food which looks more like regular foods. Recent medical information indicates that TVP is not the best for the body, long term.

Since most of the LTS foods require large amounts of water for their preparations, you must insure adequate water supply. Therefore you should stock one or two water filters with your food supply. One of the silver impregnated, activated charcoal filters with a replaceable cartridge is adequate. Store several extra cartridges. Berkey makes a very good one.

For all those who have any type of mechanical transportation, from bicycles to jet planes, you need to maintain a spare parts inventory. The more practical forms of transportation used by most people are, of course, gasoline and diesel powered vehicles. Each type takes a different set of spare parts. The most common parts to stock are fuses, belts, hoses, sparkplugs for gasoline engines and fuel injectors for diesels, air, oil, and fuel filters, and wiper blades.

A set of extra tires is also a good idea. Stock up on all the various fluids an auto requires. Oil, brake fluid, transmission fluid, windshield washer fluid, power steering pump fluid, and antifreeze are the main ones. If you travel quite a bit, carry a few (small quantities) of the items with you. Leave the rest at home.

You will also need spare parts for household fixtures. Faucet washers and o-rings, window glass, extra circuit breakers or fuses, paint, light bulbs, HVAC controls, fan motors, and etc.

As for fuel, you need a small obvious supply in case of confiscation and looters, and a larger hidden supply. Gasoline, diesel fuel, and fuel oil should be stored in DOT approved cans or tanks. Again, for security, use a two tier system of a small obvious supply, and a larger, hidden supply. If at all possible arrange the two tanks so that you are actually using out of the large tank with the smaller flowing into the larger. This keeps the fuel as fresh as possible. Put the valves between the tanks so they can be isolated and you can draw out of only the smaller or larger if circumstances require it.

Treat fuel that might not be used for three months or more with the appropriate PRI Company product to stabilize the fuel. Pri-G for gasoline, and Pri-D for diesel and kerosene.

If you depend on propane for much of your fuel requirements, you may need as much as a two-hundred-fifty, three-hundred, or five-hundred gallon obvious supply and a one-thousand gallon or more reserve.

However, circumstances here are a little different. Ordinary piping and valving will not do on the tank side of the propane gas regulator. You must either obtain special materials or expect to fill the tanks individually. If you fill each tank individually it might be better to buy from two suppliers and let each maintain identical tanks valved together after the lines pass through the regulators. However, only have one tank at a time turned on since you could damage the regulators if trying to operate the tanks at different pressure levels.

If you must keep some fuel in small containers, use only safety containers with anti-flashback mesh inside, and do not store in a building connected to a habitat. Store them in an external shed.

For liquid fuels, have a hand pump available in addition to your electric transfer pump.

No matter how good your preparations are at home, and how expansive the amount of provisions and equipment you have, there is always a very good chance you will have to evacuate, either because of government order, or because it is the wisest choice. So you need to prepare for this eventuality.

Whatever vehicle you choose to be your primary evacuation vehicle; your everyday car, a motor home, a service or work truck, or even a motorcycle; it should always be ready to go on five minutes notice or less. Keep fuel tanks at

least half full, preferably three-quarters full or more. Make sure tires, batteries, and all lights, wipers, and other safety equipment is in perfect condition.

Last minute buy... Should you or shouldn't you? Tough question. Some preppers advocate it. Others say you should already have what you need and don't take the risk. One risk is simply that it isn't the "Big One" and you've used money you can't afford. The other risks are physical.

If you do choose to try to do last minute buying in the face of a developing disaster, I recommend things such as canned meats as a high priority, bottled water, if you don't have an excellent supply of potable water. AA, AAA, C, D, 9-volt batteries as they have a limited shelf life, also available from the local auto supply dealer.

Chapter 27: Arms

There is considerable debate among emergency preparedness authorities on the need or even desirability of weapons as part of the emergency supplies. The US government in their literature is the most adamant advocate of no weapons, and I agree with their reasoning as far as it goes, but they always assume a protective body remaining intact. This would be DHS and FEMA backed up by the police and the military authorities. I believe the fear of alarming the populace unnecessarily plays a large part in the way they downplay the need for personal protection.

Another factor is that they must give general rules, and that means rules for the ignorant, greedy, dishonest, and uninformed sections of our population, as well as those capable of caring for themselves. I believe they have a valid point for limited stays in community shelters during more or less normal times.

I have little faith in the continuance of the effective local government authority in major crisis. For someone in an urban or rural area, there are often no community shelters which are obligated to give aid to individuals. If you only have enough to furnish your own family, and perhaps help a few who really need it, it seems foolish to not be ready to protect your family and life giving supplies you have stored. As explained in the chapter on the will to survive, even normally decent people will do practically anything to provide for their family. However, I fully expect the feeling of helping thy neighbor to prevail, and the people who need help, and deserve help, to receive it from those people who can help.

Weapons will be needed for use against the same groups of people that police services usually provide protection from. That is, the criminal element of our society - the thieves, rapists, burglars, and murderers. They have never worked, much less put away emergency stores. If and when society breaks down, as it did so notably in the 1978 blackout in New York City, and in most major evacuation instances, the looters run rampant.

Just imagine, for a moment, some of the less desirable elements in your own community. Imagine them with liberated police and military weapons. Imagine they know there are no police or other authorities to prevent or punish them for doing anything they please. Just sit there a moment and picture peeking out your front window curtain and seeing five, six, or more of these hoodlums carrying shotguns, rifles, submachine guns, and even machineguns.

That type of situation is why you need weapons. That, plus the fact they are the most cost and time effective means of obtaining game animals, of protecting against feral animals and pests in a garden, or as happens in floods, protection against snakes and other dangerous animals seeking the same high ground you and your family are on.

There are a great number of available weapons. Some are good and others are a complete waste of money. You will to make a decision on how many of the weapons you need and can afford. All of the major brands have quality choices in each of the categories outlined below. If most of the qualifications of a certain type weapon are close, choose the brand name you like best. You will probably feel better with your favorite brand.

Consider spare parts availability in a future without the manufacturers being available. I would rather have a weapon that might need a part in the future than one that has only a slightly less probability of needing repair work which would be totally impossible to obtain.

Whatever you do, do not blindly take my word on individual weapons choices. Try the various weapons. I am built a certain way and shoot in my own manner, and have specific likes and dislikes. You may be able to handle more or less recoil, larger or smaller grips, or a whole multitude of other physical factors. Or you may have a situation I do not cover in my recommendations. So use some common sense and your own judgment in your selections of weaponry.

We are concerned with two main categories of weapons here, defensive weapons and food harvesting weapons. The differences in requirements for each type are subtle but significant. Defensive weapons must above all be reliable. They should be capable of rapid aimed fire and should use readily available ammunition.

Hunting weapons, on the other hand, need to be extremely accurate. In some cases a second or even a third shot can come in handy, but there is not much need for larger magazine capacity. Your hunting weapons should also use readily available ammunition. Preferably, at least one hunting quality weapon should use your defensive weapon ammunition, but judicious use of only one-hundred rounds of hunting ammunition can keep you in game for quite a while.

In contrast, an attack on your home by a small band of looters might use two or three hundred rounds in just a few hours. Your hunting guns should not fall apart at

the slightest touch but, since they are engineered for pinpoint accuracy, they seldom will take the abuse a battle rifle will, and still function accurately.

Good battle weapons are engineered for absolute reliability under adverse conditions, which means slightly wider tolerances for working parts so they will not bind under stress. Bolt action hunting rifles are designed to handle wide variations in ammunition and for extreme accuracy, which call for tight tolerances. A semiautomatic hunting rifle might seem like a good compromise, but do not consider it unless you absolutely have to. None of the commercial semiautomatic hunting rifles can handle the continuous rapid firing necessary in a fire fight. Even with custom large magazines, the working parts will not take the stress of large volumes of ammunition in a short time. Though a good hunting rifle is marginal as a battle rifle, a good battle rifle can take game quite adequately.

