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IN TIME OF EMERGENCY

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IN TIME OF EMERGENCY

a citizen's handbook on

EMERGENCY MANAGEMENT

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INTRODUCTION

The primary purpose of this handbook, In Time Of Emergency, is to save lives. It is addressed directly to the individual and the family to provide them with information and guidance on what they can and should do to enhance their survival in the event of nationwide nuclear attack or other major disasters.

This guidance is general in nature and should supplement specific instructions issued by local governments. Since special conditions exist in some communities, local instructions issued by local governments may differ slightly from this general guidance. In such cases, the local instructions should be followed.

Cities and counties in all parts of the country, with the aid of Federal and state governments, have developed and are continuing to develop civil preparedness programs to reduce the loss of life and protect property in the event of major peacetime emergencies and enemy attack. Many lives have been saved and much suffering has been alleviated as a result of these programs. People have been warned of impending storms and similar dangers, told how to protect themselves, sheltered from the elements, fed, clothed, treated for injury and illness, and given help in resuming their normal lives.

Part I (pages viii - 68) is concerned with nuclear attack and basic preparations to take.

Part II (pages 71 - 98) discusses preparations and emergency actions that will help individuals cope with major natural disasters- floods, hurricanes, tornadoes, winter storms, earthquakes, and tidal waves.

Special advice for rural families on emergency actions related to crops and livestock is available from the U.S. Department of Agriculture.

PART ONE - NUCLEAR ATTACK

In this uneasy age in which we live, strife abounds in many troubled parts of the world. The weapons of modern warfare have become increasingly powerful and numerous. Potential aggressors can deliver nuclear warheads accurately on targets up to 8,000 miles away.

Despite continuing efforts to achieve and maintain peace, a nuclear attack upon the United States remains a distinct possibility. In the face of this threat, a strong civil defense is needed not only throughout government, but on the part of the individual and the family. And that is what this first section is all about- to help the individual and the family prepare for the possibility of nuclear attack.

Much has been done to prepare for a possible nuclear attack. Public fallout shelter space has been located for millions. Civil defense systems also include warning and communication networks, preparations to measure fallout radiation, emergency operating centers to direct lifesaving and recovery operations, emergency broadcasting stations, local governments organized for emergency operations, and large numbers of citizens trained in emergency skills.

If an enemy should threaten to attack the United States, you would not be alone. The entire Nation would be mobilizing to repulse the attack, destroy the enemy, and hold down our own loss of life. Much assistance would be available to you- from local, State, and Federal governments, from the U.S. Armed Forces units in your area, and from your neighbors and fellow Americans. If an attack should come, many lives would be saved through effective emergency preparations and actions.

You can give yourself and your family a much better chance of surviving and recovering from a nuclear attack if you will take time now to:

-Understand the dangers you would face in an attack.

-Make your own preparations for an attack.

-Learn what actions you should take at the time of an attack.

Every family or individual should give special attention to plan for shelter. depending upon your location and upon various circumstances, one of three possible shelter options may be available to you:

1: Seek private shelter at home.

2: Seek public shelter in your own community.

3: Leave your community to seek shelter in a less dangerous area.

Part I of this handbook contains basic information on the threat of nuclear attack. This guidance supplements specific instructions issued by local governments. Special conditions may exist in some communities, and instructions issued by local governments may differ slightly from the general guidance in this handbook. In such cases, the local instructions should be followed.

PAGE 1

UNDERSTANDING THE HAZARDS OF NUCLEAR ATTACK

The first step in preparing for a possible nuclear attack is to understand the major hazards you would face if attack should come.

When a nuclear bomb or missile explodes, the main effects produced are intense light (flash), heat, blast, and radiation. How strong these effects are depends on the size and type of the weapon; how far away the explosion is; the weather conditions (sunny or rainy, windy, or still); the terrain (whether the ground is flat or hilly) and the height of the explosion (high in the air, or near the ground).

All nuclear explosions cause light, heat, blast, and initial nuclear radiation, which occur immediately. In addition, explosions that are on or close to the ground would create large quantities of dangerous radioactive fallout particles, most of which would fall to earth during the first 24 hours. Explosions high in the air would create smaller radioactive particles, which would not have any real effect on humans until many months or years later, if at all. (These smaller particles would drift to earth more slowly, losing much of their radioactivity before they reach the ground, and would be spread by the upper winds over vast areas of the world.)

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DIRECT EFFECTS OF 1 MT. BLAST (SURFACE BURST)

* overpressure in this zone > 12 P.S.I.
0.24 miles.....crater diameter
0.70 miles.....maximum fireball radius
1.70 miles.....destruction of all but specially designed facilities
98% of people killed 2% of people injured

*overpressure in this zone 5 - 12 P.S.I.
3 miles.....severe damage to commercial-type buildings & many fires initiated
50% of people killed 40% of people injured 10% of people safe

*overpressure in this zone 2 - 5 P.S.I.
5 miles...moderate damage to commercial-type buildings, severe damage to small residences & many fires initiated
5% of people killed 45% of people injured 50% of people safe

*overpressure in this zone 1 - 2 P.S.I.
7 miles...light damage to commercial-type buildings, moderate damage to small residences & potential fire spread
25% of people injured 75% of people safe

*overpressure in this zone 0 - 1 P.S.I
beyond 7 miles.....potential fire spread
100% of people safe

(If burst is elevated to altitude maximizing the reach of blast damage, moderate damage from blast and initial fires on a clear day are extended from 5 miles to 8 miles.)

DIRECT EFFECTS OF 25 MT. BLAST (SURFACE BURST)

* overpressure in this zone >12 P.S.I.
0.70 miles.....crater diameter
2.50 miles.....maximum fireball radius
5 miles.....destruction of all but specially designed facilities
98% of people killed 2% of people injured

*overpressure in this zone 5 - 12 P.S.I.
8 miles...severe damage to commercial-type buildings & many fires initiated
50% of people killed 40% of people injured 10% of people safe

*overpressure in this zone 2 - 5 P.S.I.
14 miles...moderate damage to commercial-type buildings, severe damage to small residences & many fires initiated
5% of people killed 45% of people injured 50% of people safe

*overpressure in this zone 1 - 2 P.S.I.
22 miles...light damage to commercial-type buildings, moderate damage to small residences & potential fire spread
25% of people injured 75% of people safe

*overpressure in this zone 0 - 1 P.S.I.
beyond 22 miles.....potential fire spread
100% of people safe

(If burst is elevated to altitude maximizing the reach of blast damage, moderate damage from blast and initial fires on a clear day are extended from 14 miles to 22 miles.)

(FEMA graphic transcribed into table by Live Free International)

WHAT WOULD HAPPEN TO PEOPLE

In a nationwide nuclear attack, people close to a nuclear explosion in the area of heavy destruction probably would be killed or seriously injured by the blast, or by the heat or initial nuclear radiation of the nuclear fireball.

People a few miles away- in the "light damage" area of the explosion- would be endangered by the blast and heat, and by fires that the explosion might start. However, it is likely that most of the people in the "light

damage" area would survive these hazards, but they would be further endangered by radioactive fallout.

People who were outside the immediate damage area would not be affected by the blast, heat, or fire. Department of Defense studies show that in any nuclear attack an enemy might launch against us, tens of millions of Americans would be outside the immediate damage areas. To them- and to the people in the "light damage" areas who survived the blast, heat, and fire- radioactive fallout would be the main danger.

What would happen to people in case of nuclear attack, therefore, would depend primarily upon their nearness to a nuclear explosion.

TYPE OF PROTECTION NEEDED

People in the areas of heavy destruction would likely need protection from various combinations of blast, initial radiation, heat, fire, and radioactive fallout. This would call for shelters strong enough to resist the blast pressure, made of heat- and fire-resistant materials, and sufficiently dense or heavy and thick to protect from initial radiation and radioactive fallout. Usually, shelters affording protection from blast, heat, and fire would also provide appreciable protection from radioactive fallout. Although many people in the "light damage" areas would likely survive the blast. heat, and fire effects, they would still need protection from radioactive fallout. By improvising blast and heat protection with attendant improvement in fallout protection, the lives of millions of additional people could be saved.

However, people caught in the area of the fireball would no doubt be killed. Therefore, people living in or near likely target or high-risk areas may wish to relocate in safer areas and take fallout shelter there. (See Chapter 7, "The Relocation Option".) This would be a serious option

for many to consider if a period of international tension permitting time for such relocation should precede a nationwide nuclear attack.

For those people outside the immediate damage areas and for those relocating to lower-risk areas prior to an attack, effective protective measures can be taken against the danger of radioactive fallout.

WHAT IS FALLOUT?

When a nuclear weapon explodes near the ground, great quantities of pulverized earth and other debris are sucked up into the nuclear cloud. There the radioactive gases produced by the explosion condense on and into this debris, producing radioactive fallout particles. Within a short time, these particles fall back to earth- the larger ones first, the smaller ones later. On the way down, and after they reach the ground, the radioactive particles give off invisible gamma rays- like X-rays- too much of which can kill or injure people. These particles give off most of their radiation quickly; therefore the first few hours or days after an attack would be the most dangerous period.

In dangerously affected areas the particles themselves would look

like grains of salt or sand; but the rays they would give off could not be seen tasted, smelled, or felt. Special instruments would be required to detect the rays and measure their intensity.
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The distribution of fallout particles after a nuclear attack would depend on wind currents, weather conditions, and other factors. There is no way of predicting in advance what areas of the country would be affected by fallout, or how soon the particles would fall back to earth at a particular location.

Some communities might get a heavy accumulation of fallout, while others- even in the same general area- might get little or none. No area in the U.S. could be sure of not getting fallout, and it is probable that some fallout particles would be deposited on most of the country.

Areas close to a nuclear explosion might receive fallout within 15 - 30 minutes. It might take 5 - 10 hours or more for the particles to drift down on a community 100 or 200 miles away.

Generally, the first 24 hours after fallout began to settle would be the most dangerous period to a community's residents. The heavier particles falling during that time would still be highly radioactive and give off strong rays. The lighter particles falling later would have lost much of their radiation high in the atmosphere.
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FALLOUT CAUSES RADIATION SICKNESS

The invisible gamma rays given off by fallout particles can cause radiation sickness- that is, illness caused by physical and chemical changes in the cells of the body. If a person receives a large dose of radiation, he will die. But if he receives only a small or medium dose, his body will repair itself and he will get well. The same dose received over a short period of time is more damaging than if it is received over a longer period. Usually, the effects of a given dose of radiation are more severe in very young and very old persons, and those not in good health.

SHORT-TERM EFFECTS OF RADIATION EXPOSURE

Following are estimated short-term effects on humans of external exposure to gamma radiation from fallout during a period of less than 1 week. The total exposure is given in terms of Roentgens (R), a unit for measuring the amount of radiation exposure.

0 - 50 R...No visible effects.

50 - 200 R...Brief periods of nausea on day of exposure. 50% may experience radiation sickness (nausea); 5% may require medical attention; no deaths expected.

200 - 450 R...Most will require medical attention because of serious

radiation sickness. 50% deaths within two to four weeks.

