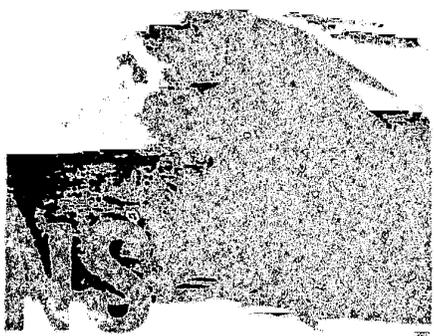
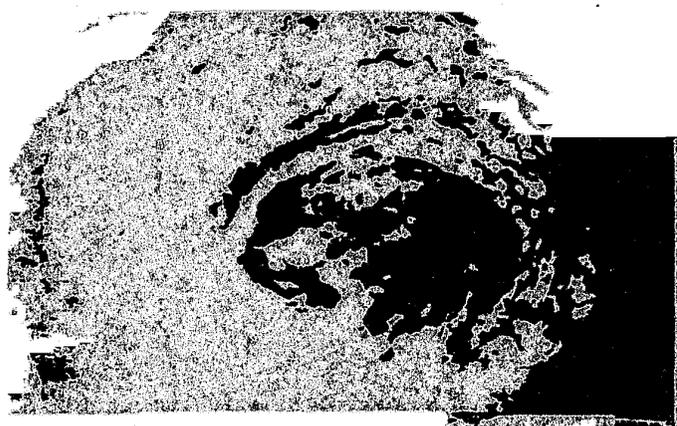


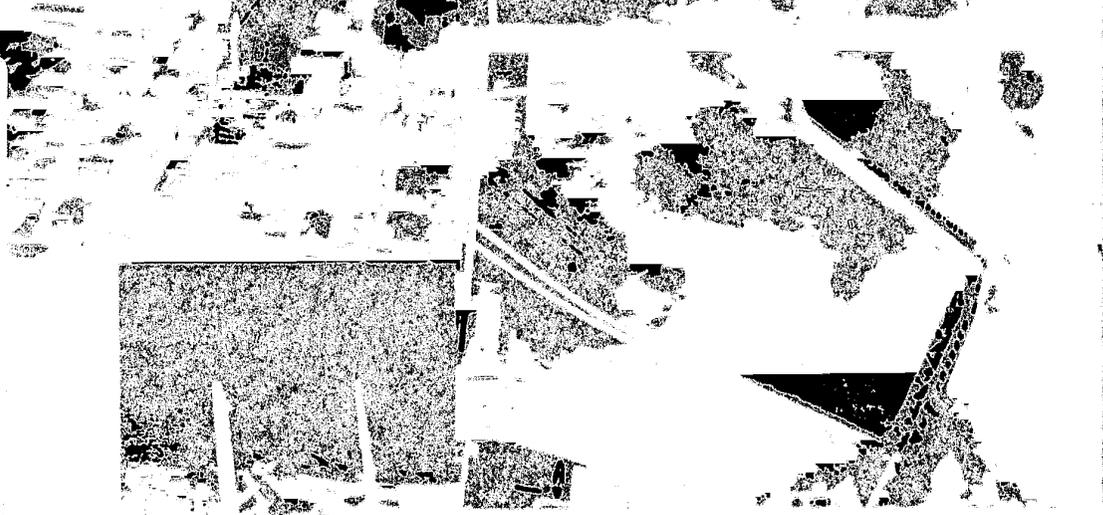
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DISASTER OPERATIONS

A Handbook for  *Officials*



138383



Federal Emergency
Management Agency



NOTE TO THE READER

This 1981 Handbook is an update of Civil Preparedness Guide 1-6, "Disaster Operations," July 1972.

The more important features are:

- All of the 1972 material has been retained—primarily, checklists on "Emergency Services Actions" for a variety of peacetime threats or hazards. ("Suggested Citizen Instructions" are included for a number of the threats.) A number of *new* checklists have been provided in this 1981 update.
- A new checklist is included on Energy Emergencies—those that can develop rapidly (due to an oil embargo, or power or natural gas outage) as well as creeping shortages due to rising costs of fuels and electricity. "Suggested Citizen Instructions" are also included. This checklist is condensed from a longer piece, Civil Preparedness Guide 1-28, "Energy Emergencies," January 1977, which was distributed to local and State civil defense agencies.
- Another new checklist is "Evacuation—Planning and Executing Evacuation from Threatened Areas." This contains guidance for "risk area" governments in case any one of a number of peacetime threats should require rapid development of ad hoc plans and arrangements for evacuation. These threats could include a severe international crisis that arose before a detailed crisis relocation plan had been prepared—or a potentially serious accident at a nuclear reactor facility, a terrorist threat of some type against a U.S. city, or various types of threatening natural disaster. (This checklist is similar to one in Civil Preparedness Guide 1-7, "Guide for Increasing Local Government Civil Defense Readiness During Periods of International Crisis," April 1979. It is repeated here because evacuation could be required by a number of different kinds of developing threats—as outlined in this Handbook.)
- A new checklist is provided on "Evacuation—Planning and Conducting Operations to Receive Evacuees in Host Areas." This contains guidance for host area governments should a developing threat require rapid development of ad hoc plans and arrangements to receive and care for evacuees from threatened areas elsewhere. One example would be a severe international crisis that arose before a detailed crisis relocation hosting plan had been prepared. Other peacetime threats, outlined above, could also call for rapidly developing hosting plans. (As with the risk-area checklist, this is similar to one in CPG 1-7, on local Increased-Readiness actions in a period of international crisis.)

- "Fallout Hazards from an Overseas Nuclear Conflict" is also new. Such a conflict, if it involved surface bursts of a large number of nuclear weapons, would not cause immediate sickness or deaths in the United States, but could still result in long-term threats to life and health in parts of the U.S. The general thrust of the actions recommended is to keep radiation exposures just as low as possible, to minimize long-term impacts on health. "Suggested Citizen Instructions" are included.
- "Nuclear Facility Accidents" is an update of Change 1 to this Handbook. This checklist was distributed separately in 1974, but has not previously been printed in the "Disaster Operations" Handbook.
- "Unauthorized or Accidental Launch of a Nuclear Weapon" is a checklist which includes guidance previously distributed in Civil Preparedness Circular No. 78-1, "Accidental Launch Warning," January 23, 1978. In the unlikely event of an accidental launch—with potential for a nuclear weapon detonation—*time would be of the essence*, to reduce casualties in the threatened area.
- Instructions and illustrations are provided at the end of this Handbook on (1) techniques for upgrading the fallout protection of existing buildings by crisis actions; and (2) field-tested designs for expedient shelters. These illustrations can be reproduced in local newspapers, if necessary, during an international crisis. The techniques and designs are based on the principle that "fallout protection is cheap as dirt." Their publication could reduce fallout casualties by tens or scores of millions, if most people took the actions shown, during a crisis followed by large-scale attack. (The illustrations also appear in CPG 1-7, April 1979, on Increased-Readiness actions.)

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DISASTER OPERATIONS

A Handbook for Local Government

This Handbook is an update of CPG 1-6, July 1972. The more important features of this 1981 update are summarized on pages i and ii (preceding). You are urged to read this summary of changes from the 1972 Handbook.

FEDERAL EMERGENCY MANAGEMENT AGENCY

138383

U.S. Department of Justice
National Institute of Justice

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A NOTE ABOUT EMERGENCY MANAGEMENT:

The Federal Emergency Management Agency (FEMA) is an executive agency that serves as a single point of contact within the Federal government for emergency management activities. We are dedicated to the establishment and maintenance of a comprehensive and coordinated emergency management capability in the United States to plan and prepare for, respond and recover from, and, most importantly, mitigate the effects of emergencies, disasters, and hazards, ranging from safety and protection in the home to nuclear attack.

FEMA is a partner, a supporting partner, to the wide range of public and private organizations and groups which on a full-time or part-time basis contribute to emergency management. We believe that emergency management should be implemented where it can be done best, as close as possible to the citizens at the State and local level. FEMA will support these local efforts by providing resources and guidance — always ready to respond when demand exceeds the capacity of local resources and capabilities.

Among FEMA's activities are:

- Establishment of policy, preparation of plans, and the coordination of preparedness activities for response to national crises, including nuclear attack.
- Assistance to State and local governments with preparedness planning to develop the capability to respond to all types of localized emergencies and disasters.
- Coordination of warning systems for natural disaster and nuclear attack.
- Development of policy for and oversight of the Emergency Broadcast System.
- Coordination of Federal activities concerning international civil emergency planning.
- Coordination of preparedness planning to reduce the consequences of major terrorist incidents in the United States.
- Practical application of research to lessen damaging effects of emergencies and disasters.
- Coordination of activities to promote dam safety.
- Development of community awareness programs for weather emergencies.
- Coordination of Federal, State, and private disaster-recovery actions.
- Improvement of State and local fire prevention through training and education.
- Provision of scientific information and technical assistance programs to State and local governments to reduce or eliminate flood risks for new and existing structures.
- Administration of programs to assist individuals and businesses to obtain insurance protection against floods, crime, and riots.

This Handbook is intended to help in one of these areas by assisting local officials in preparing their own flexible plan for actions to be taken by government and by citizens when disaster threatens or strikes.

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INTRODUCTION

This handbook is intended primarily for smaller municipalities and counties, and includes checklists pertaining to a number of specific types of emergencies and disasters that could confront such communities. It should be recognized, however, that the checklists are *not* aimed at professionals. For example, the forest-fire checklist is not for professional foresters or firefighters, but is rather intended for mayors and other officials of smaller communities that could be threatened by a forest fire.

While the primary audience for this handbook is the smaller city or county, the checklists contain material that can be useful to civil defense directors* and other officials in larger communities in developing the more complex plans that are needed in the larger jurisdiction.

The guidance in this handbook is basic and brief. The purpose is to assist local officials in preparing their own flexible plan for actions to be taken by government and by citizens when disaster threatens or strikes. A community prepared to cope with peacetime disasters is *that much better prepared* to cope with the effects of enemy attack.

The information presented here is based on the work experiences of thousands of people in actual disasters. Keep in mind that the guidelines are general and should be *adapted* to local situations.

The handbook is divided into five chapters, covering: (1) planning for emergency operations; (2) how to develop a basic plan for major emergencies; (3) the supporting maps, charts, and supplementary information that are required for carrying out emergency operations; (4) the actions that the chief executive and his designated public information representative should take in any major emergency; and, (5) the actions that the Emergency Services should take in various specific types of emergencies, such as floods and hurricanes, plus suggested information that can be used as the basis of instructions to the public, either directly or through the mass media.

* There is wide variation in the official title and in the duties of the person in the States and localities who is primarily responsible for coordination and leadership in developing civil preparedness and emergency management. He (or she) may be called the Civil Preparedness Director or Coordinator, the Emergency Management Director/Coordinator, the Disaster Services Director/Coordinator, the Civil Defense Director/Coordinator, or by a similar name.

I. PLANNING FOR EMERGENCY OPERATIONS

The major emergency situations to which this handbook applies are those situations where a government must be able to coordinate and direct the operations of many—if not all—of the emergency services that are available in the community. It is this need for *COORDINATED emergency operations* that distinguishes disasters or major emergencies from the emergencies that local fire and police forces, or hospitals and doctors, deal with every day.

1. What Is Emergency Readiness?

“Emergency readiness” means that a community is prepared to react promptly to save life and property if it is threatened or hit by a disaster or major emergency of any type. This requires that planning and preparatory actions be taken *before* there is an emergency.

If a hurricane or flood threatens, hundreds or thousands of people may need to be evacuated from low-lying areas, and then fed and housed until the danger is over. A massive effort may be needed to strengthen dikes or levees, when a river is rising to flood stage. If a tornado or earthquake hits, the damaged area must be searched for injured people, and the injured given first aid and then professional medical attention as promptly as possible; the homeless must be fed and housed. If a plane crashes into a town or an explosion occurs or a large building collapses, there are usually massive problems of getting fire and medical units into the damaged area, and of keeping curious spectators out.

The same types of emergency operations, but on an even larger scale, would be required if the United States should ever suffer an enemy attack, and there would be the added need to see that the people were sheltered against radioactive fallout.

Police, fire, engineering, and public health departments, plus doctors and other medical professionals, are the front-line forces that take the lead in carrying out the lifesaving, and property-preserving, operations required by a major emergency or disaster. Oftentimes they will be reinforced and assisted by State police, or fire and other services from neighboring communities. And citizen-volunteers will often be used—for example, crews to fill sandbags and strengthen levees, or to help police and fire forces search an earthquake-damaged area to rescue injured survivors.

2. The Need for Coordination by Local Executives

At times there have been larger-scale disasters in which an individual department did its job well, but was unaware of all the problems to be faced—and the instructions issued—by other departments. For example, during a large-scale fire emergency the water department issued a call to the citizens to hold the use of water to an absolute minimum so that water pressure could be kept up for the fire departments. At the same time, however, fire officials were on TV instructing citizens to wet down their roofs with garden hoses.

Coordination was lacking—the “left hand didn’t know what the right hand was doing.” Newspaper comments by local officials, after such a disaster, have included statements like this: “What happened is simple to describe. The various departments went their separate ways, with no one pulling them together. People have given little thought to the mechanics of disaster response.” Or, “The city and county agencies were on different wave lengths. They were all doing their job, but they weren’t talking together. There is no excuse for the absence of communications and coordination.” And remember that poorly coordinated operations can lead to the loss of lives that might have been saved, or the destruction of property that might have been preserved.

The whole concept of emergency readiness can be summed up by saying that the forces of government—and all others with emergency missions—must be able to “do the right things at the right time,” when the chips are down. This includes procedures for coordinating the operations of police forces, fire forces, ambulances, hospitals, medical personnel, and all other people and units with capabilities for helping citizens under disaster conditions.

3. Specific Requirements for Emergency Readiness

Specific requirements for emergency readiness include:

a. A control center—an Emergency Operating Center—where local executives can direct and control emergency operations. The mayor, chief of police, fire chief, civil defense director, and others at this EOC will have the same information on the emergency situation, and they will be able to coordinate decisions more rapidly by being face-to-face. The “left hand will *know* what the right hand is doing.” The EOC should have means of communicating with field forces, such as police vehicles, hospitals, fire units, or groups working on dikes or levees.

b. Local government executives and community leaders should have done some planning on who would do what if the community is threatened or hit by various types of disaster. They should also test these plans in exercises that simulate different kinds of disaster in which these key leaders would be the community’s top decision-makers.

c. The community’s leadership should be ready to give emergency instructions and information to their citizens. People want to be told practical things that they should or shouldn’t do when a disaster threatens or strikes. They need and seek instructions so that they may avoid injury to themselves and their families, and minimize damage to their houses and other property. Don’t be misled by the widespread but erroneous idea that people are apt to “panic” in a threatening or dangerous situation. This hardly ever happens. People want to get solid, down-to-earth, and practical advice from their governments. Use the local warning capability to alert the public for radio and TV advisory bulletins *before* the disaster occurs, if it is at all possible to do so. Don’t wait too long to broadcast reliable and official information.

The above three specific requirements for emergency readiness are the “mechanics of disaster response.” By doing just these three things, many communities have reached a good level of emergency readiness, and proved it when a peacetime disaster struck. There have been several disasters when local officials were already in an EOC that was then used as the focal point of operations 24 hours a day during the period of lifesaving operations, and on into the initial part of the cleanup and longer-term recovery period. During the emergency operations period, the mayors, city managers, and other key officials broadcast information and instructions to the people continually over radio stations, in addition to coordinating the emergency operations of local forces.

The balance of this handbook contains additional suggestions on the preparations and planning that should be done in every community for effective response when the chips are down.

II. HOW TO DEVELOP A BASIC PLAN OF OPERATIONS FOR MAJOR EMERGENCIES

A three-part approach is recommended for developing a local plan of operations for major emergencies: (1) Write out a basic plan that covers the authority, organization, staffing, essential facilities, and general operations common to all major emergencies; (2) support the basic plan with materials such as maps of the area, organizational charts, emergency call-up lists of people required to activate the emergency operating center and the field forces, sources of major local resources that can be used in the emergency, and any other information or data that would be useful during the emergency; and (3) develop specific checklists that cover the actions to be taken by the local chief executive, his public information representative, the local Emergency Services, and the voluntary services of the community. Details will vary from community to community.

The following eight items should be considered when developing a plan of operations for major emergencies.

1. Authority for Setting Up the Emergency Operations Plan and Organization

This should state the legal basis for the organization—the statute and any local ordinances or resolutions which authorize the establishment and organization of the emergency operating forces. Detailed legal documents should be kept separate from the basic plan and need not be located at the Emergency Operating Center.

If it has not already done so, the local governing body of a community should pass an ordinance or adopt a resolution giving its chief executive the authority and responsibility for forming an emergency operating organization. The chief executive can then issue the orders and regulations required to establish and regulate the organization, assign personnel to key positions, define responsibilities, provide for the control and management of local resources during emergencies, and define mutual-aid agreements with other communities. Many local governments already have existing ordinances relating to civil defense and disaster relief; if not, sample ordinances are available from State civil defense offices. It is best to follow the form used by other communities within your State.

Mutual-aid agreements exist among many communities. The governing bodies of two or more communities formally enact, by ordinance or resolution, permission for their local governments to assist one another in the event of any disaster within defined limits under a prearranged plan and disaster organization. The plan must be approved by the governing body of each community. Mutual-aid agreements must also be in conformity with, and authorized under, the statutes of the State involved. The provisions of these agreements should be known to the Emergency Operating Center staff. Examples are available through State civil defense offices. It is best to follow the form used by other communities within your State.

2. Types of Emergencies Covered by the Plan

This section of the basic plan should contain a Table of Contents listing the types of emergencies covered by the action checklists. The list for one community may not be the same as for another. It should include the types of emergencies which the community may encounter because of location, terrain, type of industry, or previous experience. It should not, however, be limited to types of emergencies experienced by the community. For example, the plan should provide for an airplane crash even if there has never been one in the community.

3. Plan Execution

The basic plan of a small community should be written so that it provides the steps and procedures for communitywide *coordination* of government and citizen actions *before and during* a

disaster. The following is an example of the major points of decision-making that can occur when a basic plan is executed.

In an actual emergency, the executive head of local government takes charge of the situation. If the situation warrants, he activates the Emergency Operating Center (as described in section 5, below), gets a quick picture of the situation from the designated field operations chief, and starts emergency public information activities (described in section 7, below). If the situation requires it, he gives warning and instructions to the public as soon as possible. He directs operations at the Emergency Operating Center, using the "Action Checklists" and "Suggested Information for Instructions to Citizens" described in section 8, below.

As soon as the local Emergency Operating Center is activated, he notifies the State Civil Defense Emergency Operating Center. The State EOC notifies communities that may be affected. If the situation so requires, and legislation permits, he requests the local governing body to formally declare the emergency a disaster; and he then sends copies of the resolution to the State civil defense office.

When the situation warrants, he phases out Emergency Operating Center activities but continues emergency public information activities until emergency relief operations are finished.

As a last step in executing the basic plan, he should make up final reports to the local governing body, and send copies to other government agencies as required. These reports should be based on the Emergency Operating Center log entries, supplemented by other information relating to the emergency operations.

4. Emergency Services

Within any community there are generally four "Departments" that may have the capability to respond to emergencies 24 hours a day, and are referred to as "Emergency Services." These are the Police, Fire, Medical, and Public Works Departments. Of these, the Police and Fire Departments are on duty around-the-clock, while Public Works is mobilized full-time only for specific operations, such as in severe weather. The Medical Service is more of a variable, but all of the health and medical resources of the community should be included in planning for emergency operations. If there is a hospital in the community, it is generally staffed full-time. However, whether there is a hospital or not, medical personnel respond when needed. There may also be volunteer rescue squads available, and an "emergency welfare service" can usually be quickly assembled to provide emergency food, lodging, clothing and other essentials as required. The Red Cross and local church groups are its core.

A community must depend entirely upon its own resources during the initial impact of any emergency or disaster. Assistance and additional resources should be obtained through channels only after local resources have been fully committed.

5. Emergency Operating Center

a. Selection of Emergency Operating Center Locations

It is best to have a good primary Emergency Operating Center located in a governmental or community building, and equipped with communications and emergency power. If such a "recommended" facility is not available, an Emergency Operating Center can be set up for emergencies *other than enemy attack* in a place that has a telephone switchboard with several outside lines, and enough space for additional communications equipment and operational personnel.

One or more alternate Emergency Operating Centers should be designated in case a disaster prevents use of the primary one. It is most important that there be a central point for the coordination of government services, voluntary agencies, and emergency public information. It is desirable to supplement such a center with on-site "command posts" in large-scale emergencies. Police, Fire, and Rescue vehicles are good mobile units for this purpose since they have communications.

b. Essential Staffing

The executive head of local government or his designee, representatives of the "Emergency Services," and the news media are the main work force of an Emergency Operating Center. They need to be together in a central location where they can coordinate disaster control activities effectively, and communicate with the public.

Not all of the above listed Emergency Operating Center staff personnel will be needed to handle every type of emergency. As noted in section 8, below, some disasters may not call for medical or public works involvement beyond that of normal day-to-day operations, but require only increased staffing for expanded police, fire, and emergency public information operations. These three functions have the central immediate role in local emergencies since they provide the 24-hour response capability needed to cope with most emergencies and to advise the citizens. It is most important that they understand their emergency assignments and that vacancies are filled as soon as they occur.

c. Voluntary Agencies and Labor Unions

In many communities, the American National Red Cross and other voluntary groups, many church-related, have a capability to respond rapidly to major emergencies. Agreements with such groups and local affiliates of Labor Unions will make coordination automatic and prevent duplication of effort in such missions as providing manpower, food, clothing, shelter, and first aid. Inasmuch as the Red Cross has a Congressionally mandated responsibility, this organization cooperates at all levels of government and can be a valuable resource to local government in time of major emergency.

d. Use of Available Communications

No single communications system is ideal for coping with all disasters. The most practical approach is to make an inventory of all existing communications systems in the community, and develop a simple plan to coordinate operations at the Emergency Operating Center by using these existing facilities, being careful not to overload any of them. This inventory should include telephone switchboards, radio base stations, and mobile and portable radio units (one and two-way), whether owned by government, business, or private citizens.

Police, fire, and public works "emergency service" communications can be augmented by using commercial or amateur radio systems for supplementary or backup purposes. If available, put tape recorders on all communications equipment to maintain an *official* record of transmissions.

Local broadcast stations (radio and TV), particularly those with emergency power equipment, can provide extensive one-way emergency information to the public. Local newspapers can be used to convey more complex readiness information.

6. Assessment of the Emergency

In each emergency, the Emergency Operating Center staff should as rapidly as possible assess the scope and magnitude of the emergency to determine what information each emergency operating group needs, where this information is obtainable, which group should receive this information, how the information can be confirmed, and how it can best be communicated. The information can be placed on a community map with clear plastic overlays containing information that pertains to the emergency. This information should be used as the basis for directing and controlling the government's emergency efforts, and for issuing emergency news releases, reports and instructions. The Emergency Operating Center is the central direction, control, and coordination point for emergency operations. As such, it is the place to decide what specific information should go to persons carrying on "emergency service" operations. The police, fire, and public works two-way mobile communications

systems are especially valuable for transmitting and receiving messages about developing situations, and for confirming and authenticating information reaching the Emergency Operating Center from other sources.

7. Emergency Public Information

This function is often overlooked in emergency planning. It should not be. It can be the most essential element in saving lives, alleviating suffering and hardship, protecting property, and aiding recovery. Keep in mind that, of all the "Emergency Services," the news media are not a part of government, but they are vitally needed as part of the team in an emergency. This means local officials should enlist the media in making preparations for handling disasters *before* the disaster strikes. There should be a single point of contact in local government for the news media—perhaps the chief executive—or the CD director or coordinator.

In any community, the people are normally kept informed by the news media—newspapers and radio and television stations. These media, especially radio and TV, should be fully utilized to provide fast, accurate, *official information and instructions* to the public. In addition to helping the people directly, this can also greatly ease the disaster-control job of government. After the most appropriate actions are decided upon, the local news media can transmit instructions on such matters as disaster warnings, self-help information, and systems for locating missing members of families. The emergency information plan should also include procedures to be followed at the Emergency Operating Center so that local news representatives can work efficiently with and receive *official information* from the chief executive and designated representatives of the police, fire, medical, and other emergency services.

8. "Action Checklists" and Suggested Information for Instructions to Citizens

A local basic plan for major emergencies should be supplemented by two types of "Action Checklists," plus information that can be used to prepare instructions to citizens for specific emergencies. Examples are shown in Chapters IV and V of this handbook.

a. Executive Leadership Actions

The "Executive Leadership Actions" suggested in Chapter IV are intended to serve as guidance for the chief executive or his designated representative during all types of major emergencies. They are a series of sequential steps a local chief executive should take in coordinating emergency operations from a central point of direction—the Emergency Operating Center. Part A describes priority activities relating to the governmental response to the emergency. Part B relates to public information actions.

b. Emergency Services Actions

The "Emergency Services Actions" for various specified types of disasters are concerned with the emergency operations of the fire, police, medical, public works, and voluntary agencies usually directly involved in coping with emergencies. The guidance is not all-inclusive, but it covers the key points. It has been compiled from a study of checklists and disaster reports, and from discussions with officials of government and voluntary agencies who have operational experience in emergencies. To be fully effective in your community, the "Emergency Services Actions" guidance should be made compatible with existing police, fire, and other established operating procedures.

c. Suggested Citizen Instructions

Example instructions for various types of major emergencies have been developed separately to expedite emergency public information measures, especially when a disaster threatens or actually strikes a community.

These contain general emergency information and example *basic* instructions that should be adapted to the needs of your community. They are *not* intended to be issued to the public "as is." Rather, they are intended to assist in the development of lifesaving instructions for use by local newspapers, radio, and television stations—your main links to the people you serve in an emergency. Some of these instructions can also serve as public educational tools before a disaster; e.g., getting ready for emergencies such as winter storms, floods, and hurricanes. Many of the suggested instructions apply equally to several types of specific emergencies; for example, some flood instructions may also apply to winter storms and hurricanes. It is recommended that local instructions be developed according to the needs of the locality and the situation. Consideration should be given to prepositioning selected instructions for such emergencies as tornadoes at local radio and TV stations, for immediate use if the need arises. None of the examples will replace the specialized "news-instructions" that your people will need during and after an emergency.

Some types of emergencies may not involve all the people of the community, or aren't the type for which basic citizen instructions can be prepared. For these emergencies—bomb threats, radiological accidents, search and rescue, transportation accidents, public demonstrations and civil disturbances—there are no "Suggested Citizen Instructions" in this handbook. Also, there are none for the threat of enemy attack because the Federal Government already has issued these basic instructions in a variety of formats—a public handbook ("In Time of Emergency") a newspaper kit, two radio kits, and a television motion picture ("Protection in the Nuclear Age").

III. SUPPORTING MAPS, CHARTS, AND SUPPLEMENTARY INFORMATION

The basic plan should be supported by appropriate materials that may be needed at the Emergency Operating Center during a disaster. Six types of supporting material are recommended as a minimum:

1. Maps of Local Operations Area

County and town road maps (as well as other maps) may be tacked to sheets of wallboard. Grease pencils and colored pins may be used on clear plastic overlays to depict emergency situations, and to show the locations of available manpower and equipment. The use of overlays to visualize the situation has proven successful not only to illustrate what's happening, but also to help make decisions on emergency actions to be taken. Simple magnetic maps may be made by placing magnets on maps that have metal screening underneath. Regardless of the method used, the information should be kept simple, with color coding used as much as possible.

2. Organization Charts and Procedures for Emergency Operating Center

Simple organizational charts can be useful before and during emergency operations. The most effective charts are those not cluttered with detail and notations. Usually the names, titles, addresses, and telephone numbers of key emergency personnel will be sufficient. Also, the chart should show which members of the Emergency Operating Center staff are responsible for certain actions, such as dealing with local industries or contractors who have emergency equipment or supplies on hand. Brief instructions on emergency purchasing and billing procedures should be included.

3. Call-up Lists of Key Personnel To Activate Basic Plan

Call-up lists of key personnel will be useful in activating the basic plan. They should include names, addresses, phone numbers, and organizational responsibilities for emergency operations. The lists should cover the key personnel of government, voluntary service organizations, news media, hospitals, local industries, large local contractors, and other non-governmental organizations that can assist in coping with a disaster. It is suggested that the names of as many alternates as possible be listed in case primary personnel are not available. In addition, the mayor and other authorized officials should carry pocket cards containing the names, phone numbers, and locations of the key "emergency services" staff. Identification cards and permits should be issued to provide passage through police lines.

