PROTECTION IN THE NUCLEAR AGE

DEFENSE CIVIL PREPAREDNESS AGENCY
DEPARTMENT OF DEFENSE H-20

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Defense Civil Preparedness Agency
Department of Defense

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INTRODUCTION

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 handbook is all about—to help the individual and the family prepare for the possibility of nuclear attack.

Undoubtedly, millions of Americans would die if a nuclear attack should occur. However, studies show that tens of millions would survive the initial effects of blast and heat. Many more would survive these initial effects if they had blast and heat-resistant shelters, or if they could relocate to less vulnerable areas before an attack. But all survivors could be exposed to deadly radioactive fallout. That is why fallout shelter for everyone is important.

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 warnings and communications 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 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 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.

This handbook contains basic general information on nuclear attack. This general guidance supplements 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.

Chapter 1

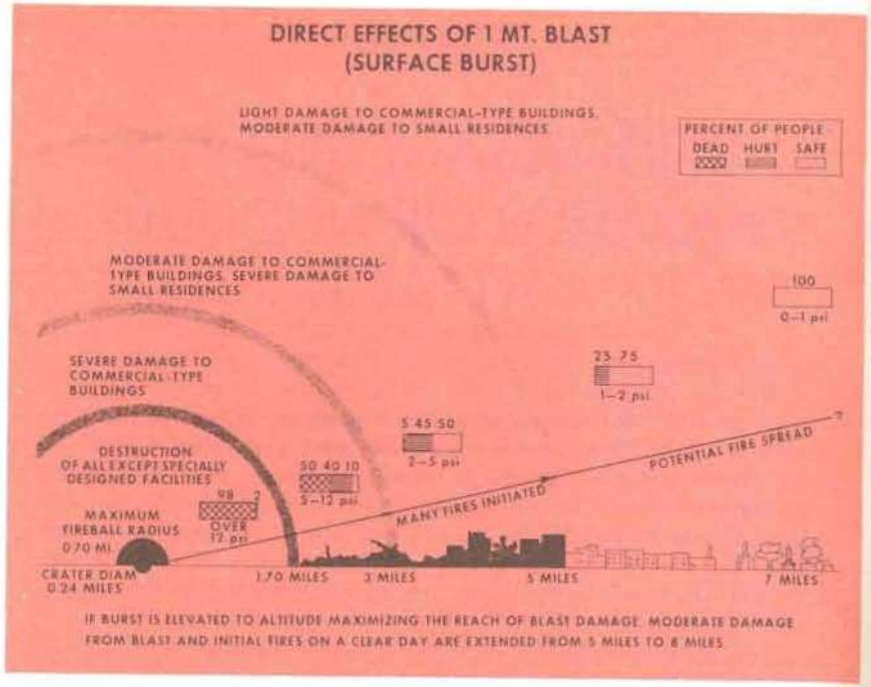
UNDERSTANDING THE HAZARDS OF NUCLEAR ATTACK

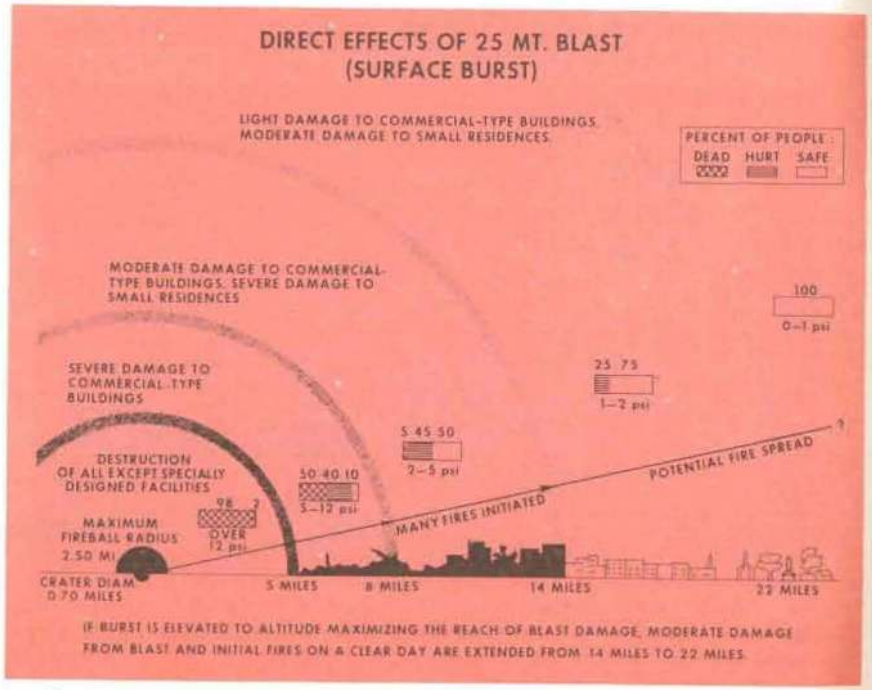
The first step in preparing for a possible nuclear attack is to understand the major hazards you would face if attack should come.

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.





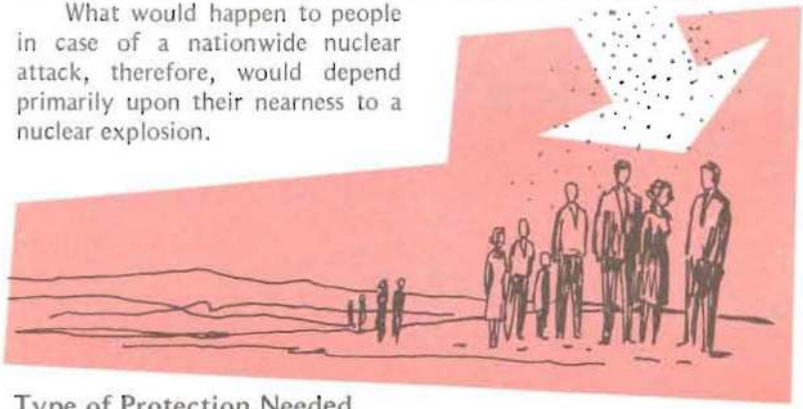
What Would Happen To People

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 areas 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 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 a nationwide 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.

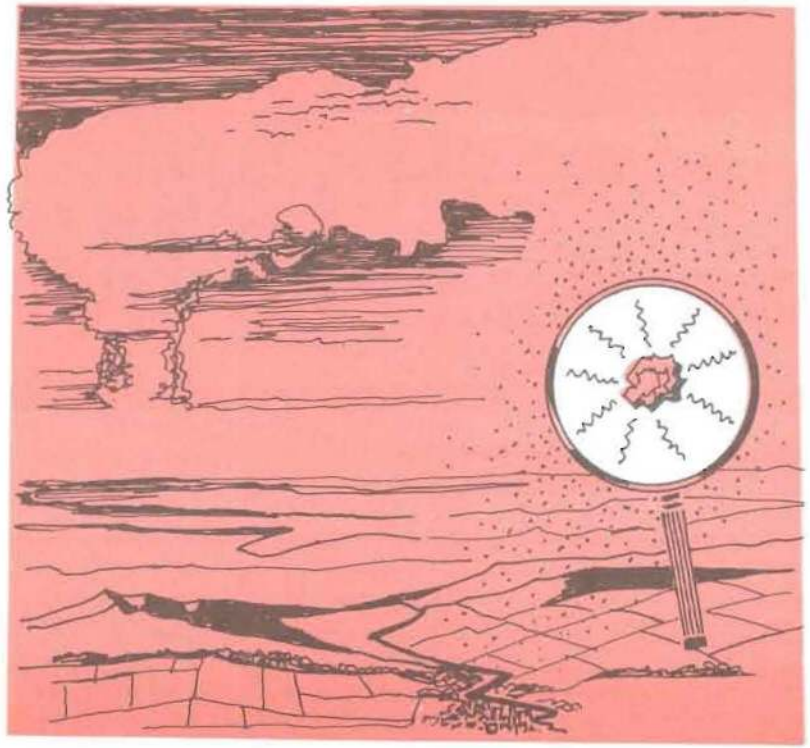
However, people caught in the area of the fireball would no doubt be killed. Therefore, people living in or near likely target or high-risk areas may wish to relocate in safer areas and take fallout shelter there. (See Chapter 7, The Relocation Option.) This would be a serious option

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?

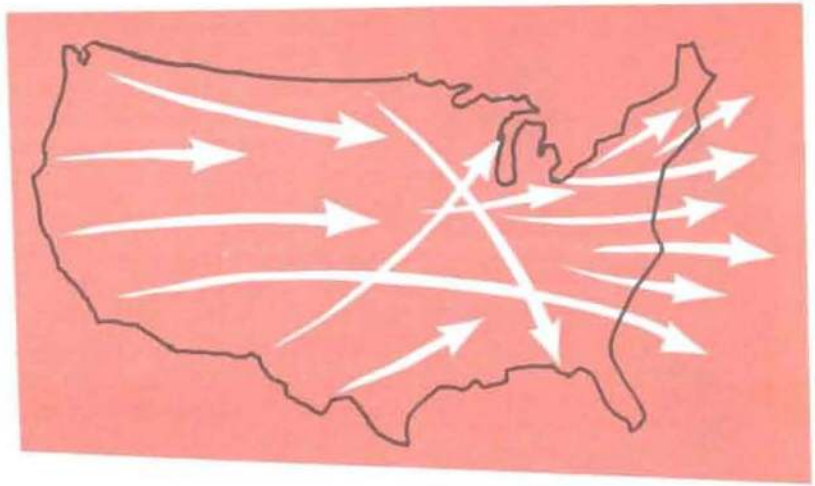
When a nuclear weapon explodes near the ground, great quantities of pulverized earth and other debris are sucked up into the nuclear cloud. There the radioactive gases produced by the explosion condense on and into this debris, producing radioactive fallout particles. Within a short time, these particles 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.

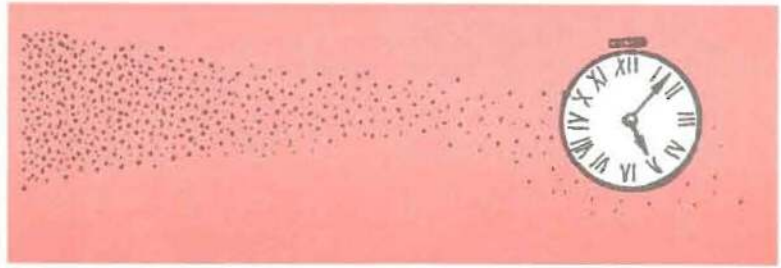
Fallout Would Be Widespread

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.

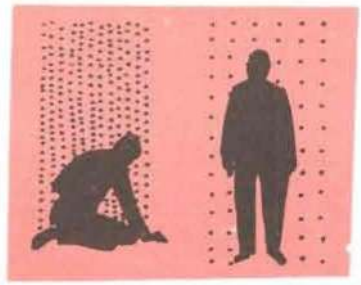
Areas close to a nuclear explosion might receive fallout within 15-30 minutes. It might take 5-10 hours or more for the particles to drift down on a community 100 or 200 miles away.

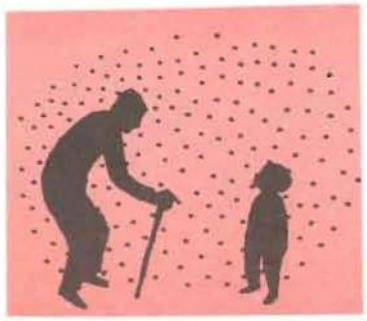


Generally, the first 24 hours after fallout began to settle would be the most dangerous period to a community's residents. The heavier particles falling during that time would still be highly radioactive and give off strong rays. The lighter particles falling later would have lost much of their radiation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

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- 50R— No visible effects.

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

200-450R— Most will require medical attention because of serious radiation sickness. 50% deaths within two to four weeks.