450 - 600 R...Serious radiation sickness; all require medical attention. Death for more than 50% within one to three weeks.

Over 600 R...Severe radiation sickness. 100% deaths in two weeks.

No special clothing can protect people against gamma radiation, and no special drugs or chemicals can prevent large doses of radiation from causing damage to the cells of the body. However, antibiotics and other medicines are helpful in treating infections that sometimes follow
PAGE 7

excessive exposure to radiation (which weakens the body's ability to fight infections).

Almost all of the radiation that people would absorb from fallout particles would come from particles outside their own bodies. Only simple precautions would be necessary to avoid swallowing the particles, and because of their size (like grains of sand) it would be practically impossible to inhale them.

People exposed to fallout radiation do not become radioactive and thereby dangerous to other people. Radiation sickness is not contagious or infectious, and one person cannot "catch it" from another person.

PROTECTION IS POSSIBLE

People can protect themselves against fallout radiation, and have a good chance of surviving it, by staying inside a fallout shelter. In most cases, the fallout radiation level outside the shelter would decrease rapidly enough to permit people to leave the shelter within a few days.

Even in communities that receive heavy accumulations of fallout particles, people soon might be able to leave shelter for a few minutes or a few hours at a time in order to perform emergency tasks. In most places, it is unlikely that full-time shelter occupancy would be required for more than a week or two.

Information from trained radiological monitors, using special instruments to detect and measure the intensity of fallout radiation, would be used to advise people when it is safe to leave shelter.

MANY KINDS OF FALLOUT SHELTERS

The farther away you are from the fallout particles outside, the less radiation you will receive. Also, the building materials (concrete, brick, lumber, etc.) that are between you and the fallout particles serve to absorb many of the gamma rays and keep them from reaching you.
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A fallout shelter, therefore, does not need to be a special type of building or an underground bunker. It can be any space, provided the walls

and roof are thick enough to absorb many of the rays given off by the fallout particles outside, and thus keep dangerous amounts of radiation from reaching the people inside the structure.

A shelter can be the basement or inner corridor of any large building; the basement of a private home; a subway or tunnel; or even a backyard trench with some kind of shielding material (heavy lumber, earth, bricks, etc.) serving as a roof.

In addition to protecting people from fallout radiation, most fallout shelters also would provide some limited protection against the blast and heat effects of nuclear explosions that were not close by.

Chapter 3, "Fallout Shelters, Public and Private," discusses the various types of fallout shelters that people can use to protect themselves in case of nuclear attack.

FOOD AND WATER WOULD BE AVAILABLE AND USABLE

From many studies, the Federal Government has determined that enough food and water would be available after an attack to sustain our surviving citizens. However, temporary food shortages might occur in some areas, until food was shipped there from other areas.

Most of the Nation's remaining food supplies would be usable after an attack. Since radiation passing through food does not contaminate it, the only danger would be the actual swallowing of fallout particles that happened to be on the food itself (or on the can or package containing the food), and these could be wiped or washed off. Reaping, threshing, canning and other processing would prevent any dangerous quantities of fallout particles from getting into processed foods. If necessary to further protect the population, special precautions would be taken by food processors.

Water systems might be affected somewhat by radioactive fallout, but the risk would be small, especially if a few simple precautions were taken. Water stored in covered containers and water in covered wells would not be contaminated after an attack, because the fallout particles could not get into the water. Even if the containers were not covered (such as buckets or bathtubs filled with emergency supplies of water), as long as they were indoors it is highly unlikely that fallout particles would get into them.

Practically all of the particles that dropped into open reservoirs, lakes, and streams (or into open containers or wells) would settle to the bottom. Any that didn't would be removed when the water was filtered before being pumped to containers. A small amount of radioactive material might remain, but at the most it would be of concern for only a few weeks.

Milk contamination from fallout is not expected to be a serious problem after an attack. If cows graze on contaminated pasture and swallow fallout particles that contain some radioactive elements, their milk might be harmful to the thyroid glands of infants and small children. Therefore, if possible, they should be given canned or powdered milk for a few weeks

if authorities say that the regular milk supply is contaminated by radioactive elements.

In summary, the danger of people receiving harmful doses of fallout radiation through food, water, or milk is very small. People suffering from extreme hunger or thirst should not be denied these necessities after an attack, even if the only available supplies might contain fallout particles.

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Chapter 2

WARNING

An enemy attack on the United States probably would be preceded by a period of international tension or crisis. This crisis period would help alert all citizens to the possibility of attack.

If an attack actually occurs, it is almost certain that incoming enemy planes and missiles would be detected by our networks of warning stations in time for citizens to get into shelters or at least take cover. This warning time might be as little as 5 - 15 minutes in some situations, or as much as an hour or more in others.

How you received warning of an attack would depend on where you happen to be at that time. You might hear the warning given on radio or television, or even by word-of-mouth. Or your first notice of attack might come from the outdoor warning system in your city, town, or village.

Many U.S. cities and towns have outdoor warning systems, using sirens, whistles, horns, or bells. Although they have been installed mainly to warn citizens of enemy attack, some local governments also use them in connection with natural disasters and other peacetime catastrophes.

Different cities and towns are using their outdoor warning systems in different ways. Most local governments, however, have decided to

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use a certain signal to warn people of an enemy attack, and a different signal to notify them of a peacetime disaster.

THE STANDARD WARNING SIGNALS

The two "standard" signals that have been adopted in most communities are these:

THE ATTACK WARNING SIGNAL. This will be sounded only in case of enemy attack. The signal itself is a 3- to 5-minute wavering sound on the siren, or a series of short blasts on whistles, horns, or other devices, repeated as deemed necessary. The Attack Warning Signal means that an actual enemy attack against the United States has been detected, and that protective action should be taken immediately. This signal has no other meaning, and will be used for no other purpose.

THE ATTENTION OR ALERT SIGNAL. This is used by some local governments to get the attention of citizens in a time of threatened or impending natural disaster, or some other peacetime emergency. The signal itself is a 3- to 5- minute steady blast on sirens, whistles, horns, or other devices. In most places, the Attention or Alert signal means that the local government wants to broadcast important information on radios or television concerning a peacetime disaster.

WHAT TO DO WHEN SIGNALS SOUND

1. If you should hear the Attack Warning Signal- unless your local government has instructed you otherwise- go immediately to a public fallout shelter or to your home fallout shelter. Turn on a radio, tune it to any local station that is broadcasting, and listen for official information. Follow whatever instructions are given.

If you are at home and there is no public or private shelter available, you may be able to improvise some last-minute protection for yourself and your family by following the suggestions in Chapter 4, "Improvising Fallout Protection."

2. If you should hear the Attention or Alert Signal, turn on a radio or TV set, tune it to any local station, and follow the official instructions being broadcast.

DON'T USE THE TELEPHONE

Whichever signal is sounding, don't use the telephone to obtain further information and advice about the emergency. Depend on radio and television, since the government will be broadcasting all the information it has available. The telephone lines will be needed for official calls. Help keep them open.

LEARN YOUR COMMUNITY'S SIGNALS NOW

As mentioned before, not all communities in the U.S. have outdoor warning systems, and not all communities with outdoor warning systems have adopted the two "standard" warning signals.

You should therefore find out now from your local Civil Defense Office what signals are being used in your community; hat they sound like; what they mean; and what actions you should take when you hear them. Then memorize this information, or write it down on a card to carry with you at all times. Also, post it in your home. Check at least once each year to see if there are any changes.

IF THERE IS A NUCLEAR FLASH

It is possible- but extremely unlikely- that your first warning of an enemy attack might be the flash of a nuclear explosion in the sky some
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distance away. Or there might be a flash after warning had been given, possibly while you were on your way to shelter.

*TAKE COVER INSTANTLY. If there should be a nuclear flash- especially if you are outdoors and feel warmth at the same time- take cover instantly in the best place you can find. By getting inside or under something within a few seconds, you might avoid being seriously burned by the heat or injured by the blast wave of the nuclear explosion. If the explosion were some distance away, you might have 5 to 15 seconds before being seriously injured by the heat, and perhaps 15 to 60 seconds before the blast wave arrived. Getting under cover within these time limits might save your life or avoid serious injury. Also, to avoid injuring your eyes, never look at the flash of an explosion or the nuclear fireball.

*WHERE TO TAKE COVER. You could take cover in any kind of a building, a storm cellar or fruit cellar, a subway station, or tunnel; or even in a ditch or culvert alongside the road, a highway underpass, a storm sewer, a cave or outcropping of rock, a pile of heavy materials, a trench or other excava-
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tion. Even getting under a parked automobile, bus or train, or a heavy piece of furniture, would protect you to some extent. If no cover is available, simply lie down on the ground and curl up. The important thing is to avoid being burned by the heat, thrown about by the blast, or struck by flying objects.

*BEST POSITION AFTER TAKING COVER. After taking cover you should lie on your side in a curled-up position, and cover your head with your arms and hands. This would give you some additional protection.

*MOVE TO A FALLOUT SHELTER LATER. If you protected yourself against the blast and heat waves by instantly taking cover, you could get protection from the radioactive fallout (which would arrive later) by moving to a fallout shelter.
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Chapter 3

FALLOUT SHELTERS, PUBLIC AND PRIVATE

After a nuclear attack, fallout particles would drift down on most areas of this country. To protect themselves from the radiation given off by these particles, people in affected areas would have to stay in fallout shelters for 2 or 3 days to as long as 2 weeks. Many people would go to public fallout shelters, while others- through choice or necessity- would take refuge in private or home fallout shelters.

IDENTIFYING PUBLIC SHELTERS

Most communities now have public fallout shelters that would protect many of their residents against fallout radiation. Where there are still not enough public shelters to accommodate all citizens, efforts are being made to locate more. In the meantime, local governments plan to make use of the best available shelter.

Most of the existing public shelters are located in larger buildings and are marked with the standard yellow-and-black fallout shelter sign. Other public shelters are in smaller buildings, subways, tunnels, mines and other facilities. These also are marked with shelter signs, or would be marked in a time of emergency.

LEARN THE LOCATIONS OF PUBLIC SHELTERS

An attack might come at any hour of the day or night. Therefore you should find out now the locations of those public fallout shelters designated by the local government for your use. If no designations have yet been made, learn the locations of public shelters that are nearest to you when you are at home, work, school, or any other place where you spend considerable time.

This advice applies to all members of the family. Your children especially should be given clear instructions now on where to find a fallout shelter at all times of the day, and told what other actions they should take in case an attack should occur.

A HOME SHELTER MAY SAVE YOUR LIFE

Public fallout shelters usually offer some advantages over home shelters. However, in many places- especially suburban and rural areas- there are few public shelters. If there is none near you now, a home fallout shelter may save your life.

The basements of some homes are usable as family fallout shelters as they now stand, without any alterations or changes- especially if the house has two or more stories, and its basement is below ground level.

However, most home basements would need some improvements in order to shield their occupants adequately from the radiation given off by fallout particles. Usually, householders can make these improvements themselves, with moderate effort and at low cost.