4. Listings of Major Local Resources for Emergency Operations

Every major source of local manpower, equipment and supplies should be considered in preparing a local "Resources Data Book." A telephone directory is a good starting point for obtaining information on every source of manpower, equipment, and supplies available in the community. The "Resources Data Book" should not contain such details as specifications on the resource items themselves, since these will change frequently. The person responsible for custody of the items and the procedures for obtaining them should be listed. The information should be updated at least annually.

5. Need for a Glossary of Terms

To be effective, the basic plan, the checklists, and public information releases should use language that means the same thing to everyone concerned. Because of possible language problems, a glossary of terms should be included among the supporting documents of a basic plan. Terms with two or more meanings should be defined in the glossary by using synonyms or illustrations.

6. State and Federal Disaster Assistance

The action checklists should be supplemented with information on how to request State and Federal assistance for a major disaster. In a disaster situation the State civil defense office is the primary point of contact between the local government and the State. The local Chief Executive, or his designated representative, should be ready to communicate with the State office and, in the event the impending or actual disaster is severe and large enough, carry out the steps listed under the appropriate actions of the "Executive Leadership" checklist.

IV. EXECUTIVE LEADERSHIP ACTIONS FOR ALL MAJOR EMERGENCIES

The following "Executive Leadership Actions for All Major Emergencies" constitute a set of checklist items for use by local Chief Executives in case an emergency or disaster of any type threatens or hits their community. These actions are therefore *general* in nature, but essential.

The actions aim at the following:

1. The Chief Executive or his designated representative takes charge of the situation. This will usually require activating an Emergency Operating Center (EOC). The EOC is the place where key local executives gather to (a) size up the situation, based on reports from field units; (b) determine the strategy and tactics that will be used in dealing with the emergency; and (c) exercise direction and control over local forces. The EOC must have communications to local police, fire, ambulance, rescue, and other emergency forces, and it should also have communications to other local governments so that mutual-aid assistance can be requested, if necessary, as well as to State Area or central EOC's, so aid can be requested, if necessary, from State government.

2. Local government officials act to get emergency public information to the citizens, via the news media. This includes keeping the public informed on the situation, and giving citizens advice on what they should or should not do.

The specific actions to be taken in a particular type of emergency are covered in checklists that are provided following the "Executive Leadership Actions for All Major Emergencies." Thus the checklist applying to the *specific* emergency confronting the community should be used in conjunction with this "Executive Leadership" checklist, depending on whether the emergency is a hurricane, earthquake, chemical accident, bomb threat, or other type of emergency. Material to be used in preparing local instructions for citizens (emergency public information) is also provided for several of these specific types of emergencies.

A. Priority Operations Actions by Chief Executive or His Designated Representative

1. Takes charge of measures to cope with the emergency.

2. Activates the Emergency Operating Center; alerts key staff (Civil Defense Director, Police, Fire, Medical, Public Works, Emergency Welfare, Public Information); sets shifts for 24-hour coverage, if required; tests communications with emergency services (listed as above), voluntary services (Red Cross, church groups, Salvation Army, etc.) and local affiliates of Labor Unions; starts activity logs. (The 24-hour coverage should be provided by using two or three shifts to prevent early exhaustion, to assure proper briefings and efficient continuity of operations, and to make certain the off-duty shifts can rest.)

Organization (Person)	Location	Telephone	
		Day	Night
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_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

3. If the immediate situation indicates it is necessary, gives orders for warning the public, with instructions to stay tuned to local radio and TV stations (identify each station) for further information and advice.

4. Notifies next higher level of government (county, State area or State EOC and specific officials, per established channels in your State). Include the following information:

- a. Type of disaster
- b. Time disaster occurred or threatens to occur
- c. Actions already taken
- d. Areas and number of people involved
- e. Estimate of loss of life and extent of damage
- f. Type and amount of assistance required

(Be specific. A "send all possible aid" message complicates matters. Specify exact quantities of such items as first aid supplies, lanterns, portable generators, blankets, sandbags, etc.)

5. Mobilizes "Emergency Services" in accordance with checklists of "Emergency Services Actions" for the particular emergency.

6. Alerts voluntary agencies (Red Cross, Salvation Army, others) and local affiliates of Labor Unions as appropriate; initiates a system for assigning and using volunteers rather than having them looking for work to do.

Organization (Person)	Location	Telephone	
		Day	Night
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_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

7. Briefs EOC staff on emergency situation based on reports; the staff reviews appropriate checklists of "Emergency Services Actions" for coping with situation.

8. Seeks additional information on threatened or actual emergency situation; determines critical problem areas; watches for sudden or unusual side effects; e.g.,

- a. Disruption of electric power (have emergency power ready)
- b. Rupture of gas or petroleum lines (have fire and rescue alerted)
- c. Rupture of water or sewer systems
- d. Accidental release of toxic, caustic, or noxious chemicals or other hazardous materials
- e. Rumors (nip them in the bud).

9. Designates Field Chief, to be in charge of all operations at disaster scene, if standing operating procedures do not already designate a Field Chief; decides on general strategy to be used, in accordance with appropriate checklists of "Emergency Services Actions" and "Suggested Citizen Instructions." (For example, Crowd Control; Traffic Control; Citizens' Self-Help Instructions; Shutdown of Utilities; etc.) The Field Chief should establish and maintain an inter-service coordination center at the disaster scene to prevent duplication of service activities.

10. Mobilizes additional local manpower and other resources to extent required to supplement Emergency Services; ascertains whether additional assistance is needed; as necessary, requests mutual aid, State assistance, Labor Union assistance, military support, etc., *according to established procedures*; makes *specific* requests, such as number of men for security, rescue, feeding teams, etc. or *specific* equipment, such as number of sandbags, pumpers, etc.; *requests military assistance only through State Emergency Operating Center and only if there are insufficient civilian resources*. (Local military commanders are authorized to act independently only if the threat of life and property is too urgent to wait for official authorization.)

11. If required, and legislation permits, requests governing body (council, freeholders, etc.) to issue declaration of emergency.

12. Obtains periodic emergency situation reports, as threat of actual situation develops; directs EOC staff to maintain accurate logs of the following: Service Activities, Estimates of Damage, Manpower and Equipment Utilized, Mutual Aid or Assistance Requested/Provided, Financial Expenditures, Reports Provided, and others, as required.

13. Provides continuing direction and coordination of emergency operations:

- a. Maintains firm position of leadership.
- b. Maintains close surveillance of emergency situation; establishes official liaison and reconnaissance positions to report on-site activities and requests to the Emergency Operating Center.
- c. Relies on Emergency Service chiefs and key personnel to carry out service operations; provides enough manpower to change work parties as often as necessary to prevent physical exhaustion.
- d. Maintains a central point of contact where individuals can get information regarding victims, dangerous locations, identification passes, traffic movement, and other essential assistance.
- e. Continues liaison and coordination with other political jurisdictions involved in the emergency. (This will facilitate exchange of correct information when supporting manpower, equipment, and supplies are essential.)

14. When situation indicates there should be a return to normal routine:

- a. Releases outside assistance, including volunteers
- b. Phases down Emergency Service operations
- c. Returns borrowed or rented equipment and supplies
- d. Reduces or removes restrictions in disaster areas
- e. Keeps public informed
- f. Discontinues services that become marginal, such as special telephone lines, and public address systems.
- g. If required, sends specified number of copies of resolution of declared emergency to the State Civil Defense Office

15. Prepares reports for official record.

B. Priority Public Information Actions by Chief Executive or His Designated Representative

1. Provides essential information to the public, emphasizing the immediate actions being taken by local government to save lives.

2. Authenticates all sources of information being received and verifies specific information with appropriate Emergency Service concerned; e.g., highway movement restrictions that police are enforcing.

3. Coordinates information with the chief executive before releasing it to the news media (list all local radio, TV and newspaper outlets, with addresses and telephone numbers).

Organization (Person)	Location	Telephone	
		Day	Night

4. Issues instructions and advice to the public on what they should do or not do (see checklists for appropriate emergency; e.g., "Hurricanes—Suggested Citizen Instructions.") Instructions and advice should be clear and simple, such as:

- a. *Avoid use of telephone except for emergency requests and reports.*
- b. *Monitor local radio or TV for continuing information and instructions.*
- c. *Stay away from disaster areas—Sightseers interfere with search and rescue operations. Sightseeing can be dangerous.*
- d. *Don't walk or drive unless necessary—If it is necessary, follow designated routes and directions provided by this broadcast (give specific information at this point).*
- e. *Please do not pass on rumors or exaggerated reports of the situation.*

5. Based on official decisions, issues additional information and instructions to the public; e.g., evacuation of dangerous areas, restriction on highway use, location of refugee care centers, etc., in accordance with problems that arise and official decisions made.

6. Prepares information and materials needed to handle individual responses to public inquiries. In addition to the above example checklists of "Executive Leadership Actions for All Major Emergencies," this handbook includes example checklists for 20 types of major emergencies requiring Emergency Services Actions, and 10 examples of "Suggested Citizen Instructions." All of these can be adapted to local requirements for use before and during a major emergency.

V. EMERGENCY ACTIONS

BOMB THREATS

Emergency Services Actions

A. General Information

Compared with other community emergencies, the covert and criminal nature of bombing incidents make detection and disarming of explosive devices a highly dangerous problem for police authorities of smaller communities with only limited resources. Consequently, planning for such emergencies should include contacts with a nearby military Explosive Ordnance Disposal Detachment, or a neighboring city police department which already has a bomb disposal unit, in order to arrange for obtaining the assistance of experienced personnel to help deal with an emergency.

Since there may be some question in regard to the participation of non-local manpower in handling dangerous explosive materials which are the responsibility of local authorities, consideration must be given in advance to being prepared to "go it alone," if necessary. Therefore, training programs for local policemen in handling improvised explosive devices should be utilized when they are available through Military Explosive Ordnance Disposal Control Centers, and Law Enforcement Assistance Administration programs.

Experience shows that over 95% of all written or phoned bomb threats are hoaxes. However, the chance remains that the threat may be authentic and appropriate action should be taken in each case to provide for the safety of people and property, and to locate an actual explosive or incendiary device so that it can be neutralized.

While the responsibility for action rests primarily with the police department, there may be a need for decisions by other persons also involved. For example, a plant manager or a school principal must make the decision whether or not to evacuate the building after a bomb threat has been received, and where to send the people who are evacuated. Also, people who work in the threatened building—and who know what does or doesn't belong in or near the building—should conduct the search for a suspected bomb.

Bomb-threat areas are almost invariably limited in size. Unless there is a multiple bomb threat, or searching covers a large geographical area, there is little need for activating an Emergency Operating Centers, as is required for forest fires, floods, hurricanes, and tornadoes which usually involve hundreds or thousands of people in a community and call for emergency public information and the coordination of several Emergency Services. Bomb threats usually involve the management of a single structure and the local police department during the search and detection phases. For this reason, no companion checklist on "Suggested Instructions for Citizens" is provided for bomb threats.

If an object is located and thought to be a bomb, and the local police cannot handle the disposition of it, one of the aforementioned bomb disposal units should be called in to assist. In any event, the following checklist is a sequential approach that can be used to handle a bomb threat situation.

B. Upon receipt of a report of a bomb threat

1. The building management will decide whether to clear the building for the safety of the occupants; police will advise and assist the management, particularly if no evacuation plan or fire-alarm drill has been previously prepared and tested. Each type of building requires different kinds of actions (e.g., factory, school, courthouse, etc.). The building can be searched most effectively by persons familiar with the building. The search can be organized as follows:

- a. Maintenance and janitorial personnel search such areas as hallways, rest rooms, stairwells, utility closets, and areas outside the building.
- b. Office personnel search their immediate office area.

- c. Cafeteria personnel search the kitchen and dining rooms.
- d. If a school is involved, teachers search their own classrooms.

Personnel doing the searching *must not move* any unfamiliar or suspicious package, but report the object's description and location immediately to the official supervising the search procedure. It must be emphasized strongly to all persons searching that any movement of an explosive device by untrained persons may cause detonation.

2. If necessary, *notify* the chief executive and civil defense director of the bomb threat, and *alert* key members of the Emergency Operating Center, particularly the fire and medical services and others, as directed by the authorized official.

3. *If a strange object is found it should be assumed to be a bomb.*

- a. The location and description of the object, as best it can be provided, should be reported to the search supervisor. This information should then be relayed immediately to a central point in the building. This point should be manned by the building management and police.
- b. Unless required by duty to remain in the vicinity of the object, all personnel should be cleared from the area. Guides may be required to escort the bomb disposal team to the site.
- c. The danger area should be marked and blocked off to at least 300 feet; the areas below and above the object should be included.
- d. Search personnel may assist by checking to see that all doors and windows are open to minimize blast effects and damage if the bomb is detonated.
- e. The use of two-way (walkie-talkie) radios within five feet of the suspected object is dangerous because radio frequency energy can cause detonation of electrically operated blasting caps.

4. The police should dispatch specialists with Bomb Disposal Training, either from the local police department, or if not available locally, specialists should be obtained from the following sources (list names of nearest police, military explosive ordnance disposal units, and others having bomb disposal capability. Arrangements for such assistance should be made in advance, with agreements containing specific procedures. Also list emergency telephone numbers).

Organization (Person)	Location	Telephone	
		Day	Night

5. *If the person in charge decides the situation requires that the suspected object be quickly removed as a menace to life or property*, the only recourse is for him to allow some courageous volunteer from one of the Emergency Services, who is capable of exercising judgment and taking all possible precautions, to attempt removal of the object to a place where if it is detonated, it will cause the least amount of damage or harm.

Basic safety measures to be observed must include:

Open doors and windows in order to allow escape of explosion pressures and reduce damage if there is a detonation; turn off gas and flammable fuel lines if present.

Do not congregate around the person who is working on the object. A crowd will distract him, and if there is an explosion, there will be more casualties.

Avoid handling the suspected object directly—Use either a long pole or a long rope with a loop attachment to drag the device away, keeping as much distance and as many protective barriers between the object and disposal team as can be managed.

Be prepared and expect the object to be “booby-trapped,” which has lately become a diabolical innovation of bomb terrorists.

6. Fire department may dispatch firefighting equipment to the vicinity of the threatened building to stand by for possible explosion and fires during steps 4 and 5 above.

7. Emergency Medical Services, including hospital personnel, should make preparations to be ready to receive casualties if they occur; cooperative mutual-support plans with other communities should be reviewed.

8. *After the device has been removed* to an area where it can be disarmed, consider and apply methods to contain fragmentation while at the same time allowing provision for the explosive force to be vented in a harmless direction. Soaking a suspected bomb may result in electrical short circuiting or chemical reaction and detonation of the bomb. Rifle fire and deliberate ignition of the device are both foolhardy, and may only serve to place the device in a more dangerous condition or cause an undesired detonation, the loss of valuable physical evidence, damage to property, and possibly loss of life. Once the bomb has been removed to a safe-handling area (e.g., a parking lot) and protective works have been erected, it should be left alone until the arrival of trained bomb disposal experts.

9. *Disposal or disarming of the device*, which ordinarily constitutes a serious problem for police officials, becomes a major undertaking for the police department of a small community when the services of highly trained bomb disposal experts cannot be obtained.

The U.S. Army *will* provide bomb disposal service to those communities which do not have a trained bomb disposal team. The bomb should remain untouched and protected in a safe holding area until their arrival even if an extended delay is anticipated. Attempted render-safe or disposal of bombs by untrained personnel tends to be suicidal.

C. If the situation is a multiple bomb threat or searching covers a large geographical area—the chief executive or civil defense director may activate the Emergency Operating Center in accordance with “Executive Leadership Actions for All Major Emergencies.” The Search and Rescue “Emergency Services Actions” also should be used. If the situation threatens a large fire, the Major Structural Fires “Emergency Services Actions” also should be used.

Advice and instructions to be issued to the public to minimize public alarm or to assist in the conduct of emergency activities will be dictated by requirements of the developing situation. A separate “Suggested Instructions for Citizens,” is not considered appropriate for bomb threats.

D. When the incident area is safe—resume normal routine, notify Emergency Operating Center, and make final reports, as required.

CHEMICAL ACCIDENTS

Emergency Services Actions

A. General Information

There are several thousand chemicals in daily use that can cause a local emergency affecting a substantial number of people. These effects include massive contamination of a community, explosions, and fires. Hazardous chemicals being transported interstate are required to be labeled with appropriate words of identification and caution. The U.S. Department of Transportation is responsible for regulating the movement of hazardous chemicals.

Local government should be on the lookout for hazardous chemicals in all occupancies, particularly in industries, hospitals, drug stores, hardware stores, film studios, dry cleaning plants, and garages. Care should be taken to note the location, the hazardous properties, and characteristics of individual chemicals, and potential hazardous reactions with each other.

A means of identification of the precise nature of chemicals at the scene of an accident is still a major problem. Despite the availability of means of obtaining information once the chemicals have been identified, it is in the early stages that action must be taken, and without a ready identification, there is a problem of how to deal with chemicals. Early establishment of an adequate identification system for containers and vehicles transporting chemicals should be a matter of priority.

The following are source of technical information on chemical hazards:

U.S. Department of Transportation
Materials Transportation Bureau MTH-30
Office of Hazardous Materials Operations
2100 Second Street, S.W.
Washington, D.C. 20590

Emergency Action Guide for Selected Hazardous Materials—This publication is to help emergency service personnel during the first 30 minutes of an incident involving a spill of a volatile, toxic, gaseous, and/or flammable material that is shipped in bulk. General safe procedures to follow are provided for various hazardous materials.

National Fire Protection Association,
470 Atlantic Ave.,
Boston, Mass. 02110

Publication No. 49, *Hazardous Chemicals Data*
No. 325, *Properties of Flammable Liquids, Gases and Volatile Solids*
No. 491, *Manual of Hazardous Chemical Reactions*
No. 704M, *Fire Hazards of Materials*

Manufacturing Chemists Association,
1825 Connecticut Avenue, N.W.
Washington, D.C. 20009

Chemical Safety Data Sheets

Transportation Emergency Information "Chem-Cards"—These cover specific chemicals moved in tank motor vehicles which possess flammable, oxidizing, corrosive, poisonous and other hazardous properties.

Marine emergency "Cargo Information Cards"—These are carried in the pilot house of a vessel towing tank barges and on the barges. The information on these cards includes the hazards of chemicals and recommendations on handling fires, chemical leaks, and human exposure threats.

National Agricultural Chemicals Association,
1155 15th Street, N.W.
Washington, D.C. 20005

—Members of this Association have a network of more than 40 safety teams nationwide prepared for prompt clean up and decontamination of *poison pesticides* involved in a major accident. Action checklist item number 2 below describes the procedure for obtaining their assistance in major emergencies.

Association of American Railroads, Bureau of Explosives,
1920 L Street, N.W.,
Washington, D.C. 20036

B.E. Pamphlets No. 1, 2, 3, and 4, *Emergency Handling of Hazardous Materials in Surface Transportation*.

The National Fire Protection Association (NFPA) has prepared a training package for a course entitled "Handling Hazardous Materials Transportation Emergencies". It is a 20-hour program including slides, cassette tapes, and manuals and is available at a cost of \$350. Also available from NFPA is a seminar entitled "Handling Hazardous Materials Transportation Emergencies" which is oriented towards police and fire fighting personnel, public works officials, city administrators, and civil defense personnel. Included in the seminar is information on hazardous materials in transit, decision making for those required to stabilize hazardous materials incidents, and methodologies for developing a community plan for emergency actions. There is a charge for attendance which is \$130 per enrollee. Information can be obtained by contacting NFPA at 470 Atlantic Ave., Boston, Mass. 02210.

B. In the Event of a Chemical Accident or Incident—take the following actions:

1. Notify the chief executive and civil defense director who, if the situation warrants, initiates activation of the Emergency Operating Center in accordance with "Executive Leadership Actions for All Major Emergencies."

2. *If at all possible, determine the names of the chemicals involved.* Call the Chemical Transportation Emergency Center, phone 800-424-9300 (202-483-7616 in District of Columbia) for advice and assistance.

3. Restrict the area of the incident. A determination of the size of the risk area, potential for flash back, speed and direction of wind or spill on the ground should be left to the judgment of the authority in charge at the scene of the accident.

4. Rescue injured or trapped persons and remove them from the incident area if it is possible to do so.

5. Evacuate the area as deemed necessary, particularly downwind (downstream).

6. Allow no one in the immediate area of the incident except "Emergency Service" personnel.

7. If available, follow applicable guidance on Transportation Emergency Information "Chem-Cards" or Marine Emergency "Cargo Information Cards" to handle spills, leaks, fires, and human exposure to the chemical. Notify nearest U.S. Coast Guard unit of Chemical Accidents or Incidents (including pollution incidents) involving marine transportation or endangering Federal water resources.

<i>Organization (Person)</i>	<i>Location</i>	<i>Telephone</i>	
		<i>Day</i>	<i>Night</i>
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8. If the chemicals are not identified and the hazards unknown, fight fires as though chemicals are TOXIC and likely to have EXPLOSIVE REACTIONS.

9. Keep "Emergency Service" personnel upwind (or upstream) to avoid smoke, fumes, and dust.

10. If required, decontaminate the area by washdown or other prescribed method for the chemical(s) involved. Flammable or toxic materials should not be washed into the drains. Such materials should be handled with caution, using foam, burying, or disposing of it as prescribed by the manufacturer.

11. If hospitalization of personnel is required, inform ambulance and other transporting personnel of the chemical contamination of the injured. Also notify hospital officials.

12. Reroute traffic as required.

13. Make reports to Emergency Operating Center for use in news releases to the public when necessary to minimize public alarm, to keep the area clear, and to assist when required.

14. Do not immediately move vehicles, containers or wreckage, except to rescue people, unless a quick cleanup of the scene is required in the interest of public safety.

15. Restore the immediate area of the incident to a safe condition to lessen the probability of additional hazards and accidents.

16. Close out emergency operations and notify the Emergency Operating Center. Submit final reports, as required.

CHEMICAL ACCIDENTS

Suggested Citizen Instructions

A. General Information

The likelihood of a community suffering a major disaster caused by a chemical accident has greatly increased because of the increase in everyday use of chemicals by all segments of our population as well as the movement of chemicals by all types of transportation. This guidance is designed primarily for communities which do not contain chemical plants but might be affected by a transportation accident or by an accident in a chemical plant in a neighboring community.

B. Citizen Cooperation with Authorities

Prompt reporting of a chemical accident is every citizen's responsibility. Local authorities, and particularly the Emergency Services (police, fire, etc.) need factual information upon which to base decisions on how to respond to the accident. For example, they must be able to execute their plan of action for handling the emergency. (See "Chemical Accidents—Emergency Services Actions.") Authorities must also be able to correctly answer questions from the news media so that erroneous reports are prevented.

A citizen should not spread rumors. If he is a witness but not a casualty, he should tell the authorities exactly what he saw. If not a witness, the citizen should keep posted via radio or TV but *not* rush to the scene since this causes serious obstructions to the Emergency Services who are attempting to save lives and property. A citizen at the scene is needlessly exposing himself to injury, particularly if chemical reactions take place.

C. Emergency Treatment of Casualties

A citizen may find himself administering emergency first aid to a victim of a chemical accident or to himself. The treatment described in this section is limited to emergency procedures which anyone can administer. The first-aid measures suggested lean heavily on the use of running water because it is available most anywhere and will remove chemicals by solution, dilution, and mechanical action. These measures cover four of the principal types of chemical threats to people: (1) Inhalation; (2) Skin Exposure; (3) Swallowing; and (4) Eye Exposure.

Inhalation

1. Remove person(s) to an uncontaminated atmosphere. If the person(s) has been overcome, do not attempt a rescue without the protection of proper respiratory equipment, preferably some form of self-contained breathing apparatus. Remember, a gas mask does not protect against atmospheric oxygen deficiency, nor is it effective in high concentrations (2 percent volume is the usual limit) of chemical vapors. Remember also that even though a self-contained air supply mask is worn, injury can occur through exposed skin surfaces if the air contaminant is an irritant or can be absorbed through the skin.

2. Have the person(s) lie down and keep him warm. If breathing is difficult, a sitting position may be more comfortable. If unconscious, see that his tongue does not fall back and obstruct his breathing. If vomiting starts, turn on side or face downward to prevent inhaling vomited material.

3. If breathing has stopped, shout for help and start any effective means of artificial respiration. Continue until breathing is restored or a physician arrives to take charge. An effective means of artificial respiration is one which the rescuer knows best how to perform. Mouth-to-mouth breathing is the most effective method now known. The back pressure-arm lift method is next most efficient. The Schafer prone-pressure method may also be used.

4. If breathing becomes difficult or color of the patient becomes blue-gray, check for an obstructed airway. If the airway is clear, oxygen may be given by face mask, but only by someone familiar with the use of the equipment and authorized to do so.

5. Call a physician as soon as possible or send someone to do this. Make sure the physician knows where he is needed and why he is needed.
6. Never leave an unconscious person unattended.
7. Never attempt to give an unconscious person anything by mouth.

Skin Exposure

1. Small exposures of the skin should be promptly flooded with water and followed by thorough, gentle scrubbing with soap and water.
2. Contaminated clothing should be removed and the underlying skin washed with running water followed by soap and water.
3. If large skin or clothing contact occurs, the person(s) should be hurried to the nearest shower and clothing removed while standing in the shower. The skin should be thoroughly washed with water in the shower followed by gentle scrubbing with soap and water.
4. Contaminated clothing should not be worn again until laundered.
5. A physician should see those cases which show skin effects from the exposure or in whom symptoms of systemic illness appear.

Swallowing

1. Cause the victim to vomit as quickly as possible. This may be done by having him drink a lot of water then sticking a finger down his throat. Another effective means of causing vomiting is to drink a glass of warm water in which a tablespoon of salt has been dissolved. CAUTION: If strong caustic chemicals have been swallowed, vomiting may rupture damaged tissue. Never give an unconscious person anything by mouth.
2. Call a physician at once.
3. Keep the victim lying down and keep him warm and comfortable.

Eye Exposure

1. Take the victim immediately to the nearest water fountain or other source of clean running water.
2. Spread the lids with the fingers and allow the water to flood the eye.
3. Roll the eye about so that the water may contact all eye surfaces.
4. Continue such emergency washing for 15 minutes.
5. Take the victim to a first-aid station or to a physician as soon as possible after the emergency washing period is completed.

EARTHQUAKES

Emergency Services Actions

A. General Information

The earthquake is a shaking or trembling of the crust of the earth, caused by underground volcanic forces or the breaking and shifting of rock beneath the surface.

Earthquakes are unpredictable and strike without warning. They may range in intensity from slight tremors to great shocks and may last from a few seconds to as much as five minutes. They could come in a series over a period of several days.

The actual movement of the ground in an earthquake is seldom the direct cause of injury or death. Most casualties result from falling objects and debris because the shocks can shake, damage or demolish buildings and other structures.

The disruption of communications along with light and power lines, and gas, sewer or water mains can be expected. Earthquakes may also trigger landslides and generate huge ocean waves, each of which can cause great damage.

B. Definitions

Earthquake Magnitude—The energy released by the earthquake, as expressed on a recording device, using the Richter scale.

Earthquake Intensity—The damage caused by the earthquake as expressed by the Mercalli scale.

Tsunami—A large wave created when the energy produced by an undersea earth movement or volcanic eruption impacts on a beach having characteristics suitable to produce such waves. Also commonly referred to as a tidal wave.

Epicenter—That point on the earth's surface directly above the center of the earthquake.

C. Upon receipt of a report that an earthquake is occurring or has occurred in the vicinity, take the following actions:

1. Notify the chief executive and civil defense director who, if the situation requires, will activate the Emergency Operating Center in accordance with "Executive Leadership Actions for All Major Emergencies."

2. Assess the situation. Initiate reporting to assist in damage assessment. This should include private industry, business, and utilities in the area. Utility damage and hazards are particularly important.

3. Evaluate the overall community situation. Compare reports from the incident areas by the police, fire, and public works officials in charge of operations with other reports to obtain a communitywide assessment of the situation. This evaluation should produce more effective decisions on what is needed, where, and when.

4. Keep in communication with the incident areas to determine priorities for handling rescue, casualties, firefighting, spillages of chemicals, health hazards due to sewage line breakages, flooding, electric outages, shelter in extremely bad weather, and other immediate operational requirements.