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

Over 600R— 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 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

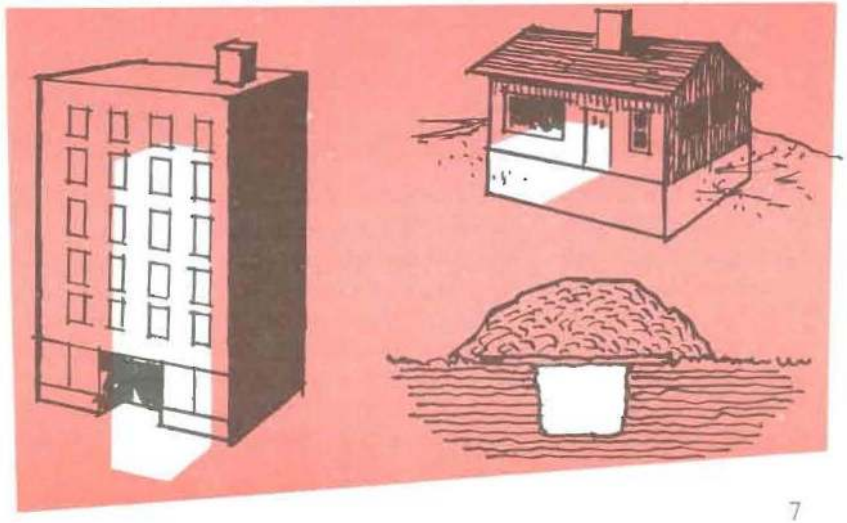
People can protect themselves against fallout radiation, and have a good chance of surviving it, by staying inside a fallout shelter. In most cases, the fallout radiation level outside the shelter would decrease rapidly enough to permit people to leave the shelter within a few days.

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.



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 or heavy 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.

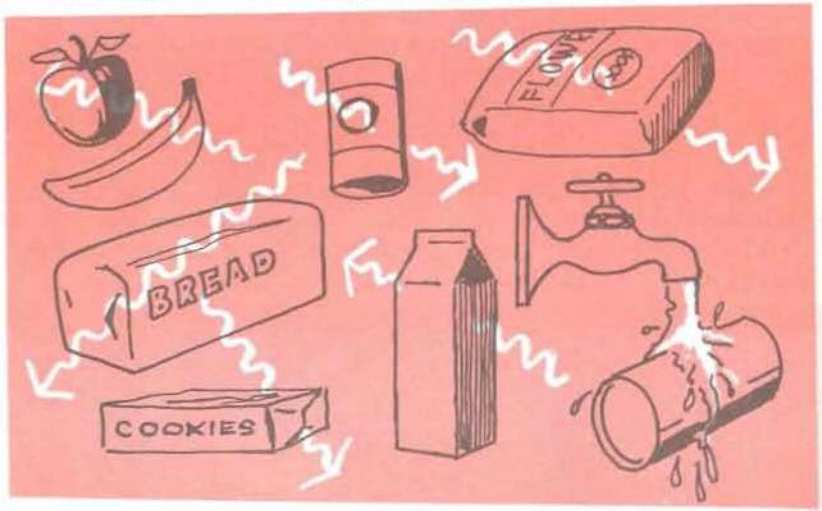
A shelter can be the basement or inner corridor of any large building; the basement of a private home; a subway or tunnel; or even a backyard trench with some kind of shielding material (heavy lumber, earth, bricks, etc.) serving as a roof.

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

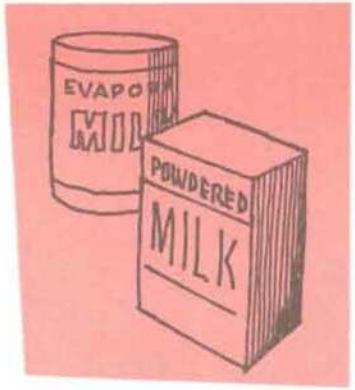
From many studies, the Federal Government has determined that enough food and water would be available after an attack to sustain our surviving citizens. However, temporary food shortages might occur in some areas, until food was shipped there from other areas.



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 consumers. A small amount of radioactive material might dissolve in the water, but at most this would be of concern for only a few weeks.



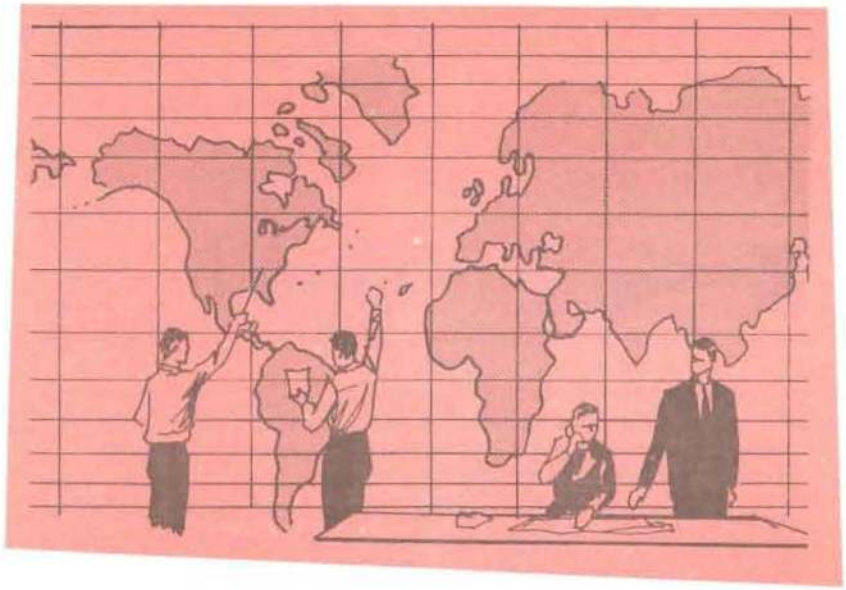
Milk contamination from fallout is not expected to be a serious problem after an attack. If cows graze on contaminated pasture and swallow fallout particles that contain some radioactive elements, their milk might be harmful to the thyroid glands of infants and small children. Therefore, if possible,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

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.

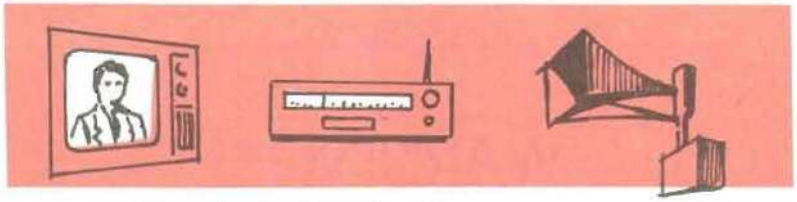


If an attack actually occurs, it is almost certain that incoming enemy planes and missiles would be detected by our networks of warning stations in time for citizens to get into shelters or at least take cover. This warning time might be as little as 5–15 minutes in some locations, or as much as an hour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



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 sirens, 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 radio 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 the radio or 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.

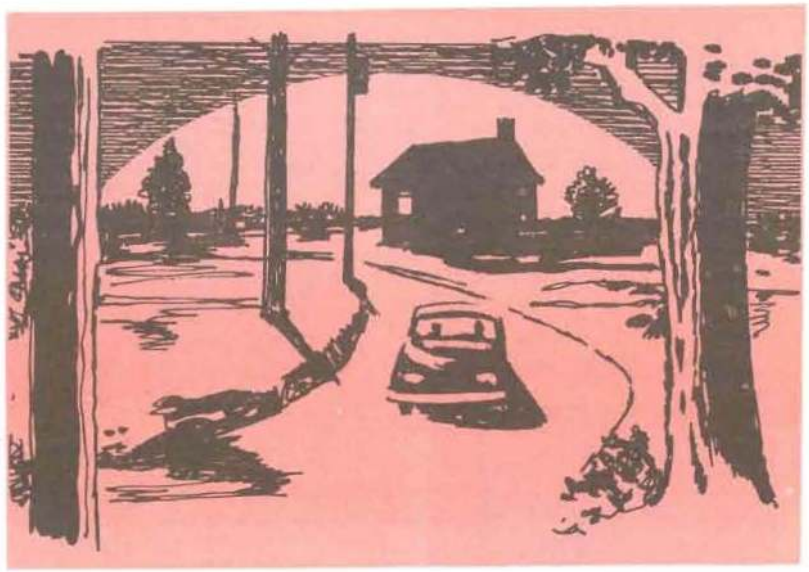
Learn Your Community's Signals Now

As mentioned before not all communities in the U.S. have outdoor warning systems, and not all communities with 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; what 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

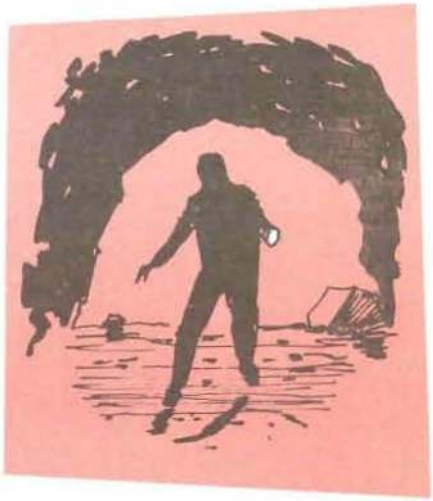
It is possible—but extremely unlikely—that your first warning of an enemy attack might be the flash of a nuclear explosion in the sky some



distance away. Or there might be a flash after warning had been given, possibly while you were on you 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 blash 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 or rock, a pile of heavy materials, a trench or other excavation. 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.

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 this 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 your 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.

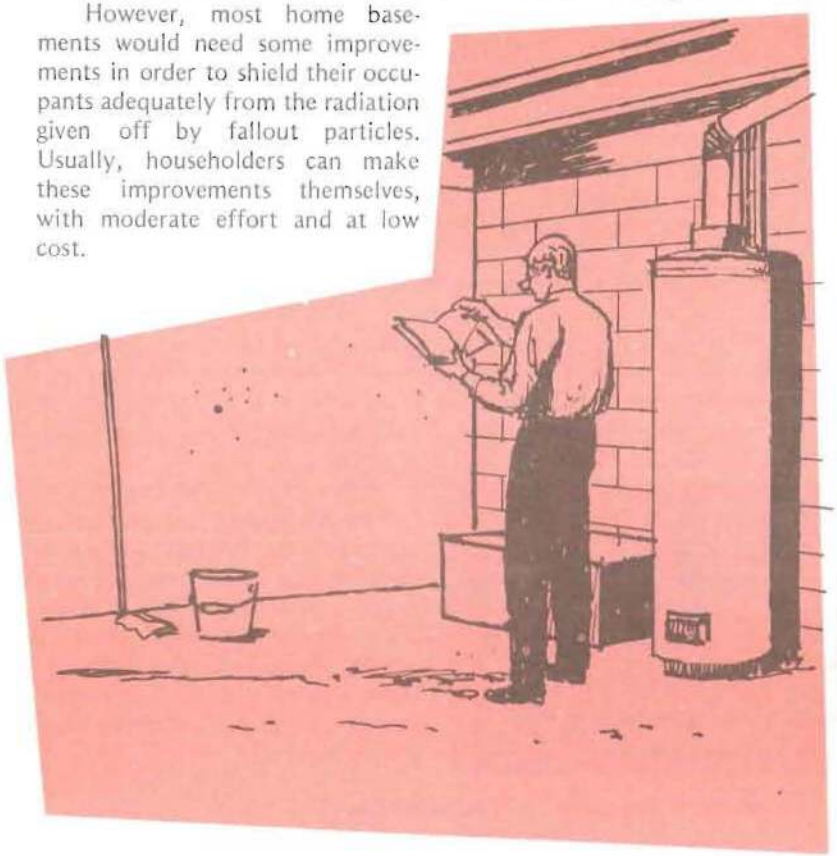
This advice applies to all members of the family. Your children especially should be given clear instructions *now* on where to find a fallout shelter at all times of the day, and told what other actions they should take in case an attack should occur.

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, 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 Potential" 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 entrance 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, stone and concrete — 3 points _____
   - ( ) Other — 5 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.