While by no means an ideal choice, one good battle rifle will serve perfectly for defense, and very well for game getting. If you are limited to one rifle, get a good battle rifle.

The need for a hunting handgun is somewhat optional. If you enjoy handgun hunting and can afford it, get one or more. But it is important to have a reliable high power pistol for personal defense. It is foolish to knowingly enter trouble armed only with a pistol. Yet no one can carry a rifle or shotgun around all the time. While carrying in groceries or wood, while you are in a vehicle, and multitudes of other situations when a long gun is not at hand, that pistol in its holster is ready for action. It should be the best you can afford in the most powerful cartridge you can shoot accurately.

And now, to specifics. First, is the choice of ammunition, since you will invest far more over the life of a weapon in its ammunition, than the weapon's actual cost. Also, most weapons are available in a variety of calibers, so you might as well choose a weapon in an effective caliber.

In my opinion the very best all around hunting caliber is the venerable .30-'06. In addition, it is a very good fighting round. It is limited to one rifle, though, the M-1 Garand. This is one of the best made and reliable of the battle rifles, but it has a few drawbacks when compared to other choices currently available. The .30-'06 is loaded with bullets from a four thousand plus feet per second fifty-five grain varmint load to two-hundred-twenty grain soft points that have taken elephants. One loading or another of .30-'06 is available around the world. There are large quantities of military ball ammunition still in existence, and when it is put on the

market it is considerably cheaper than regular factory ammunition. The .30-'06 is accurate and effective out to one-thousand yards.

As much as I like the .30-'06, the .308 Winchester (7.62mm NATO) is probably the best choice as a combat round due to the much larger selection of battle rifles available for it, and the fact that many countries use it in their military rifles. The .308 has a stronger rim and is shorter than the .30-'06, which were design factors for its intended use in semiautomatic and full-automatic weapons. There is also a pretty good selection of loads available for hunting use. Unless you already own, or know where you can get a Garand in excellent shape, and accept the limitations of the rifle, the .308 is the best choice for your primary defensive rifle. Effective range for the .308 is about eight hundred meters.

For those small in physical size, or for any situation which recoil might be a problem, the .223 Remington (5.56mm NATO) is a good choice. The .223 was the primary GI arm during the bulk of the Viet Nam war, being used in the Colt M-16, variations of which are still the current military arms for the US armed forces. There are also many police units which currently use the cartridge in a variety of weapons. While I do not believe that it is the perfect round, it does have its place. The .223 is a very good varmint round, and in emergencies will take small deer adequately. The effective range is limited to about five-hundred meters. It is the minimum caliber you should consider for your main battle weapon.

Another option for a battle weapon is a surplus, pre-1900 military bolt action rifle. While excellent rifles, and suitable for back up weapons for those already having modern semi-auto weapons, I feel that the possible need for firepower outweighs the cost advantage of these weapons.

As for shotguns, twelve-gauge is by far the best choice, with twenty-gauge a distant second. Twelve gauge rounds are available worldwide. Twenty-gauge is a very popular round and is very good in an ultra-light upland game gun, but for defense and putting food on the table, the twelve gauge packs so much more power with only a slight increase in recoil that twenty-gauge should be a distant second choice. You can shoot light loads in a twelve-gauge that keep the recoil down to that of a twenty-gauge.

If living in Europe, the sixteen gauge might be a better choice than the twenty, but do not consider either except as a last resort, or perhaps as a backup.

When considering pistols, only consider full power cartridges of 9mmP power or more. I prefer the .45 ACP. It leaves a lot to be desired as a hunting caliber, but can be used. The .45 ACP is available widely in the US, but is limited in various countries, so either make sure you have an adequate source of supply, or lay in large stocks of ammunition if you live outside the United States.

Other pistol cartridges to consider are the .40 S&W, .38 Super, and .357 Sig. The .44 Magnum, .45 Colt, and .41 Magnum all equal or exceed the .45 ACP in one shot stopping power, but none offer the advantages of the .45 ACP in a semi-auto pistol

The .44 Magnum kicks far too much for rapid aimed fire, and is available only in revolvers. The .45 Colt is an excellent defensive round as well as an excellent hunting round, but is limited severely by the fact that only revolvers and single shot pistols are made for it. The .41 Magnum, available in revolvers only, has limited availability. The .357 Magnum, being a high velocity round, tends to over penetrate in many instances, making it unsuitable for many defensive situations. .38 Special and 9mm Parabellum all suffer from the same problem. They just do not come close in stopping power to the larger calibers.

I believe that one revolver cartridge is suitable for defense. The .44 Special round has fair power and much less recoil than the .44 Magnum, and when chambered in the Charter Arms Bulldog provides a light, small, and reasonably concealable weapon. It would be a good hideout or purse gun, if a revolver must be carried.

All specialty weapons, like bows, black powder, knives, and martial arts weapons are a very poor second choice for defense. They definitely have a place, but when facing an armed group, firepower is essential. More on these later.

Now, for some lesser use cartridges. For a heavy anti-vehicle and anti-barricade weapon the .375 Holland & Holland Magnum is available worldwide, and balances power and recoil nicely. Anything much more powerful would be too hard for many people to handle. Anything much smaller would have limited effectiveness and would lack the .375 H&H Magnums availability. The .300 Winchester Magnum is a good second choice round.

The various other .300 caliber magnums like the .300 Weatherby Magnum and .300 H&H Magnum are limited in availability and come nowhere near the power of the .375 H&H Magnum. The .338 Winchester Magnum would be a good choice

except for the fact than only a few rifles are chambered for it, and that the ammunition is quite limited in availability.

The only other good choice would be the .460 Weatherby Magnum, but it has extremely heavy recoil and the weapon is therefore very heavy. The ammunition is available almost as worldwide as the .375 H&H Magnum. But if you contemplate facing heavy vehicles and can handle it physically and financially, by all means get it. The same holds true for the .458 Winchester Magnum, except the .460 Weatherby Magnum is the slightly better cartridge.

Of course the granddad of anti-material/anti-vehicle rounds is the .50 BMG. There are rifles available for it that can provide a high degree of probability of stopping a normal vehicle. They aren't legal everywhere, so check your local gun laws.

I consider it prudent to provide as many options as possible, so although by no means first choice, the following calibers should be provided weapons for, if possible.

.44 Magnum/.44 Special, .357 Magnum/.38 Special, 9mm Parabellum, .380 ACP, .30-30, .30 Carbine, and 7.62x39 Russian. The .44 Magnum is an excellent handgun hunting caliber. There are huge stocks of .38 Special, .357 Magnum, .30-30, and .30 Carbine in civilian hands. The 9mm Parabellum is popular and several US police forces use it. There are a number of semi-auto versions of the Soviet SKS and AK-47 rifles in the US, so stock it as well, if at all possible.

For hunting, all the defensive rounds will work within their power limits. In addition, the .243 and .270 are popular and widely available in the US. The .22 Long Rifle rimfire is available worldwide. An important factor in the choice of .243 and .270 is that .243 brass can be formed from some .308 cases, and .270 brass can be formed from some .30-'06 cases. This would simplify reloading parts availability. The .32 ACP and .30 Carbine are in a rather unique category. They would be a poor first choice for use in defensive weapons, but as with the .357 Magnum/.38 Special situation, they are both popular and large stockpiles of weapons and ammunition exists. In addition both make fair light loads in .30-30, .308, and .30-'06 rifles when used with cartridge adapters.

And now to the actual weapons. My first choice in battle rifles would have to be the HK-91 or the PTR-91 which is American made on German made machinery. Both are based on the famed G-3 selective fire battle rifle of the German Army. Several other major armies also use the G-3. The HK-91 and PTR-91 are

essentially identical except the trigger assembly, which limits it to semiautomatic fire only. The weapon uses the .308 cartridge. The PTR-91 at the moment is one of the least expensive of the .308 MBRs (Main Battle Rifles)

Another good choice for a battle rifle in .308 is a BM-62 by the Beretta Arms Company. This is the civilian version of the BM-59, a semiautomatic rifle with a short Garand receiver, shorter barrel, and chambered for the .308, using twenty round magazines. This semi-automatic BM-62 is scarce and magazines, like the rifle, are expensive.