5. Provide specific information for broadcasts over radio _____ (identify local stations) and television _____ (identify channels) to keep public advised of threats such as aftershocks, and of what actions should be taken. (See accompanying "Suggested Citizen Instructions.")

6. Designate field operations chiefs as required and appropriate; e.g., public works engineers on floods, senior fire officers on fires, senior police officers on evacuation and traffic movement. Use appropriate Emergency Service Actions Checklist and accompanying "Suggested Citizen Instructions."

7. If necessary, get mutual aid in accordance with agreements.

8. If the disaster gets beyond local capability, it may be necessary to mesh local Emergency

Operating Center functions with State and Federal emergency organizations and request Federal assistance. (See appropriate items of the "Executive Leadership Actions for All Major Emergencies.")

9. Allow no one in the disaster area unless authorized. Cordon the area of rescue, fire, and other hazardous operations. Reroute traffic as required, keeping the public informed through news broadcasts.

10. Maintain current situation reporting from the field to the Emergency Operating Center. Provide information for periodic and flash releases to the public when necessary to minimize public alarm, keep the operations area clear, and assist the Emergency Services forces.

11. Initiate inspection of public and private buildings and other structures for hazards and structural damage necessitating early condemnation, evacuation, demolition, or other safety measures. This should be under the direction of the senior public works engineer.

12. When conditions permit, close out emergency operations, notify the Emergency Operating Center, and submit final reports, as required.

NOTE

A large-scale disaster, such as a serious earthquake, can create the need for long periods of repair and restoration. This in turn may necessitate manpower, equipment, materials, and supplies at the scene of restoration, long after the closing of the Emergency Operating Center.

Tsunamis have been mentioned only briefly in this handbook. However, they do present a significant although relatively rare threat to communities on the Pacific Coast where special attention should be given to their possible occurrence.

EARTHQUAKES

Suggested Citizen Instructions

A. General Information

The earthquake is a shaking or trembling of the crust of the earth, caused by underground volcanic forces or by breaking and shifting of rock beneath the surface.

Most natural hazards can be detected before their threat matures, but not earthquakes. However, the U.S. Geological Survey monitors global earthquake activity and crustal movements, measures earthquake effects on buildings, and seeks to learn what, if any, advance signal an earthquake might give. The National Oceanic and Atmospheric Administration detects and warns against Pacific tsunamis (tidal waves generated by some earthquakes).

B. Safety Rules

The actual earth movement of an earthquake is seldom a direct cause of death or injury. However, this movement causes collapse of buildings and other structures. Most casualties result from:

1. Falling bricks and plaster.
2. Splintering glass.
3. Toppling furniture, collapsing walls, falling pictures and mirrors.
4. Rock slides on mountains and hillsides.
5. Fallen power lines.
6. Sea waves generated by earthquakes.
7. Fire resulting from broken gas lines and spillage of gasoline and other flammables—a danger which may be aggravated by lack of water due to broken mains.
8. Drastic human actions resulting from panic. (This rarely happens.)

The following is a list of items to consider before, during, and after an earthquake.

Before an Earthquake

Check for earthquake hazards. Bolt down or provide other strong support for water heaters and other gas appliances. Much fire damage has resulted from toppled appliances and broken gas lines caused by earthquakes. Place large and heavy objects on lower shelves of closets and storage areas. Brace or anchor high or top-heavy objects. Wire or anchor overhead lighting fixtures.

During an Earthquake

1. Remain calm. Think through the consequences of any action you plan to take. Try to reassure others.
2. If indoors, watch for falling plaster, bricks, light fixtures, and other objects. Watch out for high bookcases, china cabinets, shelves, and other furniture which might slide or topple. Stay away from windows, mirrors and chimneys. If in danger, get under a table, desk, or bed; in a corner away from windows; or in a strong doorway. Encourage others to follow your example. Don't use candles, matches or other open flames during the tremor. Douse all fires.
3. If outside, avoid high buildings, walls, power poles, and other objects that could fall. If possible, move to an open area away from all hazards. If in an automobile, stop in the safest place available, preferably an open area. Stop as quickly as safety permits, but stay in the vehicle for the shelter it offers.

After an Earthquake

1. Check for injuries. Do not attempt to move seriously injured persons unless they are in immediate danger of further injury.
2. Check for fires.
3. Wear shoes in all areas near debris or broken glass.
4. Check utility lines and appliances for damage. If gas leaks exist, shut off the main gas valve.

Shut off electrical power if there is damage to wiring. Do not use matches or lighters until it has been established that there are no gas leaks.

5. Do not turn light switches on and off. This creates sparks which can ignite gas from broken lines.

6. Clean up spilled medicines, drugs, and other potentially harmful materials immediately.

7. Draw a moderate quantity of water in case service should be disrupted. Do not draw a large quantity as this could interfere with firefighting. If water is off, emergency water may be obtained from hot water heaters, toilet tanks, melted ice cubes, and water packed in canned vegetables. If water pipes are damaged, shut off water supply at main valve.

8. Check to see that sewage lines are intact before permitting continued flushing of toilets.

9. Do not eat or drink anything from open containers near shattered glass, as glass contamination may exist. Only if their use is essential should liquids be strained through many folds of a clean handkerchief or cloth.

10. Check chimneys for cracks and damage. Unnoticed damage could lead to a fire. The initial check should be made from a distance. Approach chimneys with great caution.

11. Check closets and storage shelf areas. Open closet and cupboard doors carefully to guard against objects falling.

12. Check individual house or apartment building for structural damage and if deemed necessary evacuate your family until competent authority declares it safe to return. Stay out of severely damaged buildings; aftershocks can shake them down.

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

14. Do not go sightseeing immediately, particularly in beach and waterfront areas where sea waves could strike, or in areas where buildings have collapsed or where electric wires may be down but still alive. Keep the streets clear for passage of emergency vehicles. Be prepared for additional earthquake shocks.

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

ENEMY ATTACK

Emergency Services Actions

A. General Information

The threat of an enemy attack upon the United States would call for a number of preparedness actions in addition to those measures recommended for handling major peacetime emergencies and disasters. These actions would primarily aim at protecting citizens against the fallout radiation hazard that nuclear attack would create.

Every community would find itself involved in preparedness actions. Small communities in particular would need to accelerate preparedness since they often do not have ongoing civil defense programs of the type and scope required.

The publication "In Time of Emergency" (H-14) contains the type of information that would be needed in making preparations to meet an attack-caused emergency, and this publication is available from State civil defense agencies. The actions outlined below include only the most essential measures, described in general terms.

B. If a period of severe international crisis occurs—State authorities may recommend that local governments take actions to increase their civil defense readiness. The State would probably specify the actions to be taken at various times during the crisis, including the following Increased-Readiness actions to be taken by the local Chief Executive or his civil defense director.

1. Assemble heads of Emergency Services, local industry and labor leaders, and voluntary agency representatives for a briefing on the situation. If not already done, develop a local civil defense plan, using Chapter II of this handbook, on "How to Develop A Basic Plan Of Operations For Major Emergencies." If the plan exists, review and update it.

2. Check availability of "In Time of Emergency" materials (see list following section F) and Civil Preparedness Guide, particularly CPG 1-7, "Guide for Increasing Local Government Civil Defense Readiness During Periods of International Crisis."

3. Advise citizens on the following topics as a minimum (making use of "In Time of Emergency" materials described at the end of this checklist):

a. The hazard that would be created by radioactive fallout should the United States suffer attack; how radioactive fallout particles give off most of their radiation quickly; and how heavy materials (bricks, earth, etc.) provide protection (shielding) against fallout radiation.

b. The local system for getting attack warning to the people, and how to get further information from radio broadcasts.

c. The local emergency action plan, including advice for citizens on *where to go and what to do in case of attack*. If a Community Shelter Plan (CSP) has been prepared for your community, check to see that it contains up-to-date information, and prepare to publish (or re-publish) it, and to distribute it to the citizens. If a CSP has not been prepared, develop the best information you can for the citizens. (Include the location of any public fallout shelters in the community; also include advice for people in areas without public shelters, on how to improvise additional fallout protection in homes with or without basements.) Distribute the foregoing information on "where to go and what to do" when State authorities recommend doing so.

d. How to improvise a shelter in the home, or to build an expedient shelter. (Building an expedient shelter outside the house will provide better protection, if your community is in a risk area. Expedient shelters provide significant blast protection—as well as excellent protection against fallout.)

e. Emergency supplies to be taken to public fallout shelters, if available, or to shelter areas in the home—especially water, foods requiring no cooking, and special medicines.

f. Care and use of water and food supplies, and maintaining sanitation in public or home shelter areas.

g. Reducing fire hazards (especially closing window blinds, draperies, etc., or covering windows), and rapidly extinguishing ignitions caused by nuclear bursts before they grow into fires that citizens cannot extinguish.

h. Emergency care of the sick and injured.

i. The need to follow official instructions.

4. Start civil defense training, particularly of radiological monitors and shelter managers, as well as citizen training on fire protection and first aid. (Contact State civil defense for assistance in locating qualified instructors.) If such training is already being given, accelerate it.

5. Develop or improve Emergency Operating Center facility so that it meets at least minimum requirements for a civil defense emergency; note need for fallout protection and other features (emergency power, etc.).

6. Exercise alerting, staffing, and operating the Emergency Operating Center; maintain a 24-hour communications watch, ready to give public warning if required. Don't sound sirens or other warning devices, but test individual components of warning systems to make sure the system will work if required. Establish communications to all public shelters; for example, using Citizen Band (CB) radios.

7. Check, and improve as required, plans and readiness of personnel and equipment in each of the following areas that applies to your jurisdiction: communications, warning, radiological defense, public shelter, public works engineering, rescue, fire prevention and control, law and order, emergency welfare, health-medical, school system, industry, and local resource plans. For details, see Civil Preparedness Guide 1-7, "Guide for Increasing Local Government Civil Defense Readiness During Periods of International Crisis."

8. Assure that shelter managers (working with building owners) take fire prevention actions in all public shelters (especially closing window blinds and drapes, or covering windows)—and in other buildings as well.

9. Instruct shelter managers on the great importance of (a) putting shelterees promptly in the maximum protective posture against fallout and (in risk areas) blast; (b) taking fire prevention actions, if not already done; (c) having shelterees extinguish any attack-caused ignitions immediately (stamp out burning curtains, throw smoldering furniture out a window), and then return to best-protected part of the shelter; (d) keeping shelterees in maximum fallout protective posture during the fallout period; and (e) being prepared to lead shelterees to another area upon emergence from shelter, should residual radiation levels still be relatively high. (Remedial movement could involve distances of 20 to 40 miles or more.)

Maximum blast protective posture (in risk areas) means placing shelterees close together near the outside of the basement, or around columns—not in areas underneath an unsupported ceiling.

Maximum fallout protective posture (for all areas) means crowding shelterees into the parts of the shelter providing the best fallout protection. (These areas should be identified by monitoring after fallout arrives, if radiological instruments are available in the shelter. If instruments are not available, the basement will usually provide the best fallout protection.)

In warm weather, crowding shelterees can lead to buildup of high temperatures and humidity, which can in turn cause dangerous heat exhaustion. If heat and humidity problems develop, shelter managers must move some shelterees to less well protected parts of the shelter, if possible rotating shelter occupants to such areas.

10. If a Crisis Relocation Plan (CRP) has been prepared for your community, review it—including emergency instructions for the public, to be published if National authorities notify States to execute CRP's.

If a CRP has not been prepared, start rapid ad hoc planning for the possibility of crisis relocation. Use the Checklist at page 53 of this Handbook if your community is a risk area, and the one at page 49 if your community is a host area. (Host-area planning to receive evacuees could be essential even if National authorities did not notify States to start crisis relocation. This is because in an acute crisis there could be a large number of spontaneous evacuees from U.S. risk areas.)

If your community is a host area, it will be essential to publish instructions for evacuees on

how to *improve the fallout protection of existing buildings*—by piling about six (6) feet of earth along all exposed walls, plus 10 or 12 inches of earth overhead. If other materials are not available, use the “Illustrations of Shelter Upgrading Techniques” provided at pages 141 to 155 at the back of this Handbook.

If necessary, these illustrations can be published in your local newspaper.

THE FOLLOWING SECTIONS—C, D, E, AND F—LIST THE ACTIONS THAT THE CHIEF EXECUTIVE, PREFERABLY THROUGH HIS LOCAL CIVIL DEFENSE DIRECTOR, DIRECTS BE TAKEN, IF NOT ALREADY DONE.

C. Upon receipt of Attack Warning or notice of a nuclear detonation:

1. Sound public warning devices, followed by broadcasts of instructions for citizens.
2. Direct key local officials to report Emergency Operating Center; activate EOC and establish communications with next higher EOC (such as County or State) and with public shelters; check all communications systems including radio backup; check food, water, fuel, and other EOC supplies.
3. Activate shelter management staffs if the community has public fallout shelters. Direct shelter managers to (a) place shelterees in maximum protective posture *immediately upon entering shelters*; (b) assure that fire prevention actions are taken *immediately* (close window blinds, etc.) if not already completed; (c) instruct shelterees on the urgency, should a nuclear detonation occur in the area, of rapidly checking all parts of the building for smoldering furniture and other weapon-caused ignitions, and *immediately extinguishing ignitions* or throwing smoldering furniture out the windows—to prevent fires that could force occupants to leave shelter; and (d) keep shelterees in best fallout-protected areas of the shelter (identified by monitoring, if instruments are available), during the period of fallout hazard.
4. Assist public to reach shelter, if community has public shelters, using police and other Emergency Services.
5. If community has access to local or nearby radio or TV stations, advise public on last-minute actions to *improvise additional fallout protection* in homes with or without basements, using dense materials for shielding; also advise people using home shelter areas to check and supplement subsistence supplies, particularly water, foods requiring no cooking, and special medicines; give last-minute advice on fire prevention and extinguishment per B 3g above. Urge citizens in public (or home) shelters to assume the maximum protection posture against fallout and (in risk areas) blast per B9 above—leaving the best protected area only to assure that fire prevention actions (close blinds, etc.) have been taken throughout the public shelter or the home and (in case of a nearby detonation) to extinguish attack-caused ignitions.
6. Activate Weapons Effects Reporting (WER) stations, if available, and direct radiological monitors to check equipment.
7. Monitor warning system and Emergency Broadcast System for information or instructions.

D. Upon notice of a nuclear detonation—either from monitoring the warning system and Emergency Broadcast System, from the next higher EOC, or from visual sighting, the following actions are taken:

1. Maintain information log on nuclear detonations, including time and direction. Report to next higher level of EOC if damage resulted locally.
2. Instruct WER stations (if available) to determine time of initial arrival of fallout (0.5 R/hr); when fallout intensity increases to over 50 R/hr; and time of peak (highest) fallout intensity, if any of these events occur. Report foregoing information to next higher level EOC if requested. If community does *not* have radiological monitors and instruments, request next higher level EOC to provide forecasts and warnings of estimated time of fallout arrival, as soon as information is available.
3. Continuously assess local situation, particularly fallout and fire hazards. Urge the population (via radio broadcasts, if possible) to stay in best fallout protection available.
4. Make initial computation of estimated time when citizens can be released from shelters. (If

community does not have a Radiological Defense Officer who can make this computation, request assistance from next higher level EOC.)

5. Keep people in public shelters advised on fallout and fire hazards, and other aspects of the situation as it develops (e.g., by telephone contact with shelter managers). If community has access to Emergency Broadcast System, advise people in home shelters on situation.

6. Establish maximum limit for radiation exposure of Emergency Service personnel who may be called upon to perform emergency missions outdoors. (Ordinarily this should not exceed 150 R total exposure in one week, and should if possible be set lower.) Check whether dosimeters are available for personnel who may be called on for outdoor work, and ensure that radiation exposure records will be kept for such personnel. If dosimeters are not available, calculate time limits for outdoor work so that total exposure limit will not be exceeded; if community does not have a Radiological Defense Officer who can make this calculation, request assistance from next higher level EOC. Rules of Thumb for outdoor operations by crew members with little or no previous exposure to radiation are:

a. If radiation intensity is *over 50 R/hr*, conduct only the most critical, life-or-death operations. (Example: evacuating people from buildings threatened by uncontrollable fire.)

b. If radiation intensity is *between 0.5 and 50 R/hr*, essential outdoor operations can be conducted, but Emergency Service personnel should not receive more than the total radiation exposure previously set, and *the life-saving payoff of the operations should be great enough to justify the radiation exposure* that the Emergency Service personnel will receive. (Example: A decision could be made to send a crew of 5 members to bring water to a public shelter containing 83 people, without any water to drink, even though the crew members would be exposed to an estimated 110 R total radiation dose.)

7. Answer calls for help, where radiation exposure to personnel performing outdoor missions is justified by lifesaving potential of operations. If critical problems arise that cannot be met with forces or resources available within the community, request help from next higher-level EOC.

E. Prior to estimated time when citizens can be released from shelters:

1. If advised by next higher level EOC that further attack is unlikely, establish approximate time for releasing citizens from shelter, based on calculations on fallout and other hazards affecting the area. (If community has no Radiological Defense Officer able to make these computations, request assistance from next higher level EOC.)

2. Assess amount and condition of essential resources available in or near the jurisdiction, particularly drinking water, food, gasoline and other petroleum products, and medical supplies.

3. Assess status of utilities in or near the jurisdiction (electric power generating plant, telephone exchange, water purification plant, sewage treatment plant, etc.)

4. Establish interim standards for local consumer rationing, based on availability of and expected demand for essential resources.

5. Issue State Resources Management Directives, if available (in writing, or received from next higher EOC). If community has access to local or nearby radio or TV stations, follow up with broadcast on consumer rationing arrangements and how resources will be managed locally. If community does not have access to radio or TV, transmit information to any people in public shelters, and prepare for printing notices for remainder of citizens, for distribution after release from home shelters.

6. Alert ration registration teams and check on availability of required forms and materials.

7. Alert Emergency Personal Service (or "Welfare") teams.

8. Arrange for utility personnel to start repair and restoration of public utilities, if needed, before release of the people from shelter.

9. Establish security measures for essential resources (food, gasoline and petroleum products, medical supplies, etc.) *before* release of the people from shelter.

10. If radiation levels require *remedial movement* from the community, make preparations for

movement before releasing people from shelter (including arrangements for transportation by private cars, buses, or trucks to safer areas).

F. At the appointed time for releasing population from shelter:

1. Inform (or reinform) citizens on consumer rationing arrangements and how resources will be managed locally, and on where citizens will be housed after release from shelter (e.g., at home if community is undamaged).
2. Continue security measures for essential resources (food, gasoline and petroleum products, medical supplies, etc.).
3. Start registration for consumer rationing (register people in public shelters before they leave shelter, if possible).
4. When the foregoing preparations have been made, issue instructions for release of people from public shelters. Using local or nearby radio or TV stations, police personnel, or other means, advise people who took shelter at home that they may leave shelter areas.
5. Enforce State Resources Management Directives.
6. Provide assistance for more seriously affected communities as requested by next higher level EOC; e.g., mobilize and send medical assistance teams, receive and care for injured or uninjured survivors from damaged areas, etc.
7. If *remedial movement* is required, implement preparations made in E10 above (provide instructions to citizens via shelter managers or radio, provide transportation, coordinate movement with next higher level EOC, etc.)

NOTE re CITIZENS' INSTRUCTIONS TO BE ISSUED DURING PERIODS OF INTERNATIONAL CRISIS

This section does not have a companion section on "Suggested Citizen Instructions" because the Federal Government has made these basic "rules" available to State and local directors in a variety of formats. Most carry the title, **IN TIME OF EMERGENCY**, and consist of the following:

1. *Public Handbook*, H-14, English and Spanish editions. (Spanish edition is coded H-14-A.)
2. *Newspaper Columns*; P&P-5. Fifteen articles in reproduction proof form (December 1980).
3. *Two Radio Kits*. Both kits consist of a record and live copy. Kit No. 1 has 10 one-minute spot announcements. Kit No. 2 has six feature announcements ranging in time from two to seven minutes each.
4. *Television Motion Picture*. A 25½-minute color film (new title "Protection in the Nuclear Age").

All of these materials are for use by local communities today. However, local directors would find them especially useful in getting lifesaving instructions to their people *in a crisis period*.

In addition, hundreds of local communities have distributed Community Shelter Planning instructions to their people, and are prepared to reissue these localized emergency instructions in a crisis period as local "news" rather than an information project funded by the Federal Government. In a crisis, there would not be *time* for such Federal funding arrangements.

Local fire departments should take the lead in instructing citizens on:

1. Fire-prevention actions to be taken during crisis periods (most important action is to keep window blinds or draperies closed, or cover windows with whitewash, mud, etc.).
2. The need to extinguish rapidly (within 5 to 7 minutes) any ignitions caused by nuclear bursts, before ignitions grow into fires that citizens cannot put out. (Example actions: stamp out ignitions in draperies; push smouldering items of furniture out of window or door.)

ENERGY EMERGENCIES*

Emergency Services Actions

A. General Information

Energy emergencies can include both fast-developing fuel shortages—such as those caused by an oil embargo or a power or natural gas outage—and creeping shortages caused by rising costs of fuels and electricity.

Fuel shortages can also be caused by localized imbalances in supply. For example, the nationwide or Statewide supply-demand balance may sometimes appear satisfactory on paper, but temporary maldistribution can cause fast-developing local hardships. Strikes and severe cold weather, for example, can disrupt fuel movements and cause regional shortages.

In addition a shortage of energy in one form (such as natural gas) can impact on and cause shortages in other fuels (propane), heating oil, and residual oil, which are substitutes for natural gas. These emergencies can threaten both our health and livelihoods.

The main categories of government measures to cope with energy emergencies are basically three:

1. Emergency interventions into private industry, for example, to expedite or divert fuel movement into the fuel-short areas and to apportion it equitably, or to restore electric power—that is, mandatory allocation and rationing. These interventions are mostly under State or Federal supervision.

2. Provision of social services for immediate and direct relief of human hardships caused by fuel shortages or power outages—such as unheated homes, no gas or electricity for refrigeration and cooking, or unemployment due to business shutdowns for lack of fuel.

3. Reducing energy consumption, that is, ordering and enforcing curtailments of electricity used for non-essential purposes, reducing vehicle speed limits, shortening work weeks, or intensively promoting voluntary conservation.

Lower income people are particularly hard-hit by rising fuel and utility costs as well as the impacts of non-price-related shortages and outages. Local leaders should give high priority to being organized and ready to call upon all appropriate social services agencies, both public and private, who can on short notice provide human needs relief ranging from unemployment cash compensation to in-kind supplies of food, clothing, and shelter.

Local leaders must also be prepared to report (to State officials) quick, complete, and accurate assessments of the kind and severity of local hardships which justify outside help—such as emergency diversion of fuels from non-impacted areas or from State-owned stockpiles or reserve supplies authorized by the Federal Department of Energy, for State deployment. These reserve fuel supplies are called “set asides” or “State reserve.”

Local strategies must continually stress long-run conservation by everyone, as well as readiness to deal with fast-breaking crises like power outages, and heating fuel shortages in winter.

B. Analysis of local emergency vulnerabilities

Except for those emergencies that can strike without any warning (e.g., storm-disruption of power lines), warning time can be increased by developing and updating an “*energy vulnerability profile*” of your community. That is, know the detailed, specific facts needed to answer the following questions, and to develop situation monitoring and standby response plans:

1. Does your State or sub-State area rely heavily on an uninterrupted flow of petroleum products (or gas) for life-support (or local industry support) from out-of-State, for which you have no locally available substitutes? Can these fuels be locally stockpiled? Who are the main local importers of

*This checklist is based upon a longer piece, Civil Preparedness Guide 1-28, “Energy Emergencies,” January 1977, which was distributed to State and local civil defense agencies. This checklist also includes new material, however.

the imported fuels? (Action: arrange for importers and your State Energy Office—State Civil Defense Office—to alert you when major bulk suppliers begin to talk curtailment.)

2. Do these imported fuels move by transport systems (trucks or pipelines) that are sensitive to labor strikes? or must fuels move to your area by waterways that can freeze up? or over bridges (or through tunnels) that can be (or have been) knocked out by accidents or flooding?

3. Are your winters frequently severe enough to freeze up local coal piles at electric power plants or other industrial operations?

4. Does your community have enough public transportation (subways, buses) for workers to rely on for commuting in case gasoline shortages deny them their automobiles?

5. Does your area's economy depend heavily on tourism that in turn depends on freely available (and affordable) gasoline?

6. Does your community depend on nuclear power plants for all or a portion of electricity needed locally? If the nuclear plant is down, can conventional plants' reserves fill the power deficit caused by the nuclear plant's outage? For all seasons of the year?

7. Does your local government charter, or organizational assignment of responsibilities, specifically identify:

a. A single official responsible for knowing, monitoring, and forecasting the energy supply-demand situation in your community?

b. A single official who is the only spokesman authorized to make official statements to the media and to the public on energy emergency matters?

Also, do these officials have available adequate physical capabilities for rapid communications with all sources of situation information (for example, State offices, suppliers, adjacent jurisdictions) as well as a central "situation room" for storing, retrieving, displaying, analyzing, and integrating all useful information?

8. Does your local government charter provide sufficient authority to the elected local chief executive to issue immediate warnings and public information, or declarations of emergency, whenever in his judgment he decides it necessary?

C. External Sources of Warning of Possible Energy Emergencies include:

1. News media reports—the most obvious and readily available source—on such topics as:

a. International conditions indicating an imminent oil embargo (not necessarily directed against the U.S. but which might, for example, obligate us by treaty to cut back on U.S. domestic consumption in order to supply U.S. allies).

Reports of refiners' cautions that crude oil or product storage levels are below optimum— for example, figures released in summertime on the heating oils (or natural gas) outlook for the coming winter.

Reports on impending shutdowns of power plants.

2. U.S. Department of Energy statements and predictions.

3. State Energy Offices' (and State Public Utility Commissions') statements and predictions.

D. Categories of Local Energy Contingencies include:

1. Fast-developing health and safety hazards causable by fuel or power shortages, for example, stoppages of iron lungs or elevators. (These are the problems most closely related to the civil defense director's primary attack-oriented responsibilities.)

2. Heating problems.

3. Electric power outages or shortages.

4. Natural gas shortages

5. Motor gasoline shortages

E. Basic preparedness and response actions

1. A basic preparation for energy emergencies, as well as for enemy attack, is to establish

directories of (and working contacts with) key "energy-oriented" local, State and Federal officials in organizations such as:

	<i>Telephone</i>	
	<i>Day</i>	<i>Night</i>
Associations of fuel oil dealers	_____	_____
Gasoline service stations operators' associations	_____	_____
Utilities	_____	_____
Media	_____	_____
Oil companies' regional headquarters	_____	_____
Oil companies' and pipelines' local terminals (and familiarize yourself with the delivery channels and practices for your area's various fuels)	_____	_____
Chamber of Commerce	_____	_____
Labor Council	_____	_____
Public school board (and superintendent)	_____	_____
State fuel allocation and rationing offices	_____	_____
Field offices of Federal agencies who can provide help, for example those listed in FEMA publication DR&R-8, "Human Needs," June 1980	_____	_____

2. Other basic preparations include the following:

a. Keep the public informed of the supply and demand situation for fuels (including gasoline), and outlook projections. (Keep in contact with State and county fuel allocation officials to obtain updated Statewide supply-demand picture). Know which fuels are the *most* critical to your community's economy, for example, diesel fuel for contractors' heavy equipment or for farmers.

b. Ensure that local operators of vital community services keep full and accurate monthly records of their fuel purchases, especially public safety agencies such as ambulance services, law enforcement agencies, hospitals, and fire protection services. Encourage employers to do the same.

Reason: During threatened or actual shortages, a common Federal fuel allocation practice is to base allowable quantity-purchases on some fraction of the purchaser's past history of his monthly and yearly requirements, which he must prove with acceptable records and receipts. The aggregate of such true records can help increase the total final volume of product that the Federal government can direct the oil companies to ship into your State.

F. Responses to fast-developing health and safety hazards include:

1. List and plot on maps hospitals, nursing homes, and residential users of iron lungs, shaker beds, kidney machines, and other life-sustaining equipment. Identify those who do and those who do not have their own emergency power sources. Inventory local secondary sources such as emergency generators. Assist in earmarking such back-up power sources. Local medical associations may have this data.