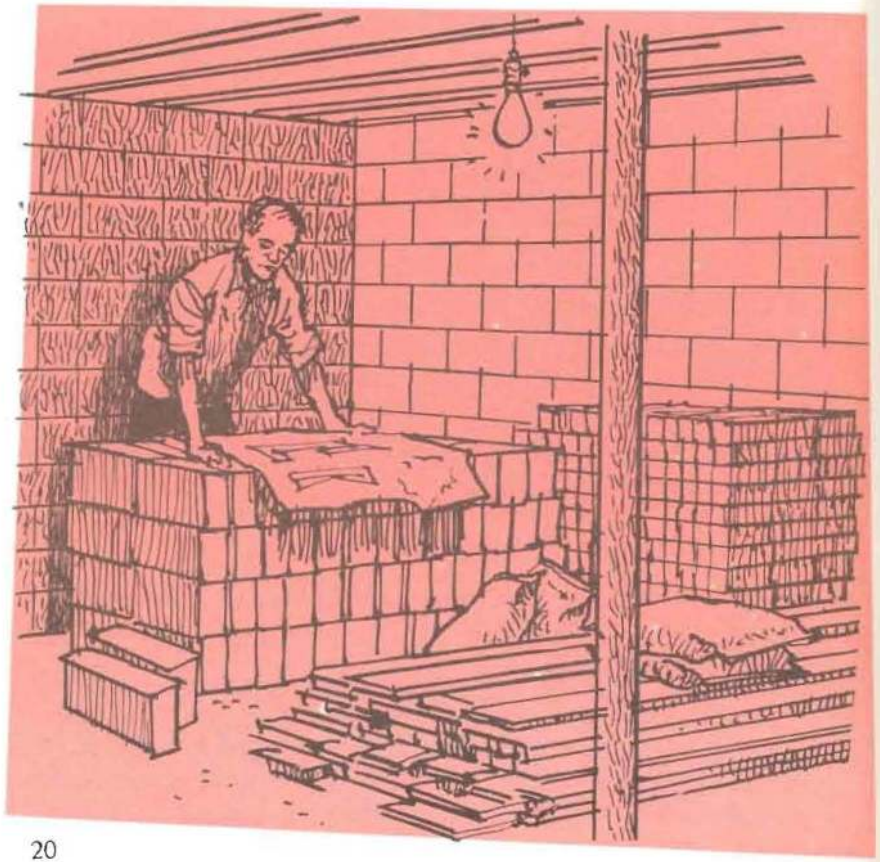
Some radiation protection is provided by the existing, standard walls and ceiling of a basement. But if they are not thick or dense enough, other shielding material will have to be added.

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

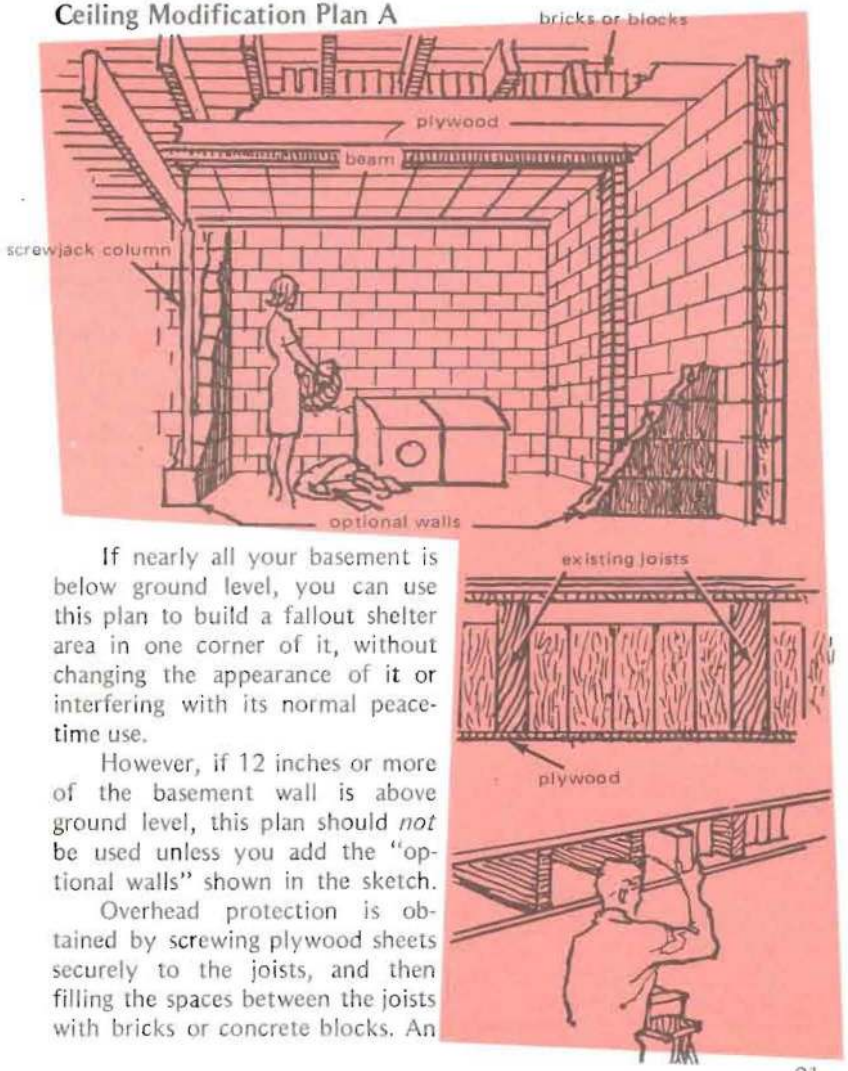
If there is no public fallout shelter near your home, or if you would prefer to use a family-type shelter in a time of attack, you should prepare a home fallout shelter. Here is how to do it:



● 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 prepare a permanent-type family 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.

Here are three methods of providing a permanent family shelter in the "best" corner of your home basement—that is, the corner which is most below ground level. 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.

Ceiling Modification Plan A



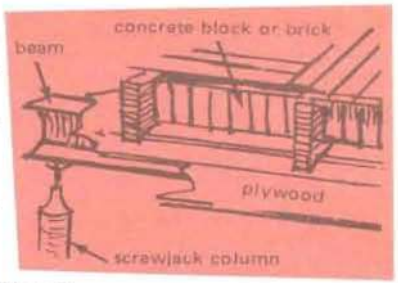
If nearly all your basement is below ground level, you can use this plan to build a fallout shelter area in one corner of it, without changing the appearance of it or interfering with its normal peacetime use.

However, if 12 inches or more of the basement wall is above ground level, this plan should *not* be used unless you add the "optional walls" shown in the sketch.

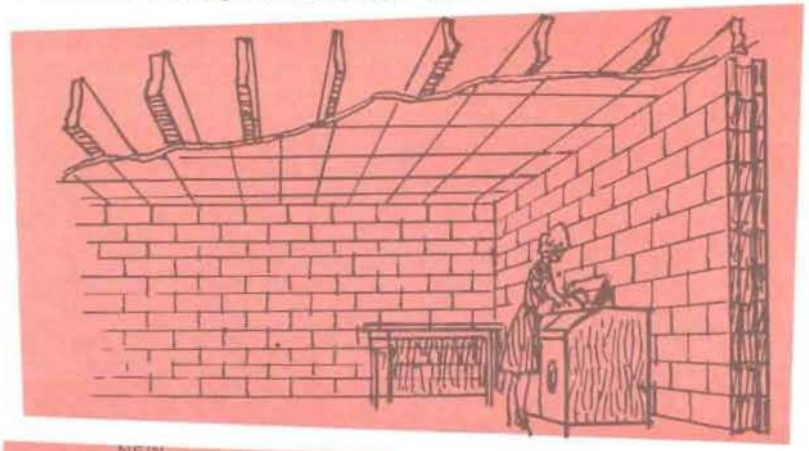
Overhead protection is obtained by screwing plywood sheets securely to the joists, and then filling the spaces between the joists with bricks or concrete blocks. An

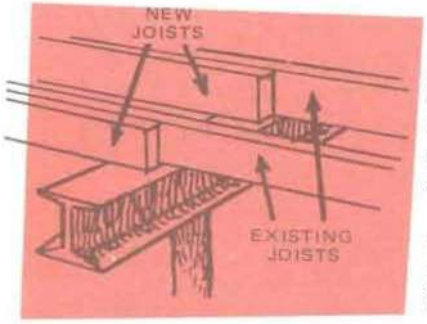
extra beam and a screwjack column may be needed to support the extra weight.

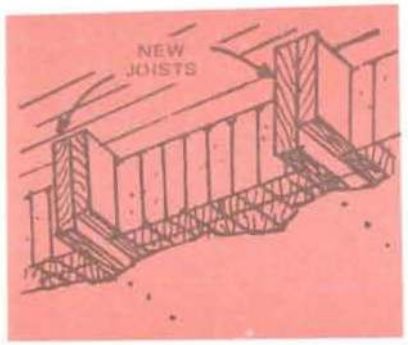
Building this shelter requires some basic woodworking skills and shielding materials. It can be set up while the house is being built, or afterward.



Alternate Ceiling Modification Plan B





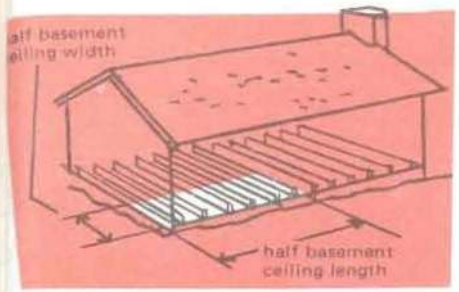


This is similar to Plan A, except that new extra joists are fitted into part of the basement ceiling to support the added weight of the shielding (instead of using a beam and a screwjack column).

The new wooden joists are cut to length and notched at the ends, then installed between the existing joists.

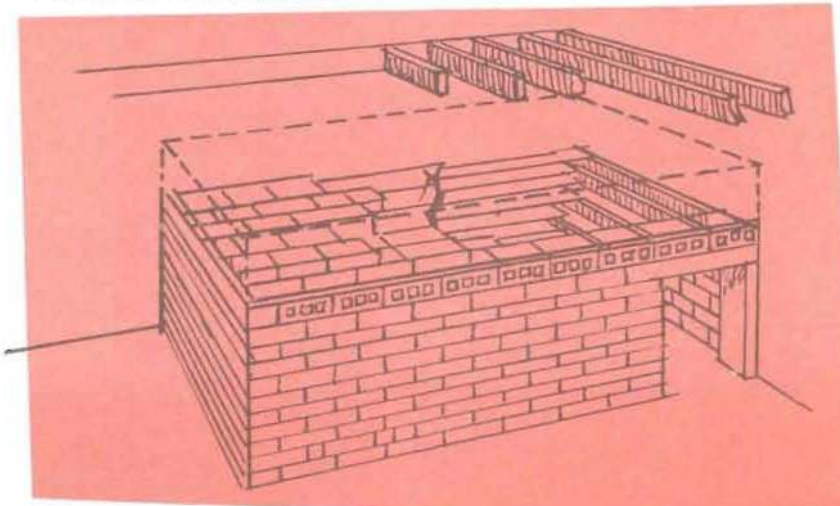
After plywood panels are screwed securely to the joists, bricks or concrete blocks are then packed tightly into the spaces between the joists. The bricks or blocks, as well as the joists themselves, will reduce the amount of fallout radiation penetrating downward into the basement.

Approximately one-quarter of the total basement ceiling should be reinforced with extra joists and shielding material.



Important: This plan (like Plan A) should *not* be used if 12 inches or more of your basement wall is above ground level, unless you add the "optional walls" inside your basement that are shown in the Plan A sketch.

Permanent Concrete Block or Brick Shelter Plan C.