HOW TO MAKE YOUR OWN HOME SURVEY

If you do not have information about the fallout protection of your basement, you may obtain it quickly as follows:

Select the answer in each multiple choice question which most nearly applies to your home. Write the number of points selected in the blank

space provided opposite each question. Add the numbers written

in the blanks. Write the sum in the blank opposite "TOTAL POINTS" and compare your total with the "Shelter Protection" table.

1. How many stories are above the ground level in this house?
( ) One story.....11 points_____
( ) One and one-half stories.....9 points_____
( ) Two stories.....6 points_____
( ) Three stories or more.....3 points_____

2. What is the maximum exposure of any basement wall above the ground? (Exclude exterior entrances of 3 feet width or less.)
( ) No basement (skip question 3).....15 points_____
( ) 3 feet or more.....8 points_____
( ) 2 to 3 feet.....3 points_____
( ) 1 to 2 feet.....1 point_____
( ) less than 1 foot.....0 points_____

3. What is the principal material of the basement walls?
( ) Cinder block or concrete block.....2 points_____
( ) Stone, brick, or poured concrete.....0 points_____

4. What is the principal material of the first story walls?
( ) Solid brick or stone, concrete.....3 points_____
( ) Other.....0 points_____

5. Is the home attached to or closer than 10 feet to another home or homes of similar size and construction?
( ) No.....2 points_____
( ) Yes, 1 side.....1 point_____
( ) Yes, 2 sides.....0 points_____

_____

TOTAL POINTS_____

Shelter potential: Up to 13 points- adequate
14 - 19 points- improvable at low cost
20 or more points- low

Remember, in this type of survey, the lowest number of points means highest degree of fallout shielding.

SHIELDING MATERIAL IS REQUIRED

In setting up any home fallout shelter, the basic aim is to place enough "shielding material" between the people in the shelter and the fallout particles outside.

Shielding material is any substance that would absorb and deflect the invisible rays given off by the fallout particles outside the house, and thus reduce the amount of radiation reaching the occupants of the shelter. The thicker, heavier, or denser the shielding material is, the more it would protect the shelter occupants.
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Some radiation protection is provided by the existing, standard walls and ceiling of a basement. But if they are not thick or dense enough, other shielding material will have to be added.

Concrete, bricks, earth, and sand are some of the materials that are dense or heavy enough to provide fallout protection. For comparative purposes, 4 inches of concrete would provide the same shielding density as:

-5 to 6 inches of bricks
-6 inches of sand or gravel___ may be packed into bags, cartons, boxes,
-7 inches of earth_____}or other containers for easier handling
-8 inches of hollow concrete blocks (6 inches if filled with sand)
-10 inches of water
-14 inches of books or magazines
-18 inches of wood.

HOW TO PREPARE A HOME SHELTER

If there is no public fallout shelter near your home, or if you would prefer to use a family-type shelter in a time of attack, you should prepare a home fallout shelter. Here is how to do it:
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*A PERMANENT BASEMENT SHELTER. If your home basement- or one corner of it- is below ground level, your best and easiest action would be to build a fallout shelter there. If you have basic carpentry or masonry skills, you probably could buy the necessary shielding material and do the work yourself in a short time. If you decide to set up one of these shelters, first get the free plan for it by writing to the U.S. Army AG Publications Center, Civil Preparedness Section, 2800 Eastern Blvd., (Middle River), Baltimore, Maryland 21220. In ordering a plan, use the full name shown for it.
[The FEMA sketches of these shelters have necessarily been omitted here, as well as some of the related text. The names of the shelter plans are:

-Ceiling Modification Plan A
-Alternate Ceiling Modification Plan B
-Permanent Concrete Block or Brick Shelter Plan C
-Preplanned Snack Bar Shelter Plan D
-Preplanned Tilt-up Storage Unit Plan E

*A PERMANENT OUTSIDE SHELTER. If your home has no basement, or if you

prefer to have a permanent-type home shelter in your yard, you can obtain free construction plans by writing to (the same address.)
-Outside Concrete Shelter, Plan H-12-1
-Aboveground Fallout Shelter, Plan H-12-2]
PAGES 22, 23, 24, 25, 26, 27 FEMA sketches and explanatory text omitted
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Chapter 4

IMPROVISING FALLOUT PROTECTION

If an enemy attack should occur when you are at home, and you have made no advance shelter preparations, you still might be able to improvise a shelter either inside or outside your house. In a time of emergency, the radio broadcasts may tell you whether you have time to improvise a shelter or whether you should take cover immediately.

An improvised shelter probably would not give you as much protection as a permanent or a preplanned family shelter, but any protection is better than none, and might save your life.

The best place to improvise a shelter would be the basement or storm cellar, if your home has one.

SHIELDING MATERIAL NEEDED

To improvise a shelter you would need shielding materials such as those mentioned on page 20- concrete blocks, bricks, sand, etc. Other things could also be used as shielding material, or to support shielding material, such as:

-House doors that have been taken off their hinges (especially heavy outside doors).
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-Dressers and chests (fill the drawers with sand or earth after they are placed in position, so they won't be too heavy to carry and won't collapse while being carried).
-Trunks, boxes, and cartons (fill them with sand or earth after they are placed in position).
-Tables and bookcases.
-Books, magazines, and stacks of firewood or lumber.
-Flagstones from outside walks and patios.

IMPROVISING A BASEMENT SHELTER

Here are two ways of improvising fallout protection in the basement of a home.

Set up a large, sturdy table or workbench in the corner of your basement that is most below ground level.

On the table, pile as much shielding material as it will hold without collapsing. Around the table, place as much shielding material as possible.

When family members are "inside the shelter"- that is, under the table- block the opening with other shielding material.

If you don't have a large table or workbench available- or if more shelter space is needed- place furniture or large appliances in the corner of the basement so they will serve as the "walls" of your shelter.

As a "ceiling" for it, use doors from the house that have been taken off their hinges. On top of the doors, pile as much shielding material as they will support. Stack other shielding material around the "walls" of your shelter.

When all persons are inside the shelter space, block the opening with shielding material.

USING A STORM CELLAR FOR FALLOUT PROTECTION

A below-ground storm cellar can be used as an improvised fallout shelter, but additional shielding material may be needed to provide adequate protection from fallout radiation.

If the existing roof of the storm cellar is made of wood or other light material, it should be covered with one foot of earth or an equivalent thickness of other shielding material (see pages 21 and 22) for overhead shielding from fallout. More posts or braces may be needed to support the extra weight.

After the roof has been shielded, better protection can be provided by blocking the entrance way with 8-inch concrete blocks or an equivalent thickness of sandbags, bricks, earth, or other shielding material, after all the occupants are inside the shelter. After particles have stopped falling, the outside door may be left open to provide further ventilation.

If shielding material is not available for the entrance way, shelter occupants should stay as far away from it as possible. They also should raise the outside door of the storm cellar now and then to knock off any fallout particles that may have collected on it.

USING THE CRAWL SPACE UNDER YOUR HOUSE

Some homes without basements have "crawl space" between the first floor and the ground underneath the house. If you have this space under your house- and if the house is set on foundation walls, rather than on pillars- you can improvise fallout protection for your family there.

First, get access to the crawl space through the floor or through the outside foundation wall. (A trapdoor or other entry could be made now, before an emergency occurs.)

As the location for your shelter, select a crawl-space area that is under the center of the house, as far away from the outside foundation walls as possible.

Around the selected shelter area, place shielding material- preferably bricks or blocks, or containers filled with earth- from the ground level up to the first floor of the house, so that the shielding material forms the "walls" of your shelter area. On the floor above, place other shielding material to form a "roof" for the shelter area.

If time permits, dig out more earth and make the shelter area deeper, so that you can stand erect or at least sit up in it.

IMPROVISING AN OUTSIDE SHELTER

If your home has no basement, no storm cellar and no protected crawl space, here are three ways of improvising fallout protection in your yard.

SHELTER UNDER A HOUSE SLAB

An excellent fallout shelter can be built by excavating under a small portion of the house slab.

First, dig a trench alongside the house, preferably alongside an eave to help keep out rainwater. Once the bottom of the slab foundation wall is reached, dig out a space under the slab. The area can very in size, but it should not extend back more than 4 feet from the outside edge of the foundation wall.

Place support shoring under the slab, and pile dirt on top of the slab inside the house to improvise overhead shielding from fallout radiation.

You can add to the protection by making a lean-to over the entrance trench, using boards or house doors, covering them with soil, and and covering this with a polyethylene sheet to keep out rainwater.

OUTSIDE TRENCH SHELTER

Dig an L-shaped trench, about 4 feet deep and 3 feet wide. One side of the L, which will be the shelter area, should be long enough to accommodate all family members. The other side of the L can be shorter, since its purpose is to serve as an entrance-way and to reduce the amount of radiation getting into the shelter area.

Cover the entire trench with lumber (or with house doors that have been taken off their hinges), except for about 2 feet on the short side of the L, to provide access and ventilation.

On top of the lumber or doors, pile earth 1 to 2 feet high, or cover them with other shielding material.

If necessary, support or "shore up" the walls of the trench, as well as the lumber or doors, so they will not collapse.

OUTSIDE LEAN-TO SHELTER

Dig a shallow ditch, 6 inches deep and 6 inches wide, parallel to and 4 feet from the outside wall of your house.

Remove the heaviest doors from the house. Place the bottoms of the doors in the ditch (so they won't slip) and lean the doors against the wall of the house.

On the doors, pile 12 to 18 inches of earth or sand. Stack or pile other shielding material at the sides of the doors, and also on the other side of the house wall (to protect you against radiation coming from that direction.)

If possible, make the shelter area deeper by digging out more earth inside it. Also dig some other shallow ditches, to allow rain water to drain away.

BOATS AS IMPROVISED SHELTERS

If no better fallout protection is available, a boat with an enclosed cabin could be used. However, in addition to emergency supplies such as food, drinking water and battery-powered radio, you should have aboard the items you would need (a broom, bucket, or pump-and-hose) to sweep off or flush off any fallout particles that might collect on the boat.

The boat should be anchored or cruised slowly at least 200 feet offshore, where the water is at least 5 feet deep. This distance from shore would protect you from radioactive fallout particles that had fallen on the nearby land. A 5-foot depth would absorb the radiation from particles falling into the water and settling on the bottom.

If particles drift down onto the boat, stay inside the cabin most of the time. Go outside now and then, and sweep or flush off any particles that have collected on the boat.

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Chapter 5

SHELTER LIVING

SUPPLIES FOR FALLOUT SHELTERS

People gathered in public and private fallout shelters to escape fallout radiation after a nuclear attack would have to stay there- at least part of the time- for a week or two.

During this time they would need certain supplies and equipment in order to stay alive and well, and to cope with emergency situations that might occur in their shelters.

This chapter tells you what supplies and equipment to take with you if you go t a public fallout shelter, and what items you should keep on hand if you plan to use a family fallout shelter at home.

To augment the supplies of water and food normally found in or near

large structures where public fallout shelter is usually located, you should plan to take the following with you:

-Special medications or foods required by members of your family, such as insulin, heart tablets, dietetic food, or baby food.