2. Coordinate development of standing readiness to rescue passengers in elevators if stalled by power failure.

3. Identify and plan emergency assistance to the local governmental, commercial, and industrial facilities (such as computers, food freezers) (a) whose equipment and stocks could be damaged by voltage reduction, and (b) who do not have their own emergency power generating equipment.

4. Keep gasoline filling station operators advised of emergency methods of pumping gasoline (for

example, supply copies of pamphlet, *What to Do When the Power Goes Off*, by the American Petroleum Institute, 1271 Avenue of the Americas, New York, New York 10020).

5. Develop personnel and material readiness to augment fire and police forces to cope with problems such as inactivated traffic signals, street lights, burglar alarms, stopped elevators in high-rise buildings, and lowered water pressure.

6. Be ready to advise householders what to do when home freezers stop (for example, publicize the instructions in the U.S. Department of Agriculture's leaflet No. 321).

G. Responses to heating problems include:

1. Develop an advance listing of specific apartment buildings and other residential facilities (including nursing homes, hospitals, etc.) which from past experience may be expected to have (or claim to have) heating problems—for example those with no capabilities to switch fuels, poor credit with fuels distributors, or a history of landlord-tenant confrontations.

2. Develop contacts and inquiry procedures regarding these buildings that will enable you to quickly assess the validity of their claims of hardship, so that you are always able to back up with solid facts any request you may make of the State Energy Office for fuel "set-aside" or "State Reserve" deployment to your area. In other words, be careful to build good credibility with the State fuel allocation office, because State must depend on those *at* the local scene to report accurately on which localities are "hurting" most, and therefore most deserve the extra fuels that the State controls when Department of Energy mandatory allocation regulations are in effect.

3. Whenever you intend to request the State to allocate "set-aside" or "State reserves"* of fuels to your locality, alert the local heating fuels distributors who customarily serve the buildings in trouble. (Note: It is *not* recommended that the local civil defense director get involved in credit matters.)

4. Plan for hosting evacuees in case lack of fuel forces householders to evacuate their homes in cold weather.

a. If a crisis relocation plan has been developed for hosting operations, can it be adapted to deal with heating fuel emergencies?

b. If no hosting plan exists, develop one (see the checklist in this Handbook on "Evacuation—Planning and Conducting Operations to Receive Evacuees in Host Areas" for general guidelines—which would have to be adapted to the special needs of an evacuation caused by lack of heating fuel).

Make standby arrangements with the managers of facilities suitable for temporary lodging (motels, schools, firehouses, churches, etc., especially those that have an assured firm fuel supply)—plus supporting suppliers of food, cots, blankets, transportation (including snowmobiles) and sanitation services—in case householders must evacuate their homes in cold weather. Ensure police protection of evacuated properties.

5. To safely delay evacuation as long as possible, arrange with all available local media to urge people to turn down their thermostats to lowest possible levels consistent with safety and the health condition of the individual person.

6. Stand ready to (a) advise all evacuating householders and other building operators how to shut down their buildings to avoid property damages, and (b) ensure police surveillance. Use all available media.

Distribute copies of booklet "Winter Survival," published by the Office of Consumer Affairs, Department of Energy, Washington, D.C., 20585, 18 pages. Obtain copies from Department of Energy, Technical Information Center, P.O. Box 62, Oak Ridge, Tennessee 37830.

*"State set-aside" or "State reserve," when Federal mandatory petroleum allocations (or rationing) is operating, is a variable (by month) amount of fuel from each prime supplier to a State, that is made subject to State government's control for use in resolving emergencies and hardships due to shortages. The government does not take title to the fuel, but tells the supplier to whom he must sell these particular amounts, or portions thereof.

7. Know the best sources of "back-up" alternate fuels in case the normally-used heating fuels are in short supply; for example, emergency sources of coal and wood. When necessary, publicize government regulations and instructions on how needy citizens may cut wood on government lands; also publicize lists of wood-using industrial plants where citizens may obtain scraps for fuel. (NOTE: With respect to gas (natural gas), residential users have the highest Federal civil priority but this priority may be changed by State public utility commissions. Maintain communications and coordination contact with your State public utility commission).

8. Arrange for stockpiling emergency supplies of local government-owned fuels; ensure compliance with local fire and building codes, also insurance coverages. NOTE: Stocks of heating oil should be "turned over" periodically; it does not keep indefinitely, nor does gasoline.

ADDITIONAL NOTE: Insist on wholesale prices from your supplier; even though local government is not normally a "wholesale purchaser-reseller" by Federal definition, it can be classed as a "wholesale purchaser-consumer."

9. Encourage hotels, motels, hospitals, nursing homes, etc., to install larger fuel storage tanks than they had before the 1973-74 oil embargo, that is, tank capacities sufficient to sustain operations for the longest heating emergency statistically possible in the area.

10. Promote long-range, continuing conservation programs to aid and guide businessmen and home owners to upgrade buildings' insulation and management of heating (and cooling) systems. (Useful references for guidance: Start with your local utilities' publications on "energy audits," etc. as mandated by your State's Public Utilities Commission or equivalent body.)

11. Same as above, except for government buildings.

12. Promote and encourage assistance to local heating system servicing dealers in upgrading the skills of their technicians, for example, burner repairmen, using local vocational schools' facilities and course materials from sources such as the Oil Heat Division of the Petroleum Marketing Foundation, P.O. Box 11187, Columbia, S.C. 29211.

13. Assist low-income people to make local contacts for the special services and aid available to them (for example, the local "Community Action Agency" for the emergency fuel, home winterization, etc., authorized under the Federal Community Services Act of 1974, Sec. 222(a), administered by HEW and HUD, and the National Energy Conservation Policy Act, Public Law 95-619, 92 Stat. 3206 et seq.)

14. Familiarize yourself with the "degree day" method that dealers use to estimate and replenish customers' heating oil.

H. Responses to electric power emergencies

(NOTE: See also paragraph F1 above . . . the more critical and fast-developing electric power emergencies have been covered therein. Also, in *all* matters concerning utilities (power, water, gas), ensure that at all times you are in full communication and coordination with their appropriate representatives.)

1. In a multijurisdictional area served by one power company, promote enactment of a Council of Governments resolution directing development of interlocking contingency plans by each jurisdiction and the utility, covering the following discrete situations:

- Capacity shortages
- Fuel shortages
- Power outages
- Conservation during normal operation

Encourage interjurisdictional agreements that designate the jurisdiction with best Emergency Operating Center and communications capabilities, as the area central coordination point responsible for disseminating both preparations guidance and operational information to other jurisdictions and to utilities.

2. Review city/county legal powers to impose restrictions and curtailments; initiate required new

measures, authorities, etc. (See Electric Power section of your State's *Energy Emergency Plan* for suggested curtailment priorities.)

3. Based on the above, ensure that each department of government (especially traffic, water, and sewerage) develops and maintains its own departmental plan, as a component that fits into the area's plans—for example, divide equipment-operator work force into shifts when capacity shortages prevent simultaneous operation of all equipment units; impose curfews during fuel shortages.

4. Develop and test your city-wide or county-wide plan.

5. List the locations and kw ratings of the emergency power generating equipment and "UPS" (uninterruptible power systems) in your jurisdiction. Plan for possible emergency hookups with the hospitals, and other facilities surveyed per paragraphs F1 to 3 above.

6. Where "ready-to-use" standby generating equipment may be inadequate, plan to improvise by use of induction motors run as generators, etc. Because this is a comparatively inefficient use of fuel, you should be prepared to justify the priority of the need for the electric power to be generated by this method.

7. Arrange with the utility to receive advance confidential notices of areas that will be affected by any load-shedding or rolling-blackout sequences. Identify all public and private essential facilities that would be affected, and develop appropriate countermeasures, including provisions for high-rise buildings that might suffer losses of water-lift, light, and elevator capabilities. Let the power company do all actual notifying of their customers.

8. Maintain a ready selection of draft statements which—when adapted to a specific emergency—can be handed to reporters, also draft TV and radio instructions to the public, etc., on the situation and on government measures in effect. *Be careful never to put out any public information that is not fully coordinated with the power company.* Also, have ready a "rumor control" information center that citizens may call in emergency; publicize its phone numbers daily.

9. Interest local building materials dealers in offering discounts on insulating materials to householders and others who have electrically-heated buildings, to encourage reduction of heat-loss.

10. Discourage "master metering" of multi-tenant buildings, whereby each tenant's usage is a uniform figure in his rental. The Department of Energy has reported that this single-meter-per-building practice results in 20% to 40% more consumption than when *each* tenant has to pay fully for what he himself uses, and has his own meter.

I. Responses to natural gas emergencies

Those natural gas contingencies requiring immediate action, for fast-developing emergencies, are covered in paragraph F1 above. In all gas matters, ensure that you are in full communication and coordination with the appropriate representatives of the gas utility.

Natural gas shortage problems concern most seriously those companies which consume natural gas in their manufacturing process—such as the fertilizer industry—in contrast to those which consume it as a boiler fuel.

However, all users should be continually urged to conserve gas . . . to help keep up production of vital products, and to maintain employment in "gas-sensitive" industries.

The local Director's duties in an actual or threatened natural gas shortage could include involvement in some or all of the following:

1. Assisting local users who have "interruptible" gas supply contracts to prepare to obtain and use substitute fuels, such as fuel oil, where it will suffice. (NOTE: If mandatory petroleum allocation government programs are likely to be imposed, or are already in effect, be ready to inform or remind users of the advisability of (a) establishing a *pre-emergency* purchase-volume relationship with an oil supplier; and (b) staying with this supplier).

2. Assist such local users indirectly by, for example, assisting your State energy office in surveying your area to identify and assist natural gas users whose curtailment by pipeline companies would cause hardships or unemployment.

3. In a multijurisdictional area served by one gas company, promote interlocking contingency plans in each community, as outlined in paragraph H1 above on electric power.

4. Review city/county/regional powers to impose restrictions and curtailments on gas users; initiate required new measures, enactments of ordinances, etc.

5. Encourage hospitals and nursing homes to install bypass valves and couplings in natural gas supply lines, on owner's side of shutoff valve, so that if his normal pipeline supply is cut off, the local gas company's tank-trucks of compressed gas ("tube trailers") can hook onto the user-buildings' supply lines, in order to fire boilers, etc.

6. Develop gas conservation and emergency plans and SOP's (for example, for imposing curtailments) for local government actions (internal), coordinated with all other metropolitan area natural gas emergency actions that are planned for your area. Ensure communications coordination with the local jurisdiction having the responsibility for alerting and advising others in the local complex. Coordinate establishment of local government's internal priorities for gas, among the various departments.

7. Be prepared to deal with the news media, as outlined above for electric power, in full and careful coordination with the gas company.

8. Promote improved insulation in gas-heated buildings, as outlined for electric power above.

J. Responses to motor gasoline shortages

1. If State government will place pre-designated "set-aside" monthly quantities of gasoline under your local government control, arrange with selected service station operators (selected on a rotating basis that assures greatest possible equity amongst operators) to agree to use it to keep open during night hours, and on weekends and holidays, so that workers, travelers, tourists, ambulances, public safety vehicles, etc. will have assured sources of motor fuel in event of area shortages, as during the 1973-74 embargo. Be careful to avoid possible "brand mixing" statute violations.

Give wide publicity to such stations' locations and operating hours. Know the oil company terminal operators who will cooperate in delivering less than full tanker (usually 8,000 gal.) loads at a trip, in "tank wagons" or "metering trucks" to these stations, especially the smaller ones. (The significance of these "set-aside" quantities is that they are over and above the operator's regular monthly allocation from his oil company and, during shortages, he might have to close down his pumps without it, thus curtailing service to the public.)

2. Promote conservation by all users, both government employees and private citizens. For conservation campaign ideas and actions see such publications as:

- "Tips for Energy Savers," Publication No. DOE/OPA 0037, U.S. Department of Energy, DOE Technical Information Center, P.O. Box 62, Oak Ridge, Tennessee 37830 (29 pages, 5 $\frac{1}{4}$ "x8 $\frac{1}{2}$ "")
- "How to Save Gasoline and Money" Publication No. DOE/OPA 0044 (A pocket size pamphlet) (Order from above address)
- Free on loan: "Running on Empty," a half hour 16 mm color motion picture suitable for driver education of all age groups (Order from above address)

These and related publications are available in quantity for free distribution.

3. Enact local ordinances prohibiting storage in homes, or motor vehicles, of gasoline in quantities over and above minimums needed for power lawnmowers. Provide stiff penalties for violations. Arrange with insurance companies for coordinated enforcement leading also to cancellations of home and auto policies.

ENERGY EMERGENCIES

Suggested Citizen Instructions

A. Short-range Warning

Advance indications of a coming energy crisis naturally vary timewise with the type of energy involved: a lightning bolt could for example cause an electric power blackout with no warning at all.

For the more slowly developing energy emergencies frequently caused by shortages of fuel, many State and local governments provide for citizen convenience one or more "Energy Hot-line" toll free telephone numbers to call for information on possible or existing energy problems. If you cannot readily ascertain these numbers, in your locality, call the Department of Energy "Hot line" at 800-424-9246.

In addition, post by your telephone the number of your local government's "Rumor Control Center," if your community has one: These are offices to call for official information on any emergency, to provide the facts in place of rumors.

B. Continuing Long-run Prospects for United States Energy Emergencies

Whether or not one believes that *world-wide* there is (and always will be) really plenty of oil and gas to go around (if only oil profiteers would stop hoarding it, as sometimes contended), it is a fact that we in the U.S. *depend* on foreign countries for so much of our petroleum that we could have a severe energy emergency at any time some or all of these countries choose to cut off their oil deliveries.

And some people in oil exporting countries are increasingly displeased with the knowledge that we Americans, who are only six percent of the world's population, consume more than thirty-three percent of all the energy used in the entire world.

This situation's danger to our national security and to our way of life is emphasized in this recent high-level warning:

"... our Nation's energy problems are real. They are serious. And they are getting worse." The President of the United States, April 5, 1979.

C. Individual Citizen Actions

In addition to obvious and well-known practices, such as keeping a standby reserve of battery-powered radios, flashlights, or kerosene lamps and kerosene, the following measures are suggested.

1. General instructions for more than one type of energy emergency:

a. If your local government uses citizen volunteers during energy emergencies, join up so that you will be better informed to help both your neighbors and yourself.

b. Know where your nearest local emergency housing is (for example, temporary lodging centers), in case you are forced to evacuate your residence temporarily because of a heating fuel or power shortage; find out what you should take with you.

c. Know how to safely "shut down" your home if you must temporarily evacuate; for example, in winter because of a fuel or power shortage:

- (1) Turn off all water at the entry point to your building.
- (2) Open the lowest tap and all other taps, draining systems completely.
- (3) Drain boiler and heating system.
- (4) Drain hot water and all storage tanks.
- (5) Flush all water closets, making sure no water remains in tanks.
- (6) If water is supplied by a well, drain pump and any storage tanks connected with this system.
- (7) Check all containers with liquids that could freeze, such as dehumidifiers, air conditioning units, etc.

- (8) Electrical system: Disconnect all electrical appliances and motors and shut off supply at main fuse box.
- (9) Turn off all gas appliances and shut off gas at main source.
- (10) Set battery-powered burglar alarms and inform police thereof.
- (11) Also, the following suggestions may be helpful: If you have a fireplace and it has been checked out as being safe (which is important), its use would provide a certain amount of heat within the home to prevent water from freezing. Naturally, the size of the fireplace, size of the home, temperature, and wind would be the factors that would decide whether enough heat could be generated to prevent water from freezing. If any type of auxiliary heating equipment is installed, make sure that it is vented properly and that your exhaust stacks are positioned according to safety standards.

d. Keep handy the telephone number of your local "Citizens Assistance Officer," or equivalent. His or her duty is to counsel citizens in need, and help them contact the right social services organizations for assistance (such as food stamps, unemployment payments, or other emergency financial help in case energy problems force your employer to lay off personnel), or for information on how to obtain emergency moratoria (if available) on your utility bills.

Find out from him (by telephone if possible) the *criteria of need*, that is, whether or not your problem and circumstances qualify you for help, before using energy to travel to his office or the city's "one-stop center."

e. If you have a wood-burning stove or fireplace, know how (1) to obtain firewood from public lands that are opened for wood-cutting only in certain emergencies; and (2) to obtain help, if available, from local government wood-cutting and hauling crews and equipment.

f. Know what government office to call to report suspected "price ripoffs" by fuel dealers, if government price controls are in effect.

2. Special actions for power brownouts or blackouts:

a. Ascertain whether or not voltage drops will harm your appliances, especially refrigerators. If in doubt, shut them off or unplug them until full power service is resumed.

b. Obtain and keep handy a copy of booklet no. 321 of the Federal Extension Service, U.S. Department of Agriculture, "What to Do When Your Home Freezer Stops" for instructions on how to safeguard food until power comes on again. One way to preserve a stock of frozen food (and medicines that must be kept cool) is to wrap it well and move it quickly to a rental locker plant that has its own power generating system.

c. If you must maintain in your home an electrically-operated life-support machine (for example, an iron lung) be sure that this is known to your nearest medical association, fire department, rescue squad, and civil defense office as well as your electric company.

d. Use water sparingly if your system depends on electrically-powered pumps.

e. See paragraph 1 above on general instructions.

3. Citizen conservation actions that will make all fuels go farther:

a. If your rooms are heated by free-standing hot water or steam radiators, put sheets of cardboard behind them, faced with aluminum foil stuck on with masking tape or scotch tape.

b. Find out from your electric company, gas company, or local government how to have an "energy audit" made of your home, to show ways of saving energy.

c. Improve insulation. Add enough material in attic to bring thickness up to six inches. Seal cracks. Install storm doors and windows or insulating-type glass. Close draperies at night or other times when daylight is not needed.

d. Save on lighting. Use lower wattage bulbs, especially the more efficient fluorescent type wherever possible. Install solid state dimming switches where light does not need to be bright all the time. Turn off all lights when not in use. Use one large bulb rather than several smaller ones, where strong light is essential.

e. Adjust hot water heater to about 105 degrees maximum.

f. Keep stove reflectors clean. Don't use the *large* electric heating element (or gas burner) to heat *small* pots; fit the pot to the size of the element or burner.

g. Turn electric ovens off five minutes before food is done; residual heat can finish the cooking.

h. Wait until bedtime to turn on the dishwasher, rather than during the late afternoon and early evening hours, when electricity-use peaks and requires the power company to add on its less efficient "spare" generators and turbines. [NOTE: If the local utility is authorized to charge higher rates for electricity used at time of day when demand is at its peak ("peak load pricing"), the CD director should keep reminding the public of this policy.]

i. When shopping for appliances, check them out for their comparative energy-efficiency. In window air conditioners for example, investigate the heat pump type, which can be used for both cooling and room heating.

j. All other factors equal, try to buy products made in whole or part from recycled materials; this can save some of the energy otherwise spent in mining, growing, and/or processing and transporting raw materials used.

k. Set heating thermostat at 65 degrees during the day and 60 at night. Set cooling thermostat at 78-80 degrees. Install a *clock*-thermostat that will automatically turn the heat down at a regular hour before retiring at night, and will turn it up just before wake-up time.

l. Wash clothes in warm or cold water whenever possible.

m. Minimize the use of hot water generally.

n. Take less time in the shower.

o. Line-dry clothes wherever possible.

p. Reduce or eliminate ornamental lights except on special holidays or festive occasions. Turn off other lights while decorative lights are on.

q. Watch for announcements of and participate in local consumer-workshops on energy sponsored by your local, State or Federal government, including public schools' energy-related courses for both day and night school students.

r. Close off unoccupied rooms and shut off their heat and air conditioning.

s. Clear or replace hot air heating system filters and air conditioner filters once a month.

t. Where possible, use light colors for walls and interior fabrics; this reduces the artificial light needed.

u. Unplug "quick-on" TV sets when not in use; they consume electricity even when screen is black.

v. Use *full* loads in washers and dryers.

w. Keep electrical tools in top shape, e.g., clean, firm electrical connections, sharp blades on electric saws.

x. Whenever possible, use hand-powered tools and equipment rather than electric-powered, including hand-wound in preference to electric clocks.

y. Install vestibules or second sets of doors at entrances where heated or cooled air can escape.

z. Keep chimney dampers closed, or block off fireplaces to stop heat escaping.

aa. Check automobile driving and maintenance practices to ensure getting the best possible gasoline mileage. Also consult the Federal Environmental Protection Agency's current "Gas Mileage Guide for New Car Buyers"; for single copies write:

Fuel Economy
Pueblo, Colorado 81009

EVACUATION—PLANNING AND CONDUCTING OPERATIONS TO RECEIVE EVACUEES IN HOST AREAS*

Emergency Services Actions

A. General Information

A number of kinds of peacetime threat may require evacuating people from areas that could later become dangerous—if the threat developed into an actual hazard. Reception and care (or “hosting”) operations would be needed, in many cases, in the host areas to which evacuees were moved.

Population relocation may be needed in a severe international crisis which could escalate to a nuclear attack on the United States. Crisis relocation planning was started in each of the States between 1977 and 1979, and will be continued in the 1980's. The plans will provide an additional *option* to protect the 145 million people living in potential nuclear attack risk areas. This option is to give the U.S. a capability to relocate (or evacuate) people from risk areas over a period of several days, during a severe crisis, to surrounding lower risk host areas.

Crisis relocation plans are being developed as one aspect of implementing civil defense policies specified in Presidential Decision (PD) 41. This provides that “. . . the United States civil defense program should enhance deterrence and stability . . . and also reduce the possibility that the Soviets could coerce us in times of increased tension.” PD 41 also specifies that the program “. . . include planning for population relocation during times of international crisis, as well as be adaptable to help deal with natural disasters and other peacetime emergencies.”

Crisis relocation planning includes work with officials of low-risk “host” jurisdictions to develop detailed crisis relocation plans and capabilities for reception and care of evacuees should relocation be directed. Host area plans include details of actions to direct traffic into and through host areas; to park cars and register evacuees assigned to the host jurisdiction (normally a county); to provide for feeding and temporary lodging of evacuees; to provide for development of fallout protection (by upgrading existing structures and/or construction of expedient shelters); and to take a number of related actions to achieve maximum survival of both evacuees and residents should crisis relocation be followed by enemy attack.

Many kinds of peacetime threat also require evacuation and hosting operations. Hurricanes have often required evacuating people from low-lying areas on the Gulf and Atlantic coastlines. Rising flood waters may require evacuation, as may the release (or threatened release) of chlorine or other toxic substances.

Another threat which could require evacuation and hosting is a potentially serious accident at a nuclear power plant. Another is a terrorist threat of some kind against a U.S. city.

In case of a developing threat of any one of these types, it could be necessary for host areas to rapidly develop hosting plans if crisis relocation hosting plans had not already been prepared. For example, it is possible that a severe international crisis could arise before detailed relocation plans had been developed for all U.S. host areas.

Even if there were no nationally directed activation of the crisis relocation plans that did exist, there could be considerable “spontaneous evacuation” from U.S. risk areas. The number of such evacuees cannot be predicted with accuracy, but estimates are that from 10 to perhaps 20 or 30 percent of the populations of many risk areas might leave spontaneously—or possibly an even higher number. In the more densely populated parts of the country, this could conceivably lead to a doubling or even tripling of host county populations.

It is also conceivable that crisis relocation could be directed, even though planning had not been completed in some counties designated as host areas. Finally, a developing peacetime hazard (such as

*This checklist is essentially the same as the one for host areas in Civil Preparedness Guide 1-7, “Guide for Increasing Local Government Civil Defense Readiness During Periods of International Crisis”, April 1979. The information is repeated here because evacuation and hosting operations could be required by a number of different kinds of developing threats—as outlined elsewhere in this Handbook.

a potentially serious accident at a nuclear reactor facility, or one of the other threats noted above) could require rapid development of hosting plans in counties surrounding threatened areas.

Peacetime experience shows that where evacuation involves relatively small numbers of people, only a small percentage need reception and care. Many people may go considerable distances to stay with relatives, or they may stay in motels. However, large-scale evacuations would result in high ratios of evacuees to host-area residents, and planning would be essential.

The checklist below is not intended as a detailed guide to crisis relocation planning for host areas. Rather, it covers the most important aspects only, of ad hoc or improvised arrangements to assist large numbers of evacuees who could arrive on short notice.

For even reasonably effective hosting operations, a high degree of initiative and improvisation would be called for from host area governmental and non-governmental leaders—and a high degree of cooperation from evacuees. Natural disaster experience is that most people will be highly cooperative, but also that this requires timely, accurate, and authoritative information and instructions from governmental leaders.

The checklist is designed for rapid, ad hoc planning for hosting operations in an international crisis. Thus it includes certain aspects of planning that would not be needed in other situations—such as planning to develop fallout protection in host areas for evacuees. These aspects should be ignored if the checklist is being used to plan evacuation for some other type of peacetime threat.

During a crisis situation, State CD personnel would probably not be able to provide onsite guidance or assistance for each host county. However, State staffs should be able to advise each county of the approximate number of evacuees that could arrive should crisis relocation or other evacuation plans be implemented, the risk areas the evacuees would likely be coming from, and the routes on which they would be likely to be moving. The State may also be able to provide copies of detailed planning guidance, and possibly examples of completed host-area CRP's for other jurisdictions in the State.

B. If a developing peacetime threat arises that could require evacuation—State authorities may recommend that local governments of potential host areas begin rapid development of ad hoc plans and arrangements for hosting evacuees (in addition to taking other actions, such as bringing Emergency Operating Centers to readiness).

Pending receipt of more detailed advice from the State, local civil defense directors should take the following actions:

1. Review any crisis relocation plan (CRP) or other hosting plan that may have been developed previously for the community, and determine whether it is applicable to the threat which is developing. Secure as much information as possible from the State staff concerning status of crisis relocation planning in the State (as this affects the locality); any indications of developing spontaneous evacuation; approximate number of evacuees that could be expected in the locality should incomplete crisis relocation plans (CRP's) nevertheless be activated; and related information. Also, if possible, secure from the State examples of completed host-area CRP's from elsewhere in the State, and other materials that would assist in rapid, ad hoc planning in the locality, including CRP planning guidance. (Civil Preparedness Guide 2-8-C, "Operations Planning for Risk and Host Areas," January 1979, is applicable to host area planning for any kind of developing threat.)

The State should be able to provide information on host areas set aside for each risk area and traffic routes to be used, and possibly an initial draft of "where to go and what to do" EPI instructions for host area residents, for crisis relocation or other types of evacuation plans.

2. The CD director should brief the Chief Executive on the situation, on potential local problems should evacuation be directed, on the status of planning within the State, and on initial evacuation planning (if any) affecting the jurisdiction.

3. The CD director should also recommend participants for an initial meeting of governmental and other leaders to consider the situation and commence development of ad hoc hosting plans. These should include people able to address problems such as traffic control, emergency public information,

lodging and feeding evacuees, and development of fallout protection. (Consider persons such as county supervisors or executives, county attorney, law enforcement officials, fire chief, welfare officials, representatives of American Red Cross and voluntary welfare organizations, news media representatives, representatives of food retailers and restaurant and motel operators, representatives of churches, school officials, county engineer, representative of construction contractors, utility officials, public health officials, representative of county medical society.)

4. The head of government and/or CD director convenes an initial meeting of the local leaders decided upon in step 3.

Brief leaders on the crisis situation, the possibility of spontaneous or directed evacuation, the problems that could then confront the jurisdiction, and the need for rapid ad hoc planning should substantial numbers of spontaneous (or other) evacuees arrive and need assistance.

Outline basic emergency organization in existing local CD plan, and additional operations that would be needed should the crisis intensify and spontaneous (or other) evacuees arrive in the jurisdiction, such as (a) traffic control, parking, and maintenance of law and order; (b) providing temporary lodging for evacuees; (c) feeding evacuees; (d) developing fallout protection; and (e) providing Emergency Public Information for both evacuees and residents.

Assign responsibilities for planning in the foregoing basic areas, and designate a planning group chief where representatives from a number of different areas are involved. (Example: The feeding planning group could involve restaurant, food retailer, school, church, Red Cross, and other representatives—one of whom should be in charge.)

Designate an overall planning director, to coordinate and direct efforts of all involved in ad hoc planning.

5. Start development of ad hoc hosting plans covering the following areas:

Emergency Public Information—Local news media representatives develop procedures for providing official information and advice to evacuees and residents via the news media, should spontaneous evacuation develop (or crisis relocation be directed). Specific information and instructions would be based on plans made for the areas outlined below, with the aim of gaining maximum cooperation by both evacuees and residents.