Other good .308 options are the various M-14 clones made by several manufactures in the US as M-14 or M1A. The rifles are a bit more expensive than the PTR-91, as are the magazines for them, but they are the conventional firearm style that many prefer.

Also right up there are the FN-FAL clones. AR-10 clones are also available. Check each of these five MBRs out and go with the one that fits you the best and is within your budget.

As a more politically correct major caliber rifle a used lever action Savage 99 or Browning Lever action in .308 would fit the bill. So would a Marlin 1895 Cowboy rifle in .45-70

If you cannot handle the weight and/or recoil of the .308 and its rifles, the .223 is your choice. Heckler-Koch makes a weapon similar to their HK-91, the HK-93 chambered in .223. It is an excellent weapon, as are all the HK products, but it is expensive and it is heavy, especially for the power and size of the cartridge.

The Ruger Mini-14 is a much better buy for the money. Several companies make all sorts of accessories for it, from twenty, thirty, and forty round magazines, to folding stocks and flash hiders. It is light, short and easy to handle. But it is considered by many not to be tough enough for continued fire.

There are several manufacturers making M-16/M-4 clones. Some use the original direct gas impingement operating system. Others use a piston assembly. There are all sorts of aftermarket accessories available for them. I don't know much about any of them, so check various gun forums on the internet to help you decide which manufacturer you want, and their specific model. The only one I can vouch for is the Bushmaster brand.

For a fighting handgun, I suggest you stay with a semi-auto pistol rather than a revolver. Most of the major manufacturers make good options. I'm particular to the high capacity .45 ACP pistols by Glock and Para-Ordinance.

For a good basic fighting shotgun, the standard is the Remington 870 pump. It tends to be more reliable than the semiautomatic shotguns on the market when roughly used.

Doubles and bolt actions are too slow for general defensive use. The Remington 870 is known for its reliability, due to its simplicity and dual slide bars. Other good choices include Mossberg riot guns, Ithaca riot guns, and Winchester riot guns. There are magazine extensions available for the Remington and Mossberg guns to extend the five round capacity (four in the magazine and one in the chamber) to seven, eight, or ten rounds, depending on barrel length.

Also available is a folding stock. For a purely defensive gun, cylinder bore is suitable for slugs and buckshot. But I prefer to equip shotguns with Polychokes. This makes it an excellent hunting gun in addition to its defensive role. For home and apartment defensive use the Remington 870 is a very good choice, although a side-by-side double in twelve gauge loaded with #4 buck might get you buy.

Most trouble in a home or apartment (during more or less normal times anyway) will involve common criminal situations. Two rounds is usually enough to either kill or disable the one or two attackers. With eighteen to twenty inch barrels, the gun is short and handy. If an external hammer type double barrel is chosen, it can be left safely loaded with the hammers down. Anyone with rudimentary safety training can easily cock it and have a potent trouble stopper at hand.

Choice of shells is a tough subject. There are recommendations from a variety of experts that are totally disparate. Only triple-ought buck by some. Any regular twelve-gauge shot shell by others to avoid over penetration. I'm a believer in standard load double-ought buck for short range and one-ounce slugs for longer range.

For those of light build, a semiautomatic shotgun can reduce the effects of recoil to more manageable proportions. I prefer a semi-auto shotgun for I am simply not very good with a pump. The new series of semi-auto shotguns from Remington and Benelli are almost as reliable as a pump. I prefer the handling characteristics of the semi-auto and will give up that tiny reliability asset. For really recoil sensitive situation a twenty-gauge semiautomatic should fit the bill.

For hunting weapons, any good brand name bolt action is suitable. I especially like Remingtons. There may be better models around, but parts are available everywhere and anyone who works in the gun repair field has already had experience with one. Ruger also makes fine arms, as does Winchester. Savage is another good choice.

It is a good idea to have a bolt action rifle in each combat rifle caliber you use. If money is available, it might be wise to own at least one rifle in each of the most common bolt action calibers used for hunting, namely .22 Hornet, .223, .243, .270, .308, .30-'06, and .375 H&H Magnum. This provides for using any ammunition that might be widely available for trade or purchase.

As secondary weapons the Smith and Wesson 629 double action stainless steel .44 Magnum with 8 3/8 inch barrel, and the Ruger Redhawk stainless steel double action with seven inch barrel, are potent hunting weapons, especially if equipped with a good pistol scope. The Colt Python with eight inch barrel, Ruger Security Six, or Charter Arms .357 Magnum Bulldog are good choices in that caliber.

The Ruger convertibles are also an ideal choice to use found ammunition, or as backup weapons, namely the .45 ACP/.45 Colt, .357 Magnum/.38 Special/9mm Parabellum, and the .22 Rimfire/.22 Magnum rimfire. However, the double actions are better than the single action convertibles for use in a defensive role.

For a 9mm weapon there are a multitude of choices. Colt, Beretta, Browning, H&K, Glock, Para-Ordinance, Springfield Armory, Kimber, and many more I'm not familiar with.

The Heckler & Koch HK-4 with all three conversion kits takes care of .22 Long Rifle, .25 ACP, .32 ACP, and .380 ACP, if you can find one. The best buy, and almost the best gun, in .22 LR is the Ruger Standard and Target Models. The next best choice is the Walther PPK or PPK/S, but they are expensive. As a hideout gun, the .32 ACP Beretta Tomcat is the minimum choice in my opinion, with a Walther PPK in .380 another, more powerful and slightly larger weapon.

The Marlin series of lever actions would be a good choice in .44 Magnum (Model 1894), .45 Colt (also in Model 1894) .30-30 (336T), and .357 Magnum/.38 Special (1894C). The GI Carbine is a very poor choice as a primary defensive weapon, but there are huge stocks of ammunition out there, so it is a good idea to have at least one.

I like box magazine type .22 LR rifles, especially the Ruger 10/22 and the Mossberg 353K. But any good auto loader is adequate for practice and pest control.

A good double barrel side-by-side twelve gauge, three inch magnum, is good to keep in the hidden caches. There are adapters available to shoot a wide range of rifle, pistol, and small gauge shotgun round in twelve gauge guns. By packing a .30-30 adapter, .45 ACP adapter, a twenty gauge adapter, a .30 Carbine to .30-30 adapter, and a .32 ACP to .30-30 adapter in with the double barrel you have a good chance of being able to come by at least some ammunition to fit one or more of the adapters. The .32 ACP and .30 Carbine adapters are available for almost all .30 caliber cartridges, including the magnums, but only the .308, .30-30, and .30-'06 really concern us. Both the .32 ACP and .30 Carbine make good light game loads in the larger cartridge rifles. The various adapters allow you to use any found ammunition in your regular working guns.

Install scopes, peep-sights, and slings on all rifles that call for precision shooting or long distance carry. The lever actions and semiautomatic rifles probably do not need scopes. Have Poly-Chokes installed on all shotguns, and magazine extensions on all combat shotguns. Obtain plenty of magazines for each weapon that requires them. And make sure the magazines perform flawlessly.

At the time of purchase of any weapon acquire a supply of ammunition for it immediately if you do not already have a stock on hand. The days of very cheap, very plentiful, very good surplus ammunition seem to be over. I suggest quality brand name ammunition.

Hunting specialty rounds will have to be brand names or hand loads. You will probably need several thousand rounds of primary combat ammunition, and perhaps two or three hundred rounds of hunting and specialty ammunition. If you are a reloader lay in a large supply of components.

It would probably be best to lay in stocks of at least a couple of good longbows, crossbows, and black powder weapons just to cover any eventuality. However, it takes considerable skill to master these weapons to a degree where you could stake your life on them. I do recommend having and being able to use effectively a good long bow or compound bow and a crossbow for applications requiring silence.