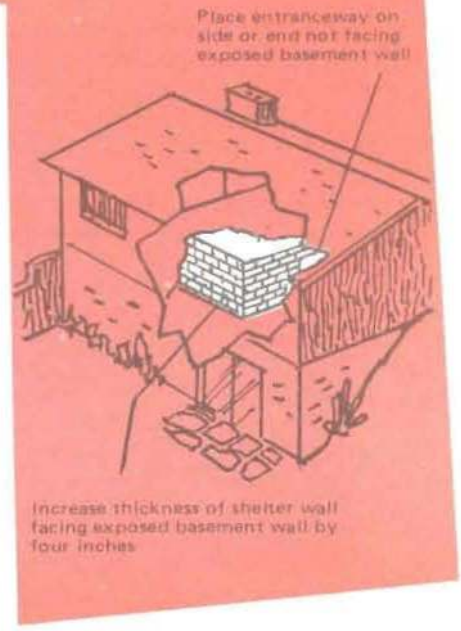


This shelter will provide excellent protection, and can be constructed easily in most parts of the country.

Made of concrete blocks or bricks, the shelter should be located in the corner of your basement that is most below ground level. It can be built low, to serve as a "sit-down" shelter; or by making it higher you can have a shelter in which people can stand erect.

The shelter ceiling, however, should *not* be higher than the outside ground level of the basement corner where the shelter is located.

The higher your basement is above ground level, the thicker you should make the walls and roof of this shelter, since your regular basement walls will provide only limited shielding against outside radiation.



Natural ventilation is provided by the shelter entrance, and by the air vents shown in the shelter wall.

This shelter can be used as a storage room or for other useful purposes in non-emergency periods.

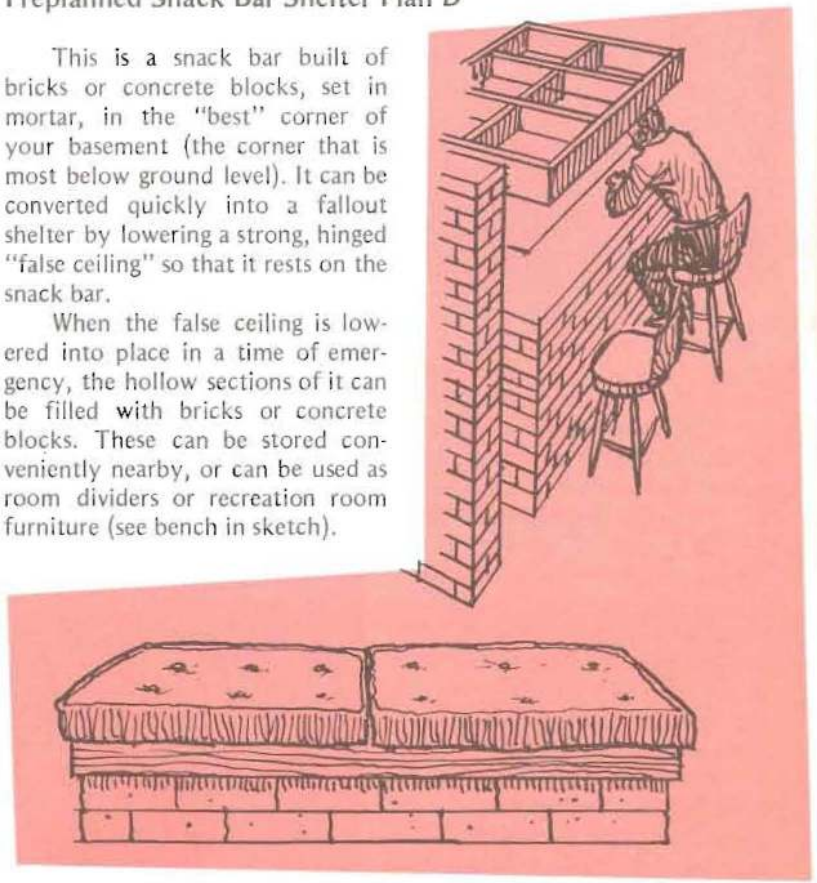
A PREPLANNED BASEMENT SHELTER. If your home has a basement but you do not wish to set up a permanent-type basement shelter, the next best thing would be to arrange to assemble a "preplanned" home shelter. This simply means gathering together, in advance, the shielding material you would need to make your basement (or one part of it) resistant to fallout radiation. This material could be stored in or around your home, ready for use whenever you decide to set up your basement shelter.

Here are two kinds of preplanned basement shelters. If you want to set up one of these, be sure to *get the free plan for it first* by writing to the U.S. Army AG Publications Center, Civil Preparedness Section, 2800 Eastern Blvd. (Middle River), Baltimore, Maryland 21220. Mention the full name of the plan you want.

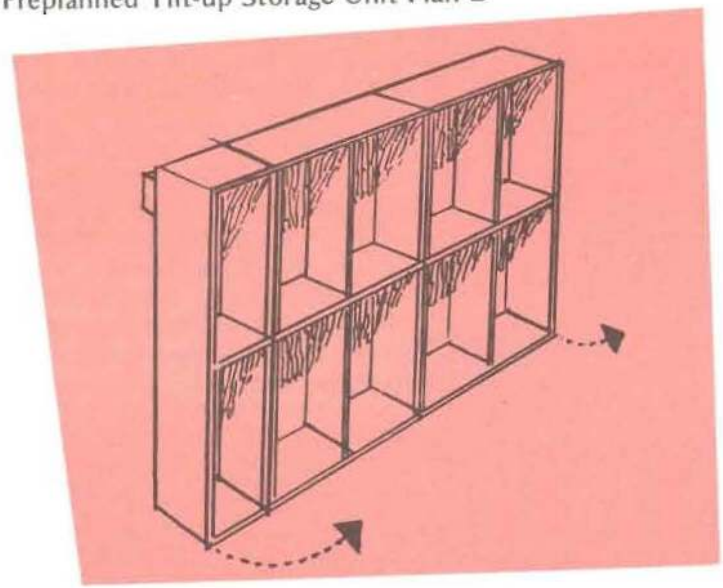
Preplanned Snack Bar Shelter Plan D

This is a snack bar built of bricks or concrete blocks, set in mortar, in the "best" corner of your basement (the corner that is most below ground level). It can be converted quickly into a fallout shelter by lowering a strong, hinged "false ceiling" so that it rests on the snack bar.

When the false ceiling is lowered into place in a time of emergency, the hollow sections of it can be filled with bricks or concrete blocks. These can be stored conveniently nearby, or can be used as room dividers or recreation room furniture (see bench in sketch).



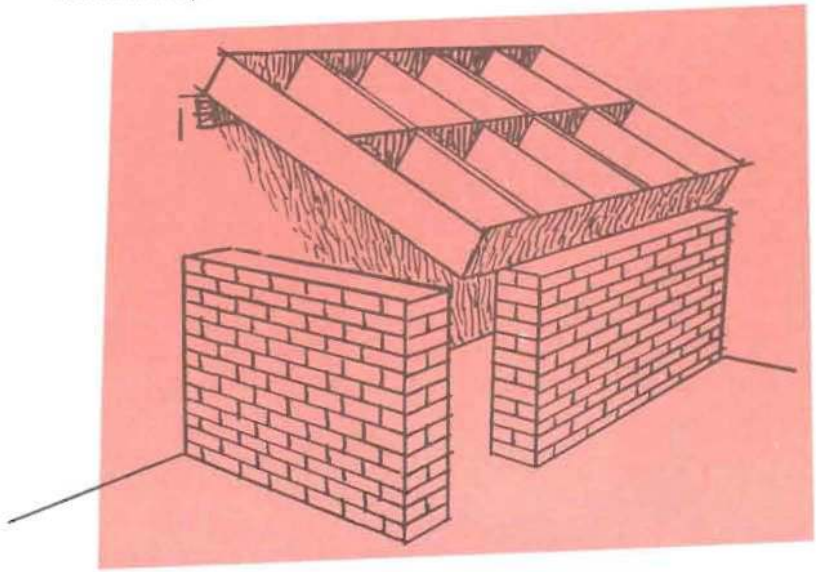
Preplanned Tilt-up Storage Unit Plan E



A tilt-up storage unit in the best corner of your basement is another method of setting up a "preplanned" family fallout shelter.

The top of the storage unit should be hinged to the wall. In peacetime, the unit can be used as a bookcase, pantry, or storage facility.

In a time of emergency the storage unit can be tilted so that the bottom of it rests on a wall of bricks or concrete blocks that you have stored nearby.



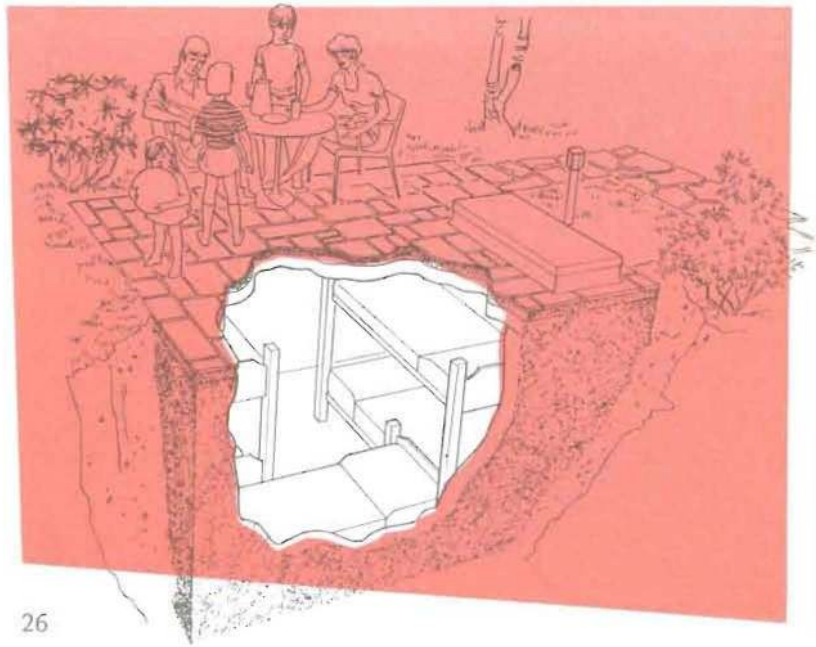
Other bricks or blocks should then be placed in the storage unit's compartments, to provide an overhead shield against fallout radiation.

The fallout protection offered by your home basement also can be increased by adding shielding material to the outside, exposed portion of your basement walls, and by covering your basement windows with shielding material.

You can cover the aboveground portion of the basement walls with earth, sand, bricks, concrete blocks, stones from your patio, or other material.

You also can use any of these substances to block basement windows and thus prevent outside fallout radiation from entering your basement in that manner.

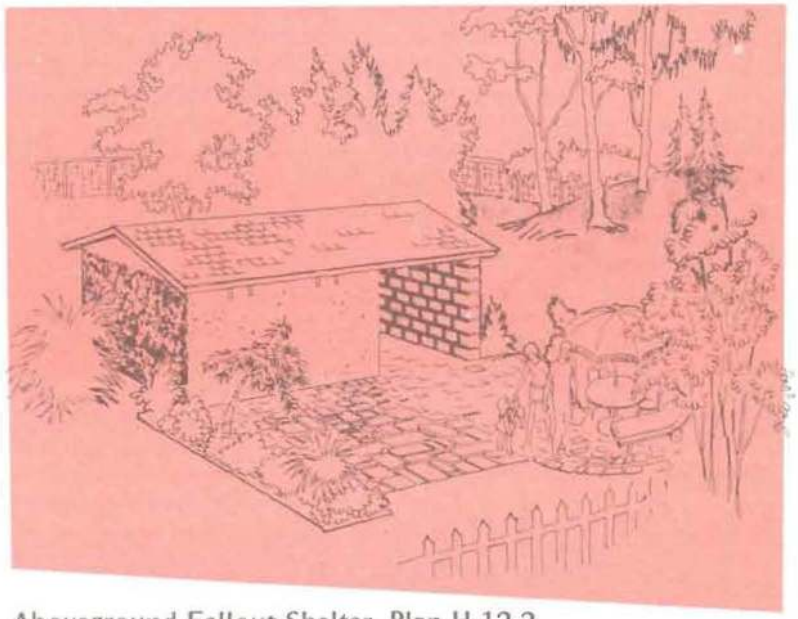
● A PERMANENT OUTSIDE SHELTER. If your home has no basement, or if you prefer to have a permanent-type home shelter in your yard, you can obtain free construction plans by writing to the U.S. Army AG Publications Center, Civil Preparedness Section, 2800 Eastern Blvd. (Middle River), Baltimore, Md. 21220. In ordering a plan, use the full title and code shown for it.