With regard to fallout protection, illustrations of techniques for increasing the fallout protection of various types of buildings appear at the end of this Handbook followed by designs of typical expedient shelters. *Illustrations showing selected expedient shelter designs, and fallout upgrading techniques, should be included in local EPI materials.* The illustrations provided at the end of this Handbook can be used in developing local EPI materials during a crisis, if other materials are not available.

EPI material for the host area residents should stress that while plans provide for lodging evacuees in schools, churches, and other non-residential structures, residents are requested to invite evacuees into their homes, on a voluntary basis, if they feel they can do so. (Both natural disaster experience and research suggest that substantial numbers of residents would voluntarily accept evacuees in their homes, as noted below under "Lodging.")

Also, EPI material should suggest that residents may wish to share their basements with evacuees, should an attack occur with the threat of a lethal fallout hazard, and if adequate shelter for evacuees had not been produced. (Research also indicates that most people with home basements would be willing to share them in case of an attack on the U.S.)

Traffic Control and Law Enforcement—Most evacuees would use their own cars. Planning for traffic control and law enforcement should include:

- Evaluate police requirements for an increased population. Discuss and plan for coordination of police operations within the county, and for augmentation of regular officers with auxiliaries, if necessary.
- Identify off-street parking areas for possibly large numbers of evacuee vehicles.
- Plan for (a) traffic movement patterns for control of vehicles, including direction to parking areas and to reception centers (signs, intersection control, etc.); (b) close

coordination with the State law enforcement agency on all movements toward the county; and (c) any by-passes to be established, to move some of the evacuees on to other host counties.

- Provide for additional security for local facilities, if necessary.

Lodging—Working with established welfare organizations, the host county government should determine facilities suitable for emergency lodging including, for example, those facilities commonly used for natural disaster refugee lodging (schools, churches, armories, motels, etc.). Planning should consider that the number of evacuees might exceed the capacities of these types of buildings (allowing about 40 square feet per evacuee). In that event, larger commercial buildings and/or barns and other non-residential rural structures might have to be used.

Plans should *not* provide for assigning any evacuees to private residences. However, if evacuees arrive in large numbers, county officials should request that residents *voluntarily* accept evacuees in their homes. (Both natural disaster experience and research suggest that substantial numbers of residents would do this—possibly half or even more.)

Feeding—The number of evacuees and capabilities of food service facilities will dictate feeding plans. Commercial and school cafeterias can handle about four times their normal capacity by increasing the work force and hours of operation. Noncommercial establishments (e.g., churches) can about double their normal levels.

American Red Cross and other private welfare organizations with experience in natural disaster welfare operations should be consulted as to the amount and types of food necessary to sustain evacuees over extended periods.

Fallout Protection—Civil defense director reviews the community shelter plan. Since CSP's provide for sheltering the resident population only, plans should be made for providing additional fallout protection for evacuees. Existing facilities providing fallout protection should be used insofar as possible, with deficits to be met by developing expedient shelters, or by planning to upgrade existing buildings judged suitable. (Upgrading requires piling earth about 6 feet high along all exterior walls, plus adding 10 to 12 inches of earth overhead. See upgrading techniques illustrated at the end of this Handbook.)

6. Refine and extend ad hoc planning. Groups involved in ad hoc planning, for the major areas outlined in step 5, continue to develop plans, coordinated by overall planning director.

Planning is extended to additional areas deemed necessary. These may include:

- Plan for establishing evacuee registration centers (schools are recommended).
- Surveys of existing stocks of food, fuel, and other life-support resources.
- Consideration of impact of increased population on community public services (water, sanitation, fire protection, electric power, etc.), and ways to mitigate impact.
- Survey of hospital and outpatient medical loads vs. potential needs, and means of providing medical care for evacuees.
- Surveys of health and sanitation supplies.
- Refuse disposal and sanitation operations.
- Establishing retail trades and services organization to coordinate business and commercial activities in support of local government operations.
- Enactment of any ordinances needed to provide authority for operating officials.

Emergency Public Information plans and standby materials for later use are expanded as required by broadened planning.

7. Develop organizations needed to execute ad hoc plans, such as school personnel to operate evacuee registration centers.

8. Activate ad hoc hosting plans as required. If significant spontaneous evacuation develops (or crisis relocation is directed), local officials implement ad hoc plans. This includes dissemination of information and instructions for evacuees and residents (such as instructions for evacuees on where to register, requests to residents to volunteer homes for temporary lodging of evacuees, information on expedient shelter construction).

EVACUATION—PLANNING AND EXECUTING EVACUATION FROM THREATENED AREAS*

Emergency Services Actions

A. General Information

A number of kinds of peacetime threat may require evacuating people from areas that could later become dangerous—if the threat developed into an actual hazard.

One example is a severe international crisis which—if negotiations to settle the crisis were not successful—could escalate to a nuclear attack on the United States. Crisis relocation planning was started in each of the States between 1977 and 1979, and will be continued in the 1980's. The plans will provide an additional *option* to protect the 145 million people living in potential nuclear attack "risk areas". This option is to give the U.S. a capability to relocate (or evacuate) people from risk areas over a period of several days, during a severe crisis, to surrounding lower risk "host" areas.

Crisis relocation plans are being developed as one aspect of implementing civil defense policies specified in Presidential Decision (PD) 41. This provides that "... the United States civil defense program should enhance deterrence and stability . . . and also reduce the possibility that the Soviets could coerce us in times of increased tension." PD 41 also specifies that the program "... include planning for population relocation during times of international crisis, as well as be adaptable to help deal with natural disasters and other peacetime emergencies."

Crisis relocation plans cover moving risk area populations; providing food, temporary lodging, and other support; and developing fallout protection for the evacuees in the host areas. If time and circumstances during a crisis permitted relocating most of the risk population, and developing protection, there would be many millions of added survivors if the crisis escalated to a large-scale nuclear exchange.

Many kinds of peacetime threat also require evacuation. Hurricanes have often required evacuating people from low-lying areas on the Gulf and Atlantic coastlines. Rising flood waters may require evacuation, as may the release (or threatened release) of chlorine or other toxic substances.

Another threat which could require evacuation is a potentially serious accident at a nuclear power plant. Another is a terrorist threat of some kind against a U.S. city.

In case of a developing threat of any one of these types, it could be necessary to rapidly develop plans for the possibility of evacuation if relocation plans had not already been prepared. For example, it is possible that a severe international crisis could arise before detailed relocation plans had been developed for all U.S. risk areas, and it is conceivable that crisis relocation could be directed even though plans were not available for some areas. A terrorist threat, a potentially serious accident at a nuclear reactor facility, or some other developing threat could also require rapid development of evacuation plans.

Peacetime experience shows that evacuation from smaller-scale threats, with relatively small numbers of people involved, can be and often is handled on an improvised basis, without plans developed in advance. But experience also shows that planning is essential where scores or hundreds of thousands (or millions) of people need to be evacuated.

This checklist is provided as a guide for rapid, ad hoc planning for evacuating people from potential risk areas—if detailed plans are not available. The plans that could be developed in a few days of developing threat would not be nearly as thorough and detailed as plans prepared in advance—but they could help substantially nevertheless, in undertaking evacuation operations.

The basic planning approach for evacuation is the same regardless of the type of threat. Highlights include determining the number of people in the potential risk area, allocating people to

*This checklist is essentially the same as the one for risk areas in Civil Preparedness Guide 1-7, "Guide for Increasing Local Government Civil Defense Readiness During Periods of International Crisis," April 1979. The information is repeated here because evacuation could be required by a number of different kinds of developing threats—as outlined elsewhere in this Handbook.

roads leading to appropriate host areas, providing bus or other transportation for those without cars, providing special transportation for people in institutions (such as hospital or nursing home patients, and prisoners), and—most important of all—providing *clear and understandable instructions for the public*.

Experience in a variety of peacetime disasters requiring evacuation is that most people will cooperate, and comply with official instructions—provided that the instructions are communicated clearly and can be understood, and that they appear to make sense, in terms of offering a better chance to survive or avoid injury, should the threat develop into an actual hazard.

The checklist below is not a detailed guide to evacuation planning. But it does cover the most important aspects of developing ad hoc or improvised arrangements for evacuating threatened jurisdictions.

The checklist is designed for rapid, ad hoc planning for relocation in an international crisis. Thus it includes certain aspects of planning that would not be needed in other situations—such as planning to improve blast protection for key workers who were commuting into risk areas to keep essential industries and services in operation. These aspects should be ignored if the checklist is being used to plan evacuation for some other type of peacetime threat.

Depending on the situation, and how much time appears to be available, State-level planners may be able to provide some assistance to local governments in threatened areas. This may include information on the host areas set aside for each risk area, and on the major routes to be used for auto and bus movement. But State planners would probably not be able to provide much detailed, on-site planning guidance or assistance. Thus local planners in risk areas would likely be pretty much on their own in developing detailed evacuation plans for their areas—in the context of the overall guidelines provided by the State.

While risk area planners were developing ad hoc plans for these jurisdictions, other officials in the host areas would be developing ad hoc plans for the reception and care of evacuees. (See the companion checklist at pages 49 to 52 in this Handbook, “Evacuation—Planning and Conducting Operations to Receive Evacuees in Host Areas.”)

B. If a developing peacetime threat arises that could require evacuation—State authorities may recommend that local governments of potential risk areas begin rapid development of ad hoc plans and arrangements for evacuation (in addition to taking other actions, such as bringing Emergency Operating Centers to readiness).

Pending receipt of more detailed advice from the State, local civil defense directors should take the following actions:

1. Review any crisis relocation plan (CRP) or other evacuation plan that may have been developed previously for the community, and determine whether it is applicable to the threat which is developing. Obtain any information or guidance available from the State. This may include crisis relocation planning guidance such as Civil Preparedness Guide 2-8-C, “Operations Planning for Risk and Host Areas,” January 1979, which is applicable to risk area evacuation planning for any kind of developing threat. The CD director should also, if possible, secure from the State examples of completed risk-area CRP’s from elsewhere in the State, and other materials that would assist in rapid, ad hoc planning in the locality. This may include information on host areas set aside for the risk area and traffic routes to be used, and possibly an initial draft of “where to go and what to do” EPI instructions for the public for crisis relocation plans or other types of evacuation plans.

2. The CD director should brief the Chief Executive and other government executives on the situation, on potential local problems should evacuation be directed, on the status of planning within the State, and on initial evacuation planning (if any) affecting the jurisdiction.

3. The CD director should also recommend participants for an initial meeting of governmental and other leaders to consider the situation and commence development of ad hoc evacuation plans. In risk areas of significant size, a number of jurisdictions may be involved (central city and suburbs) and *interjurisdictional coordination* will be of great importance, as well as coordination with State

authorities (such as State police and CD agency). Thus, it may be advisable for the chief executive of the central city, or of the major metropolitan county, to take the lead in ad hoc planning for the entire risk area. A State CD Area Director for the risk area may be able to assist, and in some areas there may be Councils of Government or similar organizations of local chief executives which can provide a vehicle for coordination of ad hoc planning.

Participants in the initial meeting should include persons able to address problems such as traffic control, emergency public information, providing for public safety, keeping essential services and industries in operation during an evacuation period, and providing transportation for hospital patients and those in various types of institutions (such as nursing homes or prisons). Thus participants to be considered may include county and municipal chief executives or managers, legal officers, law enforcement officials, fire chiefs, news media representatives, transportation officials (such as local bus company representatives, to provide transportation for those without cars), school officials, public health officials, representative of the local medical society, hospital and nursing home representatives, welfare officials, and representatives of local industry (such as the Chamber of Commerce). Participation by the metropolitan area planning commission, or similar group, is of great importance, as such a group may be a source of planning expertise and detailed data, and may indeed be assigned the primary role in ad hoc planning.

4. The central city head of government, Council of Government, or other suitable person(s) convene initial meeting of local leaders decided upon in Step 3.

Brief leaders on the situation, the current status of planning, the possibility of evacuation, the problems that could then confront the jurisdiction, and the need for rapid ad hoc planning for population relocation or evacuation.

Outline basic emergency organization in existing local CD plans, and the additional operations that would be needed should the crisis intensify and require population relocation, such as (a) providing emergency information for the public ("where to go and what to do"); (b) traffic control; (c) providing transportation for those without cars and the institutionalized (hospital and nursing home patients, prisoners); (d) keeping essential industries and services in operation during the relocation period (by key workers commuting from nearby host areas); (e) providing for orderly shutdown of any industrial facilities that would be damaged if left unattended (such as steel plants or chemical process plants); and (f) providing for protecting those still in the risk area in best-available blast protection should an attack occur.

Assign responsibilities for planning in the foregoing basic areas, and designate a chief for planning sub-groups where representatives from a number of different groups—or from a number of jurisdictions—are involved.

Designate an overall planning director, to coordinate and direct the efforts of all involved in ad hoc planning. (One possible candidate would be the director of the metropolitan area planning commission, if there is an effective group of this type serving the entire risk area.)

Provide for liaison and coordination with State authorities (such as State CD Area office, State police).

5. Start development of ad hoc evacuation (relocation) plans, including attention to:

Allocation and Assignment of Evacuees—Use any information made available by the State on host areas "allocated" (set aside) for the risk area. If additional information is available on "assignment" of people from specific parts of the risk area to specific host areas, use this. (Example: "People living in Zip Code areas X and Y go to Host County Z, using U.S. Highway 00.") If such information is not available, develop such an assignment, attempting to equalize traffic loading on routes to the host counties. (See Chapter 3 of CPG 2-8-C, "Operations Planning for Risk and Host Areas," January 1979, which relates specifically to crisis relocation planning, but is applicable to any kind of larger-scale evacuation.)

Emergency Public Information—Local news media representatives develop materials and procedures for providing official information and advice to risk area residents, should evacuation be

directed. Specific information and instructions would be based on the risk area allocation and assignment outlined above, and the operational planning outlined below. Stress is on developing "hard copy" (newspaper) materials, but plans should also provide for use of radio and TV to supplement more detailed newspaper materials.

Use any initial Emergency Public Information (EPI) materials made available by the State for the risk area. If such material is not available use any example materials made available for other risk areas in the State.

The general approach should be to develop initial EPI materials as soon as possible, and then to refine the materials progressively as planning proceeds. Initial newspaper materials should include (a) a map of the risk area and of the corresponding host areas, with major traffic routes shown; (b) things evacuees should be prepared to take with them (such as work gloves and tools for developing shelter in host areas, nonperishable food, battery-powered radio, bedding, sanitation and medical supplies, baby supplies, important papers); (c) use of vacation cabin if available; (d) initial assignment of people living in various parts of the risk area to appropriate routes and host areas; (e) filling fuel tanks of private autos, in case evacuation is directed; (f) action for those without cars (such as, report to nearest elementary school if friends or neighbors cannot provide transportation); (g) outline of nuclear attack effects from standard CD publications; (h) methods of improvising fallout protection in host areas, including illustrations of expedient shelter designs appropriate for the area, also of techniques for fallout upgrading of larger buildings (use illustrations from those provided at the end of this Handbook); (i) what to do upon arrival in host areas (such as, follow local police instructions on parking, report to a local school for registration and assignment to temporary lodging).

As planning progresses, the initial EPI materials should be refined. This may include (a) more detailed assignment of people in various parts of the risk area to specific host counties (as, by Zip Code areas, or elementary school districts); (b) more detailed instructions on routes to follow; (c) more detailed instructions for those without transportation (such as, times to report to schools or other designated locations for bus transportation); (d) designation of essential industries and services (see below), and instructions for key workers and their families to go to specific nearby counties set aside for key workers, from which the key workers can commute into the risk area to keep essential industries and services operating.

Transportation and Movement Planning—Local police, transportation department, city bus company, and others as appropriate develop plans for traffic control and movement. Planning to move the institutionalized (hospital and nursing home inmates, prisoners) will require coordination with those in charge of institutions, and may present difficult problems in moving patients unable to board buses, or requiring security arrangements (some prisoners, some psychiatric patients). Planning to provide transportation for those without cars will usually involve use of city and/or school buses; also, arrangements will be needed to dispatch buses to pickup points, and from these points to host areas. If pickup points are at schools, school authorities should be asked to organize dispatching operations at schools, to be operated in coordination with the city bus company or other appropriate organization. The bus company should be asked to take actions to assure availability of drivers.

As transportation and movement plans are developed, materials should be provided to those developing EPI materials, as a basis for updating and refining instructions for the public.

Health-Medical Planning—Local public health officials, hospital representatives, representatives of physicians' groups, and others as appropriate develop plans for reducing hospital censuses as much as possible (as by early discharge of patients as feasible, or suspending elective surgery). Plans should also provide for keeping hospitals in operation on a reduced-staffing basis for patients who cannot be moved; staff required would be designated as key workers, to commute from nearby host areas.

Public Safety—Police and fire department officials develop plans to maintain security in the risk area if evacuation is directed. Police planning includes surveillance of the area to detect fires and unlawful activity, by aerial surveillance as available and by street patrols. (Other police elements would be required for traffic control). Fires that occur in the risk area can be expected to be larger in size than is normally the case, because of the problem of early detection.

Police and firefighting personnel needed to maintain public safety in the risk area would be key workers, and should commute into the risk area from nearby host areas. Any police or fire personnel not needed for the risk area should be dispersed to host areas for the general risk area population, and should report to police and fire authorities there, to assist in host-area public safety operations.

Essential Industries and Services—Representatives of risk-area industries and services that are essential should plan to keep such activities in operation during the evacuation period. Essential activities generally include those needed to support evacuees in host areas (food processing and wholesale distribution, pharmaceutical production and distribution, transportation); communications (telephone); news media (newspapers, radio, TV); energy (petroleum refining and pipeline and wholesale distribution, electric power generation); utilities (water, gas); and the most essential defense production (with emphasis on production of ordnance consumed at a high rate in combat operations—the State CD staff may be able to specify critical defense industries that should be kept in operation during a crisis relocation period, based on Department of Defense guidance previously provided to the States).

The short time available for ad hoc relocation planning will probably not permit sophistication in designating essential activities. However, most essential activities can be kept in at least partial operation by supervisory personnel (as when refinery or telephone company supervisors maintain operations during a strike). Thus, not all employees of an essential activity are “key,” and limited operations can often be kept going by only 20 or 30 percent of the normal workforce.

Key workers and their families should go to nearby host areas, in case of crisis relocation, from which the key workers can commute into the risk area to maintain operations, as on a two-shift basis.

Orderly Shutdown of Certain Industrial Processes—Certain industries require orderly shutdown over a period of hours or days if severe damage is to be avoided. These include, among others, production of iron, steel, and other basic metals, and various chemical process industries.

Personnel needed for orderly shutdown of such industries would be “key workers.” They should go with their families to nearby host areas, from which the key workers would commute to phase the plant down to a safe standby status, in case of crisis relocation.

Shelter for Persons Still in the Risk Area at the Time of Attack—Key workers of essential industries and services, police officers and firefighters on duty, and others still in the risk area would need best-available protection should an attack occur.

In general, most below-ground (basement) space offers better blast (as well as fallout) protection than above ground areas. Guidance should be developed on identification and use of such space. Home basements provide a modest level of blast protection, and many larger buildings provide moderate protection. The basements of many larger buildings built before about 1950 provide significant blast protection. However, basements of more modern buildings of “flat-plate” construction (often characterized by light-panel exteriors, with large windows) should be avoided; they may provide less resistance to blast than a home basement, and upper floors may be pushed into the basement.

Expedient shelters (such as an earth covered trench or other designs illustrated at the end of this Handbook) can provide significant or substantial blast protection, as well as excellent fallout protection. Therefore, key workers of essential industries or services should be encouraged to construct expedient shelters close to their facilities, for use should attack warning be received.

Expedient shelter stocking operations in the risk area, using locally-available water containers and food, should concentrate on providing stocks for key worker shelters.

6. As time permits, ad hoc plans should be refined and extended. Groups involved in ad hoc planning, for the major areas outlined in step 5, continue to develop plans, coordinated by the overall planning director.

Planning will cover all areas outlined in step 5 with special emphasis on (a) designation of essential industries and services to be kept in operation; (b) providing for sheltering key workers (as by planning for construction of expedient shelters providing blast protection); (c) stocking key worker shelters with water and food; (d) refining plans and arrangements to provide transportation for those in institutions unable to use buses; (e) refining plans and arrangements to provide bus transportation

for those without cars, including organizing dispatch operations at schools or other pickup points, and coordination with the bus company; (f) arrangements for orderly shutdown of chemical or other industries where this is essential; and (g) enactment of any ordinances needed to provide authority for operating officials (this may include ordinances on curfews to be imposed if evacuation is directed).

As planning proceeds, close *liaison should be maintained with State authorities* (State Police, CD), and *with authorities in host counties*.

As plans are refined, additional details are provided to those developing EPI materials, as a basis for continual updating and refinement of instructions for the public.

Also, all groups or organizations planning for keeping essential activities operating should provide information and instructions to their personnel, through their own channels. This would include designation of which are "key" workers, information on which nearby areas are to be used for key worker hosting, and the operations to be kept going. (Example: newspapers to suspend all operations except those needed to publish national and international news, and to provide Emergency Public Information.)

7. As planning proceeds, develop organizations needed to execute ad hoc relocation plans (such as school personnel to operate dispatch centers at schools, for those without cars).

8. If evacuation is directed, local officials implement ad hoc plans, including dissemination of Emergency Public Information materials previously prepared.

EVACUATION OR CRISIS RELOCATION PLANS WILL BE ACTIVATED ONLY UPON DIRECTION BY STATE OR NATIONAL AUTHORITIES.

FALLOUT HAZARDS FROM AN OVERSEAS NUCLEAR CONFLICT

Emergency Services Actions

A. General Information

Overseas hostilities involving the large-scale use of nuclear weapons are considered highly unlikely. However, if such a conflict should ever occur, there would be a high probability that some fallout material would be carried over parts of the United States in the lower atmosphere. This could result in some radiation hazards in parts of the U.S. It is emphasized that such hazards could result only from *large-scale* nuclear hostilities overseas. If only a relatively small number of nuclear weapons were used, there would be no radiological hazard of such significance for the U.S. as to warrant countermeasures as outlined below (the situation would be similar to that resulting from atmospheric testing of nuclear weapons overseas).

Seven Federal agencies that have complementary roles in responding to potential radioactive contamination of the U.S. have agreed to a memorandum of understanding that clarifies the role and responsibilities of each. The Federal agencies involved are the Environmental Protection Agency (EPA), the Nuclear Regulatory Commission (NRC), the Department of Energy (DOE), the Food and Drug Administration (FDA), the Federal Aviation Administration (FAA), the National Oceanic and Atmospheric Administration (NOAA), and the Department of the Air Force.

EPA has the prime responsibility for advising the general public on the potential health significance of radioactive contamination. In this role, EPA is responsible for coordination of all Federal activities for public health protection and dissemination of information to the public. FDA also has a major responsibility in the area of assuring that foods (exclusive of water for domestic consumption) are safe and wholesome. EPA and FDA will normally notify the State health agencies, who can provide additional guidance as needed to other State and local agencies.

DOE is responsible for making public announcements on the occurrence of nuclear detonations outside the U.S. The Department of the Air Force will provide data to other Federal agencies on airborne samples it collects. NOAA will provide official forecasts on the movement of airborne radioactivity and on areas of potential rainout of nuclear debris. NRC will provide to EPA any fallout data obtained from its licensees. FAA is responsible for the safety of air commerce.

The following publications have been prepared and issued by Federal agencies, and should be used in developing local government plans for response to fallout hazards from an overseas nuclear conflict: (1) EPA's "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents," EPA-520/1-75-001 (provides guidance on radiation exposure avoidance, applicable to evacuation and inhalation); (2) FDA's "Accidental Radioactive Contamination of Human Food and Animal Feeds—Recommendations for State and Local Agencies," 21 CFR Part 1090, as published in Federal Register, Volume 43, No. 242, December 15, 1978, pages 58790-58797 (provides guidance on acceptable contamination levels of human food and animal feed); and (3) FDA's "Potassium Iodide as a Thyroid-Blocking Agent in a Radiation Emergency," Federal Register, Volume 43, No. 242, December 15, 1978, pages 58798-58800.

The protective actions discussed later in this checklist (shelter, avoiding consumption of fresh milk, etc.) would be initiated **ONLY** if the potential radiation exposure was likely to be great enough to exceed the Protective Action Guides (PAG's) given in the foregoing publications, and **ONLY** at the direction of responsible public health officials.

Only a very small fraction of the radioactive particles produced by surface-burst weapons in an overseas nuclear war would be carried by the winds to the U.S. If the particles were produced by large "strategic" weapons, most would be carried high into the stratosphere, and few particles would be deposited as fallout on the U.S.

The particles from smaller "tactical" nuclear weapons are carried to lesser altitudes, and most of the smallest of these particles would be carried towards the U.S. by the winds in the lower

atmosphere. Fallout deposition on the West Coast could begin as soon as four or five days after the first explosions.

In the absence of precipitation (rain or snow), most of the particles in the lower atmosphere would be carried across the U.S. by the winds, without depositing significant radioactivity. However, where precipitation occurred, a substantial fraction of the particles below the altitude of rain clouds would be carried down and deposited on the ground, resulting in a significant increase in radioactive contamination levels on the ground.

On any given day, there is about a 50-50 chance that at least 30 percent of the land area of the U.S. would experience rain or snow. There are about three chances out of four that at least 20 percent of the U.S. land area would experience precipitation, on any one day. However, the fallout clouds that resulted from an overseas nuclear war that lasted as little as a few days might take several days to pass over any one locality in the U.S. Thus, the chances of significant fallout deposition are higher than those suggested by the probability of precipitation on any single day.

Thus, significant or substantial areas of the U.S. could be contaminated to some degree by fallout from overseas detonations. *It is not possible to predict where these areas would be, or how large they would be*, because this would depend upon the winds, and on whether and where there was rain or snow. The contaminated areas could be quite localized or they could be large in size, depending on the weather.

Even a relatively massive employment of nuclear weapons overseas would not result in a radiation hazard in the U.S. sufficient to cause radiation sickness. Exposure rates soon after deposition of fallout from overseas would probably be measured in hundredths of a roentgen per hour, even in the more heavily contaminated areas. *Total exposures over a period of about three months—assuming no countermeasures were taken—could range from about 1 roentgen to as much as 10 R in heavily contaminated areas, again assuming relatively massive employment of weapons.*

Thus, the hazard from a nuclear war overseas would be far less than if the United States itself were attacked. Nevertheless, while radiation exposures from a large-scale nuclear conflict overseas would not cause sickness, they could still result in longer-term threats to health in parts of the U.S.

If large numbers of people were exposed to such relatively low but potentially harmful levels of radioactivity, there could eventually, on a statistically detectable basis, be additional cases of cancer and related diseases among these people—even though these consequences would not occur for many years. These longer-term effects could result from both external radiation exposures (to the whole body) and exposures to internal organs (if contaminated milk or other food products were consumed). It would obviously be prudent to keep radiation exposures as low as practicable.

Fortunately, countermeasures can be taken which could substantially reduce radiation exposure, and thus long-term adverse effects on health. *Countermeasures could readily reduce external (whole-body) exposures by about 90 percent, and internal organ exposures by about 90 to 99 percent.* These countermeasures could be needed for a period of as much as three months.

Also, there would be sufficient time to permit taking countermeasures. An outbreak of conventional hostilities between nations possessing nuclear weapons could suggest the possibility of their later use. And if nuclear weapons were actually employed, there would be a period of four or five days or more before fallout particles in the lower atmosphere would reach the U.S., permitting countermeasures to be organized.

The fallout threat from an overseas nuclear conflict would differ in many important ways from that resulting from a large-scale attack on the U.S. One of these differences would be the absence of highly radioactive particles. By the time fallout from overseas arrived here, its radioactivity would have decayed to well under one percent of the original intensity. Having reached this low level, however, its further decay would be quite slow.

Countermeasures against external exposure in areas of relatively heavy fallout deposition would include staying indoors for several weeks (longer for pregnant women and pre-school children). Decontamination of roofs and some areas around houses could also reduce exposures.

It would also be important to take countermeasures to reduce to a minimum the amount of radioactive material taken into the body. One of the main hazards to be avoided would be drinking milk contaminated with "iodine-131," one of the radioactive substances produced by a nuclear explosion. The thyroid gland (in the neck) concentrates all forms of iodine taken into the body. Thus, if a person has drunk contaminated milk, the "I-131" will be concentrated in the thyroid, and may damage it. This is especially true for pre-school children and fetuses (unborn babies), whose thyroids are more vulnerable to radiation damage than are those of older children or adults.