If you know how to use them, knives and martial arts weapons are effective as a last resort, but learn the art thoroughly before relying on these very short range weapons.

Whatever you buy, learn to use it well and keep it in good repair. Your life may depend on it some day. Keep your weapons loaded and available to grab at a moments notice. In troubled times, wear your sidearm at all times. If you expect trouble, have the appropriate long arm with you. (Avoiding trouble is best.) If you have children in the house, either educate them to respect arms and teach them to shoot, or forget about weapons. If you have to keep them locked away, they are no good to you. Some jurisdictions require gunlocks. If yours does, use them.

Chapter 28: Mobility

You need transportation not only for an emergency evacuation, but for day-to-day use as well. And, quite probably, for working and clean up during and after an emergency. Keeping a separate BOV (bug-out vehicle) can be done, and may be necessary, depending on your every day driver requirements. You don't want a monster truck getting eight miles per gallon as a daily commuter. Nor do you want a Miata for going off-road in the mountains.

For travel in rough country, or in and around debris from a disaster the small, agile four-wheel-drive SUVs are ideal. They are relatively small and have somewhat limited passenger space if heavily loaded with supplies and equipment.

For large families a four-wheel-drive heavy-duty station wagon type vehicle such as the Chevrolet Suburban, or a four-wheel-drive van could be the answer. They have plenty of room for both passengers and gear. If you prefer a smaller, more maneuverable vehicle than a van or Suburban, but need more space than a Blazer, a four-wheel-drive pickup with a simple camper shell may do.

If you can afford it, a motorhome with a few improvements for survival use could be a perfect way to evacuate and travel to your retreat, as well as for general recreational use. It needs extra large fuel, water, and holding tanks. Space should be designed to hide your LTS food supply, arms, and ammunition. You need extra heavy-duty suspension and running gear to carry the extra weight and to handle the rough terrain you will probably encounter.

In case fuel becomes hard to get, you will need low fuel consumption vehicles such as bicycles or mopeds.

Although you will be stocking an extensive spare parts inventory, it is still a good idea to choose your transportation equipment so as to assure a fairly reliable supply of spare parts locally.

Equip all of your heavy-duty vehicles with extra food and water in addition to your evacuation kit. All spare parts that commonly fail on an automobile, such as belts, bulbs, fuses, etc., should also be carried along with a tool kit to enable you to install them.

You should carry a shovel and a come-along style winch in case of miring down. Install as large an extra fuel tank as is possible in the vehicle. You also need extensive communications equipment. Minimum is an AM/FM radio, CB, and police scanner, with amateur, shortwave, and business band radios preferred in addition.

Keep ammunition in an accessible space, but protected from casual discovery. And if there is room, keep a spare battle rifle and an extra shotgun aboard. Have safe ready racks installed to hold your duty weapons in reach inside the vehicle. But use these only where legal.

Install a reliable security alarm covering the interior, trunk, and under hood parts of your vehicle and always use security procedures when leaving it, especially closing the windows and locking the doors. Do not leave tempting items in plain view to a potential thief.

Chapter 29: Finances

During a financial disaster, your primary assets to maintain the health and security of your family will be your sturdy shelter and a steady, healthful diet. Chances are however, that you will still have monthly bills of one type or another.

To cover these bills when earning no income, you should try to maintain the equivalent of one year's earning in highly liquid assets. Hopefully these assets will either pay interest equal to or more than the current inflation rate, or appreciate in value, or both, to maintain the purchasing power for one year's worth of bills.

One of the best ways to do this is in a money market fund using only US Treasury Bills. These companies take your money and the money from the other investors and buy Treasury Bills, and in some, also bank certificates of deposit (CDs). A few invest in other high quality bank and government paper. I say avoid these.

These funds allow even a fairly small investor to enter the high level paper market. The minimum to purchase T-bills is usually ten thousand dollars and both T-bills and CDs require attention every few months. A good money market fund takes care of this for you, and is therefore, rather trouble free for you. And you need not look for a buyer or go through a broker to sell. Most money market funds provide a checkbook similar to a bank checking account checkbook. You merely write a check on the fund and cash it. Of course, this could be difficult in very severe financial disasters in which no one trusts anything but cash.

Another possibility is a foreign bank account, particularly Swiss or Austrian. By keeping your funds in a more stable currency, such as Swiss Francs or Austrian Shillings, in an account that has little or no penalty for quick withdrawal, you can earn some interest and hopefully the currency you choose will also keep pace with or appreciate against the dollar.

Although the high rates of inflation we are living with now rapidly eat away at assets held as cash, you still need an emergency cash fund. Unexpected things come up. Emergency plumbing repairs, accidents, breakdowns, or sudden evacuation.

This cash fund should be maintained in the home. At least two-hundred dollars, at today's prices, is the minimum, with two-thousand much better. However, if inflation really starts getting out of hand you will be better off converting the cash

to a hard asset such as food or fuel. But as things stand right now, cash is still necessary.

The most touted survival finances are undoubtedly gold, diamonds, and silver. These Big Three definitely have a place, but forget about them until you have provided a secure shelter, a reliable food supply, and the weapons with which to protect them. Then, and only then, can you even consider any of the Big Three.

Diamonds and gold are not nearly as liquid as some would have you think. Investment diamonds are a specialized market, requiring usually at least several thousand dollars minimum invested per diamond to make it worthwhile. And you just cannot go out on any given day and sell one.

Gold has become more recognized in the last few years as a possible medium of exchange in the event of major disasters. Although, unlike places in Europe and the Mid-East, Americans will not automatically take it in payment.

When you buy gold, get decent quality, low premium coins. Specifically US Gold Eagles in 1, 1/2, 1/4, & 1/10 ounce sizes if you are in the US. If you live outside the US, other nations produce gold bullion coins and they would be a better selection than the US coins.

Silver coins should be your emergency working hard currency. Junk silver coins by the one-thousand dollar face value bag are the best buy. Avoid high quality, therefore high premium, numismatic coins. I believe that, by far, the largest number of people would be willing to accept pre-1965 silver coins than any other type of non-standard currency.

Silver bullion has many of the same problems as gold bullion and diamonds. Too few people are willing to accept the fact that the lump of stuff you hold in your hand is really what you say it is, and selling to an established dealer requires assaying, which costs money and can be time consuming.

The best way to hold value in an emergency is in commodities. Not warehouses full of grain, or a pen of pork bellies on the hoof, and especially not paper contracts for the items, but actual everyday human needs. Not only can you use them, but you can trade them as well, if money is not accepted.

The Big Five trade goods in my opinion are liquor, tobacco, coffee, sugar, and gasoline. Hard on their heels come milk, salt, and chocolate. Other items to stock

are ammunition, tea, various condiments, flour (or wheat), medicines, candy, seeds, soups, and canned meats.

And two other items I think will be in short supply if the disaster lasts very long are candles, and especially matches.

All of your trade goods should be purchased in case lots of the smallest practical sealed individual packages available. While you could save money by buying cases of the larger packages you might have trouble getting an equitable trade for the packages when things are tight. By buying the smaller packages in case lots, you do recoup some of the difference. So go for the liquor in pints, coffee in one-pound cans, etc.

All of the human consumable items possible should be vacuum packed or canned to provide the longest possible shelf life.

Sugar, salt, and wheat will last indefinitely if kept dry, cool, and rodent proof, so store sugar and salt in one-pound paper packages in larger cans or pails with tight, waterproof lids, or get the professionally packed #10 cans or Super Pails. Keep wheat and a grinder, rather than flour. Grind as you need for trading.

Factory assembled ammunition will keep for twenty years or more if reasonable care is taken. Both cocoa and bar chocolate should be kept. I have kept cocoa for over a year in the original can with little deterioration. And while it tends to separate, milk chocolate stays edible if kept cool in a tight container. Stored candy and nuts should be the canned type. Pepper keeps well in the all-metal can type container.