-A blanket for each family member.

-A battery-powered radio, flashlight, extra batteries for each, and writing materials for taking notes on information given over the radio.

-As much potable liquids (water, fruit and vegetable juices, etc.) and ready-to-eat food as you can carry to the shelter.

STOCKS FOR A HOME SHELTER

If you intend to use a home fallout shelter, you should gather together now all the things you and your family would need for 2 weeks, even though you probably wouldn't have to remain inside the shelter for the entire period.

All these items need not be stocked in your home shelter area. They can be stored elsewhere in or around your house, as long as you could find them easily and move them to your shelter area quickly in a time of emergency.

*THE ABSOLUTE NECESSITIES. There are a few things you must have. They are water, food, sanitation supplies, and any special medicines or foods needed by family members such as insulin, heart tablets, dietetic food, and baby food.

*THE COMPLETE LIST. In addition to the absolute necessities, there are other important items. Some of them may be needed to save lives. At the least, they will be helpful to you. Here is a list of all major items- both essential and desirable.

WATER. This is even more important than food. Each person will need at least one quart of water per day. Some will need more. As explained on pages 39 and 40, do not ration drinking water. Store it in plastic containers, or in bottles or cans. All should have tight stoppers. Part of your water supply might be "trapped" water in the pipes of your home plumbing system, and part of it might be in the form of bottled or canned beverages, fruit or vegetable juices, or milk. A water-purifying agent (either water-purifying tablets, or 2 percent tincture of iodine, or a liquid household chlorine bleach) should also be stored, in case you need to purify any cloudy or "suspicious" water that may contain bacteria.

FOOD. Enough food should be kept on hand to feed all shelter occupants for 14 days, including special foods needed by infants, elderly persons, and those on limited diets. Most people in shelter can get along on about half as much as usual and can survive without food for several days if necessary. If possible, store canned or sealed package foods, preferably those not requiring refrigeration or cooking. These should be

replaced periodically. Here is a table showing the suggested replacement periods, in months, for some of the types of food suitable to store for emergency use. (This table, and other suggestions concerning emergency supplies of food and water, is contained in "Family Food Stockpile for Survival," Home and Garden Bulletin No. 77, available to individuals free, from the U.S. Department of Agriculture, Office of Communications, Washington, D.C. 20250.)

	months
Milk:	
Evaporated	6
Nonfat dry or whole dry milk, in metal container	6
Canned meat, poultry, fish:	
Meat, poultry	18
Fish	12
Mixtures of meats, vegetables, cereal products	18
Condensed meat and vegetable soups	8
Fruits and vegetables:	
Berries and sour cherries, canned	6
Citrus fruit juices, canned	6
Other fruit and fruit juices, canned	18
Dried fruit, in metal container	6
Tomatoes, sauerkraut, canned	6
Other vegetables, canned (including dry beans and dry peas)	18
Cereals and baked goods:	
Ready-to-eat cereals:	
In metal container	12
In original paper package	1
Uncooked cereal (quick-cooking or instant):	
In metal container	24
In original paper package	12
Sugars, sweets, and nuts:	
Sugar	will keep indefinitely
Hard candy, gum	18
Nuts, canned	12
Instant puddings	12
Miscellaneous:	
Coffee, tea, cocoa (instant)	18
Dry cream product (instant)	12
Bouillon products	12

Flavored beverage powders.....24
Salt.....will keep indefinitely
Flavoring extracts (e.g., pepper).....24
Soda, baking powder.....12
Hydrogenated (or antioxidant-treated) fats, vegetable oil.....12

SANITATION SUPPLIES. Since you may not be able to use your regular bathroom during a period of emergency, you should keep on hand these sanitation supplies: A metal container with a tight-fitting lid to use as an emergency toilet; one or two large garbage cans with covers (for human wastes and garbage); plastic bags to line the toilet container; disinfectant; toilet paper; soap; wash cloths and towels; a pail or basin; and sanitary napkins.

MEDICINES AND FIRST AID SUPPLIES. This should include any medicines being regularly taken, or likely to be needed, by family

members. First aid supplies should include all those found in a good first aid kit (bandages, antiseptics, etc.) plus all the items normally kept in a well-stocked home medicine chest (aspirin, thermometer, baking soda, petroleum jelly, etc.). A good first aid handbook is also recommended.

INFANT SUPPLIES. Families with babies should keep on hand a two-week stock of infant supplies such as canned milk or baby formula, disposable diapers, bottles and nipples, rubber sheeting, blankets and baby clothing. Because water for washing might be limited, baby clothing and bedding should be stored in larger-than-normal quantities.

COOKING AND EATING UTENSILS. Emergency supplies should include pots, pans, knives, forks, spoons, cups, napkins, paper towels, measuring cup, bottle opener, can opener, and pocket knife. If possible, disposable items should be stored. A heat source also might be helpful, such as an electric hot plate (for use if power is available), or a camp stove or canned-heat stove (in case power is shut off). However, if a stove is used indoors, adequate ventilation is needed.

CLOTHING. Several changes of clean clothing- especially undergarments and socks or stockings- should be ready for shelter use, in case water for washing should be scarce.

BEDDING. Blankets are the most important items of bedding that would be needed in a shelter, but occupants probably would be more comfortable if they also had available pillows, sheets, and air mattresses or sleeping bags.

FIRE FIGHTING EQUIPMENT. Simple fire fighting tools, and the knowledge of how to use them, may be very useful. A hand-pumped fire

extinguisher of the inexpensive, 5-gallon, water type is preferred. Carbon tetrachloride and other vaporizing-liquid type extinguishers are not recommended for use in small enclosed spaces, because of the danger of fumes. Other useful fire equipment for home use includes buckets filled with sand, a ladder, and a garden hose.

GENERAL EQUIPMENT AND TOOLS. The essential items in this list are a battery-powered radio and a flashlight or lantern, with spare batteries. the radio might be your only link with the outside world, and you might have to depend on it for all your information and instructions, especially for advice on when to leave shelter. Include writing materials for taking notes on information given over the radio. Other useful items: a shovel, broom, axe, crowbar, kerosene lanterns,
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short rubber hose for siphoning, coil of half-inch rope at least 25 feet long, coil of wire, hammer, pliers, screwdriver, wrench, nails and screws.

MISCELLANEOUS ITEMS. In addition to such practical items as matches, candles, and civil defense instructions, some personal convenience items could be brought into the home shelter if space permits. These might include books and magazines, a clock, and calendar, playing cards, and hobby materials, a sewing kit, and toiletries such as toothbrushes, cosmetics, and shaving supplies.

WATER, FOOD, AND SANITATION IN A SHELTER

At all times and under all conditions, human beings must have sufficient water, adequate food and proper sanitation in order to stay alive and healthy. With people living in a shelter- even for a week or two- water and food might be scarce, and it would be difficult to maintain normal sanitary conditions. Water and food supplies would have to be "managed" - that is, kept clean, and used carefully by each person in the shelter. Sanitation also would have to be managed and controlled, perhaps by setting up emergency toilets and rules to insure that they are used properly.

de the risk area, but within a reasonable distance, go there as soon as possible. As relocation gets underway, it may be difficult or impossible to get to the location of your choice.
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*If you do not have a definite location to go to...

You should proceed to the nearest reception area indicated by your government officials.

*If you are a key worker...

If you have been designated by your employer as a key worker in an essential industry, you may be expected to go with your family to a reserved nearby reception area. You would probably not be expected to stay

in location at your high-risk area, but you would probably commute daily to work from your assigned reception area. Protection would be provided for you while in your high-risk location, and you would be able to join your family after work.

HOW TO GET THERE

If you have a car, truck, camper, or recreational vehicle, drive it to your designated reception area, using the route given by your local officials. Remember that several days should be available for relocating all those living in the high-risk area. Take the time you need to prepare and pack.

Relocation routes will be designated to assure that residents will be equally distributed among the reception counties so that there will be adequate food and lodging for you and your family. If you use a route not assigned to you, you may find the reception area you have chosen is filled, and there is no room or accommodations for you. Follow the relocation route to the reception county as indicated by your local officials. Wherever possible, police officers will be on duty to advise and direct you. Obey all instructions by law enforcement officers.

If you get caught in a traffic jam, turn off your engine, remain in your car, listen for official instructions, and be patient. Do not get out of the line to find an alternate route. All routes will be crowded. If traffic is stopped for an hour or more, do not leave your car for any reason.

Be sure you have adequate gasoline when you start out. DO NOT BUY ANY MORE GAS THAN YOU WILL NEED. Gasoline will be in short supply and will be needed to provide you with food and other essential supplies. But if you run out of gas or have other mechanical difficulties, move your car to the side of the road out of traffic lanes to allow traffic to continue. Service to stalled autos will be available during the evacuation period. Leave your hood up as a sign that you are stalled, and you will be assisted as soon as possible.

If you have no private means of transportation, public transportation will probably be provided to move you to your reception area.

If you are physically unable to get to transportation, make arrangements to be picked up and be transported to your reception area.

WHAT TO DO WHEN YOU ARRIVE

When you reach a major community or town in your assigned reception county, proceed immediately to your assigned reception area.

At the center you will register yourself and your family. Reception county officials will make every effort to assign you to a place to sleep, in a larger building or possibly with a private household that has

volunteered to share their home.
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Lodging in Public Buildings...

If you are assigned to a public building such as a school, church, or other temporary lodging center, do everything you can to help maintain order and sanitary living conditions. Elect a leader and form working groups to help local officials and volunteers with such tasks as:

*Cooking and feeding services
*Providing water supply
*Cleaning up trash and garbage
*Maintaining order
*Assuring quiet during sleeping hours
*Organizing recreation and religious activities
*Arranging medical care for the sick and assisting the handicapped

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HOW TO KEEP INFORMED

Listen to the radio for information and advice from national, State, and local officials. You will be told when you should return home. DO NOT RETURN HOME BEFORE YOU ARE ADVISED TO DO SO. It is impossible to predict how long you will have to stay in the reception area. It could be only for a few days or could last for a week or more.

If a nuclear attack should occur and the Emergency Broadcasting System (EBS) is in operation, a number of radio stations will remain on the air to provide emergency information.
All other radio stations will stop broadcasting. Those emergency stations remaining on the air will provide you with information and instructions that you will need.

FINDING FALLOUT SHELTER IN HOST AREAS

Many larger buildings have been designed as public fallout shelters. They are marked by signs like this:

[yellow-and-black sign with trefoil radiation symbol on top and words "Fallout Shelter" with directional arrows on bottom]

Host areas usually do not have enough shelters for their own residents. Consequently, it will be necessary for many residents of host counties AND FOR MOST CITY EVACUEES to upgrade to protection in the building they are to stay in or to try to improvise their own fallout protection.