Outside Concrete Shelter, Plan H-12-1

In addition to providing protection against radioactive fallout, this shelter will withstand blast overpressures up to 5 pounds per square inch. It can be built of concrete or a combination of concrete blocks and poured concrete. If built as shown, the roof slab can be used as a patio. The shelter can be reached through a hatch door and wood stairway. Fresh air is provided by a hand-operated blower and two pipes extended above-ground level.

Modifications can be made to permit dual-use of the shelter space. If topography permits, the shelter can be modified to increase protection against radioactive fallout by addition of an earth mound over the shelter. Such a mound can also be used to advantage where drainage is poor or where the watertable is close to the surface.



Aboveground Fallout Shelter, Plan H-12-2

This shelter is for persons who prefer shelter aboveground or for locations where underground shelters are impractical. It can be built of two rows of concrete blocks filled with sand or grout, or of poured, reinforced concrete. If other materials, such as concrete block faced with brick are used, care should be taken to provide the same weight of materials per square foot.

This structure has been designated for areas where frost does not penetrate the ground more than 20 inches. Where frost goes deeper, layers of concrete blocks may be used to lower the footings below the frost line. Dual-use includes storage of lawn equipment, such as wheelbarrows and lawnmowers.

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 should take cover immediately.

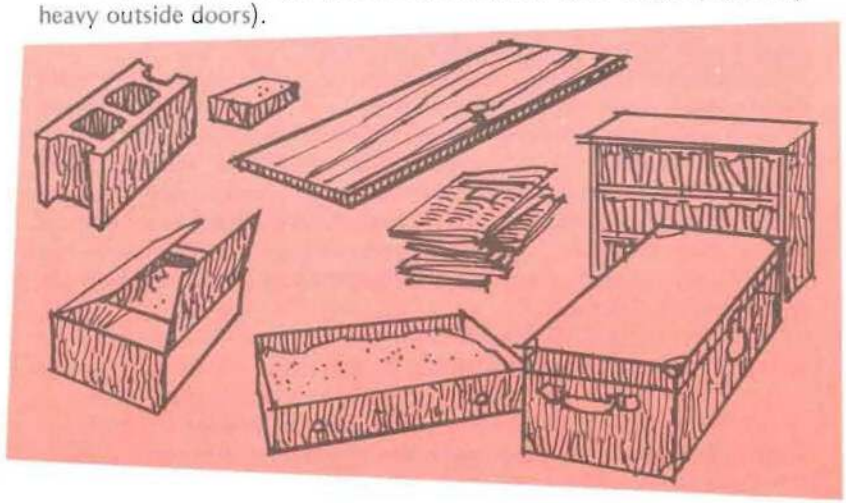
An improvised shelter probably would not give you as much protection as a permanent or a preplanned family shelter, but any protection is better than none, and might save your life.

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).



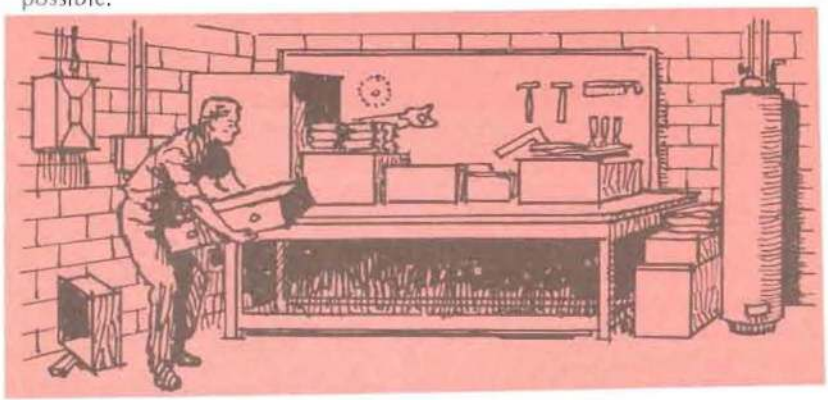
— Dressers and chests (fill the drawers with sand or earth after they are placed in position, so they won't be too heavy to carry and won't collapse while being carried).
— Trunks, boxes and cartons (fill them with sand or earth after they are placed in position).
— Tables and bookcases.
— Books, magazines, 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.

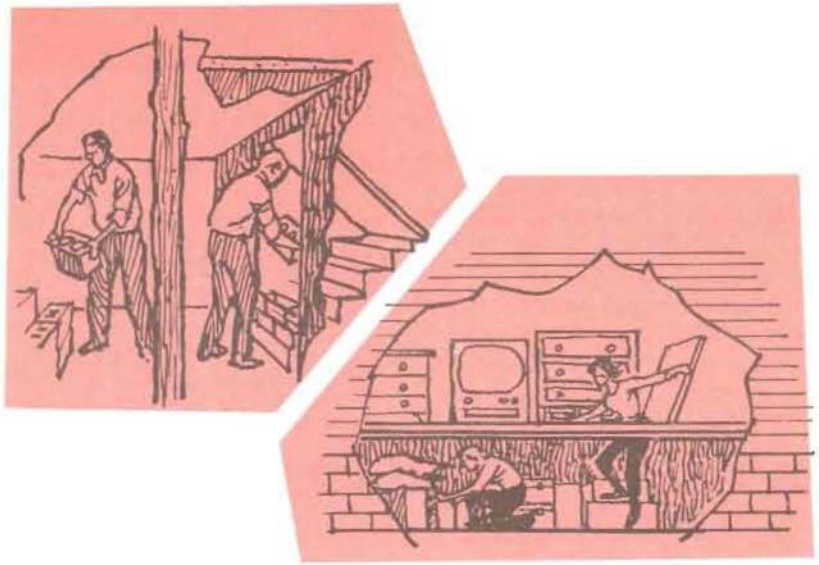
Using a Storm Cellar for Fallout Protection

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 occupants are inside the shelter. After particles have stopped falling, the outside door may be left open to provide better 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 they may have collected on it.



Using the Crawl Space Under Your House

Some homes without basement 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.

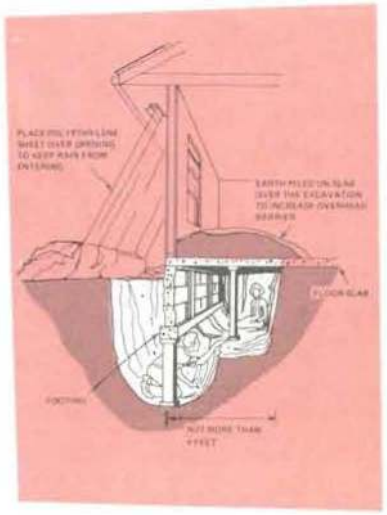
Around the selected shelter area, place shielding material—preferably bricks or blocks, or containers filled with sand or earth—from the ground level up to the first floor of the house, so that the shielding material forms the "walls" of your shelter area. On the floor above, place other shielding material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

If time permits, dig out more earth and make the shelter area deeper, so 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 under 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 vary 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) over the shelter area to improve 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 covering this with a polyethylene sheet to keep out rainwater.

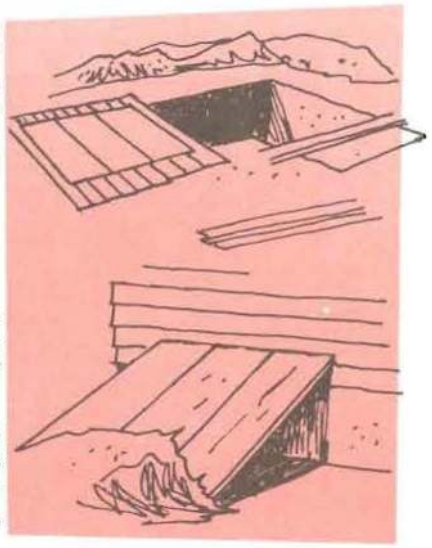
Outside Trench Shelter

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 on 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.

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.

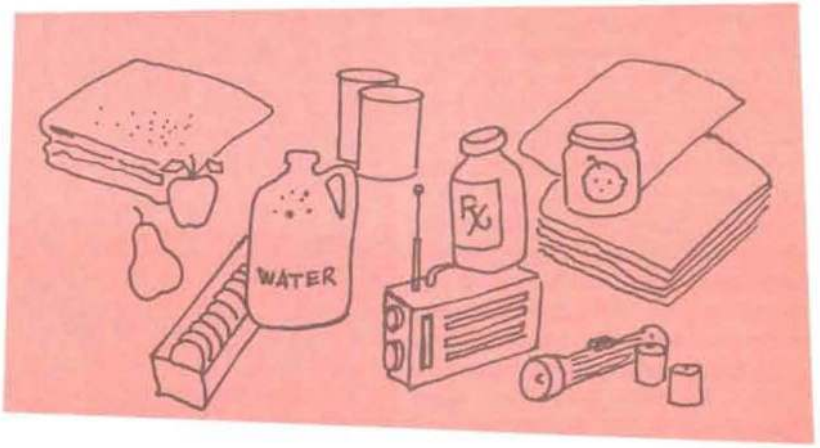
During this time they would need certain supplies and equipment in order to stay alive and well, and to cope with emergency situations that might occur in their shelters.

This chapter tells you what supplies and equipment to take with you if you go to 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 medicines 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 or 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 chlorine household bleach) should also be stored, in case you neet 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.*

	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
Hydrogenated (or antioxidant-treated) fats, vegetable oil	12
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

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

*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.

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, plates, 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 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 category 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. Including writing materials for taking notes on information given over the radio. Other useful items: a shovel, broom, axe, crowbar, kerosene lantern,

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.

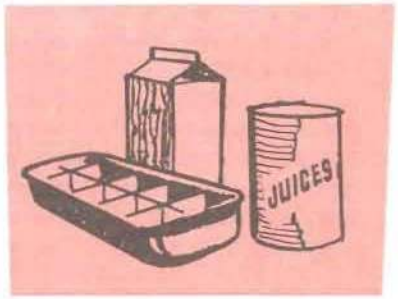
If you go to a *public* shelter in a time of attack, you probably would not need to know a great deal about managing water, food, and sanitation. A shelter manager and his assistants would handle these problems with the cooperation of all in the shelter. He would make the best use of whatever water and food supplies were available, provide emergency toilets if necessary, set up rules for living in the shelter, arrange for the shelter occupants to carry on various activities necessary for health and well-being, and decide when it was safe for the group to leave shelter and for how long at a time.

In a *home* shelter, however, you and your family would be largely on your own. You would have to take care of yourselves, solve your own problems, make your own living arrangements, subsist on the supplies you had previously stocked, and find out for yourself (probably by listening to the radio) when it was safe to leave shelter. In this situation, one of your most important tasks would be to manage your water and food supplies, and maintain sanitation. The following guidance is intended to help you do this.

Care and Use of Water Supplies

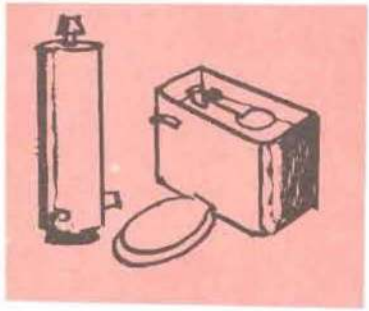
Each person's need for drinking water will vary, depending upon age, physical condition, and time of year. The average person under usual or normal conditions in a shelter would need at least 1 quart of water or other liquids to drink per day, but more would be useful. Each person should be allowed to drink according to need. Under no

circumstances should drinking water be rationed to make it last a certain length of time. Studies have shown that nothing is to be gained by limiting drinking water below the amount demanded by the human body. Even with a limited supply, it is safer to drink it as needed in the hope that the supply can be replaced if your shelter stay should warrant it.