Follow the same temperature and humidity provisions for the soup, canned meat, and milk. I include canned meat in the trade goods list, but not vegetables, because I believe that meat products will disappear faster and be harder to obtain after a disaster than vegetables and fruits. Americans consume huge amounts of meat and are accustomed to it. Fruits and vegetables can be grown fairly easily. Meat cannot.

Keep tea in its original cellophane sealed package, and place it in airtight cans. Consult with your doctor on medicines to keep for trade, but you must stay away from prescription items and just stock cure-alls such as aspirin, iodine, boric acid, Bengay, milk of magnesia, and such.

Lay in the matches. They disappear rapidly when you must light fires, candles, and lamps, every time you want to cook or have light. Get only wooden strike anywhere kitchen matches, not book matches or safety matches that must be struck on the box.

Soaps will also disappear quickly, I feel, so stock Lava soap at least, and perhaps bleach, laundry soap, dish detergent, and bath soap. I particularly like Ivory since it floats and is very mild.

To sum up, I believe you should first fix your shelter, store food, and arm yourself. Then build up a stock of trade goods and silver coins. Then, and only then, use gold coins and perhaps diamonds to store excess wealth, and as part of your one year salary equivalent of liquid assets.

Keep all your tangible financial assets well hidden at home in a secure safe or strong room.

If you stock as trade goods items you do not use personally, you might sell older stocks of these items to friends or relatives at a discount in order to keep your stock rotated.

For long range planning, especially for anyone just starting out in adult life, I believe in certain assets to provide for a secure future whether a disaster occurs or more or less normal times continue.

I'm a follower of the Howard Ruff and the late Harry E. Browne's philosophies of investing, with my own twist.

It basically has four elements, kept equally balanced. US Treasury Bonds with twenty-eight or more years maturity. US Treasury Money Market Fund, Gold coins (in hand), and a high volatility stock mutual fund or growth fund. The Permanent Portfolio Fund is a single fund application of Browne's Permanent Portfolio Fund premise.

I believe in spreading the risk. Start a deferred annuity with an old, established, insurance company now, and continue to add to it until you can draw it without penalty.

Despite the problems with the stock market that crop up from time-to-time, a blue chip mutual fund is, in my opinion, a relatively safe store of wealth until you need it for retirement.

The above items are long term holdings. If you want to speculate in the stock market, consider setting up a program of buying and selling warrants. Check out the possibilities on-line before investing a dime in these paper investments.

Another portion of investment money can be invested in real property. Quadraplex housing units on large corner lots in small towns are a good way to set up a stream of income after the initial investment is paid off. But stay away from cities. Find small towns with a good economic base.

And of course, in addition to the Permanent Portfolio funds, buy and stash additional gold coins and silver coins as mentioned above.

Even if you are not interested in farming, consider buying into a working truck farm near where you live, or where your retreat is, if you have one. Make the arrangements such that you have a reliable source of food, not matter what happens at the stores.

If you have more money than you can possibly use, then consider putting some of it into 1.00 to 1.01 carat, VVS1 clarity or better, F color or better, brilliant cut investment grade diamonds.

Like the diamonds, foreign bank accounts aren't usually worth the hassles unless you have excess income. If you feel it is justified, I suggest one of the old line Swiss banks with accounts in US dollars, Swiss francs, and a gold coin holding account.

Retreats have been discussed. I consider them an investment in safety. How much you set aside for one or more is up to you. At least try to set up one or more of the small, limited retreats on land purchased for the purpose.

The same goes for a blast/fallout/disaster shelter, prep equipment, bug-out vehicle, and consumable preps. Put what you can into these as early as possible, and maintain the highest level of preparedness you can.

Chapter 30: Procedures

This chapter outlines logical steps to take in the event of serious emergencies. Your particular circumstances will alter these suggestions. The important thing is to think out all the possibilities even remotely likely to occur and have established plans to cope with each. Familiarize yourself and your family with them through periodic tests.

Tornados: Your NWS receiver should always be on standby so the alert tone will alert your family early to the possibility of tornados. If you have time, secure loose objects and close shutters. Turn on a battery operated AM/FM radio or a TV and tune to the best local station for reports. When conditions even just start to get bad, get in your shelter and monitor your radios and other communications gear for the all clear.

Hurricanes: On coasts, unless you have an underground shelter almost impossible to flood, secure your household. That is, bring in or tie down all objects laying around outside, close and lock doors and windows, close shutters, pull drapes, and generally arrange things to prevent injuries and be ready to evacuate immediately. Get out early when the authorities so advise.

Earthquakes: If outside lay on the ground in a fetal position and protect your head. However, if overhead objects pose a threat, try to move away from them carefully. There are two schools of thought on protecting yourself when caught inside a building during an earthquake. Stand in an inner doorway with your back against one jamb and brace your hands against the other jamb, children protected under the adult's arms. Alternately, crouch, kneel, or lay down beside, not under, a piece of sturdy furniture. There are experts on each side that say one is right and the other is wrong. Definitely do not run in or out of the house while the quake is occurring.

After the quake check gas and power lines, and shut them off if trouble exists. If you live in an earthquake area, you should have earthquake valves on your gas lines. It's not a bad idea if you aren't in a recognized seismic zone.

Floods: If at all possible, have flood insurance on your property from the National Flood Insurance Program. If it will be a minor slow-forming flood, stack sandbags out away from the house, with provisions to get the auto out if necessary, probably with a ramp. Do not put sandbags against the house. It puts too much pressure on the walls. If you have a basement and any possibility exists of large amounts of water entering, remove things that could be harmed and flood the basement with clean water.

In a major flood, or one involving any deep or fast flowing water you should secure the household and flood the basement with clean water if time permits, and then evacuate. Check now with your insurance company to see if pre-flooding the basement will void your policy. If it does, do not consider pre-flooding.

Drought: Unless your water supply is absolutely reliable, store and conserve water as much as possible.

Blizzard: If you know it is coming, and you should, with as much communications gear as I recommend, secure the building and top off fuel supplies if necessary. If things start getting bad, use only the warm room and shut off the rest of the house to just above freezing. Use commercial fuel as long as possible, saving on-site fuels as a last reserve.

Heat Wave: Conserve energy of all types and if plenty of water is available, take showers occasionally rather than using a lower A/C setting. If energy supplies are critical, use only the warm room. Stay inside if you have medical problems.

Tidal Wave/Tsunami: Evacuate immediately. If you have BOBs packed, grab and go. If not, just go.

Volcanic Activity: Ditto.

Climactic Change: If your house has been built as I suggest you have little to worry about. Just lay in extra supplies and provisions appropriate to the direction of change. If it is toward colder, build a greenhouse if you don't already have one.

Pestilence: Close up the house as much as practical and eliminate any pests that might have entered. If the situation really gets acute, stay inside. Otherwise just be sure and remove any pests from people as they enter.

Forest Fire /Brush Fire /Firestorm: If you have a wide open area between any vegetation and your house, and have a good water supply and a good shelter, you can stay and keep everything good and wet. But remember, you can suffocate from lack of oxygen if it is a really large fire close to you. Fire storms also rapidly deplete oxygen supplies and generate tremendous winds as well. If it looks bad, secure the house, turn on wash-down systems and sprinklers, and get out quickly.

Dangers From Space: Some of these dangers could end most, if not all, life on earth. However, many will be less than extinction level events and will be survivable, by those with preparations. There are primarily the dangers from extraterrestrial objects impacting earth. Cope with those much as listed below under Nuclear Attack. As some of them will reduce the protection of the ozone layer, and the magnetic shield of the earth, be prepared to become nocturnal to avoid the higher levels of ionizing radiation and UVA/UVB radiation. Wear a wide brimmed hat, UVA/UVB blocking glasses, long sleeves, long pants, and gloves if you must be outside during daylight hours.

Nuclear Attack: Get in your shelter and activate EMP and blast protection procedures. Listen to the NWS radio and your AM/FM radio, but keep the rest of your equipment disconnected unless you have very extensive EMP protection. Monitor the local conditions with your radiation instruments. Prepare for looters and people seeking shelter. Clean up your place after the danger of radiation is past.