Residents of host areas are encouraged to share their homes and shelter facilities as far as possible. Both the residents of the host areas and the city evacuees will have to WORK HARD FOR A DAY OR MORE to construct improvised shelters to protect against fallout. In this case,

radiation protection would be "cheap as dirt." Upgrading existing structures by piling earth outside them can be done by adding an average of one cubic yard of earth for each 10 square feet of shelter space to be developed (more for some buildings, less for others.) Moving a cubic yard of earth is not easy- it's about 80 to 100 buckets full- but can be done if everyone works for their survival.

Generally, shelter in host areas can be found in the following:

*Buildings which have been identified in the National Shelter Survey and marked with a shelter sign.

*Home basements

*Buildings which can be upgraded to improve the fallout protection by placing earth overhead and against the walls.

*Caves, mines, and tunnels.

*Expedient fallout shelters involving digging of trenches, movement of earth, or use of materials at hand, such as tables, doors, bricks, or books.

For specific information on improvising fallout protection, see Chapter 4, "Improvising Fallout Shelters."

Chapter 8

EMERGENCY CARE OF THE SICK AND INJURED

A nuclear attack on the United States would cause great numbers of casualties, and there would be fewer doctors, nurses, and hospitals available to care for them. Even in areas where no nuclear weapons exploded, radioactive fallout could prevent doctors and nurses from reaching sick or injured persons for a considerable period of time. People would have to help each other during the emergency, and would have to depend on their own knowledge of first aid and emergency medical care.

Both adults and teenagers can acquire these valuable skills now by taking free courses that are offered in many communities, such as a First Aid course.

The following information is no substitute for one of these courses. The basic guidance may save lives during a nuclear emergency, however, by helping untrained persons take care of the sick and injured when professional medical assistance may not be immediately available.

GENERAL RULES FOR ANY MEDICAL EMERGENCY

1. First of all, DO NO HARM. Often, well-meaning but untrained persons worsen the injury or illness in their attempts to help. Get competent medical assistance, if possible. Do not assume responsibility for a patient if you can get the help of a doctor, nurse, or experienced first-aid worker. But if no one better qualified is available, take charge yourself.

2. LOOK FOR STOPPAGE OF BREATHING, AND FOR SERIOUS BLEEDING. These are the two most life-threatening conditions you can do something about. They demand IMMEDIATE treatment (see pages 59 and 62).

3. PREVENT SHOCK, OR TREAT IT. Shock, a serious condition of acute circulatory failure, usually accompanies a severe or painful injury, a serious loss of blood, or a severe emotional upset. If you EXPECT shock, and take prompt action, you can prevent it or lessen its severity. This may save the patient's life. (Treatment of shock is discussed on page 63.)

4. DON'T MOVE THE PATIENT IMMEDIATELY. Unless there is REAL DANGER of the patient receiving further injury where he is, he should not be moved until breathing is restored, bleeding is stopped, and suspected broken bones are splinted.

5. KEEP CALM, AND REASSURE THE PATIENT. Keep him lying down and comfortably warm, but do not apply heat to his body, or make him sweat.

6. NEVER ATTEMPT TO GIVE LIQUIDS TO AN UNCONSCIOUS PERSON. If he is not able to swallow, he may choke to death or drown. Also, don't give him any liquids to drink if he has an abdominal injury.

IF THE PATIENT HAS STOPPED BREATHING

Quick action is required. You must get air into his lungs again immediately or he may die. The best and simplest way of doing this is to use mouth-to-mouth artificial respiration. Here is how to do it.

1. Place the patient on his back. Loosen his collar.

2. Open his mouth and use your fingers to remove any food or foreign matter, If he has false teeth or removable dental bridges, take them out.

3. Tilt the patient's head back so that his chin points upward. Lift his lower jaw from beneath and behind so that it juts out. This will move his tongue away from the back of his throat, so it does not block the air passage to his lungs. Placing a pillow or something else under his shoulders will help get his head into the right position. Some patients will start breathing as soon as you take these steps, and no further help is necessary.

4. Open your mouth as wide as possible, and place it tightly over the patient's mouth, so his mouth is completely covered by yours. With one hand, pinch his nostrils shut.

With your other hand, hold his lower jaw in a thrust-forward position and keep his head tilted back. With a baby or small child, place your mouth over both his nose and mouth, making a tight seal.

5. Blow a good lungful of air into an adult patient's mouth, continuing to keep his head tilted back and his jaw jutting out so that the air passage is kept open. (Air can be blown through an unconscious person's teeth, even though they may be clenched tightly together.) Watch his chest as you blow. When you see his chest rise, you will know that you

are getting air into his lungs.

6. Remove your mouth from the patient's mouth, and listen for him to breathe out the air you breathed into him. You also may feel his breath on your cheek and see his chest sink as he exhales.

7. Continue your breathing for the patient. If he is an adult, blow a good breath into his mouth every 5 seconds, or 12 times a minute, and listen for him to breathe it back out again. Caution: If the patient is an infant or small child, blow small puffs of air into him about 20 times a minute. You may rupture his lung if you blow in too much air at one time. Watch his chest rise to make sure you are giving him the right amount of air with each puff.

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8. If you are not getting air into the patient's lungs, or if he is not breathing out the air you blew into him, first make sure that his head is tilted back and his jaw is jutting out in the proper position. Then use your fingers to make sure nothing in his mouth or throat is obstructing the air passage to his lungs. If this does not help, then turn him on his side and strike him sharply with the palm of your hand several times between the shoulder blades. This should dislodge any obstruction in the air passage. Then place him again on his back, with his head tilted back and his jaw jutting out, and resume blowing air into his mouth. If this doesn't work, try closing his mouth and blowing air through his nose into his lungs.

9. If you wish to avoid placing your mouth directly on the patient's face, you may hold a cloth (handkerchief, gauze, or other porous material) over his mouth and breathe through the cloth. But don't waste precious time looking for a cloth if you don't have one.

10. Important: Even if the patient does not respond, continue your efforts for 1 hour or longer, or wait until you are completely sure he is dead. If possible, have this confirmed by at least one other person.

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TO STOP SERIOUS BLEEDING

1. Apply firm, even pressure to the wound with a dressing, clean cloth, or sanitary napkin. If you don't have any of these, use your bare hand until you can get something better. Remembers, you must keep blood from running out of the patient's body. Loss of 1 or 2 quarts will seriously endanger his life.

2. Hold the dressing in place with your hand until you can bandage the dressing in place. In case of an arm or leg wound, make sure the bandage is not so tight as to cut off circulation; and raise the arm or leg above the level of the patient's heart. (But if the arm or leg appears broken, be sure to splint it first.)

3. Treat the patient for shock.

4. If blood soaks through the dressing, do not remove the dressing. Apply more dressings.

5. SPECIAL ADVICE ON TOURNIQUETS: Never use a tourniquet unless you

cannot stop excessive, life-threatening bleeding by any other method. Using a tourniquet increases the chances that the arm or leg will have to be amputated later. If you are forced to use a tourniquet to keep the patient from bleeding to death (for example, when a hand or foot has been accidentally cut off), follow these instructions carefully:

-Place the tourniquet as close to the wound as possible, between the wound and the patient's

heart.

-After the tourniquet has been applied, do not permit it to be loosened (even temporarily, or even though the bleeding has stopped) by anyone except a physician, who can control the bleeding by other methods and replace the blood that the patient has lost.

-Get a physician to treat the patient as soon as possible.

PREVENTING AND TREATING SHOCK

Being "in shock" means that a person's circulatory system is not working properly, and not enough blood is getting to the vital centers of his brain and spinal cord.

These are the symptoms of shock: The patient's pulse is weak or rapid, or he may have no pulse that you can find. His skin may be pale or blue, cold, or moist. His breathing may be shallow or irregular. He may have chills. He may be thirsty. He may get sick at his stomach and vomit.

A person can be "in shock" whether he is conscious or unconscious.

Important: All seriously injured persons should be treated for shock, even though they appear normal and alert. Shock may cause death if not treated properly, even though the injuries which brought on shock might not be serious enough to cause death. In fact, persons may go into shock without having any physical injuries.

Here is how to treat any person who may be in shock:

1. Keep him lying down and keep him from chilling, but do not apply a hot water bottle or other heat to his body. Also, loosen his clothing.

2. Keep his head a little lower than his legs and hips. But if he has a head or chest injury, or has difficulty in breathing, keep his head and shoulders slightly lower than the rest of his body.

3. Encourage him to drink fluids if he is conscious and not nauseated, and if he does not have abdominal injuries. Every 15 minutes give him a half-glass of this solution until he no longer wants it: One teaspoonful of salt and a half-tablespoonful of baking soda to one quart of water.

4. Do not give him alcohol.

BROKEN BONES

Any break in a bone is called a fracture. If you think a person may

have a fracture, treat it as though it were one. Otherwise, you may cause further injury. For example, if an arm or leg is injured and bleeding, splint it as well as bandage it.

With any fracture, first look for bleeding and control it. Keep the patient comfortably warm and quiet, preferably lying down. If you have an ice bag, apply it to the fracture to ease the pain. Do not move the patient (unless his life is in danger where he is) without first applying a splint or otherwise immobilizing the bone that may be fractured. Treat the patient for shock.

A FRACTURED ARM OR LEG should be straightened out as much as possible, preferably by having 2 persons gently stretch it into a normal position. Then it should be "splinted"- that is, fastened to a board or something else, to prevent motion and keep the ends of the broken bone together. As a splint, use a board, a trimmed branch from a tree, a broomstick, an umbrella, a roll of newspaper, or anything else rigid enough to keep the arm or leg straight. Fasten the arm or leg to the splint with bandages, strips of cloth, handkerchiefs, neckties, or belts. After splinting, keep the injured arm or leg a little higher than the rest of the patient's body. From time to time, make sure that the splint is not too tight, since the arm or leg may swell, and the blood circulation might be shut off. If the broken bone is sticking out through the skin but the exposed part of it is clean, allow it to slip back

naturally under the skin (but don't push it in) when the limb is being straightened. However, if the exposed part of the bone is dirty, cover it with a clean cloth and bandage the wound to stop the bleeding. Then splint the arm or leg without trying to straighten it out, and try to find a doctor or nurse to treat the patient.

A FRACTURED COLLARBONE should also be prevented from moving, until the patient can get professional medical attention. It can be immobilized by placing the arm on that side in a sling and then binding the arm close to the body.

A FRACTURED RIB should be suspected if the patient has received a chest injury or if he has pain when he moves his chest, breathes, or coughs. Strap the injured side of his chest with 2-inch adhesive tape if available, or with a cloth bandage or towel wrapped around and around his entire chest.

Fractured bones in the NECK OR BACK are very serious, because they may injure the patient's spinal cord and paralyze him or even kill him. He should not be moved until a doctor comes (or a person trained in first aid), unless it is absolutely necessary to move him to prevent further injury. If a person with a back injury has to be moved, he should be place gently on his back on a stiff board, door, or stretcher. His head, back, and legs should be kept in a straight line at all times.

A person with a neck injury should be moved gently with his head, neck, and shoulders kept in the same position they were when he was found. His neck should not be allowed to bend when he is being moved.

BURNS

Non-serious or superficial (first degree) burns should not be covered- in fact, nothing need be done for them. However, if a first degree burn covers a large area of the body, the patient should be given fluids to drink as mentioned in item 2 following.