One way to avoid producing contaminated milk would be to remove dairy cows from pasture before the arrival of fallout, and provide them with clean feed and water. This could reduce the iodine-131 content of their milk by from about 90 to 99 percent—depending on how long the cows were kept off pasture and fed indoors.

Countermeasures would thus include providing uncontaminated milk for children and pregnant women—or canned or dried milk, or other substitutes for fresh milk. Older children and adults should avoid contaminated milk—and if necessary drink no milk at all for 3 to 4 weeks, which would not present a serious nutritional problem.

Also, it is possible that Federal or State public health authorities might recommend that people take small doses of potassium iodide, starting a day or two before exposure to radiation from an overseas nuclear conflict. The effect of this would be to "block," (or saturate) the thyroid with non-radioactive iodine, so that very little harmful I-131 would be taken into the thyroid, even if an individual consumed contaminated milk or other foods. However, potassium iodide should be administered only if advised by health authorities, and then only in strict compliance with their instructions.

Overall, the countermeasures that would be needed in case of an overseas nuclear war could be taken over a somewhat longer period than in the case of an attack on the U.S. Exposure rates would be low, even in the first several days after fallout deposition, and a relatively high total exposure would be accumulated only with a *long exposure time*.

The countermeasures just outlined are included in the action checklists below, and the "Suggested Citizen Instructions" which follow.

It would obviously be necessary to know how great a fallout hazard existed, and in which areas, before the proper countermeasures could be determined and then carried out. Evaluating the fallout hazard would require mobilizing local, State and Federal monitoring capabilities, as well as those of universities and industries (including nuclear power plants).

The CDV-700 civil defense radiation rate-meter (of which about 300,000 have been distributed to the States) can detect low-level radiation. Thus, it is sensitive enough to react to radiation hazards of the levels that could result from a large-scale overseas nuclear war. Where available, two CDV-700's should be used—to lessen the chance of an erroneously high dose-rate being reported. Higher-range survey meters should also be carried and used if necessary (possibly in areas of heaviest fallout deposition, where rates could somewhat exceed the 50 mR/hr indicated by the CDV-700).

The CDV-700 could be used to indicate the magnitude of possible milk and crop contamination. That is, it is capable of indicating the advisability of taking animals off pasture or of returning them to pasture, the advisability of harvesting crops, or the advisability of submitting milk and crop samples for precise analysis. In short, it can be used as a low-cost *initial screening* instrument. However, the CDV-700 would not be well suited to local use in measuring I-131 concentration in milk. This would require precise analytical techniques that can be carried out by various governmental, university, and commercial facilities or laboratories. (See Federal Register, Vol. 43, No. 242, page 58796.)

Also, the low-range civil defense *training* dosimeter (the CDV-138) can measure *total* exposure to radiation from 0 to 200 milliroentgens (mR). Some 100,000 CDV-138 dosimeters have been

distributed to the States. The CDV-138 low-range dosimeter can be used to measure whole-body exposure to fallout radiation.

Thus, radiological monitoring instruments and trained personnel provided as part of the civil defense program would have important roles to play in local monitoring of the low-level radiation hazards that could result from an overseas nuclear war. In addition, there are monitoring and analysis capabilities maintained by various Federal agencies, the military, States, universities, and industries (including nuclear power plants) that would also have important roles in case of an overseas nuclear conflict. These capabilities are widely distributed throughout the U.S.

In general, these detection and monitoring capabilities would be used for more accurate determination of which areas were contaminated, and to what extent, than would be possible with local-level civil defense radiological monitoring capabilities (the CDV-700 low-range ratemeter and the CDV-138 low-range training dosimeter, and CD Radiological Monitors and Radiological Defense Officers). In addition, some of the facilities have capabilities for precise analysis and determination of I-131 or other contamination in milk and other foods.

B. If large-scale conventional hostilities break out overseas, between countries known to have significant numbers of nuclear weapons—State authorities may recommend that local governments take actions to increase their civil defense readiness, particularly with respect to Direction and Control capabilities (including Emergency Operating Centers and EOC staffs) and Radiological Defense. (See Civil Preparedness Guide 1-7, "Guide for Increasing Local Government Civil Defense Readiness During Periods of International Crisis," April 1979.)

Pending receipt of more detailed advice from State or Federal agencies, civil defense directors should take the following actions:

1. Review all parts of this checklist, as well as CPG 1-7, on Increased-Readiness actions.
2. Meet with the local Chief Executive to review civil defense status and plans, and discuss the actions that would be needed should nuclear weapons be used on a large scale in the overseas conflict.
3. Assemble heads of Emergency Services, local industry and labor leaders, and voluntary agency representatives for a briefing on situation. If not already done, develop a local civil defense plan, using Chapter II of this handbook, on "How to Develop A Basic Plan Of Operations For Major Emergencies." If the plan exists, review and update it.
4. Meet with agricultural representatives (such as the County Emergency Board) to review the actions that could be needed with respect to agriculture, should nuclear weapons be used on a large scale in the overseas conflict.
5. Meet with managers of local food chains and dairies, the County Emergency Board, and local Public Health officials, and consider steps that could be taken, should nuclear weapons be used in the overseas conflict, to limit use of dried or canned milk to pre-school children and pregnant women. The purpose would be to *conserve* supplies of milk substitutes, in case a milk contamination problem should later develop. (The actual existence of a milk contamination problem would be determined by public health officials. Advice would be given to the public concerning consumption of fresh milk *only* if the contamination levels, in a given area, were high enough that the anticipated "projected dose commitment" approached or would exceed FDA's Preventive PAG levels.)
6. Direct the Radiological Defense Officer (RDO) to review the readiness of the local radiological defense system, with special emphasis on availability of CDV-700 low-range ratemeters and CDV-138 low-range training dosimeters, and of Radiological Monitoring personnel. Review Civil Preparedness Guide 2-6.1, "Radiological Defense Preparedness," April 1978. Commence accelerated training of additional Radiological Monitors, as well as refresher training of available Monitors, to assure that four Monitors are available for each set of instruments available in the jurisdiction. Request guidance and assistance from the State on radiological defense matters, especially if the community or county does not have a trained RDO.
7. Meet with the local Emergency Public Information (EPI) Officer, if any, and with local news media representatives, to review methods for getting EPI material to the public promptly, should

nuclear weapons be used on a large scale in the overseas conflict. (See "Suggested Citizen Instructions" at the end of this checklist.) Designate a single authoritative spokesman for the local government.

8. Review the status of the local Emergency Operating Center facility and the EOC staff. Take actions necessary to bring the EOC to readiness for use if needed. (See CPG 1-7, "Guide for Increasing Local Government Civil Defense Readiness During Periods of International Crisis," April 1979, Sections Seven and Eight).

9. Take any other increased readiness actions specified by the State—or *modify* checklist actions 1 to 8 above if so notified by the State.

C. If nuclear weapons are employed on a large scale in the overseas conflict—State authorities will undoubtedly recommend that local governments take additional actions promptly to increase their civil defense readiness, based on guidance received from Federal authorities. If nuclear weapons appear to have been used only on a small scale, take *NO action* except as advised by the State.

Pending receipt of more detailed advice from the States, local civil defense directors should take the following actions (unless advised otherwise by the State):

1. Meet with the local Chief Executive to review civil defense status and plans, and discuss actions to be taken. Consider all actions outlined in section "B" above, if these have not been taken.

2. Assemble heads of Emergency Services, local industry and labor leaders, the Emergency Public Information Officer, the County Emergency Board, food industry representatives, voluntary agency representatives, and others as appropriate for a briefing on the situation, and to review planning and increased readiness actions already begun.

3. Activate the Emergency Operating Center (EOC), and establish or check communications with neighboring communities and with the next higher-level EOC (county, State-Area, or State). Continue actions, if needed, to bring the EOC facility and staff to full readiness.

4. Disseminate Emergency Public Information material to the public, **UNLESS** the State provides other instructions. (See "Suggested Citizen Instructions" at the end of this checklist.) The EPI materials generally outline the nature of the fallout threat, the time when fallout may reach the U.S., its consequences in areas where fallout is actually deposited, and the nature of the countermeasures that will be needed in areas where fallout is deposited.

Coordinate with local agricultural representatives (such as the County Emergency Board) *before* disseminating any EPI materials relating to agricultural operations (harvesting crops, preparing to take dairy cows off pasture). Distribute such materials *only* in coordination and cooperation with agricultural authorities.

Maintain contact with the State as time goes by after initial reports of overseas nuclear hostilities, to secure updated information on the potential fallout hazard—such as the estimated magnitude of nuclear weapons employment, the estimated fallout hazard from surface bursts, and the movement of fallout towards the U.S. Emergency Public Information announcements on these and related matters will probably be made from the national or State level, but the local EPI and EOC staffs should be aware of all new information on the expected threat.

Make EPI announcements concerning use of potassium iodide, to "block" absorption of radioactive iodine-131 by the thyroid, **ONLY** if advised to do so by State Public Health authorities.

5. Based on coordination between the Chief Executive, civil defense director, local Public Health officials, County Emergency Board, representatives of local food chains and dairies, and the local Emergency Public Information Officer, *arrange for dried or canned milk to be sold only for use by children and pregnant women* in order to conserve supplies should public health authorities later determine that a contamination problem existed with respect to fresh milk. Disseminate EPI announcements by radio and TV, and in newspapers, requesting public cooperation. (See "Suggested Citizen Instructions" at the end of this checklist.)

6. Mobilize the local Radiological Defense system, including activation of a network of Weapons Effects Reporting stations (formerly called monitoring stations).

Contact the State to arrange for securing additional CDV-700 low-range ratemeters and CDV-138 low-range training dosimeters, and for guidance on radiological defense measures.

The Radiological Defense Officer (RDO) should keep monitoring stations informed of information received from higher levels on the expected fallout hazard, the movement of fallout towards (and across) the U.S., and related factors. Also, keep Radiological Monitors (RM's) informed as to weather forecasts on whether and where precipitation is expected in the jurisdiction or surrounding areas (which may bring fallout down to the ground).

The RDO should identify any other facilities in the jurisdiction having radiological detection or analysis capabilities, and make arrangements for informal cooperation and exchange of information. These could include State and Federal facilities (civil or military) with radiological defense capabilities, and university or industrial laboratories or other facilities (including nuclear power plants). The States will undoubtedly arrange for such facilities to support radiological defense operations on a State-area or State-wide basis, and of course such State arrangements would take priority over any informal local arrangements for cooperation and exchange of information.

Instruct RM's to report to the EOC initial and subsequent readings indicating fallout arrival. They should also report the absence of radiation readings. As reports are received of fallout arrival, these should be transmitted promptly to the State-Area EOC. The radiation hazard should be evaluated by State authorities.

7. After initial fallout arrival has been reported, Emergency Public Information announcements should be made from the local EOC, via local broadcast stations, based on guidance from the State. EPI announcements should be made in a low-keyed manner, and should stress countermeasures appropriate at the time, such as having people not doing essential work (and pre-school children and pregnant women) stay indoors in the best-protected area of the dwelling. In areas of lower-level radiation, all services and industries should continue to operate, to reduce economic impacts. This would be true for the most essential industries and services, in areas of relatively higher radiation.

8. Take any other actions recommended by the State—or *modify* checklist items 1 to 7 above, if so instructed by the State.

D. As time goes by and the intensity and geographical extent of the fallout hazard are evaluated nationwide—Federal and State authorities will issue advice to local governments, and undoubtedly Emergency Public Information announcements as well.

Local governments should comply fully with State advice or instructions. Local civil defense directors should take the following general types of actions, modifying them as necessary to comply with more detailed instructions from the State:

1. Continue EOC operations, under the overall direction of the Chief Executive, stressing Radiological Defense and Emergency Public Information operations.

2. Continue radiological monitoring, making reports to the State-Area or State EOC as specified by the State.

3. Take any additional radiological protection actions recommended by the State. These may include submitting samples of milk, other foods, or water to specified laboratories or facilities, for detailed analysis.

4. As advised by the State, make regular EPI announcements from the local EOC, via local broadcast stations, concerning the fallout hazard (or absence of a significant fallout hazard) in the community, and the local countermeasures appropriate at the time. (See "Suggested Citizen Instructions" at the end of this checklist.)

5. Support and assist local agricultural authorities in announcing any measures directed by State (or higher) levels relating to agriculture (such as returning dairy cows to pasture, or inspecting milk or other food products).

6. Take any other actions specified by the State.

To repeat, countermeasures would be warranted **ONLY** in the case of *large-scale* nuclear hostilities overseas—not if only a relatively small number of nuclear weapons were used.

FALLOUT HAZARDS FROM AN OVERSEAS NUCLEAR CONFLICT

Suggested Citizen Instructions

A. General Information

Nuclear weapons have been used overseas on a large scale, in the conflict involving _____, and significant amounts of fallout *may* have been produced by the exploding weapons. *If* this has happened, some of the fallout particles are likely to be carried towards the United States by the winds.

This could cause a radiation hazard in some parts of the U.S.

How much fallout has been produced depends on many factors. One is the type and total explosive power of the nuclear weapons used. Another is how many of them were exploded on the ground. National authorities are assessing these factors, and more information will be provided as soon as it is available.

Fallout particles from the overseas conflict could reach the West Coast in perhaps four to six days after the first nuclear explosions. It could take several more days for the fallout from the first explosions to be carried across the U.S., depending on the winds at the time.

The fallout particles that may be carried here by the winds would be small, not visible to the naked eye. However, they will be giving off radiation in small but still harmful amounts.

The "gamma rays" the particles give off cannot be seen, tasted, smelled, or felt. Special instruments are required to detect the rays and measure their intensity. Civil defense officials have such instruments, and they are preparing them for use, to detect where fallout has been deposited, and how much radiation it is giving off.

As time goes by, the relatively low levels of radiation given off by the fallout particles will become still lower, but it will be a number of weeks before nearly all of the radiation has disappeared.

If fallout reaches the U.S. it will *not* cause a radiation hazard everywhere. Fallout particles will be deposited in significant amounts—and cause a hazard—*only* where rain (or snow) washes them out of the atmosphere and down to the ground.

Thus, considerable areas of the United States—primarily places where it rains (or snows) while the fallout is passing over—could face a radiation hazard from the overseas nuclear conflict. *It is not possible at this time to predict just where these areas may be, or how large they may be.* This will depend on the origins of the fallout, on the winds, and on where there is rain (or snow) when the fallout is passing over the U.S. (Federal authorities will be tracking the movement of the fallout material in the air, and will make forecasts on where rain or snow could wash fallout down to the ground.)

This community could receive no fallout. *Or* there could be fallout here and in a few neighboring counties. *Or* there could be fallout over most of this State and perhaps neighboring States as well.

If fallout is deposited in this area, the next question would be, how much of a radiation hazard is there?

Even where fallout particles are washed down by rain (or snow), the radiation danger will be far less than if the United States itself had suffered a nuclear attack. This is because only a small fraction of the fallout particles will reach the U.S. and because the intensity of fallout radiation falls (diminishes) rapidly during the first several days after the nuclear explosion. By the time fallout particles reach the U.S., the amount of radiation they will be giving off will be *well under one percent* of the amount soon after the explosion.

Thus, the radiation hazard in those areas where fallout is deposited on the ground will not be enough to cause radiation sickness.

However, there could still be significant longer-term threats to health in the areas contaminated with fallout. Over a period of many years, there might be some additional cases of cancer and related diseases. Of course, if any given person got cancer, 20 or 30 years from now, it

would not be possible to tell if this was due to the delayed results of exposure to fallout, or if it would have happened anyway. But if a large number of people are exposed to relatively low levels of radiation, for long enough to receive significantly large total exposure, the statistics of past exposures indicate there will be some increase in the number of cases of cancer.

Thus it is prudent to keep radiation exposure as low as practicable. This would be especially important for pre-school children and pregnant women, because younger children and unborn babies are more vulnerable to radiation than adults or older children.

Fortunately, you can take a number of *simple countermeasures which can greatly decrease radiation exposure*—and thus the long-term health hazards:

- Some of the radiation would come from fallout particles *outside* the body. Countermeasures described below could reduce this “external exposure” danger by *about 90 percent*.
- Other hazards to health would result from taking radioactive material *into* the body. Some of these materials tend to concentrate in certain organs—such as the thyroid gland in the neck—and can cause radiation damage there. However, fairly simple countermeasures can reduce the “internal” radiation dose to organs in the body by *about 90 to 99 percent*.

Ways to reduce exposure from radiation *outside* the body include staying indoors much of the time. In areas of relatively heavy fallout, having pre-school children and pregnant women stay in the best-protected part of the house may be a justified countermeasure.

The primary way to reduce the danger from taking radioactivity *into the body* is to avoid drinking milk which may be contaminated. There could be a relatively minor hazard from other foods such as leafy vegetables harvested in contaminated areas after fallout was deposited, and from water (where water is collected off roofs, or comes from shallow reservoirs).

But contaminated milk would be by far the greatest concern. This is because one of the radioactive substances produced by a nuclear explosion is so-called iodine-131. If dairy cows grazed on pastures contaminated by fallout, iodine-131 would be concentrated in their milk. This concentration is so effective that harmful contamination of milk can occur in areas where the fallout is not heavy enough to cause serious exposures from radiation *outside* the body.

Persons drinking milk contaminated with iodine-131 will have some of it concentrated in their thyroid glands. Concentration of radioactive iodine in the thyroids of fetuses (unborn babies) would cause the most damage. The thyroids of babies and pre-school children are more likely to be damaged than are those of older children and adults. In future years, radioactive iodine concentrated in the thyroids would result in an increase in the number of benign (non-cancerous) tumors of the thyroid and in a small percentage increase in malignant (cancerous) thyroid tumors. Fortunately, modern medical techniques will prevent all but a small fraction of the patients from dying of these afflictions.

The thyroids of pre-school children and of unborn babies are more vulnerable to radiation damage than the thyroids of older children or adults. Therefore, *canned and dried milk are being reserved for use by pre-school children and pregnant women ONLY, effective immediately*. (This is to conserve milk products starting now—in case there should later be any problem with milk here.)

The best way to avoid contamination of milk with iodine-131 would be to take dairy cows off pasture before the arrival of fallout, and place them on uncontaminated feed and water in barns for several weeks. If this were done for two and a half weeks before returning them to pastures, the maximum iodine-131 content of the milk would be reduced by about 90 percent. If cows were fed in barns for five weeks, the radioactive iodine content would be reduced by about 99 percent.

To repeat, even if fallout is deposited in this community, there will not be enough radiation to cause radiation sickness. But the relatively low-level radiation hazard could cause small but significant threats to health in *later years*.

This threat could result from exposure to low-level radiation *over a fairly long time*—a number of

weeks after the arrival of fallout. Thus it is prudent to keep radiation exposure as low as practicable—especially for children and pregnant women.

The actions outlined below will all contribute to keeping radiation exposure low. Each one of the actions will help, and taken all together they will keep to a minimum the possibility of health problems in future years.

B. Things To Do When a Large Scale Nuclear Conflict Has Occurred Overseas

There are a number of things you should do now to reduce radiation exposure, should the nuclear conflict overseas result in fallout contamination here in our community.

1. *Prepare to stay indoors in your house.* This will require laying in a supply of food and other essentials, if possible enough for one or two weeks. Be sure you have enough of any special medicines family members may need to take, and infant supplies (such as diapers, and canned milk or baby formula). *Do NOT attempt to buy dried or canned milk, or other substitutes for fresh milk—unless there is a pre-school child or a pregnant woman in your family. Please cooperate with local officials and retail stores in reserving substitutes for fresh milk for those who would need it most.*

If officials find that risks from radiation *outside* the body are relatively high in this area, they may advise pre-school children, pregnant women, and those not doing essential work to spend most of the time in the part of the house providing the best fallout protection. If your house has a basement, this would be in the corner of the basement that is farthest belowground—and farthest from an exposed basement wall, if there is one. If your home does not have a basement, stay in the central part of the house.

[NOTE: The following Emergency Public Information instructions should be disseminated only in those areas where drinking water is collected off roofs, or comes from open reservoirs.]

2. *Drinking water* would be safe if it comes from wells. However, in this area (some) (many) people collect drinking water off roofs. This water could contain small amounts of radioactive substances, if fallout comes down here.

Although radiation from drinking water is a minor hazard, precautions should be taken. If your drinking water comes from off the roof, or directly from a stream or pond, you should store enough drinking water for one or two weeks. Put the water in any clean containers you have.

[NOTE: The following Emergency Public Information instructions for farmers should be disseminated ONLY after coordinating with local agricultural authorities, such as the County Emergency Board. If they approve disseminating EPI material, assist and cooperate in any special type of distribution needed.]

3. *Dairy farmers should make preparations now for taking dairy cows off pasture*, should it appear several days from now that fallout may be deposited in this area. Clean feed and water should be provided in barns for at least two to three weeks, and if possible five weeks. As noted earlier, this can reduce radioactive iodine-131 contamination of milk by 90 to 99 percent. Cover any hay or feed that cannot be placed in barns.

If it is not possible to keep dairy cows indoors, and fallout is deposited here, the milk will be contaminated to some extent by radioactive iodine. It may be possible, however, for dairies to arrange to process this milk by high-temperature pasteurization and long-term cold storage, or to process it into dried milk, cheese or other dairy products that can be set aside for a number of months until nearly all the iodine-131 has decayed into non-harmful substances.

Where farmers have mature grain or vegetable crops, these should be harvested before the arrival of fallout, if it is feasible to do so. Cover harvested crops or put them indoors before the arrival of fallout.

[NOTE: The following Emergency Public Information instructions concerning use of potassium iodide should be disseminated ONLY IF State Public Health authorities so advise.]

4. *Public Health officials may recommend taking small doses of a substance (potassium iodide) that would reduce the amount of radioactive iodine taken into the thyroid gland. A small dose would be taken daily, starting about one day before the arrival of fallout.*

If potassium iodide is available, the daily dose would be *prescribed by Public Health authorities, and you should FOLLOW THEIR INSTRUCTIONS STRICTLY.*

If potassium iodide is available in liquid form (rather than pills) it will have a disagreeable taste. These are two methods for taking it:

- Put the recommended number of drops in a half-glass of water, milk or fruit juice, and drink quickly. Then you may want to drink some of the beverage with nothing added. (Public health authorities will tell you how many drops to take. This would probably be a few drops for adults, and half as many for babies under 12 months old.)
- Put the recommended number of drops on a piece of bread, roll it into a firm little ball about the size of a large pea, and swallow it quickly with water. If the pill is coated with margarine, there is no taste at all.

5. Listen to radio or TV, and read the newspapers, to get the latest information and instructions from government officials. *If they tell you to do something different than outlined in the points above, follow their instructions.*

C. Actions if Fallout Arrival is Predicted for this Community

Civil defense authorities will be tracking the situation closely. If it appears that the overseas nuclear conflict has indeed created a substantial amount of fallout, and that the fallout is moving towards the U.S., you will be advised as the fallout approaches this community—which *could* mean that fallout would be deposited here, if it rains (or snows). Actions you will be advised to take will probably include the following (all of which were discussed above):

1. Finish preparations to stay indoors as much as is practical until notified that normal living may be resumed.

[NOTE: The following EPI instructions for farmers should be issued only after coordinating with local agricultural authorities, such as the County Emergency Board.]

2. Dairy farmers should take dairy cows off pasture a day or so before fallout is expected to arrive over this area, if rain or snow is forecast.

[NOTE: The following EPI instructions concerning potassium iodide should be issued only if State Public Health authorities so advise.]

3. Start taking small doses of potassium iodide, *IF* this has been recommended by Public Health authorities, and *follow their instructions strictly.*

4. Stay indoors as much as is practical and listen to the radio or TV for the latest information and instructions.

5. *[NOTE: Add instructions—based on State or Federal guidance—on keeping essential industries, services, and utilities in operation.]*

D. Actions if Relatively Large Amounts of Fallout are Deposited Here

If fallout is actually deposited here (by rain or snow), civil defense authorities will instruct you on what to do. Those instructions may include the following:

1. Stay indoors as much of the time as is practical. Restrict ventilation into the house to reduce the number of fallout particles that might get into the house (but provide enough ventilation to avoid serious discomfort). It would be especially important to reduce the radiation exposure of pre-school children and pregnant women.

2. Decontaminate the roof of your house, and driveways or walks near the house, if and when civil defense authorities advise.

3. *[NOTE: Add instructions on keeping essential industries, services, and utilities in operation.]*

E. Actions if Large Amounts of Fallout are Not Deposited Here

If fallout is not deposited here, civil defense authorities will tell you what to do.

In general, you will be able to resume normal living.

Uncontaminated fresh milk (and dried or canned milk) will continue to be *reserved for pre-school children and pregnant women*. Please cooperate—adults and older children should not drink milk until civil defense officials tell you this is permitted again.

FLOODS

Emergency Services Actions

A. General Information

Normally, flooding will be a relatively slow process with adequate warning. The buildup to flood conditions will normally (except in case of a flash flood) take several days and in the meantime, progressive situation reports will be available from the Weather Service. Flash flood warnings are the most urgent type of flood warnings issued, and are also transmitted to the public over radio and television; this should be supplemented by a local warning system. A local government prearranged warning system (horns, sirens or other signals) should be established if it is required to meet local needs.

In communities where there is a history of recurring floods, the minimum requirement is to establish a continuing communication with the National Weather Service. For example, flood forecasts and warnings should be telephoned to the local police headquarters at agreed upon times. During the flood control planning phase, communities should coordinate closely with the nearest office of the U.S. Army Corps of Engineers *in accordance with established State procedures*. Also, the Corps of Engineers stands ready to offer preventive assistance for flood control when authorized under Public Law 99.

The following actions are recommended for (1) establishing flood watches, (2) making preparations to carry out flood warnings, (3) handling flood operations, such as search and rescue, and (4) restoring the flood area to normal. In cases of flash floods, the warnings will have to be greatly accelerated and there will be minimal time available for preparations to handle the flood or for conducting search and rescue during the early flood period.

B. When a flood threatens—take the following actions:

1. Notify the chief executive and civil defense director who will activate the Emergency Operating Center in accordance with the "Executive Leadership Actions for All Major Emergencies." (The emergency telephone numbers of the forecast and warning offices for the area should be inserted at this point.) _____ If a *Flood Watch* is called for, the EOC will maintain a 24-hour communications watch, place the Emergency Services on a standby watch alert, and notify all hospitals, schools, and voluntary groups listed on the *Flood Watch* alert list.

2. Survey all cooperative weather observers and stream gauge reporting offices in the area to insure they are operating and reporting. If necessary, establish emergency communications procedures to assure such reports reach the proper National Weather Service office; use dike patrols and low flying aircraft if available.

3. Provide public information representative with information for broadcasts over radio and TV to remind the public to (1) stay tuned in for instructions and advice from local governments; (2) remain calm; (3) begin precautionary measures. (See accompanying "Suggested Citizen Instructions.") A sample message is as follows:

"Radio stations _____ and television channels _____ will broadcast
(identify) (identify)
the latest flood information and warnings. Your local government's advice and instructions to
the public during the emergency will also be issued over these stations by

(Mayor/CD Director, etc.)"

4. Assess the situation, including a determination of the potential risk area and an estimate of rise of water, based upon flood watch notification; initiate reports to and from private agencies and utilities in the risk area. (List telephone numbers, locations, persons to receive reports.)

Organization (Person)	Location	Telephone	
		Day	Night

C. If a flood warning is received or the Flood Watch so indicates, the Emergency Operating Center will be activated to full staff in accordance with "Executive Leadership Actions for All Major Emergencies."