Chemical /Biological Attacks: Close up the house and stay inside, with all outside air entering through the CBRNE air filter. Maintain slight over pressure inside to keep out contaminants. If it is suspected that an attack is coming, evacuate beforehand.

Civil War: Keep as low a profile as possible and keep your opinions to yourself. Maintain your house as securely as possible and be ready for anything.

Runaway Inflation: If inflation starts really climbing buy as much food as possible right then, and any other necessities you happen to need. Stay away from black markets. Do not advertise the fact that you have supplies. Stay at home as much as possible. But be prepared for trading.

Financial Depression: Do not do anything rash during a crash, but be ready to roll with the punches after things start settling down. Anything can happen during and after a severe depression. If inflation is outrunning your interest gain in your savings consider putting some savings in tangibles and food that you already eat so you can rotate it. Buy food and the like in bulk (such as Sam's Club/Costco) or buy it on sale at the regular stores and stock it for a while. It will save you money and prevent some losses by inflation.

Recession: Pretty much just have to live with it. Be conservative.

Stock Market Crash: See Financial Depression.

Strikes: If you are on strike, stay away from possible violent spots. Stay close to home and conserve food and energy. Limit expenditures as much as possible.

Boycotts /Shortages /Embargoes: Since you already have stocks of the item, it should not affect you too much. Just be conservative with the item and wait it out.

Government Controls: The realm is so wide here only general advice can be given. If you have kept your preparations secret and there are no direct records, confiscation is unlikely. Just roll with the punches using common sense to fit the circumstances.

Major Accidents: If they involve hazardous materials, secure your home if you have time, but evacuate quickly. If you are on the scene of a crash, collision, derailment, or structural accident, help if you can. If the authorities are on the scene, leave unless they specifically ask you to stop and help. You are just in the way. If caught in a traffic jam or otherwise cannot leave, just take it easy and use the emergency kit in the car if you need food, water, warmer clothes, etc.

Major Crime: Your affairs should be arranged so you can just live around the situation.

Crime Wave: Stay out of the troubled area, or areas. Law enforcement can be more trouble than the hoods, and the local vigilantes are just plain mean in situations like this. If you live or work in the area maintain a low profile. Be ready to run or hide if needed.

Riots: Secure the building and stand by to fight fires. Be ready to protect yourself, but do not start anything yourself. Be ready to run or hide if needed.

Terrorism: Use the appropriate action for the tactic the terrorists are using. Mostly just avoiding the area is adequate. If you are involved in the area secure as for riots.

Anarchy: Maintain a secure house and be ready to defend yourself.

Martial Law: If you have kept your preparations secret, let them see your up-front supplies. Give willing up to ten or fifteen percent of your up-front stocks. Protest some if they take more than that, but do not make them very mad. Keep a very low profile. Do not flaunt your goods, but do not just disappear either, since that too, is suspicious.

Home Fire: If a fire breaks out in the daytime, it will probably be in the kitchen area. Put it out with an extinguisher kept near the kitchen for that purpose. If it even starts getting out of hand, get everyone out by sounding the fire alarm and

call the fire department. Most killer fires occur at night. You need several smoke alarms, one in the bedroom area if nowhere else. Bedroom doors should be kept closed at night to avoid the rapid spread of smoke and fumes. Each bedroom should have an alternate exit. When the alarm sounds, roll off the bed onto your hands and knees on the floor. Do not rise up in the bed. The room may be full of super heated gasses and fry your lungs. But do not lay flat on the floor either. There could be dangerous fumes there too.

So keep your head twelve to twenty-four inches off the floor and crawl to the door. Carefully feel the door. If it is not warm, feel of the door knob. If it is not hot or very warm, very carefully, with your body braced against it, open the door slightly. If there are flames, heavy smoke, or other indications of fire along your primary exit, close the door and go out the alternate exit.

Everyone should assemble at the prearranged spot and the fire department called. This meeting place is a good spot for an outdoor phone. If the fire appears to be fairly small, you can try to control it with hoses. Do not split up. Always work in pairs or trios. It is very easy to get trapped if you do not know what you are doing.

Burglary: If someone attempts to break in during the daytime, call local law enforcement and try scaring the burglars off by telling them you have called the law. If they still persist on trying to enter, go to your strong room. Do not shoot anyone outside the house unless absolutely necessary. It will only get you in deep trouble. At night just lay there and do not disturb the burglar. Wait until he leaves the bedroom area, then call the law. If it is an attack rather than burglary, go to the strong room, call the law and prepare to protect yourself.

Pandemic: Isolation is the best policy, in my opinion. But be prepared to deal with other people, and your own people if one becomes infected. N-95 masks with P-100 masks preferred to prevent breathing the lungs. Exam gloves and protective eye wear, and in extreme cases a full protective garment such as a Tyvek or similar coverall with booties and hood included.

All areas of human contact must be cleaned religiously with a good anti-bacterial/anti-viral cleaner. Hands should be washed often and a disinfecting hand cleaner used. That goes double when handling and preparing food.

Have a means to separate an infected person from the rest of the household and have medical equipment that can be sterilized and used again, or use disposables. Limit the contact between the sick and the healthy, no matter how hard it is to do. Only one or two should care for the victim(s) and they should always shower and disinfect before and after being with the infected person.

Be prepared to safely bury or otherwise eliminate the body from the house in case of death. A regular body bag is ideal for this, then burial immediately. They are gruesome for a home owner to contemplate, but are worth the modest cost to be safe.

Armed Attack: Most of the other problems can be handled simply by closing up and calling the law and waiting things out. You cannot wait out an armed attack, however. No matter how strong your shelter, a determined attack can penetrate it if not effectively defended. And it is a very good idea to have some kind of escape plan in case the attacker cannot be defeated and you have to evacuate under fire.

If things get such that an attack seems likely, maintain your house in a prepared state. Keep all shutters closed when not attended. Stay armed and travel in groups. If your home is attacked, immediately close up and summon any outside help you can depend upon.

Do not bluff, and do not bargain with, the attackers. If they were honorable people, they would not be attacking you. At the first sign of weakness, they will redouble the attack.

There are several types of attack you may face, depending on terrain features and how the attackers are equipped. Most can be repelled if you have adequate arms, ammunition, and common sense. There are a few, however, that may call for a tactical or strategic retreat.

The most probable attack you might face is a handful of men armed with handguns and a few shotguns and hunting rifles. A sudden charge can be quickly stopped with the heavy fire capability of your battle rifles. A sneak attack under cover is unlikely if you have kept all approaches cleared of easy cover. A nighttime attack can be controlled with floodlights equipped with anti-sniper protection, or with flares. A sneak attack under cover of smoke or fog is pretty rough. Vigilance, an early warning perimeter alarm, and plenty of shotgun shells will have to be used.

Beware of two or three men sniping at long range. They may be scouts of a larger force trying to determine your strength and armament. Return their fire with small caliber weapons at a very slow pace to give the impression of being lightly armed. Try your best to hit them, of course. If it is just two or three people on their own, a few close hits will probably scare them off. If it is really a scouting party of a larger force you might trick them into an open attack, which is fairly easily dealt with. If the attackers are a large force, the snipers will likely stay in place and continue their sniping. If this occurs, and you have the means, consider going to a counter-sniper role and using one of your scoped hunting rifles to try and take out the sniper(s).

A concerted attack led by someone with military experience, and armed with good weapons, can probably be held to a standoff. If you have a good means of perimeter defense, it can be so expensive to the attacker that they might try to bargain first, and then hopefully leave. But, if you must defend your place from within it, you must be satisfied with exchanging fire and hoping they will grow tired and leave.

One of the most dangerous attacks is a fire bombing with heavy covering fire, and an advance under cover of the smoke and flame. By building with nonflammable materials and maintaining a clear strip around your house wide enough to prevent easily throwing Molotov cocktails at the house from under cover, this hazard is greatly reduced. A roof and wall wash-down system reduces the hazard even more.