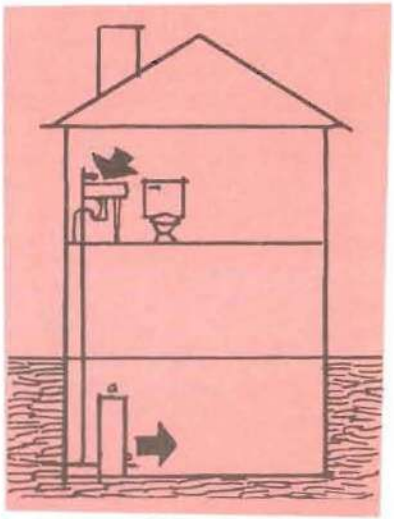


In addition to water that may be stored in containers, there is usually other water available in most homes that is drinkable, such as:

— Water and other liquids normally found in the kitchen, including ice cubes, milk, soft drinks, and fruit and vegetable juices.



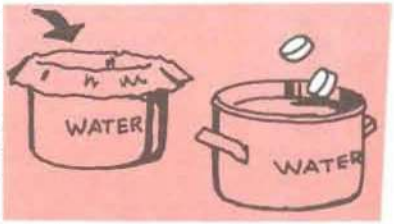
— Water (20 to 60 gallons) in the hot water tank.
— Water in the *flush tanks* (not the bowls) of home toilets.
— Water in the pipes of your home plumbing system. In a time of nuclear attack, local authorities may instruct householders to *turn off* the main water valves in their homes to avoid having water drain away in case of a break and loss of pressure in the water mains. With the main valve in your house closed, all the pipes in the house would still be full of water. To use this water, *turn on* the faucet that is located at the *highest* point in your house, to let air into the system; and then draw water, as needed, from the faucet that is located at the *lowest* point in your house.



In a home shelter, occupants should drink first the water they know is uncontaminated, such as that mentioned above. Of course, if local authorities tell you the regular water is drinkable, it should be used.

If necessary, "suspicious" water—such as cloudy water from regular faucets or perhaps some muddy water from a nearby stream or pond—can be used after it has been purified. This is how to purify it:

1. Strain the water through a paper towel or several thicknesses of clean cloth, to remove dirt and fallout particles, if any. Or else let the water "settle" in a container for 24 hours, by which time most solid particles probably would have sunk to the bottom.



2. After the solid particles have been removed, boil the water if possible for 3 to 5 minutes, or add a water-purifying agent to it. This could be either: (a) water-purifying tablets, available at drug stores, or (b) two percent tincture of iodine, or (c) liquid chlorine household bleach, provided the label says that it contains hypochlorite as its *only* active ingredient. For each gallon of water, use 4 water-purifying tablets, or 12 drops of tincture of iodine, or 8 drops of liquid chlorine bleach. If the water is cloudy, these amounts should be doubled.

There would not be much danger of drinking radioactive particles in water, as they would sink quickly to the bottom of the container or stream. Very few would dissolve in the water. Although open reservoirs might contain some radioactive iodine in the first few days after an attack, this danger is considered minor except to very young children.

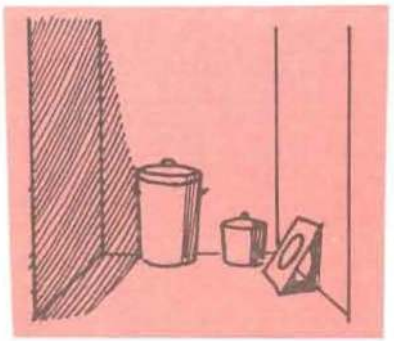
Care and Use of Food Supplies

Food also should be rationed carefully in a home shelter, to make it last for at least a 2-week period of shelter occupancy. Usually, half the normal intake would be adequate, except for growing children or pregnant women.

In a shelter, it is especially important to be sanitary in the storing, handling and eating of food, so as to avoid digestive upsets or other more serious illness, and to avoid attracting vermin. Be sure to:

— Keep all food in covered containers.
— Keep cooking and eating utensils clean.
— Keep all garbage in a closed container, or dispose of it outside the home when it is safe to go outside. If possible, bury it. Avoid letting garbage or trash accumulate inside the shelter, both for fire and sanitation reasons.

Emergency Toilet Facilities



In many home shelters, people would have to use emergency toilets until it was safe to leave shelter for brief periods of time.

An emergency toilet, consisting of a watertight container with a snug-fitting cover, would be necessary. It could be a garbage container, or a pail or bucket. If the container is small, a large container, also with a cover, should be available to empty the contents into for later disposal. If possible, both containers should be lined with plastic bags.

This emergency toilet could be fitted with some kind of seat, especially for children or elderly persons. Or it may be possible to remove the seat from a wooden chair, cut a hole in it, and place the container underneath. For privacy, the toilet could be screened from view.

Every time someone uses the toilet, he should pour or sprinkle into it a small amount of regular household disinfectant, such as creosol or chlorine bleach, to keep down odors and germs. After each use, the lid should be put back on.

When the toilet container needs to be emptied, and outside radiation levels permit, the contents should be buried outside in a hole 1 or 2 feet deep. This would prevent the spread of disease by rats and insects.

If the regular toilets inside the home—or the sewer lines—are not usable for any reason, an outside toilet should be built when it is safe to do so.

If anyone has been outside and fallout particles have collected on his shoes or clothing, they should be brushed off before he enters the shelter area again.

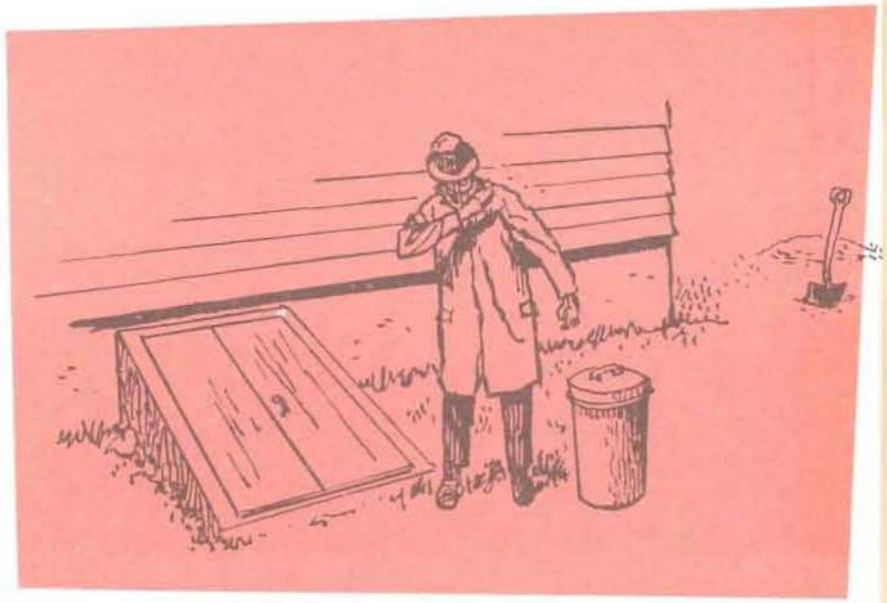
When to Leave Shelter

The intensity of fallout radiation in your area would be a major factor in any determination of when it is safe to leave shelter.

Special instruments are needed to detect fallout radiation and to measure its intensity. These instruments are part of the Federal supplies provided for public fallout shelters, and are also part of the emergency equipment issued to certain Federal, State, and local governmental agencies. Low-cost instruments to detect and measure fallout radiation are not now generally available for *home* shelter use, but the Federal Government is working to develop such instruments.

Unless you have access to these special instruments and know how to use them, you will have to depend on your local government to tell you when it is safe to leave shelter. This information probably would be given on the radio, which is one reason why you should keep on hand a battery-powered radio that works in your shelter areas.

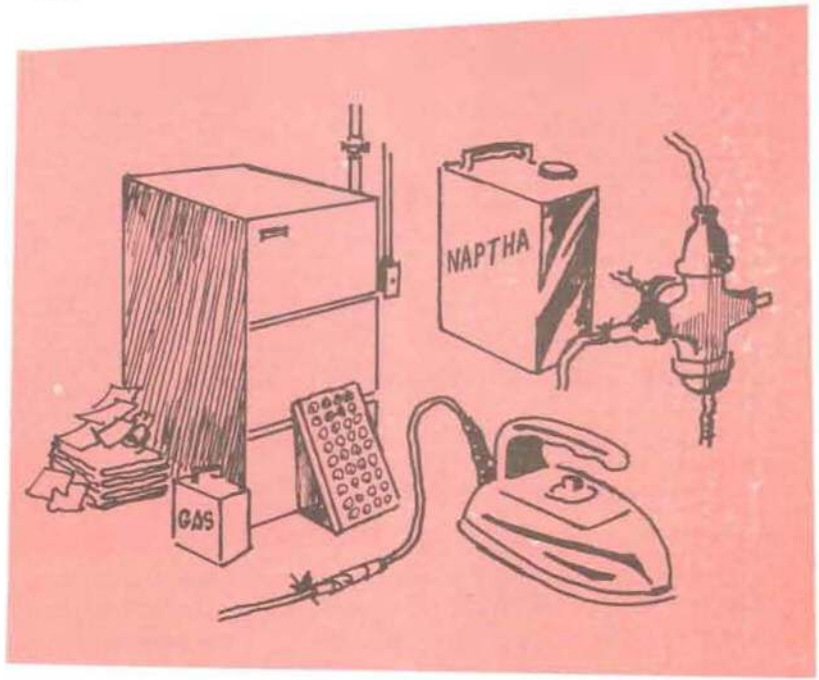
Remember that *fallout particles* can be seen, but the *rays* they give off cannot be seen. If you see unusual quantities of gritty particles outside (on window ledges, sidewalks, cars, etc.) after an attack, you should assume that they are fallout particles, and therefore stay inside your shelter until you are told it is safe to come out.



Chapter 6

FIRE HAZARDS

Fire, always a danger, could be even more of a disaster during a nuclear attack emergency when the fire department might not be available to help you. Also, the risk of fire would be greater at that time.



Normal fire-prevention rules are of special importance in an emergency. To keep fires from starting:

Don't let trash and "junk" accumulate. Clean out attics, basements, closets and garages frequently.

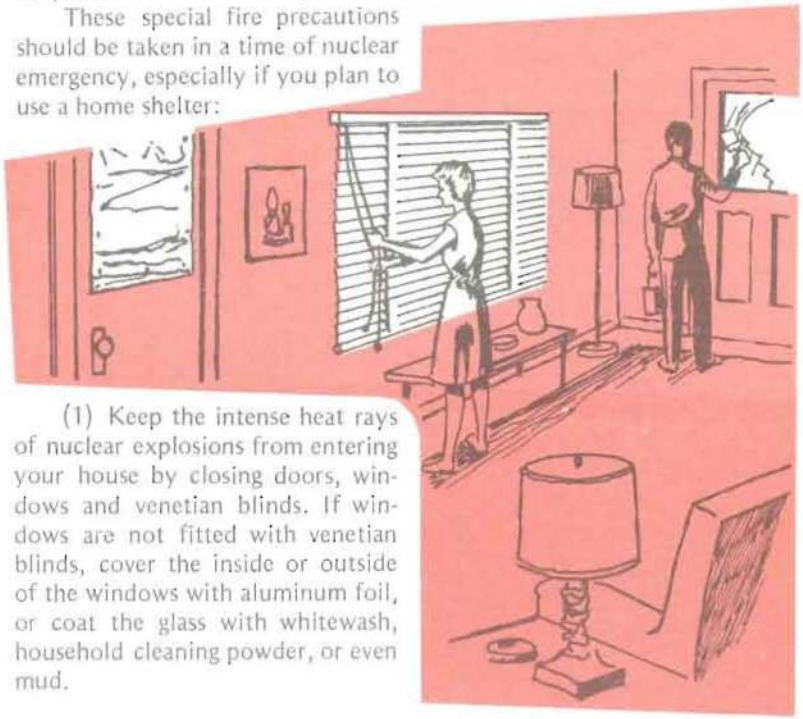
Check electrical wiring and appliances. Replace worn or frayed cords. Don't put too many appliances on one circuit. Don't string extension wires all over the house, and never under rugs. Use irons and other heating appliances with caution.