Take the following additional actions:

1. Place into effect appropriate emergency plans and procedures. (List important details of local plans and procedures.)
2. Advise the public of what steps and actions are to be taken to safeguard their lives and property. (See accompanying "Suggested Citizen Instructions.")
3. Maintain morale by informing the public of the current situation and actions being taken by local government to handle the emergency.
4. Mobilize *all* Emergency Services (police, public works, fire, health, welfare, etc.).
 - a. Notify all personnel of the general situation and to report to emergency assignments.
 - b. Remind appropriate Emergency Service personnel to position equipment, fuel, and other essential supplies outside the anticipated flood area for use after the storm.
 - c. Check auxiliary generators and other power and lighting equipment. Place reserve EOC supplies and equipment, such as antennas, where they can be obtained following the flood.
5. Notify all agencies, facilities, and volunteer groups on the *flood warning* lists.
6. Advise the Superintendent of Schools to consider cancelling classes for the duration of the flood emergency.
7. Put the appropriate emergency plan(s) in operation, depending on what area may be flooded if the water continues to rise. Alternate plans, developed by local government, should include such information as the following: height of water at normal stage; at what height flooding will occur; areas that may be (or will be) affected by the rising flood waters; areas to be ordered evacuated; shelter locations for evacuees, feeding, and other requirements for taking care of evacuees.
8. Place into effect a highway traffic control plan to expedite movement from areas ordered evacuated. The plan should include designation of entrance routes for Emergency Services, mutual aid, etc., and exit routes for evacuation of citizens.
9. Set up patrols in evacuated areas for protection of property and prevention of fires, utilizing mutual aid, military assistance, etc., as available.
10. Conduct rescue of persons as required. (A major problem is the rescue of stranded inhabitants of the flooded areas, as well as of trapped motorists. The most practical solution is to use boats, helicopters, and specially equipped vehicles.)
11. Make electrical, gas, and water inspections as necessary to prevent accidents. (LP and bulk fuel tanks should be anchored or kept full to prevent floating and becoming a hazard.)
12. Maintain current situation reports from the field to the Emergency Operating Center. These are the basis for releases to the public when necessary to minimize public alarm, to keep the area clear, and to assist as required.

13. Restore the flood area to a safe condition, including inspection of flooded area and structures to lessen the probability of additional hazards, accidents, and fires. This period of operations is critical since the Emergency Services are usually deeply committed and fatigued from long time involvement in such activities in sandbagging, pumping, and shoring unsafe structures. Priority operations include:

- a. Clear main streets of mud and debris first and the other streets as rapidly as possible.
- b. When structures permit, pump water out of basements and lower floors.
- c. Limit accumulation of food-type garbage as first priority, followed by general trash collection.
- d. Initiate health and sanitation inspections of the area.

14. Close out emergency operations as soon as the flood area is considered safe, notify Emergency Operating Center and submit reports, as required.

REMEMBER THAT a large-scale flood can create the need for long periods of repair and restoration. This may necessitate manpower, equipment, materials, and supplies at the scene of restoration long after closing the Emergency Operating Center. The following safety, health and welfare measures for the general public should be covered by the local officials via radio, television, and newspapers. (Also see accompanying "Suggested Citizen Instructions.")

1. Safety measures to be taken after the flood.
2. Where to go to obtain necessary first aid and medical care in the area.
3. Where to go for necessary assistance, such as emergency housing, clothing, food.
4. Specific local measures to help themselves and their community recover from the emergency.

FLOODS

Suggested Citizen Instructions

A. General Information and Definitions

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

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

Flash flood warnings are the most urgent type of flood warning issued, and are also transmitted to the public over radio, television, and by other signals (e.g., sirens) established by local government to meet local needs.

B. Local Government Instructions

Area radio and television stations usually broadcast the latest flood information and warnings. However, local government should give more specific advice and instructions over *local* stations, preferably by the chief executive or his emergency public information representative. (Describe here any additional prearranged local warning system, if established for your local area.)

C. Suggested Flood Safety Instructions for Citizens

1. Before the flood:

a. Find out how many feet your property is above or below possible flood levels so when predicted flood levels are broadcast, you can determine if you may be flooded. (Specify whether this information may be obtained from the local government engineering department and/ or civil defense office.) Also ask for the location of the nearest safe area.

b. Keep a stock of food which requires little cooking and no refrigeration; electric power may be interrupted.

c. Keep a portable radio, emergency cooking equipment, lights and flashlights in working order.

d. Keep first aid and critical medical supplies (prescriptions, insulin, etc.) at hand.

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

f. Keep materials like sandbags, plywood, plastic sheeting, and lumber handy for emergency waterproofing.

2. When you receive a flood warning:

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

b. If flooding is likely, and time permits, move essential items and furniture to upper floors of your house.

c. If forced or advised to leave your home, move to a safe area *before* access is cut off by flood water.

d. Cut off all electric circuits at the fuse panel or disconnect switch. If this is not possible, turn off or disconnect all electrical appliances. Shut off the water service and gas valves in your home. (*Local Officials Note:* Before making announcements on shutting off gas valves, check local gas company policy.)

3. During the flood:

a. Avoid areas subject to sudden flooding.

- b. Do not attempt to cross a flowing stream where water is above your knees.
- c. Do not attempt to drive over a flooded road. You can be stranded and trapped.
- d. If your vehicle stalls, abandon it immediately and seek higher ground. Many people drown while trying to rescue their car.

4. *After the floods:*

- a. Do not use fresh food that has come in contact with flood waters.
- b. Test drinking water for potability; wells should be pumped out and the water tested before drinking.
- c. Do not visit disaster area; your presence will probably hamper rescue and other emergency operations.
- d. Do not handle live electrical equipment in wet areas; electrical equipment should be checked and dried before returning to service.
- e. Use flashlights, not lanterns or torches, to examine buildings; flammables may be inside.
- f. Report broken utility lines to police, fire, or other appropriate authorities. (List telephone numbers and locations.)

<i>Organization (Person)</i>	<i>Location</i>	<i>Telephone</i>	
		<i>Day</i>	<i>Night</i>

- g. Keep tuned to your radio or TV stations for advice and instructions of your local government on:
 - (1) Where to go to obtain necessary medical care in your area.
 - (2) Where to go for emergency assistance such as housing, clothing, food, etc.
 - (3) Ways to help yourself and your community recover from the emergency.

FOREST AND WILDLAND FIRES

Emergency Services Actions

A. General Information

Any small fire in a wooded area, if not quickly detected and suppressed, can get out of control. An uncontrolled fire is one of the most destructive forces caused by nature or by man. It is a multiple killer of people, livestock, fish and wildlife. It destroys personal and real property, valuable timber, forage, watersheds, and inestimable scenic and recreational values. Severe soil erosion, silting of stream beds and reservoirs, and flooding often are serious aftermaths of fires.

Responsibility for fire protection on Federal lands is centered primarily in the Department of Agriculture, Department of Interior, and to a lesser degree in such agencies as the Department of Defense and the Tennessee Valley Authority. The States have recognized their responsibilities on State and private forest lands through the passage of numerous State laws, and have set up State forest agencies to protect these resources. In many instances, private interests have established their own fire control organizations. As the protection of natural resources often transcends property and State lines, a strong link of coordination and cooperation has developed between private, local State, and Federal agencies. It is important that local officials have pre-fire knowledge of specific responsibilities for fire prevention and suppression in their own and adjacent jurisdictions. This can be accomplished through local participation in applicable State and Federal rural fire defense plans.

In addition to training and equipping their own fire department personnel for brush and forest firefighting, small communities near forest areas should consider such activities as radio and TV fire prevention programs, fire weather forecasting available from the National Weather Service, and mutual-aid compacts with adjacent communities and private agencies. *Any competent volunteer fireman can be trained and equipped to fight forest and wildland fires without much cost in time and money.* Any community fire department can provide the nucleus of a force that can prevent, detect, and suppress forest fires before they reach the disaster stage.

B. Upon receipt of a report that a forest fire threatens or is occurring in the vicinity—take the following actions:

1. Notify the chief executive and civil defense director who, if the situation warrants, will activate the Emergency Operating Center in accordance with "Executive Leadership Actions for All Major Emergencies."

2. Assess the fire situation including a determination of the firespread potential risk area, and make an estimate of the speed and direction of wind at the scene. Initiate a system of reporting from private agencies and utilities that have facilities in the risk area.

3. Establish contact with the nearest office of the National Weather Service to insure adequate forecasting support. If no National Weather Service Office is nearby, get information via State civil defense. Make sure the senior firefighting officer receives all weather information on a timely basis.

4. Keep in communication with the senior firefighting officer at the scene to obtain his strategy and the tactics he intends to use, plus his requirements for additional manpower, equipment, and supplies.

5. Evaluate the overall community situation. Compare reports from the scene by the senior firefighting officer to other reports to obtain a communitywide assessment of the situation. This evaluation provides a basis for effective decisions on how best to meet requirements. In addition to mutual aid, obtain specific information on sources of additional manpower, equipment, food, and other supplies. (List potential local sources, with telephone numbers and addresses.)

<i>Organization (Person)</i>	<i>Location</i>	<i>Telephone</i>	
		<i>Day</i>	<i>Night</i>

6. Provide public information officer with appropriate information for releases. (See accompanying "Suggested Citizen Instructions.")

7. Coordinate with responsible fire and other Emergency Services on plans for evacuation of area if required, designating exit routes for threatened citizens and entrance routes for Emergency Services; enlarge area of evacuation if situation requires; carry out plans as required.

8. If necessary, get additional aid from other communities in accordance with mutual-aid agreements.

9. If the fire situation gets beyond local capability, it may be necessary to mesh local Emergency Operating Center functions with State and Federal "campaign" fire organizations. This means higher levels of coordination and forest fire suppression techniques, including direct and indirect attack, control lines, backfiring, and use of air support coordinated by area "Fire Bosses."

10. It is essential for each local, area, and State Emergency Operating Center to know what the fire is doing at all times; maintain communications upward and down to the scene of operations. Make certain that exit routes for citizens and entrance routes for the Emergency Services are predetermined, ready for emergency use, and known to those who may have to use them.

11. Provide for cordoning the area of operations. Allow no one in the fire area except Emergency Services and their augmentation forces.

12. Keep Emergency Service personnel advised of area wind speeds and directions so they can minimize operational obstacles, such as smoke, fumes, and dust. Information can be obtained from the nearest National Weather Service office, or from State civil defense.

13. Reroute traffic as required on an area basis.

14. Maintain reports to the Emergency Operating Center for developing releases to the public, when necessary, to minimize public alarm, keep the area clear, and assist the Emergency Service forces. (See accompanying "Suggested Citizen Instructions.")

15. When fire is suppressed, restore the incident area to a safe condition to lessen the probability of further fires or accidents.

16. When firefighting operations are completed, the senior firefighting officer notifies the Emergency Operating Center.

17. Prepare and submit final reports, as required.

FOREST AND WILDLAND FIRES

Suggested Citizen Instructions

A. General Information

Forest fires can occur at any time of the year but mostly occur during long dry hot spells.

B. Warnings

Though forest fires can start without warning, the Federal and State governments maintain a system of watch towers or surveillance aircraft manned by U.S. Forest Service and the State Forest Services to ensure that the location of fires can be determined, warnings issued, and necessary emergency actions taken. (Describe here any local prearranged warning system.)

C. Causes of Forest Fires

Most forest fires are caused by human carelessness, negligence, or ignorance. Forest fire prevention, therefore, is mainly a problem of creating a better understanding of the importance of forests, an awareness of the danger of fire in the woods, and a sense of personal responsibility to safeguard the forests from damage.

D. In Case A Forest Fire Threatens

1. Keep posted on progress of fire by listening to radio broadcast _____
(local station identification)
and television _____; e.g., "Local government advice and instruction will
(local channel identification)
be issued over these stations by _____."
(Mayor/Civil Defense Director/Other authorized official)

2. To know what to do when a forest fire threatens may mean the difference between life or death. If you see such a threat, report it immediately by phone to the local police department, fire department, or fire warden. Do *not* use the phone to get information and advice—depend on radio or TV as indicated above. (List all local Emergency Service telephone numbers.)

3. If you are burning debris for cleanup, such as "woods-burning" in the South, immediately stop.

4. Put out all fires in homes and other structures.

5. If in woods, put out camp fires.

6. Make certain your own property is clear of combustibles, particularly brush that is hazardous to your home or other structures.

7. Hook up garden hoses and check out your water supply for possible "wetting down" of roofs if sparks from the forest fire threaten.

8. If time permits and it is required, remove and clear away flammable vegetation up to 30 feet on each side of your home or other structure (this is an extension of Step 6).

9. Close all windows (cover if possible), remove combustibles near windows and other openings, protect and secure stock and pet animals.

10. After your own home is prepared, be ready to assist in constructing community fire-breaks if asked to do so.

11. If area evacuation is called for, get full information on exit routes and relocation areas.

E. If Your Community Is Involved In A Forest Fire

1. Cooperate with authorities. Keep posted on progress of fire by listening to radio broadcasts _____ and television _____; e.g., "Local government advice and instructions will
(local station identification) (local channel identification)
be issued over these stations by _____."
(name of official)

2. Follow evacuation directions. Safe exit routes are as follows (describe the area to be evacuated and relocation areas, specified by street, route number, etc.).

3. *Do not use firefighting entrance routes.* These are reserved for Emergency Services only.

4. Assist in community firefighting operations if you are between ages ___ and ___ and able bodied. Report to _____. All others keep clear of fire area.
(specify checkpoint area)

5. Make certain you are under the supervision of a designated firefighter. Follow his instructions since he knows how the fire is being fought and where you will be of most value to the operation.

6. Follow safety precautions to prevent getting trapped. Ground winds and fuels are tricky. Follow instructions. (List any special instructions to cope with local hazards.) Keep informed. Know where the fire is in relation to you. Know your escape route. Keep calm. Maintain communication with your supervisor. (*Don't go it alone!*) Make sure you understand instructions.

HURRICANES

Emergency Services Actions

A. General Information

The National Weather Service is responsible for issuing warnings when hurricanes are approaching the United States mainland.

As soon as there are definite indications that a hurricane is forming, even though it is a thousand miles or more from the mainland, the storm is given a name and the Weather Service begins issuing "Advisories" and "Bulletins." These are issued frequently throughout the day and night and tell where the storm is located, intensity of its winds, and the speed and direction of movement.

If the hurricane moves toward the mainland, "Hurricane Watch" notices are included. The *Hurricane Watch* does not constitute a warning that hurricane conditions are imminent. Rather, it indicates that the hurricane is close enough so that everyone in the area covered by the "WATCH" should listen for further advisories and be ready to take precautionary action in case "WARNINGS" are issued.

As soon as the forecaster determines that a particular section of the coast will feel the full effects of a hurricane, he issues a "HURRICANE WARNING." Hurricane Warnings specify coastal areas where winds of 74 miles-per-hour or higher or dangerously high water are expected to occur. When the warnings are issued, all precautions should be taken immediately against the full force of the storm.

B. Upon receipt of an advisory from the Weather Service that a "Hurricane Watch" is in effect— take the following actions:

1. Notify the chief executive and civil defense director who will activate the Emergency Operating Center in accordance with "Executive Leadership Actions for All Major Emergencies."

2. Ensure that appropriate information and instructions based on the latest hurricane advisories are broadcast by radio and TV. For example:

"Radio Station _____ and Television Channel _____ will broadcast latest
(identify) (identify)

hurricane advisories. Your local government advice and instructions will also be issued over these stations by _____."

(Mayor/CD Director/Other Authorized Official)

3. Add information from the State civil defense agency on tracking the storm to Step 2, if available.

4. Assess the situation and review preparedness procedures for evacuation and other possible local alternate plans.

5. If possible, determine probable risk area. Initiate reporting of situation to industries, utilities, schools, and other facilities in the probable risk area. Dispatch Emergency Service field personnel (particularly police) to alert exposed settlements and trailer camps to maintain a constant radio watch for further instructions.

6. Provide continuing instructions to the public, such as:

a. Advise people on where to go if they are warned to evacuate. (Attach local listing of hurricane shelters and locations.)

b. Routes to use when area is ordered evacuated. (Provide map of proposed evacuation routes to assist the announcer.)

7. Maintain contact with State civil defense agency for advice and guidance on the developing situation.

8. Have highway and public works departments make preparations for placing emergency directional and detour signs as called for under evacuation and traffic control plans.

C. Upon receipt of a Hurricane Warning—take the following actions:

1. Place the Emergency Operating Center in full scale operation, including emergency communications systems, plans, and procedures.
2. Step up broadcasts over radio _____ and TV _____ to remind public to:
(identify station) (identify channel)
 - a. Remain calm
 - b. Remain at home
 - c. Make preparations for evacuation if ordered to do so
 - d. Stay tuned in continuously
 - e. Begin precautionary measures (See accompanying "Suggested Citizen Instructions.")
3. Notify all agencies and individuals on the *Hurricane Warning* lists.
4. Advise the Superintendent of Schools to consider cancelling classes for the duration of the emergency.
5. Put the appropriate hurricane emergency plan in operation, depending on the maximum tide height expected which will indicate areas to be evacuated. Alternate plans, developed by local government, should include: Areas to be evacuated; shelter locations for evacuees; feeding and other requirements for taking care of evacuees.
6. Remind appropriate Emergency Service personnel to position equipment, fuel, and other essential supplies outside the anticipated storm area for use after the storm.
7. Check auxiliary generators and other power and lighting equipment. Place reserve EOC supplies and equipment, such as antennas, where they can be obtained following the storm.
8. Place into effect a highway traffic control plan to expedite movement from areas ordered evacuated to hurricane shelters. The plan should include designation of exit routes by evacuees, and provision for broadcasting information to the public.
9. Set up patrols to cordon evacuated areas to prevent fires, looting, and property damage.
10. If the hurricane strikes, commence Search and Rescue and other emergency operations as soon as possible and as required, in accordance with appropriate Action Checklists.
11. After passage of the hurricane, broadcast advice and instruction to the public:
 - a. That they should remain in shelters until informed by those in charge that they may return to their homes.
 - b. Where assistance may be obtained.
12. As soon as situation permits, resume normal routine, notify Emergency Operating Center, and submit final reports, as required.

NOTE: When a hurricane strikes a community, it may necessitate manpower, equipment, materials, and supplies at the scene of restoration, long after closing of the Emergency Operating Center.

HURRICANES

Suggested Citizen Instructions

A. General Information—WARNINGS:

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

2. A *HURRICANE WATCH* means a hurricane *may* threaten an area within 24 hours. A Hurricane Watch is *not* a hurricane warning, but a first alert for emergency forces and the general public in prospectively threatened areas. When your area is under a Hurricane Watch, you should continue normal activities, but stay tuned to radio or television for all Weather Service advisories.

3. A *HURRICANE WARNING* becomes part of advisories when a hurricane is expected to strike an area within 24 hours. Advisories containing hurricane warnings include an assessment of flood danger in coastal and inland areas, small craft warnings, gale warnings for the storm's periphery, estimated storm effects, and recommended emergency procedures. (See list of recommended precautionary measures in Sections B, C, and D, below.)

4. Radio _____ and television _____ will broadcast latest hurricane advisories; e.g., "Local government advice and instructions will be issued over these stations by _____."
(local station identification) (local channel identification)
(Mayor/Civil Defense Director/Other authorized official)

B. Precautionary Measures—AFTER WARNING AND PRIOR TO HURRICANE

1. Keep your radio or television on and listen for the latest Weather Service warnings and advisories. When a hurricane approaches, *also* listen for *tornado* watches and warnings. (See "Suggested Citizen Instructions for Tornadoes.") If power fails, use portable battery radio or your car radio. Check your battery-powered equipment. Your radio may be your only link with the world outside the hurricane, and emergency cooking facilities and flashlights will be essential if utility services are interrupted.

2. Plan your time before the storm arrives. Waiting until the "last minute" might mean you'll be marooned.

3. Leave beaches or other low-lying areas that may be swept by high tides. Leave early; don't run the risk of being marooned.

4. Moor your boat securely before the storm arrives, or move it to a designated safe area. When your boat is moored, leave it, and don't return once the wind and waves are up.

5. Board up windows or protect them with storm shutters or tape. Danger to small windows is mainly from wind-driven debris. Larger windows may be broken by wind pressure.

6. Secure outdoor objects that might be blown away or uprooted. Garbage cans, garden tools, toys, signs, porch furniture, and a number of other harmless items become missiles of destruction in hurricane winds. Anchor them or store them inside before the storm strikes.

7. Store drinking water in clean, closed containers, such as jugs, bottles, and cooking utensils. Your town's water supply may be contaminated by flooding or damaged by the hurricane.

8. Keep your car fueled. Service stations may be inoperable for several days after the storm strikes, due to flooding or interrupted electrical power.

9. Unless advised to evacuate, stay at home if your house is sturdy and on high ground. If it is not or you live in a mobile home, move to a designated shelter and stay there until the storm is over.

10. Remain indoors during the hurricane. Travel is extremely dangerous when winds and tides are whipping through your area.

11. Beware the "eye" of the hurricane. If the calm storm center passes directly overhead, there will be a lull in the wind lasting from a few minutes to half-an-hour or more. Stay in a safe

place unless emergency repairs are absolutely necessary. But remember, at the other side of the "eye" the winds rise very rapidly to hurricane force, and come from the opposite direction.

C. Evacuation.

If you are warned to evacuate your home and move to another location (including pre-designated hurricane shelters) temporarily, there are certain things to remember and do. Here are the most important ones:

- **FOLLOW THE INSTRUCTIONS AND ADVICE OF LOCAL AUTHORITIES.** If you are told to evacuate, do so promptly. If you are instructed to move to a certain location, go there—don't go anywhere else. If certain travel routes are specified or recommended, use those routes rather than trying to find short cuts of your own. If you are told to shut off your water, gas or electric service before leaving home, do so. Also find out from the radio or TV where emergency housing and mass feeding stations are located, in case you need to use them.
- **SECURE YOUR HOME BEFORE LEAVING.** If you have time, and if you have not received other instructions from the local authorities, you should lock your house doors and windows. Park your car in the garage, carport, or driveway, close windows, and lock the car (unless you are driving to your new temporary location).
- **TRAVEL WITH CARE.** If the local authorities are arranging transportation for you, precautions will be taken for your safety. But if you are walking or driving your own car to another location, keep in mind these things:
 - Leave early enough so as not to be marooned by flooded roads, fallen trees, and wires.
 - Make sure you have enough gasoline in your car.
 - Follow recommended routes.
 - As you travel, keep listening to the radio for additional information and instructions from your local government.

D. Safety Measures—After Passage of Hurricane

1. Remain in shelters until informed by those in charge that you may return to your home.
2. Keep tuned to your radio or TV stations for advice and instructions of your local government on:
 - a. Where to go to obtain necessary medical care in your area.
 - b. Where to go for necessary emergency assistance for housing, clothing, food, etc.
 - c. Ways to help yourself and your community recover from the emergency.
3. Use extreme caution in entering or working in buildings that may have been damaged or weakened by the disaster; they may collapse without warning. Also, there may be gas leaks or electrical short circuits.
4. Don't take lanterns, torches, or lighted cigarettes into buildings that have been damaged by a hurricane; there may be leaking gas lines or flammable material present. Use battery-powered flashlights, spots, etc., if available.
5. Stay away from fallen or damaged electric wires, which may still be dangerous. Notify the power company, or the police or the fire department. (List telephone numbers for these agencies.)

<i>Organization (Person)</i>	<i>Location</i>	<i>Telephone</i>	
		<i>Day</i>	<i>Night</i>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

6. Check for leaking gas pipes in your home. Do this by smell—don't use matches or candles. If you smell gas, do this: (1) open all windows and doors; (2) turn off the main gas valve at the meter; (3) leave the house immediately; (4) notify the gas company (Telephone No. _____) or the police (Telephone No. _____); (5) don't re-enter the house until you are told it is safe to do so.

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

8. Check your food and water supplies before using them. Foods that require refrigeration may be spoiled if electric power has been off for some time. Also, do not use fresh food that has come in contact with flood waters.

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

10. Don't drive unless necessary, but if you must, drive with caution. Watch for hazards to yourself and others, and report them to local police or fire departments.

11. Report broken sewer or water mains to the water department. (Telephone No. _____)

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

MAJOR STRUCTURAL FIRES

Emergency Services Actions

A. General Information

The most important aspect of planning for coping with a major structural fire is the development of mutual-aid pacts with nearby local governments and State or Federal installations. Fire control methods and techniques vary widely in different parts of the country as well as between the various fire protection agencies. It is difficult to prescribe a standard procedure for small communities because generally fire organizations have been developed over the years to meet the specific needs of different areas.

Smaller communities cannot afford to maintain the standing forces required to meet a major fire situation and so they rely on mutual aid. To be effective in cases of large fires, industrial explosions, and forest fires, mutual aid requires good communication, accessibility to the fire scene, prearrangement for use of apparatus and manpower, and centralized command. The biggest single need is *not* usually manpower and equipment. Most often it is the ability to respond quickly and to confine the fire to manageable limits before it reaches the disaster stage. This calls for a pre-fire plan of action for mutual-aid response by existing local fire organizations. Experience shows that where such plans of action existed at the time of a large fire, the emergency usually has been manageable, with life and property loss held to a minimum.

B. Upon receipt of a report that a major structural fire threatens or is occurring in the vicinity—take the following actions:

1. Notify the chief executive and civil defense director who, if the situation warrants, will activate the Emergency Operating Center in accordance with "Executive Leadership Actions for All Major Emergencies."

2. Assess the fire situation, including a determination of the area to which the fire might spread and an estimate of speed and direction of wind at the scene. Initiate a system of reporting from industries and utilities that have facilities in the risk area.

3. Keep in communication with the senior fire officer at the scene to obtain his strategy and the tactics he intends to use, plus requirements for additional manpower, equipment, and supplies.

4. Evaluate the overall community situation. Compare reports from the scene by the senior fire officer with those of other services to obtain a communitywide assessment of the threat. This evaluation provides a basis for effective decisions on how best to meet requirements. *In addition to mutual aid*, consider other sources of additional manpower, equipment, and supplies. (List potential local sources, with telephone numbers and addresses.)

Organization (Person)	Location	Telephone	
		Day	Night

5. Provide public information officer with appropriate information for releases. (See accompanying "Suggested Citizen Instructions.")

6. Carry out plans for evacuation of risk areas as required, designating exit routes for threatened citizens and entrance routes for Emergency Services; enlarge area of evacuation if situation requires.

7. If necessary, get additional mutual aid in accordance with agreements; any additional assistance requested, over that provided by established mutual-aid agreements, should be specific with respect to apparatus and manpower required; e.g., 10 pumpers; 5 tankers; 500 gallons foam concentrate, etc. General requests usually evoke uncoordinated response of unsuitable apparatus; the additional reinforcements should be instructed to report *not* directly to the fire area but to a predetermined assembly and dispersal area, such as a school or municipal park, where incoming apparatus can be redirected. Communication should be established between the assembly area and the fire scene and the Emergency Operating Center. Deployment should be to points directed by the senior fire officer. The Emergency Operating Center should ensure that local men are available, to serve as guides, one to each piece of apparatus.

8. If the fire situation gets beyond local and mutual-aid capability, it may be necessary to continue operations in accordance with "Forest and Wildland Fires—Emergency Services Actions."

9. If the fire situation stabilizes and appears to be manageable with existing forces, keep public information officer informed on fire situation, rerouting of traffic and other activities.

10. When firefighting operations are completed, senior fire officer at the scene notifies the Emergency Operating Center.

11. Prepare and submit final reports, as required by the chief executive, or his designated representative.

MAJOR STRUCTURAL FIRES

Suggested Citizen Instructions

A. General Information

Fire, always a danger, could be even more of a disaster during a natural disaster or nuclear 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 preventing an emergency. They include familiar commonsense precautions such as not allowing trash to accumulate, especially near heat sources; exercising extreme caution in the use of flammable fluids such as gasoline, naphtha, etc.; storage of such fluids outdoors when possible; care in the use of electricity; repairing of faulty wiring and avoiding overloaded circuits; and repair of faulty heating systems.

B. Be Prepared

Take a few minutes to discuss with your family what each member is to do in case of a fire. Tell them how to call the fire department and post the emergency telephone number on the wall near the phone.

If there is a public fire alarm box in your area, show the members of your family where it is and how to use it.

C. Fire Extinguishers

There are many types of fire extinguishers. Read the label carefully and follow instructions. Not all types of extinguishers can be used on every kind of fire.

Pressurized water extinguishers (CLASS A) are good for trash, paper, cloth, and wood fires, but are normally not used for flammable liquid (CLASS B) or electrical (CLASS C) fires. To extinguish a flammable liquid fire, smother it. Use an extinguisher marked for CLASS B fires. The extinguishing agent covers the whole flaming liquid surface.

Extra caution must be used when extinguishing an electrical fire. Use a CLASS C extinguisher. This contains a nonconducting extinguishing agent that will prevent the user from getting a shock.

A CLASS ABC extinguisher can be used on all three types of fires.