You have problems if a renegade military outfit attacks, or a looter band raids an armory and obtains military weapons. Just staying under cover, if you have strong outer walls, and returning fire can usually cope with automatic weapons fire. But if they have mortars, grenades, anti-tank weapons, perhaps even field guns, tanks, or rockets, you may have to evacuate, so build in at least one reliable escape route when you plan your house and shelter.

With some ingenuity, you might booby-trap or mine all approaches to your place, but if you do, I recommend remote controlled devices rather than uncontrolled types. Not only can you make the best use of the traps, but avoid the possibility of accidents. But, you need to know what you are doing.

An attack using a truck or a piece of construction equipment can be stopped with several .375 H&H Magnum rounds into the engine.

If your shelter is a boat, and an attack is from an approaching boat, one sniper should harass the helm and another with a .375 H&H Magnum should try to hit the engines.

After a battle gather all weapons and supplies and add them to your trading stocks. You must make your own decision concerning prisoners and any enemy wounded, but all bodies must quickly be buried or burned to prevent the spread of diseases.

Get involved with local CERT programs and any prep measures your employer may have, but do not give away the extent of your own personal preparations. Just admit to the government recommended precautions.

The stronger the local community is, the less you have to worry, and the more likely you are to get help if you do need it.

Chapter 31: BOBs, BIBs, INCH Bags, GOOD Bags, Etc.

Various acronyms, various arrangements, similar uses - but not identical. First, what do the initials mean? BOB is Bug-Out Bag, BIB is Bug-In Bag, INCH is I'm Not Coming Home bag, and GOOD is Get Out Of Dodge bag. There are probably more, but these are the ones I'm familiar with. Now, to the purposes of each.

BOBs and GOOD bags are essentially the same thing. Often called a 72-hour bag, it is a bag or tote to keep together items a person needs to go from where they are, in a potentially dangerous place, to one of safety. Possibly to your BOL (Bug Out Location) using your BOV (Bug Out Vehicle).

BIB bags contain the items you need you stay where you are during the time of the disaster.

INCH bags are usually more elaborate and larger, since you are not coming home to retrieve anything else. What you have in your INCH bag is what you have, period.

There are as many lists of contents for each type of bag as there are preppers. Which ones you need to set up are very dependant on your particular location and situation. Some basic as well as extended lists can be found in the FRC forums in the appropriate section you are dealing with.

Section 6: Organized Community Preparedness

Chapter 32: Small Business & Preparedness

There are many advantages of a strong emergency preparedness program for a small business, besides the physical protection to personnel, stock, and equipment.

By encouraging all your employees to maintain a good emergency preparedness state at their homes, and by providing them with protection at work, they are much more likely to show up for work during times of trouble. A mutual aid pact with other local businesses, and participation in local Department of Homeland Security activities is a good public relations tactic, by maintaining your company in the public eye. Many people will buy from those who they perceive as helping their community, as opposed to outsiders just out for a quick buck.

First of all, encourage a strong preparedness stance at your employees' homes. This will reduce absenteeism during a crisis. Many people will stay home to protect their family during many crises. You might offer your company's bulk purchasing power to employees to aid them in obtaining supplies they need at the cheapest possible rate. A company has access to supplies and specialty items that an individual does not.

If your business is any size at all, build a shelter at least large enough to house all employees and any visitors you might have onsite on any given day, and equip it with the proper supplies. If at all possible, allow extra space for use as a community shelter during natural disasters. This is good PR, and a loyalty keeping factor for those employees who have no shelter for their family at home. Set up an Emergency Operating Center (EOC) in the shelter, with good communications equipment to coordinate in-plant and external activities during a disaster.

Draw up emergency shutdown procedures for any of your equipment, so as to avoid more danger or loss of business, and practice those procedures periodically.

In cooperation with local DHS and FEMA sponsored Civil Emergency Response Teams (CERT), draw up contingency plans for all types of disasters possible in your area, and practice them when the local authorities run their tests. Periodically review and update these plans.

Obtain and honor mutual aid agreements with other businesses in your area.

Maintain duplicate records in a safe place, and if at all possible, make arrangements for an alternate Operating Center so work can continue, or at least a place for employees to report for orders if the original site is destroyed or inaccessible.

For more expert ideas obtain a copy of the most recent edition of “Disaster Planning Guide for Business and Industry” and follow the advice and instructions given in it.

Chapter 33: Churches & Community Preparedness

Church groups have much more to offer in preparedness situations besides the very important spiritual aid they provide. Many church groups have welfare organizational capabilities already in existence. They can often provide housing, food, and clothing during an emergency.

But, as for individuals, the needs of the church should be met first, and then strong assistance given to local DHS, FEMA, and CERT authorities. By first encouraging individual church members to make preparations, and then providing for the integrity of the church itself, church members will have the peace of mind to work for and with the local authorities to help those in need.

The various churches and church groups should work together and with the local authorities tasked with preparedness to determine the probable needs of the community, and the best ways to meet them. Four churches with one-hundred pounds of coffee each help little if people are starving and need a place to sleep. By spreading the supply base around, with each church having food, clothes, medicines, shelters supplies, and manpower pools, the chances of losing all of one type of item, or stocking an overabundance of another, are much less.

Most people would rather receive a little help from their friends and church than standing in dole lines for government assistance.

The key, though, as in all community preparedness work, is cooperation and preplanning.

Chapter 34: Civic and Professional Groups & Community Preparedness

Civic leaders can encourage the participation of large numbers of people and provide a good place to have training sessions. The civic organizations are also a good source of money for particular community preparedness hardware needs. Most have fund raising organizations which raise money for the needs of the parent organization and for general civic needs which might also be used to help raise funds for the community preparedness efforts.

Professional groups can give expert advice to the appropriate officials about the particular field in which they are involved, as well as provide a rotating pool of specialized manpower such as doctors, nurses, engineering personnel, teachers, etc.

And the leaders of these organizations can also influence and guide many others into helping or getting involved with preparedness.

Chapter 35: Local Community Preparedness

If it exists, the local preparedness organization always carries the heaviest load during a disaster; otherwise Red Cross and the National Guard do the work. Unfortunately, no matter how earnestly I or others make suggestions, only a handful of people in any given community will be prepared. Local preparedness organizations must take care of the rest. To be effective during and after a disaster takes a great deal of preparation.

Strong Community Preparedness is based on a dedicated Preparedness Director (or Coordinator, etc.), and the understanding by the local head of government, usually a mayor, that the final authority of all actions is not the Preparedness Director, but the Mayor and his or her Council. The Preparedness Director is just another department head like the Police Chief, Fire Chief, Financial Administrator and so on. The Mayor, not the Preparedness Director, must make the actual working decisions based on advice from all the branches and sections of city government. The Director can suggest plans and advise on equipment purchases, but all items must be approved by the Mayor and Council. Some small purchases may be made within budget restrictions, but major items are by prior approval only. He or she can carry out training and many other tactical functions of an ongoing nature. Only with this top level cooperation and understanding can an effective local community preparedness organization operate.

Emergency Preparedness must acquire reliable manpower for both planning and implementation of those plans. The established sections of government utilities are the base on which to build. The Police, Fire, Ambulance, Street, and Maintenance departments are the foundation, and provide a great deal of the specialized manpower. It is important for the Preparedness Director to coordinate the disaster functions of these groups without trying to run their daily activities. They have established priorities no matter what, and a disaster does not change them, now matter what a Preparedness official says.

Government officials, business men and women, professional people, church leaders, and civic leaders are the primary planning agents and coordinators between Organized Preparedness and their special interest groups. Also needed are numbers of civilian volunteers for the operational end during an emergency.

Surveying the needs and possibilities of various disasters and developing appropriate contingency plans is mandatory. If those tasked with Preparedness

activities have no idea what could happen and the best response to those disasters, it means little how many people or how much equipment they have, their response will not be very effective. But contingency plans should not be hewn in granite. They must allow flexibility as new information and facts come in.