Some of the radioactive fallout on exposed skin may cause burns for which the same action should be taken as for normal heat burns.

The most important things to do about serious (second or third degree) burns are: (a) Treat the patient for shock, (b) Prevent infection, and (c) Relieve pain. These specific actions should be taken:

1. Keep the patient lying down, with his head a little lower than his legs and hips unless he has a head or chest wound, or has difficulty breathing.

2. Have him drink a half-glass every 15 minutes of a salt-and-soda solution (one teaspoonful of salt and a half-teaspoonful of baking soda to a quart of water). Give him additional plain water to drink if he wants it.

3. Cover the burned area with a dry, sterile gauze dressing. if gauze is not available, use a clean cloth, towel, or pad.

4. With soap and water, wash the area around the burn (not the burn itself) for a distance of several inches, wiping away from the burn. The dressing will help prevent surface washings from getting into the burned area.

5. Use a bandage to hold the dry dressing firmly in place against the burned area. This will keep moving air from reaching the burn and will lessen the pain. Leave dressings and bandage in place as long as possible.

6. If adjoining surfaces of skin are burned, separate them with gauze or cloth to keep them from sticking together (such as between

toes or fingers, ears and head, arms and chest).

7. If the burn was caused by a chemical- or by fallout particles sticking to the skin or hair- wash the chemical or the fallout particles away with generous amounts of plain water, then treat the burn as described above.

What NOT to do about burns:

-Don't pull clothing over the burned area (cut it away, if necessary).

-Don't try to remove any pieces of cloth, or bits of dirt or debris, that may be sticking to the burn.

-Don't try to clean the burn; don't use iodine or other antiseptics on it; and don't open any blisters that may form on it.

-Don't use grease, butter, ointment, salve, petroleum jelly, or any type of medication on severe burns. Keeping them dry is best.

-Don't breathe on a burn, and don't touch it with anything except a clean dressing.

-Don't change the dressings that were initially applied to the burn, until absolutely necessary. Dressings may be left in place for a week, if necessary.

RADIATION SICKNESS

Radiation sickness is caused by the invisible rays given off by particles of radioactive fallout. If a person has received a large dose of radiation in a short period of time- generally, less than a week- he will become seriously ill and probably will die. But if he has received only a small or medium dose, his body will repair itself and he will get well. No special clothing can protect a person from gamma radiation, and no special medicines can protect him or cure him of radiation sickness.

Symptoms of radiation sickness may not be noticed for several days. The early symptoms are lack of appetite, nausea, vomiting, fatigue, weakness, and headache. Later, the patient may have sore mouth, loss of hair, bleeding gums, bleeding under the skin, and diarrhea. But these same symptoms can be caused by other diseases, and not everyone who has radiation sickness shows all these symptoms, or shows them all at once.

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PART TWO

MAJOR NATURAL DISASTERS

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PART TWO

MAJOR NATURAL DISASTERS

Disasters and other emergencies affecting large areas and many people can sometimes develop quickly. Flash floods and earthquakes, for example, can strike with little or no advance warning.

Other types of disasters and emergencies are preceded by a build-up period that provides more time for taking effective protective measures. For example, the paths of a hurricane are traced for days, and people in likely danger areas are notified several hours before the storm is expected to strike land. In many cases, floods can also be predicted to provide considerable warning time for people in the danger areas. Even in cases of tornadoes, the forecast of weather conditions frequently permits some warning of possible disaster. Winter storms, blizzards, heavy snows, ice storms, or freezing rains- also may pose hazards of disaster proportions which lend themselves to reasonable prediction.

Some of these disasters or emergencies are more likely to occur in certain parts of the country. For example, hurricanes are more common along the Gulf and Atlantic Coast States, and tornadoes are more frequent in midwestern and southern States. Yet, no area is entirely free from possible disasters or emergencies of one type or another.

Many of the actions recommended in Part 1 of this handbook to help you prepare for and live through a nuclear attack- such as learning the warning signals, stocking emergency supplies, taking a course in emergency skills, and knowing how to fight fires at home- also would help you in case a major natural disaster occurs in your area.

Part II of this handbook is intended to help you prepare for those natural disasters that may occur in your area, and tell you the right actions to take if they occur.

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Chapter 1

GENERAL GUIDANCE

There are certain things you can learn and do that will help you get ready for, and cope with, almost any type of emergency.

Perhaps the most basic thing to remember is to keep calm. This may mean the difference between life and death. In many disasters, people have been killed or injured needlessly because they took thoughtless actions when they should have done something else- or or done nothing at all just then.

In a time of emergency, taking proper action may save your life. Take time to think, and then take the considered action that the situation calls for. Usually, this will be the action you have planned in advance, or the action you are instructed to take by responsible authorities.

Here is other guidance that applies to most types of peacetime emergencies.

WARNING

LEARN YOUR COMMUNITY'S WARNING SIGNALS. In most communities having outdoor warning systems, the Attack Warning Signal is a wavering sound on the sirens, or a series of short blasts on whistles, horns, or other devices. This signal will be used only to warn of an attack against the United States.

Many communities also are using an Attention or Alert Signal, usually a 3- to 5- minute steady blast to get the attention of their people in a time of threatened or impending peacetime emergency. In most places, the Attention or Alert Signal means that people should turn on their radio or television set to hear important emergency information being broadcast.

You should find out now, before any emergency occurs, what warning signals are being used in your community, what they sound like, what they mean, and what actions you should take when you hear them.

Also, whenever a major storm or other peacetime disaster threatens, keep your radio or television set turned on to hear weather reports and forecasts (issued by the National Weather Service of the National Oceanic and Atmospheric Administration), as well as other information and advice that may be broadcast by your local government.

When you are warned of an emergency, get your information on the radio or television. Use your telephone only to report important events (such as fires, flash floods, or tornado sightings) to the local authorities. If you tie up the telephone lines simply to get information, you may prevent emergency calls from being completed.

EMERGENCY SUPPLIES

A major disaster of almost any kind may interfere with your normal supplies of food, water, heat, and other day-to-day necessities. You should keep on hand, in or around your home, a stock of emergency supplies sufficient to meet your needs for a few days or preferably for a week.

If you stayed at home during the disaster, these supplies would help you live through the period of emergency without hardships. If you had to evacuate your home and move temporarily to another location, your emergency supplies could be taken with you and used en route or after you arrived at the new location (where regular supplies may not be available). Even if you only had to move to an emergency shelter station set up by a local agency, these supplies might be helpful to you, or make your stay easier.

The most important items to keep on hand are water (preferably in plastic jugs or other stoppered containers); canned or sealed-package foods that do not require refrigeration or heat for cooking; medicines needed by family members, and a first aid kit; blankets or sleeping bags, flashlights or lanterns, a battery-powered radio; and perhaps a covered container to use as an emergency toilet. In addition, an automobile in

good operating condition with an ample supply of gasoline may be necessary in case you have to leave your home.

In those parts of the country subject to hurricanes or floods, it is also wise to keep on hand certain emergency materials you may need to protect your home from wind and water- such as plywood sheeting or lumber to board up your windows and doors, and plastic sheeting or tarpaulins to protect furniture and appliances.

FIRE PROTECTION AND FIRE FIGHTING

Fires are a special hazard in time of disaster. They may start more readily, and the help of the fire department may not be available quickly. Therefore, it is essential that you:

1. Follow the fire prevention rules given on page 45, and be especially careful not to start fires.
2. Know how to put out small fires yourself. (See pages 45 to 48.)
3. Have on hand simple tools and equipment needed for fire fighting. (See page 38.)
4. Install smoke or heat detectors to save lives and protect property by detecting fires promptly.

AFTER A NATURAL DISASTER

Use extreme caution in entering or working in buildings that may have been damaged or weakened by the disaster, as they may collapse without warning. Also, there may be gas leaks or electrical short circuits.

Don't take lanterns, torches, or lighted cigarettes into buildings that have been flooded or otherwise damaged, since there may be leaking gas lines or flammable material present.

Stay away from fallen or damaged electric wires, which may still be dangerous.

Check for leaking gas pipes in your home. Do this by smell only- don't use matches or candles. If you smell gas, do this: (1) Open all windows and doors, (2) Turn off the main gas valve at the meter, (3) Leave the house immediately, (4) Notify the gas company or the police or fire department, (5) Don't re-enter the house until you are told it is safe to do so.

If any of your electrical appliances are wet, first turn off the main power switch in your house, then unplug the wet appliance, dry it out, reconnect it, and finally, turn on the main power switch. (Caution: Don't do any of these things while you are wet or standing in water.) Is fuses blow when the electric power is restored, turn off the main power switch again and then inspect for short circuits in your home wiring, appliances, and equipment.

Check your food and water supplies before using them. Foods that require refrigeration may be spoiled if electric power has been off for some time. Also, don't eat food that has come in contact with

flood waters. Be sure to follow the instructions of local authorities concerning the use of food and water supplies.

If needed, get food, clothing, medical care or shelter at Red Cross stations or from local government authorities.

Stay away from disaster areas. Sightseeing could interfere with first aid or rescue work, and may be dangerous as well.

Don't drive unless necessary, and drive with caution. Watch for hazards to yourself and others, and report them to local authorities.

Write, telegraph, or telephone your relatives, after the emergency is over, so they will know you are safe. Otherwise local authorities may waste time locating you- or if you have evacuated to a safer location, they may not be able to find you. (However, do not tie up the phone lines if they are still needed for official emergency calls.)

Do not pass on rumors or exaggerated reports of damage.

Follow the advice and instructions of your local government on ways to help yourself and your community recover from the emergency.

Chapter 2

FLOODS

The National Oceanic and Atmospheric Administration, through its Weather Service River Forecast Centers and River District offices, issues flood forecasts and warnings when rainfall is enough to cause rivers to overflow their banks or when melting snow combines with rainfall to produce similar effects.

Flood warnings are forecasts of impending floods, and are given to you by radio and television and through local government emergency forces. The warning message tells the expected severity of flooding (minor, moderate, or major), the affected river, and when and where the flooding will begin. Careful preparations and prompt response will assure personal safety and reduce property loss.

BEFORE THE FLOOD

1. Find out how many feet your property is above or below possible flood levels so when predicted flood levels are broadcast, you can determine if you may be flooded.
2. Keep a stock of food which requires little cooking and no refrigeration. Regular electric service may be disrupted.
3. Keep a portable radio, emergency cooking equipment, and flashlights in working order.
4. Keep first aid supplies and any medicines needed by members of your family.

5. Keep your automobile fueled. If electric power is cut off, filling stations may not be able to operate pumps for several days.

6. Keep materials like sandbags, plywood, plastic sheeting, and lumber handy for emergency waterproofing. But if flooding is imminent, do not stack sandbags around the outside walls of your house to

keep flood waters out of your basement. Water seeping downward through the earth (either beyond the sandbags or over them) may collect around the basement walls and under the floor, creating pressure that could damage the walls or else raise the entire basement and cause it to "float" out of the ground. In most cases, it is better to permit the flood waters to flow freely into the basement (or flood the basement yourself with clean water, if you feel sure it will be flooded anyway). This will equalize the water pressure on the outside of the basement walls and floors, and thus avoid structural damage to the foundation and the house.