Store explosive or flammable fluids carefully, outside the home if possible, Never use gasoline, benzine, naphtha and similar fluids indoors—if their vapors mix with air in a closed space, they will ignite readily from any kind of a spark. Rags soaked with oil or turpentine sometimes catch fire by themselves (this is called spontaneous combustion), and therefore should never be left lying around.

Check heating plants. Many home fires are started by faulty furnaces and stoves, cracked or rusted furnace pipes, and sooty chimneys.

Don't place papers or magazines on radiators, or near stove or fireplaces. Don't allow lamp shades to touch electric bulbs.

These special fire precautions should be taken in a time of nuclear emergency, especially if you plan to use a home shelter:

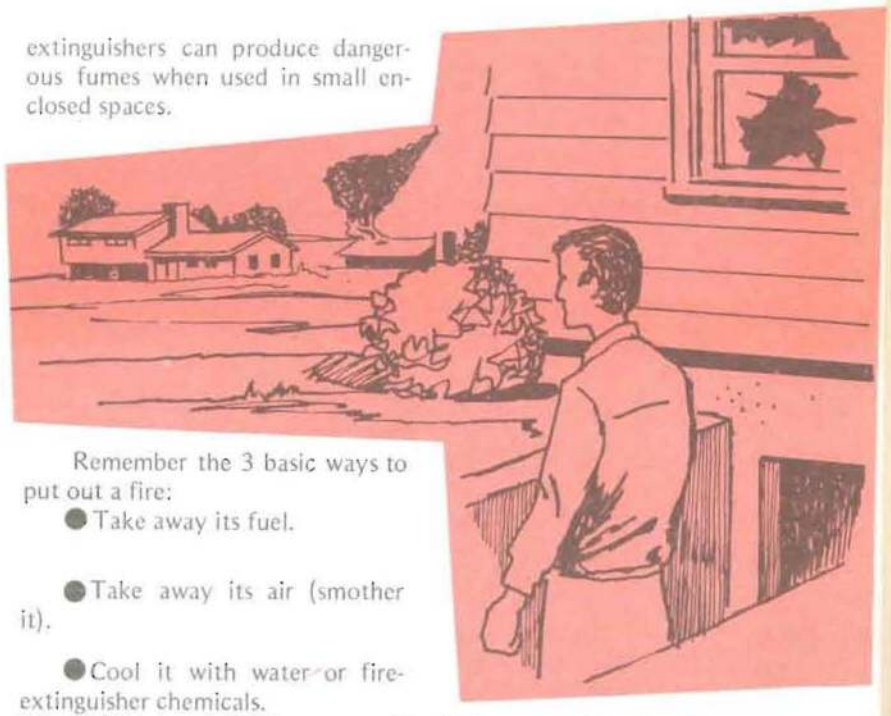


(1) Keep the intense heat rays of nuclear explosions from entering your house by closing doors, windows and venetian blinds. If windows are not fitted with venetian blinds, cover the inside or outside of the windows with aluminum foil, or coat the glass with whitewash, household cleaning powder, or even mud.

(2) Unless local authorities advise otherwise, fill buckets, bathtubs and other containers with water, for use in emergency firefighting. In so far as possible, place water containers in corner of the basement.

(3) If you have taken refuge in a home fallout shelter, stay there unless you hear an explosion that breaks windows. If you do, check to make sure nothing in your home is burning and there are no other fires nearby that might endanger you.

If a fire does occur, your home might be saved if you know how to fight fires, act promptly, and have on hand some basic firefighting tools. These should include a garden hose (preferably already connected), a ladder, buckets filled with sand, containers filled with water, and a fire extinguisher. Keep in mind that vaporizing-liquid types of fire extinguishers can produce dangerous fumes when used in small enclosed spaces.



Remember the 3 basic ways to put out a fire:

- Take away its fuel.
- Take away its air (smother it).
- Cool it with water or fire-extinguisher chemicals.

Whichever method you use, it will be most effective if you act immediately, before the fire grows larger by:

— Getting the burning material out of the house (carry it out, or throw it out of a door or window if you can); or

— Putting out the fire with water, sand, earth or fire-extinguisher chemicals; or

— Smothering the fire with a rug or blanket, preferably wet.

Special types of fires require special methods:

— If it is an *electrical fire,* be sure to shut off the electricity first. Then put out the flames with water or anything else available. If you can't shut off the electricity, don't use water on an electrical fire.

— If it is an *oil or grease fire,* shut off the supply of whatever is burning. Then smother the flames with sand, earth, rugs, or other heavy materials. Don't use water. For small kitchen fires, table salt or baking soda could also be used.

— If it is a *gas fire*, shut off the gas supply. Then use water, sand or earth to put out whatever is burning.

The fire departments of some communities in the United States conduct free training courses for citizens interested in learning how to fight fires at home or in becoming auxiliary firemen. If such courses are available in your community, you can acquire firefighting skills which may save your life or your home either in peacetime or in a period of nuclear attack.

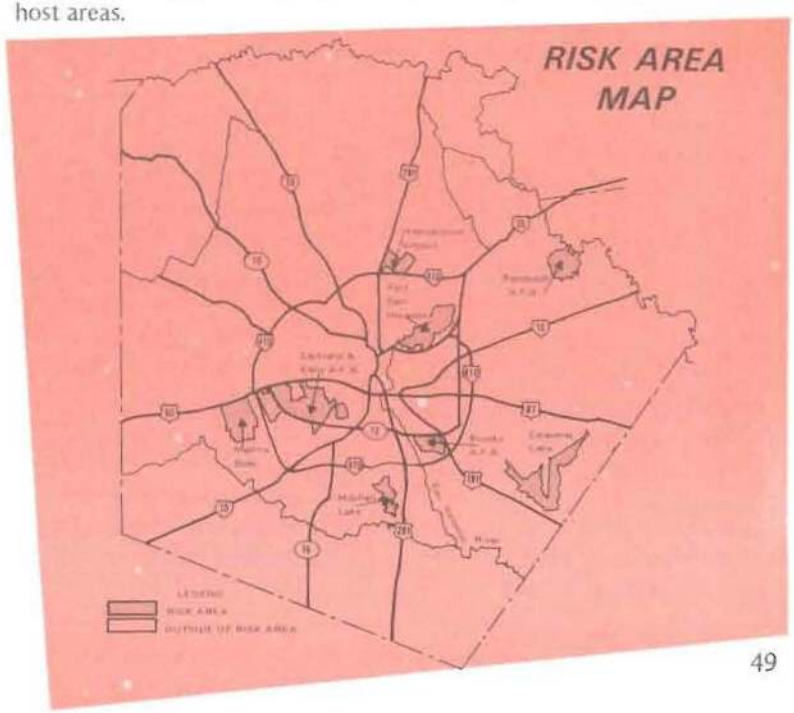
Chapter 7

THE RELOCATION OPTION

If an international crisis should threaten to result in a nuclear attack, people living in high-risk areas—those areas more likely to be nuclear targets—may be asked to relocate temporarily to safer areas where nuclear weapons probably would not be targeted.

High-risk areas are generally considered to be metropolitan areas of 50 thousand or more population or areas near major military installations. The safer areas, or low-risk areas, are the surrounding small-town and rural areas. These would become the host areas in the event of an emergency relocation from high-risk areas.

Your Federal Government and many State and local governments are currently planning for the orderly relocation of people in time of an international crisis. These plans call for (1) allocating people from high-risk areas to go to appropriate low-risk host areas for reception and care, and for (2) developing and improvising fallout protection in the host areas.



WHAT TO DO BEFORE YOU LEAVE A HIGH-RISK AREA

1. Get ample supply of any prescription medicines and special foods.
2. Collect all your important papers and package them preferably in plastic wrappers in metal container (tool box, fishing-tackle box, etc.).
3. Check home for security; see that all locks are secure; store valuables being left behind (silverware, etc.,) in a safe place.
4. Close all window blinds, shades, and drapes to help prevent fires from the heat wave of a nuclear explosion.
5. If you use your car, be sure you have enough gasoline, and prepare to take shovels, picks, hammers, and work gloves—all will be needed to help improvise fallout shelter.
6. Stay tuned to your local TV or radio station for instructions on relocating if so directed by government officials.
7. Go over all instructions with your family so that all will understand what to do.

WHAT TO TAKE WITH YOU IN RELOCATING TO A SAFER AREA

(Take all these items if using your car. If using public transportation, take those marked "X.")

Clothing and Bedding
- ☐ X work gloves
- ☐ X work clothes
- ☐ X extra underclothing
- ☐ X outerwear (depending on season
- ☐ X rain garments
- ☐ X extra pair of shoes
- ☐ X extra socks or stockings
- ☐ sleeping bags and/or
- ☐ blankets and sheets

Food and Utensils
- ☐ Take all the food you can carry (particularly canned or dried food requiring little preparation.)
- ☐ water
- ☐ thermos jug or plastic bottles
- ☐ bottle and can opener
- ☐ eating utensils
- ☐ plastic or paper plates, cups, and napkins.
- ☐ plastic and paper bags.
- ☐ X candles and matches
- ☐ plastic drop cloth

Personal, Safety, Sanitation, and Medical Supplies
- ☐ X Battery operated (transistor) radios, extra batteries
- ☐ X flashlight, extra batteries
- ☐ X soap
- ☐ X shaving articles
- ☐ X sanitary napkins
- ☐ X detergent
- ☐ X towels and washcloths
- ☐ toilet paper
- ☐ emergency toilet
- ☐ garbage can
- ☐ newspapers
- ☐ first aid kit
- ☐ X special medication (insulin, heart tablets, or other)
- ☐ X toothbrush and toothpaste

Baby Supplies
- ☐ X diapers
- ☐ X bottles and nipples
- ☐ X milk or formula
- ☐ X powder
- ☐ X rubber sheeting, etc.

Tools for Constructing a Fallout Shelter
- ☐ pick ax
- ☐ shovel
- ☐ saw
- ☐ hammer
- ☐ broom
- ☐ ax
- ☐ crowbar
- ☐ nails and screws
- ☐ screw driver
- ☐ wrench

Important Papers
- ☐ X Social Security Card
- ☐ X Deeds
- ☐ X Insurance Policies
- ☐ X Stocks and Bonds
- ☐ X Will
- ☐ X Saving Accounts Books
- ☐ X Credit Cards and Currency

WHAT NOT TO TAKE WITH YOU IN RELOCATING TO SAFER AREA

Do not Take
- ☐ FIREARMS—(guns of any kind)
- ☐ NARCOTICS
- ☐ ALCOHOL BEVERAGES

WHY YOU SHOULD RELOCATE

If you are located in a high-risk area (50 thousand or more urban area and near a military installation), you may be in a major target area where you may become exposed to the direct blast, heat, and radiation effects of a nuclear explosion. By relocating to a safer area you may be exposed mainly to radioactive fallout. Providing or improvising fallout protection in various types of buildings is much simpler and easier than providing protection from the direct effects of nuclear weapons. The chances of surviving from the threat of radioactive fallout alone are much greater than are the chances of surviving the direct effects of nuclear weapons.

If you live in a high-risk area and do not relocate if asked to do so, you may become subject to strictly enforced curfews. Movement within the area may be severely restricted to protect property, and most facilities or services normally available probably could not be provided during the relocation period. Most food and retail outlets would probably be closed. Much of the available food and goods would be needed to supply relocated people in the host-reception areas.

If an actual attack should occur, the best existing public shelters would probably be reserved for key workers who would remain to carry on essential industries, and for hospitalized or institutionalized people who could not be relocated.

WHO WOULD RELOCATE

If official notification for relocation is given, your government officials will tell you where to go for greater safety. If you are in a high-risk area, two days or possibly more should be available to relocate. You should prepare now so that you can get ready to leave quickly in an orderly manner.