All Preparedness personnel should go through training sessions for their specialty, as well as general preparedness training and cross training. The general populace should be encouraged to provide in-home preparations, and taught what to do in various emergency situations. Pamphlets available through national DHS and FEMA provide good information, but not many will come in and ask for them. Newspaper inserts, TV and radio discussions, and open-to-the-public training sessions will reach the maximum number of people. The more knowledgeable the civilian population is, the better they respond to official instructions during the emergency.

When it comes to Preparedness, equipment is probably the most important single item in a good community preparedness program in an Emergency Operating Center. A well equipped EOC will allow the decision making members of government to accumulate information, make the proper decisions, and distribute those decisions to the proper personnel. Even events not covered by a specific contingency plan can be dealt with in the most advantageous way possible if the pertinent information is gathered, analyzed, and acted upon in this central location. In addition, it serves as the central point for people to look to for information and instructions during a crisis.

The EOC should be underground or mounded over with earth, providing a protection factor of PF 1000 or more. All entrances and other penetrations should be so designed to maintain the integrity of the PF 1000 at all times, and in all conditions. Blast protection to 12 psi overpressure should be incorporated using blast valves on all lines entering the structure and with air locks on the entrances. A CBRNE air filter should be installed in the ventilation system.

Information gathering and dissemination is the key to smooth operation, which makes the communications room one of the most important areas of the EOC. It should have a full EMP installation consisting of 16 gauge galvanized steel shielding with welded joints, single point conduit and pipe penetrations, wave guides on all entrances and penetrations, and a thorough and reliable earth ground. All cables that will enter the EOC should be in steel conduit with all junction and terminal boxes employing RFI shielding and grounding. Thermistors and/or Gas-

Gap protectors should be placed across all electric and electronic lines and antenna lead-ins.

Monitors covering local police, fire, ambulance, and all other city departments, the NWS broadcasts, and the National and Regional Preparedness networks should be provided. In addition, weather satellite receivers provide information on national and international situations. Monitors to cover the local aircraft and marine frequencies provide information pertaining to those specialized areas. Monitoring business band, amateur, and CB frequencies can provide information on what a lot of the general population is doing.

Since the EOC needs to be manned twenty-four hours a day, it is the logical place for all central dispatching for the community. Police, fire, ambulance, local Preparedness, and all other departments using radios can be dispatched from here with the proper transceivers. If you qualify for tie-ins to the national or regional DHS/FEMA radio or teletype nets these units should also be located here.

If you are part of the Regional Warning System the telephone or teletype tie-in should also be here.

Provisions should be made for qualified CB and Amateur Radio operators to man stations inside the EOC to provide backup communications, and as relays for external information sources that lack specialized radios.

If the EOC is large an internal intercom or telephone system is necessary. Two or more external telephone lines are required. At least one emergency-only number should be available, and a daily business number as well.

An adequate antenna system is a must, with all towers well grounded and guyed. Backup antennas should be stored inside the shelter for deployment if a primary antenna is damaged or destroyed.

A weather radar unit can greatly aid in early warning during weather disasters.

All critical communications equipment should have, at the very least, spare parts, and preferably, complete replacement units. In the case of nuclear attack, only one or two units should be connected to external power or antennas at any one time to reduce the chance of EMP damage. Battery power should be available to selected units in case public power is not available or there is a delay in power plant startup.

In order to utilize this communications equipment to the utmost a, preferably quiet, decision room should be equipped with continuously updated situation maps, all contingency plans and the various lists and charts containing information on manpower and equipment, as well as specific notification lists and organization charts.

To maintain the habitability of the EOC, a reliable life support system is necessary. A diesel generator with a large fuel supply is a prerequisite. Bathroom facilities are necessary since several uninterrupted hours may be spent in the EOC. This also calls for at least minimal kitchen facilities, with large food stores and other consumables stocks kept on hand. Sleeping quarters are a good idea, and decontamination facilities and a sick bay of some type are highly recommended.

All of this equipment will require quite a bit of storage space, so plan it in, and do not have items stacked all over the place when the EOC is fully stocked.

If the EOC is built in conjunction with a public shelter, there should be a separate entrance for the EOC in addition to access from the shelter. Entrance to the EOC from the shelter should be controlled to eliminate unnecessary distractions for the EOC staff.

All critical equipment should be owned by the Community Preparedness Organization outright. Volunteered equipment is necessary but it can not always be counted on during a real crisis.

The Preparedness Organization motor pool is based on the radio equipped city vehicles, supplemented by any official cars and vehicles purchased specifically for Preparedness Organization use. All vehicles should be equipped with a transceiver tuned to the local Preparedness frequencies.

One of the more difficult and frustrating parts of Community Preparedness is the political lobbying necessary to even allow Preparedness to be funded at all, much less to spend the amounts needed to bring the readiness up to what is needed from the sorry state it is in today. Interested individuals must do the lobbying to local mayors and city councils, but much work needs to be done to achieve what I think are three of the most important needs nationally. First, there should be tax breaks similar to those available for solar power installations, for private and business preparedness preparations. Second, there should be mandatory shelter areas in all government financed buildings, particularly schools, hospitals, and government office buildings. And the third is funding for special emergency equipment such as

dose and rate meters for household use, and a nationwide, or communitywide, in-home warning system. Automated emergency notification phone systems are now available and affordable.

Since much of the preparations are so expensive, a small town or city may only be able to do the minimum outlined above. Ongoing plans to acquire and train new volunteers are needed, and equipment deployment plans as new equipment is acquired should be well developed ahead of time. Contingency plans should be reviewed and updated, and new hazard surveys are required periodically.

As for hardware, the EOC is of prime importance, but backup stationary and/or mobile EOCs should be acquired as money permits. If radar is unavailable at first, it should be high on the priority list. Individual handheld radios for use by individuals during special situations should be high up on the priority list. Build up extensive supply reserves. And, perhaps, with other civic groups, obtain mobile units for use as canteens, medical care units, restrooms, water and provisions units, and clothing and welfare units.

During an emergency, Organized Preparedness Organizations provide four functions.

The first is detection of the disaster through weather radar, NWS broadcasts, radiological monitors, regional or national reporting networks, eyewitness reports, police reports or communications monitors, or other means.

As soon as the EOC is alerted, early warning of the population is undertaken with radio and TV broadcasts, mobile loudspeakers on city vehicles, sirens where available, and even door-to-door notification if necessary.

As the disaster progresses, assistance is given in the form of manpower pools, shelter, food, information dissemination, emergency transportation, search and rescue, and essential first-aid.

After the disaster the Preparedness Organization usually has the job of cleaning up, including decontamination if needed, salvage help, and emergency waste disposal.

But without the preplanning and physical preparations, these functions are very limited and somewhat ineffective. When you compare the facts of deaths and

damage during a disaster in an area with a strong local Preparedness Organization it is startling. Deaths are held to a minimum, often less than one tenth the number in a comparable disaster where no organization exists. And usually recovery is much quicker, since necessities have been protected in advance.

Chapter 36: You & Community Preparedness

Organized Community Preparedness is not a substitute for personal preparedness. However, the stronger the local emergency organizations, churches, and business are, the less likely you are to have to depend totally on your own preparations. The more prepared people there are around you, the less likely you are to be singled out by militias or looters to be robbed. It also can be very reassuring to know that qualified help is available in any emergency for which you have little or no provisions, or if your provisions are by some chance lost or destroyed. So support and encourage organized Emergency Preparedness, while keeping the extent of your personal preparations secret, through your job or business, church, and civic and professional affiliations. A little time, and perhaps some money, will be worth it if a disaster occurs.

A Final Note

I hope the information in this manual will get you started on preparing for the worst, while hoping for the best. It is not all inclusive, by any means, and is not intended to be so. It is a starting point.

There is much additional information here within the Family Readiness Center Forums and the associated websites, as well as other websites of like content. The internet, for the moment, is your single best source of information. But weigh that information carefully. Do not depend on any one opinion. Compare information sources and think it through on your own.

Take care.

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