7. Store drinking water in closed, clean containers. Water service may be interrupted.

8. If flooding is likely, and time permits, move essential items and furniture to upper floors of your house. Disconnect any electrical appliances that can't be moved- but don't touch them if you are wet or standing in water.

EVACUATION

If you are warned to evacuate your home and move to another location temporarily, there are certain things to remember and do. Here are the more important ones:

*FOLLOW THE INSTRUCTIONS AND ADVICE OF YOUR LOCAL GOVERNMENT. If you are told to evacuate, do so promptly. If you are instructed to move to a certain location, go there- don't go anywhere else. If certain travel routes are specified or recommended, use those routes rather than trying to find your own. (It will help if you have previously become familiar with the routes likely to be used.) If you are told to shut off your water, gas, or electric service before leaving home, do so. Also find out on the radio where emergency housing and mass feeding stations are located, in case you need to use them.

*SECURE YOUR HOME BEFORE LEAVING. If you have time, and if you have not received other instructions from your local government, you should take the following actions before leaving your home:

-Bring outside possessions inside the house, or tie them down securely. This includes outdoor furniture, garbage cans, garden tools, signs and other movable objects that might be blown or washed away.

-As already suggested, move furniture and other movable objects to the upper floor of your house. Disconnect any electrical appliances or

equipment that cannot be moved- but don't touch them if you are wet or standing in water.

-Lock house doors and windows. Park your car in the garage or driveway, close the windows, and lock it (unless you are driving to your new temporary location).
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*TRAVEL WITH CARE. If your local government is arranging transportation for you, precautions will be taken for your safety. But if you are walking or driving your own car to another location, keep in mind these things:

-Leave early enough so as not to be marooned by flooded roads.

-Make sure you have enough gasoline in your car.

-Follow recommended routes.

-As you travel, keep listening to the radio for additional information and instructions from your local government.

-Watch for washed-out or undermined roadways, earth slides, broken sewer or water mains, loose or downed electric wires, and falling or fallen objects.

-Watch out for areas where rivers or streams may flood suddenly.

-Don't try to cross a stream or a pool of water unless you are certain that the water will not be over your knees, or above the middle of your car's wheels, all the way across. Sometimes the water will hide a bridge or a part of the road that has been washed out. If you decide it is safe to drive across it, put your car in low gear and drive
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very slowly to avoid splashing water into your engine and causing it to stop. Also, remember that your brakes may not work well after the wheels of your car have been in deep water. Try them out a few times when you reach the other side.

AFTER THE FLOOD

1. Do not use fresh food that has come in contact with flood waters.
2. Test drinking water for potability. Wells should be pumped out and the water tested before drinking.
3. Do not visit disaster area. Your presence will probably hamper rescue and other emergency operations.
4. Do not handle live electrical equipment in wet areas. Electrical

equipment should be checked and dried before being returned to service.

5. Use battery-powered lanterns or flashlights, not oil or gas lanterns or torches, to examine buildings. Flammables may be inside.

6. Report broken utility lines to police, fire, or other appropriate authorities.

7. Keep tuned to your radio or television station for advice and instructions of your local government on where to obtain medical care, where to get assistance for such necessities as housing, clothing, and food, and how to help yourself and your community to recover.

SPECIAL ADVICE ON FLASH FLOODS

In many areas, unusually heavy rains may cause quick or "flash" floods. Small creeks, gullies dry streambeds, ravines, culverts, or even low-lying ground frequently flood quickly and endanger people, sometimes before any warning can be given.

National Weather Service offices issue two types of flash flood advisories: a flash flood watch and a flash flood warning. A flash flood watch means that heavy rains occurring or expected to occur may soon cause flash flooding in certain areas, and citizens should be alert to the possibility of a flood emergency which will require immediate action. A flash flood warning means that flash flooding is occurring or imminent on certain streams or designated areas, and precautions should be taken immediately by those threatened.

In a period of heavy rains, be aware of the hazard of flash floods and be prepared to protect yourself against it. If you see any possibility of a flash flood occurring where you are, move immediately to a safer location (don't wait for instructions to move) and then notify your local authorities of the danger, so other people can be warned.

Especially during periods of heavy rainfall:

-STAY AWAY FROM NATURAL STREAMBEDS, arroyos, and other drainage channels during and after rainstorms. Water runs off the higher elevations very rapidly, causing the natural drainage system to overflow with rushing floodwaters and their deadly cargo of rocks, mud, smashed trees, and other debris.

-USE YOUR MAPS. Know where you are, and whether you are on locally low ground. Remember: You don't have to be at the bottom of a hill to be a target for the dangers of flash flooding.

-KNOW WHERE THE HIGH GROUND IS and how to get there in a hurry. Remember: many roads and trails parallel existing drainage patterns, and may be swept away by flood waters.

-STAY OUT OF FLOODED AREAS; the water may still be rising, and the current is unusually swift. Never try to cross a flowing stream on foot if the water is above your knees.

-ABANDON STALLED VEHICLES IN FLOODED AREAS if you can do so safely. Flood waters may rise and sweep the vehicle (and its occupants) away. Many deaths have resulted from attempts to move stalled vehicles.

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Chapter 3

HURRICANES

The National Weather Service issues advisories when hurricanes are approaching the United States mainland.

A hurricane watch means a hurricane may threaten coastal and inland areas. A hurricane watch means that hurricane conditions are a real possibility; it does not mean that they are imminent. When a hurricane watch is issued, everyone in the area covered by the watch should listen for further advisories and be prepared to act promptly if a hurricane watch is issued.

A hurricane warning becomes part of advisories when a hurricane is expected to strike an area within 24 hours. Advisories containing hurricane warnings may also include an assessment of flood danger in coastal and inland areas, small craft warnings, gale warnings for the storm's periphery, estimated storm effects, and recommended emergency procedures.

HURRICANE WARNING: SAFETY ACTIONS

When your area reads a hurricane warning:

1. Keep your radio or television on and listen for the latest Weather Service advisories as well as special instructions from your local government. Also listen for tornado watches and warnings. Tornadoes spawned by a hurricane are among the storm's worst killers.
2. Plan your time before the storm arrives and avoid the last-minute hurry which might leave you marooned or unprepared.
3. Leave low-lying areas that may be swept by high tides or storm waves.
4. Leave mobile homes for more substantial shelter. Unless properly anchored, mobile homes are particularly vulnerable to overturning during strong winds.
5. Moor your boat securely before the storm arrives, or move it to a designated safe area. When your boat is moored, leave it, and don't return once the wind and waves are up.
6. Board up windows or protect them with storm shutters or tape. Danger to small windows is mainly from wind-driven debris. Large windows may be broken by wind pressure.
7. Secure outdoor objects that might be blown away. garbage cans,

garden tools, toys, signs, porch furniture, and a number of other harmless items become missiles of destruction in hurricane winds. Anchor them or store them inside before the storm strikes.
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8. Store drinking water in clean bathtubs, jugs, bottles, and cooking utensils. Your town's water system may be contaminated or damaged by the storm.

9. Check your battery-powered equipment. Your radio may be your only link with the world outside the hurricane, and emergency cooking facilities and flashlights will be essential if utility services are interrupted.

10. Keep your car fueled. Service stations may be inoperable for several days after the storm strikes, because of flooding or interrupted electrical power.

11. Stay at home if it is sturdy and on high ground. If not- and especially if local authorities order an evacuation of your area- move to a designated shelter and stay there until the storm is over.

`12. Remain indoors during the hurricane. Travel is extremely dangerous when winds and tides are whipping through your area. Don't be fooled by the "eye" of the hurricane. if the storm center passes directly overhead, there will be a lull in the wind lasting from a few minutes to half an hour or more. Stay in a safe place unless emergency repairs are absolutely necessary. But remember, at the other side of the "eye" the winds will increase rapidly to hurricane force, and will come from the opposite direction.

EVACUATION

If you are advised to evacuate your home and move to another location temporarily (including predesignated hurricane shelters), there are certain things to remember and do. Here are the most important ones:
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*FOLLOW THE INSTRUCTIONS AND ADVICE OF YOUR LOCAL GOVERNMENT. If you
are advised to evacuate, do so promptly. If you are told to move to a certain location, go there- don't go anywhere else. If certain travel routes are specified or recommended, use these routes rather than trying to find short cuts of your own. If you are told to shut off your water, gas, or electric service before leaving home, do so. Also, find out from the radio or television where emergency housing and mass feeding stations are located, in case you need to use them.

*TRAVEL WITH CARE. If your local government is arranging transportation for you, precautions will be taken for your safety. But if you are walking or driving your own car to another location, keep these things in mind.

-Leave early enough so as not to be marooned by flooded roads, fallen trees, and wires.

-Make sure you have enough gasoline for your car.

-Follow recommended routes.

-As you travel, keep listening to the radio for additional information and instructions from your local government.

AFTER THE HURRICANE

When the hurricane has passed:

1. Remain in shelter until informed by local authorities that it is safe to leave.
2. Keep tuned to your local radio or television station for advice and instructions from your local government on:

-Where to go to obtain emergency medical care in your area.

-Where to go for necessary emergency assistance for housing, clothing, food.

-Ways to help yourself and your community recover from the emergency.

3. Stay out of disaster areas. Sightseeing interferes with essential rescue and recovery work, and may be dangerous as well.
4. Drive carefully along debris-filled streets. Roads may be undermined and may collapse under the weight of a car.
5. Avoid loose or dangling wires, and report them immediately to your power company or to the local police or fire department.
6. Report broken sewer or water mains to the water department.
7. Prevent fires. Lowered water pressure may make fire fighting difficult.
8. Check refrigerated food for spoilage if the power has been off during the storm.

REMEMBER: Hurricanes moving inland can cause severe flooding. Stay away from river banks and streams until all potential flooding is past.

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Chapter 4

TORNADOES

A tornado is a violent storm with whirling winds of tremendous speed. It appears as a rotating, funnel-shaped cloud, from gray to black in color, which extends towards the ground from the base of a thundercloud. A tornado spins like a top and may sound like the roaring of an airplane or locomotive. These shortlived storms are the most violent of atmospheric phenomena, and over a small area, the most destructive. They frequently accompany the advance of hurricanes.