IF YOU ARE IN A HOSPITAL

Most hospital patients would probably be relocated. However, if it should be impossible for you to be moved because of special requirements during the relocation period, every effort would be made to care for you. Similar consideration would be given to people in other institutions. The best available shelter and care would be provided in case of imminent attack.

WHERE TO GO

● *If you have a vacation cabin, relatives, friends. . .*

As the crisis intensifies and relocation appears imminent, if you have a vacation cabin or friends or relatives outside 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.

● *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 recreation 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. You can find this by following signs with the number of the last digit of your auto license plate.

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.

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

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.

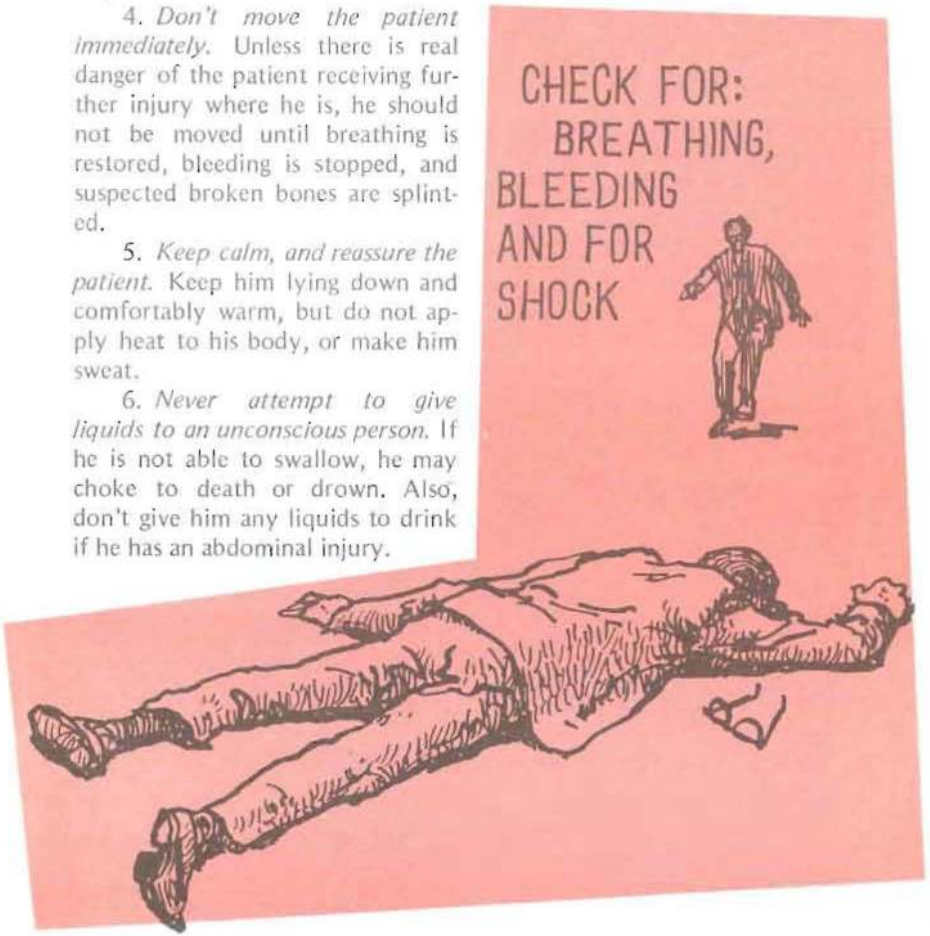
2. *Look for stoppage of breathing, and for serious bleeding.* These are two most life-threatening conditions you can do something about. They demand *immediate* treatment (see pages 59 and 62).

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.

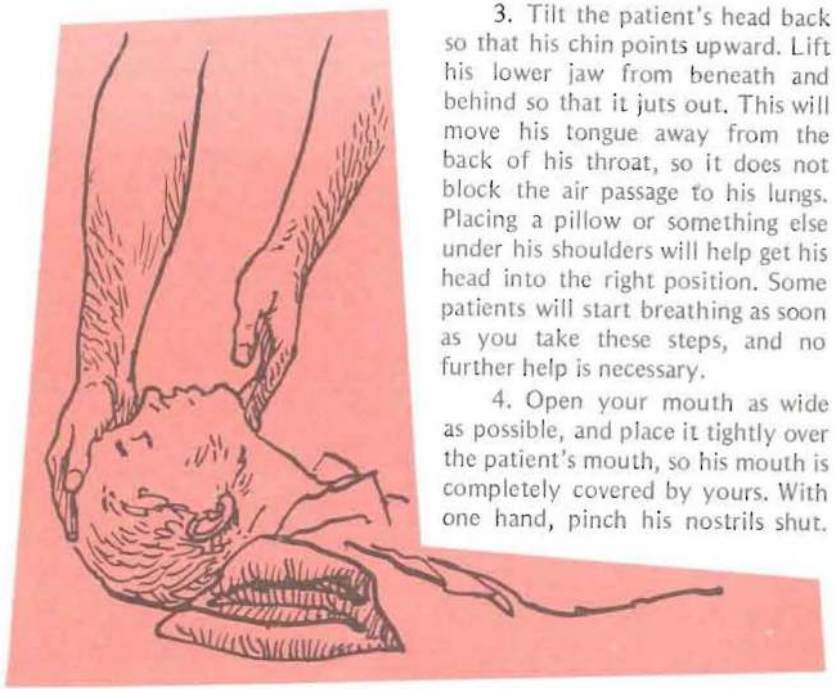


If the Patient Has Stopped Breathing

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.

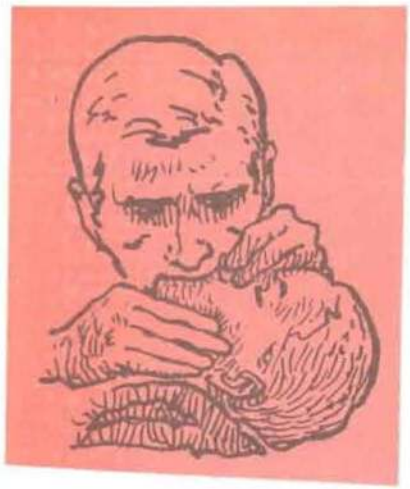
1. Place the patient on his back. Loosen his collar.

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.

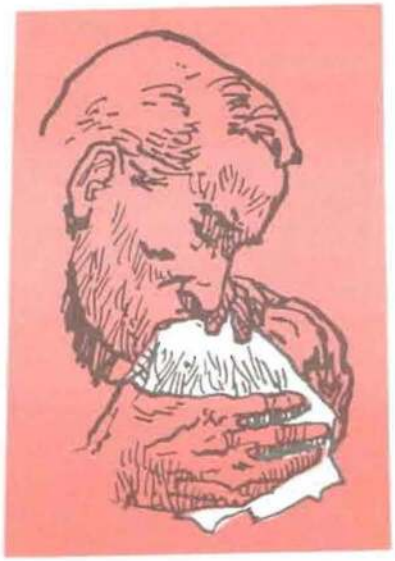
5. Blow a good lungful of air into an adult patient's mouth, continuing to keep his head tilted back and his jaw jutting out so that the air passage is kept open. (Air can be blown through an unconscious person's teeth, even though they may be clenched tightly together.) Watch his chest as you blow.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

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 his 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.



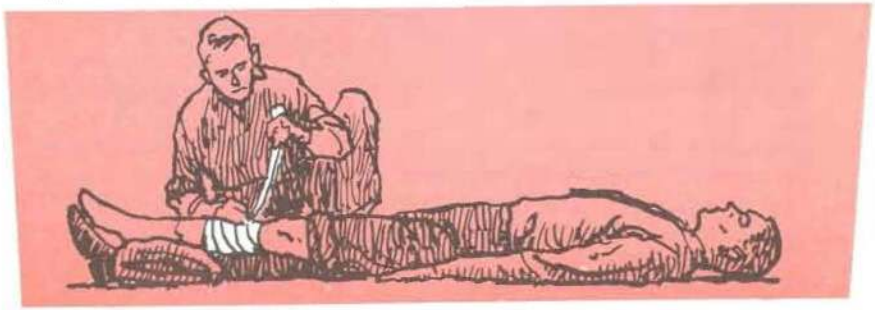
9. If you wish to avoid placing your mouth directly on the patient's face, you may hold a cloth (hankerchief, gauze, or other porous material) over his mouth and breath through the cloth. But don't waste precious time looking for a cloth if you don't have one.

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

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. Remember, 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.

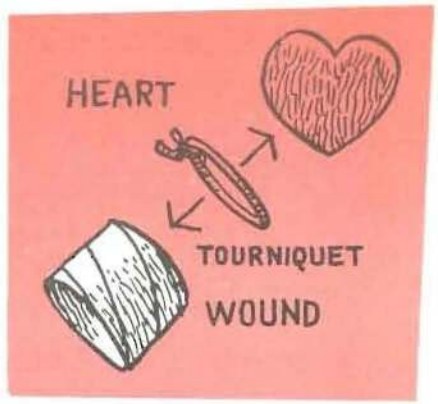
4. If blood soaks through the dressing, do *not* remove the dressing. Apply more dressings.

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.

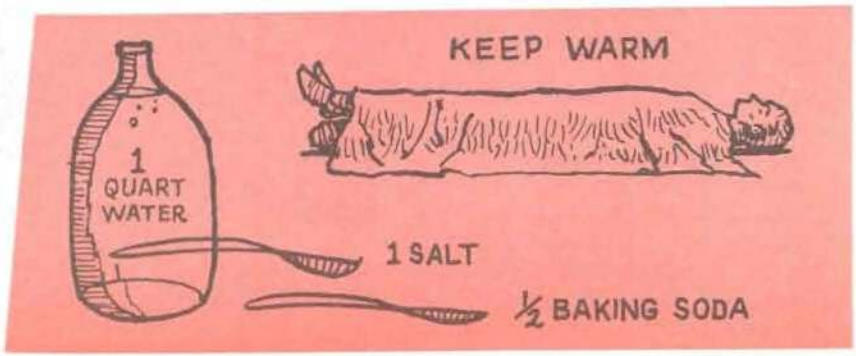
A person can be "in shock" whether he is conscious or unconscious.

Important: All seriously injured persons should be treated for shock, even though they appear normal and alert. Shock may cause death if not treated promptly, 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 higher than the rest of his body.



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.

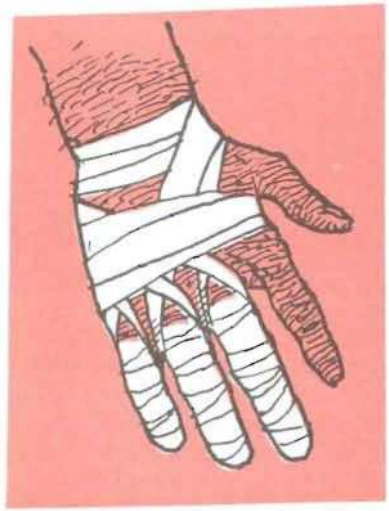
Some of the radioactive fallout on exposed skin may cause burns for which the same action should be taken as for normal heat burn.

The most important things to do about serious (second of 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 in 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 gause 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 then 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 breath on a burn, and don't touch it with anything except a sterile or 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.

If the patient has headache or general discomfort, give him one or two aspirin tablets every 3 or 4 hours (half a tablet, for a child under 12). If he is nauseous, give him "motion sickness tablets," if available. If his mouth is sore or his gums are bleeding, have him use a mouthwash made up of a half-teaspoon of salt to 1 quart of water. If there is vomiting or diarrhea, he should drink slowly several glasses each day of a salt-and-soda solution (one teaspoonful of salt and one-half teaspoonful of baking soda to 1 quart of cool water), plus bouillon or fruit juices. If available, a mixture of kaolin and pectin should be given for diarrhea. Whatever his symptoms, the patient should be kept lying down, comfortably warm, and resting.

Remember that radiation sickness is *not* contagious or infectious and one person cannot "catch it" from another person.