*When a tornado watch (forecast) is announced, this means that tornadoes are expected in or near your area. Keep your radio or television set tuned to a local station for information and advice from your local government and the Weather Service. Also, keep watching the sky, especially to the south and southwest. (When a tornado watch is announced during the approach of a hurricane, however, keep watching the sky to the east). If you see any revolving, funnel-shaped clouds, report them by telephone immediately to your local police department, sheriff's office, or Weather Service office. But do not use the telephone to get information and advice- depend on radio and television.
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*When a tornado warning is issued, take shelter immediately. The warning means that a tornado has actually been sighted, or has been indicated by radar, and this or other tornadoes may strike in your vicinity. You must take action to protect yourself from being blown away, struck by falling objects, or injured by flying debris. Your best protection is an underground shelter or cave, or a substantial steel-framed or reinforced concrete building. But if none of these is available, there are other places where you can take refuge:

* IF YOU ARE AT HOME, go to your underground storm cellar or your basement fallout shelter, if you have one. If not, go to a corner of your home basement and take cover under a sturdy workbench or table (but not underneath heavy appliances on the floor above). If your home has no basement, take cover in the center part of the house, on the lowest floor, in a small room such as a closet or bathroom, or under sturdy furniture. Stay away from windows to avoid flying debris. Do not remain in a trailer or mobile home if a tornado is approaching; take cover elsewhere.

* IF YOU ARE AT WORK in a building, go to an interior hallway on the lowest floor, or to the designated shelter area.

* IF YOU ARE AT SCHOOL, follow the instructions of school authorities. These usually involve taking shelter in interior hallways on the lowest floor, and staying out of structures with wide, free-span roofs, such as auditoriums and gymnasiums.

* IF YOU ARE OUTSIDE IN OPEN COUNTRY, drive away from the tornado's path, at a right angle to it. If there isn't time to do this- or if you are walking- take cover and lie flat in the nearest depression, such as a

ditch, culvert, excavation, or ravine.
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Chapter 5

WINTER STORMS

Here is advice that will help you protect yourself and your family against the hazards of winter storms- blizzards, heavy snows, ice storms, freezing rain, or sleet.

* KEEP POSTED ON WEATHER CONDITIONS. Use your radio, television, and newspapers to keep informed of current weather conditions and forecasts in your area. Even a few hours warning of a storm may enable you to avoid being caught in it, or at least be better prepared to cope with it. You should also understand the terms commonly used in weather forecasts:

-A blizzard is the most dangerous of all winter storms. It combines cold air, heavy snow, and strong winds that blow the snow about and may reduce visibility to only a few yards. A blizzard warning is issued when the Weather Service expects considerable snow and winds of 35 miles per hour or more. A severe blizzard warning means that a very heavy snowfall is expected, with winds of at least 45 miles per hour and temperature of 10 degrees or lower.

-A heavy snow warning usually means an expected snowfall of 4 inches or more in a 12-hour period, or 6 inches or more in a 24-hour period. Warnings of snow flurries, snow squalls, or blowing and drifting snow are important mainly because visibility may be reduced and roads may become slippery or blocked.
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-Freezing rain or freezing drizzle is forecast when expected rain is likely to freeze as soon as it strikes the ground, putting a coating of ice or glaze on roads and everything else that is exposed. If a substantial layer of ice is expected to accumulate from the freezing rain, an ice storm is forecast.

-Sleet is usually small particles of ice, usually mixed with rain. If enough sleet accumulates on the ground, it will make the roads slippery.

* BE PREPARED FOR ISOLATION AT HOME. If you live in a rural area, make sure you could survive at home for a week or two in case a storm isolated you and made it impossible for you to leave. You should:

-Keep an adequate supply of heating fuel on hand and use it sparingly. Your regular supplies may be curtailed by storm conditions. If

necessary, conserve fuel by keeping the house cooler than usual, or by "closing off' some rooms temporarily. Also, have available some kind of emergency heating equipment and fuel so you could keep at least one room of your house warm enough to be livable. This could be a camp stove with fuel, or a supply of wood or coal if you have a fireplace. If your furnace is controlled by a thermostat and your electricity is cut off by a storm, the furnace probably would not operate and you would need emergency heat.

-Stock an emergency supply of food and water, as well as emergency cooking equipment such as a camp stove. Some of this food should be of the type that does not require refrigeration or cooking.

-Make sure you have a battery-powered radio and extra batteries on hand, so that if your electric power is cut off you could still hear weather forecasts, information, and advice broadcast by local authorities. Also, flashlights or lanterns would be needed.

- Keep on hand the simple tools and equipment needed to fight a fire. Also, be certain that all family members know how to take precautions that would prevent fire at such a time, when the help of the fire department may not be available.

*DRESS FOR THE SEASON. If you spend much time outdoors, wear several layers of loose-fitting, lightweight, warm clothing rather than a single layer of thick clothing. Mittens are warmer than gloves. Use a hood to protect your head and face, and to cover your mouth to protect your lungs from the extremely cold air.

* TRAVEL ONLY IF NECESSARY. Avoid all unnecessary trips. If you must travel, use public transportation if possible. However, if you are forced to use your automobile for a trip of any distance, take these precautions:

-Make sure your car is in good condition, properly serviced, and equipped with chains or snow tires.

-Take another person with you if possible.

-Make sure someone knows where you are going, your approximate schedule, and your estimated time of arrival at your destination.

-Have emergency "winter storm supplies" in the car, such as a container of sand, shovel, windshield scraper, tow chain, or rope, extra gasoline, and a flashlight. It is also good to have with you heavy gloves or mittens, overshoes, extra woolen socks, and winter headgear to cover your head and face.

-Travel by daylight and use major highways if you can. Keep the car radio turned on for weather information and advice.

-Drive with all possible caution. Don't try to save time by traveling faster than road and weather conditions permit.

-Don't be daring or foolhardy. Stop, turn back, or seek help if conditions threaten that may test your ability or endurance, rather than risk being stalled, lost, or isolated. If you are caught in a blizzard, seek refuge immediately.
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* KEEP CALM IF YOU GET IN TROUBLE. If your car breaks down during a storm, or if you become stalled or lost, don't panic. Think the problem through, decide what's the safest and best thing to do, and then do it slowly and carefully. If you are on a well-traveled road, show a trouble signal. Set your directional lights to flashing, raise the hood of your car, or hang a cloth from the radio aerial or car window. Then stay in your car and wait for help to arrive. If you run the engine to keep warm, remember to open a window enough to provide ventilation and protect you from carbon monoxide poisoning.

Wherever you are, if there is no house or other source of help in sight, do not leave your car to search for assistance, as you may become confused and get lost.

* AVOID OVEREXERTION. Every winter many unnecessary deaths occur because people- especially older persons, but younger ones as well- engage in more strenuous physical activity than their bodies can stand. Cold weather itself, without any physical exertion, puts an extra strain on your heart. If you add to this physical exercise, especially exercise that you are not accustomed to- such as shoveling snow, pushing an automobile, or even walking fast or far- you are risking a heart attack, a stroke, or damage to your body. In winter weather, and especially in winter storms, be aware of this danger, and avoid overexertion.
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Chapter 6

EARTHQUAKES

An earthquake is the shaking or trembling or the crust of the earth, caused by underground volcanic forces or by breaking and shifting of rock beneath the surface. In recent years considerable progress has been made towards developing the science of earthquake prediction, but techniques for making precise predictions of earthquakes do not yet exist.

The actual earth movement of an earthquake, frightening as it is, seldom is a direct cause of death or injury. The earth does not yawn open, gulp down a neighborhood, and slam shut. The earth movement, however, can cause buildings and other structures to shake or collapse. Most casualties result from falling objects and debris, splintering glass, and fires.

DURING AN EARTHQUAKE

1. Stay calm. Don't run or panic. If you take the proper precautions, the chances are you will not be hurt.

2. Stay where you are. If outdoors, stay outdoors. If indoors, stay indoors. Most injuries occur as people are entering or leaving buildings.
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3. If the shaking catches you indoors, stay indoors. Take cover under a desk, table, bench, or against inside walls and doorways. Stay away from glass, windows, and outside doors.

4. Don't use candles, matches, or other open flames either during or after the tremor. Douse all fires.

5. If the earthquake catches you outside, move away from buildings and utility wires. Once in the open, stay there until the shaking stops.

6. Don't run through or near buildings. The greatest danger from falling debris is just outside doorways and close to outer walls.

7. If you are in a moving car, stop as quickly as safety permits, nut stay in the vehicle. A car may jiggle fearsomely on its springs during an earthquake, but it is a good place to stay until the shaking stops. When you drive on, watch for hazards created by the earthquake, such as fallen or falling objects, downed electric wires, or broken or undermined roadways.
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AFTER AN EARTHQUAKE

1. Check for injuries. Do not attempt to move seriously injured persons unless they are in immediate danger of further injury.
2. Check utility lines and appliances for damage. If you smell gas, open windows and shut off the main gas valve. The leave the building and report gas leakage to the authorities. Don't re-enter the building until a utility official says it is safe.
3. If water pipes are damaged, shut off the supply at the main valve. Emergency water may be obtained from such sources as hot water tanks, toilet tanks, and melted ice cubes.
4. Check to see that sewage lines are intact before permitting continued flushing of toilets.
5. If electrical wiring is shorting out, shut off current at the main meter box.
6. Check chimneys for cracks and damage. Unnoticed damage could lead to a fire. The initial check should be made from a distance. Approach

chimneys with great caution.

7. Stay out of severely damaged buildings. Aftershocks can shake them down.

8. Do not heed or spread rumors. They often do great harm following disasters. Stay off the telephone, except to report an emergency. Turn on your radio or television to get the latest emergency information.

9. Don't go sightseeing. Respond to requests for assistance from police, firefighting, and relief organizations, but do not go into damaged areas unless your assistance has been requested. Cooperate fully with local authorities.

10. Be prepared for additional earthquake shocks.

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Chapter 7

TIDAL WAVES

A tsunami (pronounced soo-nam'-ee) is actually a series of waves caused by an underwater disturbance. Although most tsunamis are associated with large earthquakes whose epicenters underlie or border the ocean floor, the generating mechanism is not positively known. In this century more than 200 tsunamis have been recorded in the Pacific. Some of these resulted in coastal waves more than 100 feet high that smashed into land with tremendous destructive power.

The major tsunami detection and warning system is the National Oceanic and Atmospheric Administration's Pacific Tsunami Warning System, with headquarters at Ewa Beach Observatory near Honolulu, Hawaii.

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TSUNAMI SAFETY RULES

1. All earthquakes do not cause tsunamis, but many do. When you hear that an earthquake has occurred, stand by for a tsunami emergency.

2. An earthquake in your area is a natural tsunami warning. Do not stay in low-lying coastal areas after a local earthquake.

3. A tsunami is not a single wave but a series of waves. Stay out of danger areas until an "all clear" is issued by competent authority.

4. Approaching tsunamis are sometimes heralded by a noticeable rise or fall of coastal water. This is nature's tsunami warning and should be heeded.

5. A small tsunami at one beach can be a giant a few miles away. Don't let the modest size of one make you lose respect for all.

6. The Pacific Tsunami Warning Center does not issue false alarms. When a warning is issued, a tsunami exists.

7. All tsunamis are potentially dangerous, even though they may not damage every coastline they strike.

8. Never go down to the beach to watch for a tsunami. When you can see the wave you are too close to escape it.

9. Sooner or later, tsunamis visit every coastline in the Pacific. Warnings apply to you especially if you live in any Pacific coastal area.

10. During a tsunami emergency, follow the instructions of local authorities on what to do and what not to do with respect to the emergency.

END

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