D. Care of Firefighting Equipment

Keep tools that can be used to fight fire where they can be easily reached. Don't store the hose, rake, and shovel away just because it isn't the gardening season. Check the hose for leaks and damaged connections. Make sure that faucet adapters are where they can be found quickly. Hang the ladder in a convenient location even though it isn't needed for painting or putting up screens. Inspect the rungs to make sure they are solid and clean. Store buckets where they can be found when needed, and keep them free of trash.

E. Know How to Fight a Fire

When a fire is noticed, get the building occupants out first; notify the Fire Department; then fight the fire. Assume that help can't come and go to work with whatever equipment is at hand. Don't stop fighting the fire until it is out or until it becomes too big for you.

All fires destroy by heating and burning, but all fires are not put out by using the same method. The method for extinguishing a fire depends on what is burning and what caused it to burn. It is important to know the difference because the wrong method of fighting a fire can increase the danger.

F. Fire Streams

The type of water stream that is used on a fire is important, especially when the amount of water available is limited.

Fires should be fought as close in as possible. If the fire is small and a person can get close enough to use a spray on it, this is the best method. A spray cools the fuel more quickly.

A fire that is too hot for close approach may have to be fought with a solid stream of water. If this is the case, be sure to keep the stream moving over the base of the fire.

G. Ordinary Combustible Fires

Ordinary combustibles are the materials that are usually found in and around the home such as paper, wood, and cloth. Fires that are burning ordinary combustibles can be put out by cooling or smothering. A stream of water from a garden hose or a fire extinguisher, or splashes from a pail of water will cool the burning object so that it will stop burning. This is what happens to the burning match when it is placed in water.

When using a hose or fire extinguisher, aim the stream at the base of the fire, not at the smoke or flame. Make sure it is completely out and that there are no smouldering embers left to rekindle the fire.

If a person's clothing catches on fire, don't let the victim run, but force him to the ground. Smother the flames with a coat or blanket, or roll him up in a rug. Just rolling the victim will help. Prevent him from inhaling the flame.

To protect a building from catching fire from flying sparks or heat radiation from another fire, remove all rubbish from near the building, close the windows, and wet down the building and yard with a hose.

H. Flammable Liquids and Gas Fires

Flammable liquids are those liquids which give off flammable vapors. Flammable liquids include gasoline, oil, kerosene, and paint. Be very careful when fighting this kind of fire because it is not like an ordinary combustible fire. A flammable liquid fire must be smothered. Use a foam, dry chemical, or carbon dioxide (CO₂) extinguisher. These fire extinguishers are marked for CLASS B fires. Avoid close blasting; it could splatter and spread the fire. If the burning liquid is spread out and not deep, the fire can be put out by throwing sand or dirt on it.

Never use a solid stream of water on this type of fire. The flammable liquid will splatter and float on top of the water; the fire will not be smothered and the fire can spread as the water and flammable liquid flow away. A water *spray* can be used to cool the fuel and extinguish the fire.

If the fire is in a confined area, such as an oil drum, paint bucket, or kitchen skillet, it can be put out by covering the container with a metal lid. Small cooking fires can be extinguished by turning off the gas, covering a pot, or closing the oven door. The fire will be smothered.

If burning gas is the cause of the fire, turn off the gas supply valve. Don't try to extinguish burning gas without turning off the supply valve; the result may be an explosion. If the flow of gas cannot be stopped, allow the gas to continue burning and protect the surroundings.

I. Electrical Fires

Electrical fires are caused by the shorting of electric wires or the overheating of electrical equipment. There is always the danger of electrical shock while fighting this type of fire. First, try to unplug the appliance or shut off the main electric switch at the fuse box. Then fight the fire with dry chemical, carbon dioxide, or any other CLASS C fire extinguisher. The fire extinguishing agent in these extinguishers will not conduct electricity, and the user will not get an electrical shock. Never use water on an electrical fire unless you are absolutely sure that the electricity has been shut off; otherwise, you can get a shock that could kill you. Don't turn the electricity back on or reconnect the appliance until the cause of the fire has been found and corrected.

J. Firefighting Precautions

When fighting a fire, there are some safety measures that should be taken that will reduce the danger.

Use Right Firefighting Method—

Find out where the fire comes from. If electricity started it, don't use water until the electricity is off. If a flammable liquid is burning, be careful not to splatter it.

Stay Low—Heat and smoke rise. Hot air can scorch the lungs. Smoke may contain poisonous fumes that could cause death. Stay close to the floor. Take short breaths and breathe through the nose. Cover face with a damp cloth to filter out smoke.

Leave an Escape Path— Stay near the door and out of confined places. Don't let the fire get between you and the way out.

Check Doors Before Opening— Sometimes a fire may smoulder for a long time in a closed room because the oxygen supply is limited. When a door is opened, the oxygen needed to make it flame is supplied by the inward rush of air. The fire may flare up with the force of an explosion. Check for smoke seepage around door cracks. Feel the door. If it is hot, don't open it. If the door seems cool, open it carefully, but keep your head to one side and out of the path of any blast of hot air.

Watch for Falling Materials— A burning structure becomes weakened and may fall apart. Before going into a burning area, look around for anything that looks like it is going to fall on you or crumble underneath you. Avoid these areas. Be careful of fallen overhead electrical wires.

K. Danger in Fire Fighting

Air in a burning building may be dangerous. Many of the gases given off by burning materials are poisonous. Fire sometimes can heat the air in a burning building hot enough to scorch the lining of your lungs and kill you. Fire takes oxygen out of the air. If you were caught in a closed burning room for any length of time, you might smother.

Sometimes a fire may smoulder for a long time in a closed building or room. When a door or window in the building is opened, the oxygen needed to make it flame is supplied by the inward rush of air. The hot gases may flare up with the force of an explosion. This back draft can burn or injure you badly if you are in its path.

Like all dangers, those in firefighting take courage to face, but all of them can be met if you use care and common sense. The greatest danger of all comes from losing your head. The danger can be avoided by training and practice. If you are trained in the right things to do, you will do them if the need arises.

L. Major Fires

Do the following things if a major fire (that is, one of such size that it endangers your home) develops near your home:

1. Close doors, window blinds, and drapes.
2. Unless otherwise directed fill containers with water for firefighting.
3. Turn off any running water so as not to reduce supply and pressure in water lines used for fighting fire.
4. Watch your house inside and out for fire that may start.
5. If you have a swimming pool or water reservoir, be sure it is accessible for firemen to use in fighting fire.
6. Hook up and test portable pumps and hoses, if available.

If the building you are in should catch fire, notify the Fire Department, and then fight the fire yourself until help arrives.

NUCLEAR FACILITY ACCIDENTS*

Emergency Services Actions

A. General Information

There are approximately 170 (as of January 1981) commercial nuclear power reactors licensed to operate, under construction, or planned throughout the United States. In addition, a smaller number of nuclear fuel fabrication and reprocessing facilities are required to support these commercial nuclear power plants.

Experts agree that reactors cannot become bombs. However, there is a possibility that incidents could result in an accidental release of radioactive material to the environment. Should this occur, the operator of the nuclear facility would promptly determine the magnitude of the incident, and notify officials of nearby jurisdictions and the State. If significant off-site contamination is anticipated, the facility operator will recommend to State and local government officials appropriate protective actions for the public. As in the case of preparedness for nuclear attack, time, distance and, to a lesser extent, shielding may be important factors in avoiding radiological exposure from the consequences of nuclear facility accidents.

Planning for effective community response for nuclear power reactor emergencies should be a joint effort by nuclear facility management, local, State, and Federal agencies, and the private sector. This is required if the responsible authorities are to be able to assess the severity of an emergency and, if necessary, execute emergency protective actions such as evacuating populations near nuclear facilities or sheltering them in-place.

The radiological hazard resulting from a reactor accident that could require emergency protective actions would be predominantly from gaseous radioactive materials (such as xenon and krypton, so-called "noble gases") and from volatile substances (such as iodines). Special equipment is necessary for assessing the magnitude of this hazard and should be available through the nuclear facility operators and State and Federal agencies. If the release involves large amounts of radioiodines, then radiation exposure to individuals' thyroids will be the primary concern. However, if the radioiodines are contained and not released to the atmosphere, the primary hazard will be radiation exposure to the whole body and lungs.

It is not possible to predict with precision the amount of warning time that would be available in a given community, or the intensity or duration of the hazard before the onset of a radiological accident. This would depend upon the type and severity of the accident, weather conditions—in particular the winds prevailing at the time—and other factors.

Local government radiological emergency plans should be developed in coordination with the designated State agency—usually the emergency services or radiation health agency. Specific assumptions to be used should be developed in cooperation with State personnel and the nuclear facility operator. This will assure that local plans are consistent with the State's radiological emergency plan.

It is recommended that State and local governments use the assistance provided by the Federal agencies for developing radiological emergency plans. Guidance and planning criteria for developing these plans are presented in the publication, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," NUREG-0654-FEMA/REP-1, Rev. 1, November 1980.

Two other recommended documents are: (1) "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants," NUREG-0396/EPA-520/1-75-016; and (2) the Environmental Protection Agency (EPA) "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents," EPA-520/1-75-001.

*This checklist updates guidance distributed in 1974, as change 1 to the "Disaster Operations" handbook (1972 version).

Procedures for review and approval of State and local government radiological emergency plans and preparedness are set forth in 44 CFR 350 (45 FR 42341, June 24, 1980). A copy of this rule, 44 CFR 350, is available upon request to your appropriate FEMA Regional office.

B. Emergency Classification System

Local government emergency plans should provide for several classes of emergency situations. The Federal Emergency Management Agency (FEMA) and the Nuclear Regulatory Commission (NRC) provide guidance on an emergency classification system for emergencies at nuclear power plants in NUREG-0654 (II. D and Appendix 1, pp. 42 and 1-3). Four classes of emergency action levels are established with examples of initiating conditions. The classes are: (1) notification of unusual event, (2) alert, (3) site area emergency and (4) general emergency.

1. Notification of Unusual Event

This class represents an emergency situation wherein unusual events are in process, or have occurred, that indicate a potential degradation of the level of safety of the plant. No releases of radioactive material are expected unless further deterioration of safety systems occurs.

Given such a situation, the licensee promptly informs State and/or local off-site authorities who in turn may request fire or security assistance, if needed. Such actions should assure the implementation of the first appropriate response steps, bring the operating staff to a state of readiness, and provide systematic handling of unusual events, information and decisionmaking.

2. Alert

Events that may or do involve a substantial degradation of the safety level of the plant correspond to this class. If radioactive releases occur, they are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

Actions by the licensee and State or local government, in case of an alert should assure the availability of emergency personnel if needed and provide off-site authorities with current status information.

3. Site Area Emergency

This class includes events that may or do involve major failures of plant functions needed for public protection. Any releases would not be expected to exceed EPA Protective Action Guideline exposure levels except near the site boundary.

Actions for this class of emergency should assure the manning of response centers, the dispatching of monitoring teams, the availability of personnel from duty stations for evacuation, consultation with off-site authorities and provide public information updates.

4. General Emergency

The most serious emergencies are included in this class and include events that may or do involve substantial core degradation (e.g., melting) with releases exceeding EPA Protective Action Guideline exposure levels in off-site areas.

Actions initiated by a declaration of "General Emergency" should initiate predetermined protective actions for the public, provide continuous assessment of information from licensee and off-site organization measurements, initiate additional measures as indicated by actual or potential releases, provide consultation with off-site authorities, and provide public information updates.

C. Planning Standards and Criteria for Local Governments Adjacent to Nuclear Power Plants.

NUREG-0654 presents 16 specific planning standards, with corresponding evaluation criteria, for use by State and local governments to develop radiological emergency plans for fixed commercial nuclear power reactor accidents. This document is based upon some of the following considerations:

- *Types of accidents.* A wide range of accidents from those with no potential for radioactive releases to accidents with the potential for the most serious consequences;

- *Time frames for exposure to radioactivity.* Exposure to persons would occur from one-half hour to days, while exposure to food and water could occur within hours and could continue for months, depending upon a number of factors such as the type of accident, wind speed and direction.
- *Emergency planning zones (EPZs).* Two types of EPZs (geographical areas) are defined and illustrated in Figure 1. EPZs oriented toward exposure to persons are about 10 miles in radius from the power plant. EPZs oriented toward exposure to food and water sources are about 50 miles in radius from the power plant. The exact size and configuration of these zones can be adjusted by State and local authorities based on local conditions such as demography, topography, land characteristics, access routes, and local jurisdictional boundaries.
- *Contiguous-jurisdiction governmental planning.* The concept of EPZs implies mutually supporting emergency planning and preparedness arrangements by all levels of government—Federal, State and local.
- *Evacuation.* Evacuation planning is recommended for a 10 mile EPZ to protect persons from exposure.

These and other considerations, and experience in plan development and testing, provide the basis for the 16 planning standards and evaluation criteria presented in NUREG-0654. These standards, which are variously applicable to licensees, States, and local governments, are as follows:

1. *Assignment of Responsibility (Organization Control).* Primary responsibilities for emergency response by the nuclear facility licensee and by State and local organizations within the emergency planning zones have been assigned; the emergency responsibilities of the various supporting organizations have been specifically established; and each principal response organization has been assigned staff to respond and to augment its initial response on a continuous basis.
2. *On-site Emergency Organization.* On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available, and the interfaces among various on-site response activities and off-site support and response activities are specified.
3. *Emergency Response Support and Resources.* Arrangements for requesting and effectively using assistance resources have been made, arrangements to accommodate State and local staff at the licensee's near-site Emergency Operations Facility have been made, and other organizations capable of augmenting the planned response have been identified.
4. *Emergency Classification System.* A standard emergency classification and action level scheme (the bases of which include facility system and effluent parameters), is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial off-site response measures.
5. *Notification Methods and Procedures.* Procedures have been established for notification by the licensee of State and local response organizations, and for notification of emergency personnel by all response organizations; the content of initial and follow-up messages to response organizations and the public has been established; and means to provide early notification and clear instruction to the populace within the plume exposure pathway emergency planning zone have been established.
6. *Emergency Communications.* Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.
7. *Public Education and Information.* Information is made available to the public on a periodic basis on how they will be notified and what their initial actions should be in an emergency (e.g., listening to a local broadcast station and remaining indoors), the principal points of contact with the news

media for dissemination of information during an emergency (including the physical location or locations) are established in advance, and procedures for coordinated dissemination of information to the public are established.

8. *Emergency Facilities and Equipment.* Adequate emergency facilities and equipment to support the emergency response are provided and maintained.

9. *Accident Assessment.* Adequate methods, systems and equipment for assessing and monitoring actual or potential off-site consequences of a radiological emergency condition are in use.

10. *Protective Response.* A range of protective actions have been developed for emergency workers and the public. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions appropriate to the locale have been developed.

While NUREG-0654 provides guidance for evacuation as one of several protective guidance responses, some communities located near nuclear power plants may not have completed their radiological emergency plans. In the interim, State and local governments should make use of Crisis Relocation Planning (CRP) guidance for both evacuation and hosting plans contained in CPG 2-8-C, "Guide for Crisis Relocation Contingency Planning-Operations Planning for Risk and Host Areas," January 1979. Brief guidance is provided in two checklists in this handbook: "Evacuation-Planning and Executing Evacuation from Threatened Areas" (pages 53 to 58) and "Evacuation-Planning and Conducting Operations to Receive Evacuees in Host Areas" (pages 49 to 52).

11. *Radiological Exposure Control.* Means for controlling radiological exposures in an emergency are established for emergency workers. The means for controlling radiological exposures shall include exposure guidelines consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides.

12. *Medical and Public Health Support.* Arrangements are made for medical services for contaminated injured individuals.

13. *Recovery and Reentry Planning and Postaccident Operations.* General plans for recovery and reentry are developed.

14. *Exercises and Drills.* Periodic exercises are conducted to evaluate major portions for emergency response capabilities, periodic drills are conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are corrected.

15. *Radiological Emergency Response Training.* Radiological emergency response training is provided to those who may be called on to assist in an emergency.

16. *Responsibility for the Planning Effort: Development, Periodic Review and Distribution of Emergency Plans.* Responsibilities for plan development, review, and distribution of emergency plans are established, and planners are properly trained.

D. Action Recommended to be Taken by Local Government

The type of action to be taken by local government will depend upon several factors, including the class level of emergency (Section B. Emergency Classification Systems). Actions of local and/or State governments per emergency class are as follows:

- *Notification of Unusual Event.* Provide fire or security assistance if requested by utility company, and stand-by for further requests until the unusual events are under full control.

Organization (person)	Location	Telephone	
		Day	Night
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

- *Alert.* Provide fire or security assistance, if requested; augment resources and bring primary response centers and the Emergency Broadcast System to stand-by status; alert emergency personnel to stand-by for monitoring and communications functions, if needed; provide confirmatory off-site radiation monitoring and radiation projections if actual release exceeds prescribed limits; and, maintain alert status until alert is terminated.

Organization (person)	Location	Telephone	
		Day	Night
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

- *Site Area Emergency.* Provide any assistance required, such as fire and security assistance, sheltering advice, public information releases, and press briefings; activate primary response centers; dispatch key emergency personnel, including monitoring and communications teams; alert other emergency personnel to stand-by status; perform off-site monitoring and assess readings; continuously assess information from licensee and off-site monitoring for changes to protective actions already initiated for the public and for mobilizing evacuation resources; recommend placing milk animals within two miles on stored feed; provide press briefings; and maintain site area emergency status until the site area emergency is terminated.

Organization (person)	Location	Telephone	
		Day	Night
(Fire)	_____	_____	_____
(Security)	_____	_____	_____
(Public information)	_____	_____	_____
(Sheltering)	_____	_____	_____
(Response centers)	_____	_____	_____
(Monitoring team)	_____	_____	_____
(Communications team)	_____	_____	_____
(Agriculture reps.)	_____	_____	_____
(Other personnel)	_____	_____	_____

- **General Emergency.** Provide the types of assistance and take actions mentioned under "Site Area Emergency" with these additions: activate immediate public notification of emergency status and provide public information with periodic updates; recommend sheltering for a 2-mile radius and 5-miles downwind, and consider advisability of evacuation; augment resources by activating primary response centers; dispatch emergency personnel to duty station within a 5-mile radius; provide off-site monitoring results to licensee, DOE, and others and jointly assess them; recommend placing milk animals within 10 miles on stored feed; and assess need to extend distance and maintain these and other functions until termination of general emergency declaration.

Organization (person)	Location	Telephone	
		Day	Night
(Fire)			
(Security)			
(Public information)			
(Sheltering)			
(Response centers)			
(Monitoring team)			
(Communications team)			
(Agriculture reps.)			
(Other personnel)			

All of these actions and functions would be coordinated with the State and Federal Governments as well as with the utility operators, voluntary groups, private business, the media and other affected organizations.

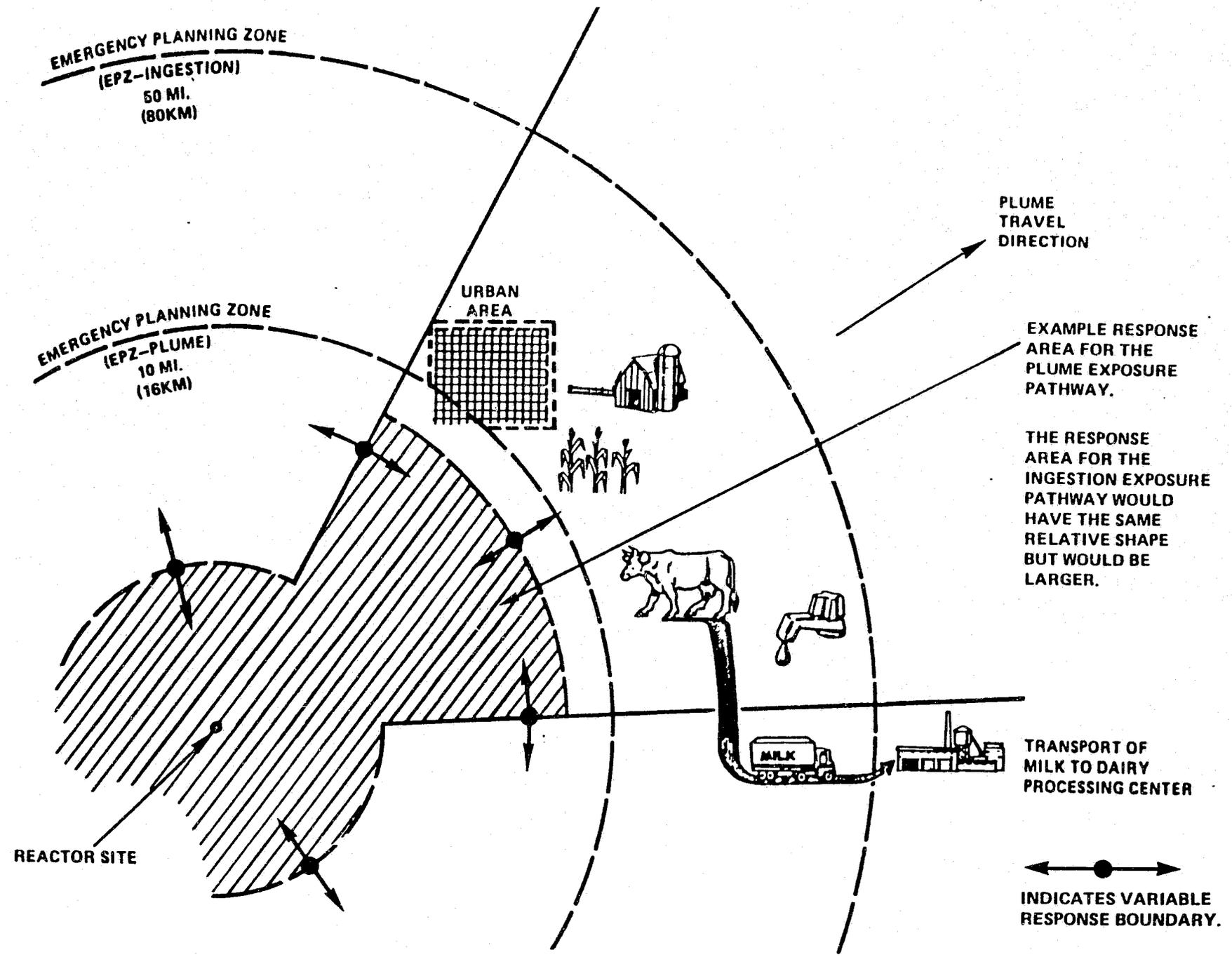


Figure 1 Concept of Emergency Planning Zones

PUBLIC DEMONSTRATIONS AND CIVIL DISTURBANCES

Emergency Services Actions

A. General Information

Recent years have seen a variety of public gatherings for different purposes running the gamut of activities from the Woodstock Music Festival in rural New York and various orderly peace demonstrations held in the Nation's capital, to the riots on college campuses and in the business districts of some of our principal cities. Some situations develop slowly, allowing the authorities to assess the problem and conduct negotiations with the demonstration organizers and arrange for control measures. On other occasions, however, violence may flare up seemingly at the slightest provocation. But even these incidents usually are preceded by earlier indications of a buildup of tensions and pressures.

In a situation which is developing slowly and deliberately along the lines of some of the Rock Festivals or the past peace demonstrations, the chief executive, or designated officials with delegated authority, may operate during the preliminary or negotiating phase out of their regular offices on a scheduled appointment basis, calling in key officials as required, and circulating information to departments concerned, using routine dissemination methods.

In another type situation, there may be a sudden eruption of widespread violence and disorder accompanied by arson, looting and assaults. Police personnel will usually be involved initially and will serve as the source for information regarding the characteristics and extent of the disturbance. The intelligence-gathering capability of the police agencies will generally provide the chief executive with information needed to enable him to make appropriate decisions.

Prudent chief executives and Emergency Service officials will keep in mind the fact that when the disturbance is over and all the outside assistance (e.g., the National Guard and the State Police) has left the community, they are left behind with the burden of giving an explanation to their fellow citizens, if one is necessary.

B. Upon receipt of a report that a public demonstration is about to be held or is occurring, take the following actions:

1. Notify the chief executive and civil defense director who, if the situation warrants, will activate the Emergency Operating Center in accordance with "Executive Leadership Actions for All Major Emergencies."

2. Assess the situation; obtain information as to current and impending situations. Make certain there are adequate forces on hand or requested to deal with situations as they arise. Avoid over-reaction, recognizing that each situation is unique.

3. Keep track of the situation as it is reported in intelligence from law enforcement sources and meetings with citizens and business organizations, and by monitoring news media reports.

4. Determine the jurisdictional status of property which may be the scene of a demonstration; consult with legal advisors.

5. Meet with the organizers of the proposed event to review the program and their plans for controlling the participants, and also the arrangements for housing, feeding, medical care, and sanitary facilities. It may even be necessary to require the sponsors to post a cash bond (if legally provided for) to assure that their financial obligations for services and maintenance will be discharged. During this phase, government authorities should explore the consequences of all possible eventualities and see that ample provisions are made to deal with them effectively if they should occur. All individuals concerned should be made aware of their responsibilities.

6. Apply the least amount of force necessary to control and protect persons and property. Ascertain under what conditions State authorities will take action to assist in the situation, such as providing State Police and National Guard assistance.

C. Upon receipt of a report that a civil disturbance is about to occur or is occurring—take the following actions:

1. Notify the chief executive and civil defense director who will activate the Emergency Operating Center in accordance with the "Executive Leadership Actions for All Major Emergencies."

2. Assess the situation. If it is warranted, the official-in-charge issues a proclamation to the public regarding the situation. This is a legally provided statement describing the disorder in specific terms in reference to existing laws, statutes, ordinances, or common practice. It should call upon all citizens to cease and desist from such activities, and to disperse and return to their homes and make clear that those continuing such activities, or remaining at the scene of the disorder, will be considered as being in violation of lawful orders and subject to arrest and confinement.

3. As a related legally provided action, the official-in-charge may also impose a curfew. The curfew can be modified as the situation is brought under control. This method has been found very effective as a control measure because it restricts activities during hours of darkness on the part of persons seeking to continue disorderly actions.

4. Alert and obtain commitments from neighboring police departments, county sheriff, and State police to assure that they will respond with sufficient force to requests for assistance to deal with the situation.

5. Alert and advise of existing situation—the State Civil Defense Office and the National Guard as well as nearest military installations, in accordance with previous arrangements and established channels.

6. Provide for the following additional activities:

<i>Activity</i>	<i>Functional Agency</i>
Detention of Prisoners (Preparation of charges, fingerprinting, photographs, overloaded jail facilities, etc.)	Police Department supplemented by Special Deputies or outside forces.
Judicial Hearings and Trials	Local Magistrates supplemented by County or State Judiciary
Maintenance of Public Utilities (Water, Gas, Electric Power)	City Engineer or Public Works Director and the representatives of utilities
Security measures for key retail establishments such as drug stores, liquor stores, gas stations, and food stores.	Chamber of Commerce, and other local merchants' association officials who will maintain contact with city government.
Emergency Medical Services (on-site first aid, transportation to hospital, and hospital emergency services)	Health Department, working with medical and hospital personnel.
Emergency Shelter for homeless persons	City Welfare (or County, State Welfare) working with Voluntary agencies and School and Church officials
Public Information—Community Relations (Issuance of instructions; dispelling of rumors)	Press, radio, TV
Liaison contacts with neighborhood civic leaders and religious leaders to request aid and cooperation	Chief Executive or official-in-charge

7. Strategies should include: use only that force necessary to attain the objective; protect both private and public property; make every effort to induce the leaders and the crowd to disperse before using force; provide avenues of escape when dispersing crowds; make selective, essential arrests only; stay within local capability to expedite arrests, detentions and judicial hearings and trials.

8. If the situation gets beyond the local capability, it may be necessary to mesh local Emergency Operating Center functions with those of State and Federal organizations.

9. Maintain a flow of information on the situation to the Emergency Operating Center for the preparation of news releases to the public when necessary to reduce public alarm. (Advice and instructions to be issued to the general public will be dictated by requirements of the developing situation. For this reason a companion section on "Suggested Citizen Instructions" is not provided with these "Emergency Services Actions.")

10. Keep the demonstration area clear of sightseers.

11. Maintain coordination of all Emergency Service actions in the area of the demonstration.

12. When order is restored, resume normal routine, notify the Emergency Operating Center, and submit final reports as required.

RADIOLOGICAL ACCIDENTS

Emergency Services Actions

A. General Information

The widespread and rapidly increasing industrial and commercial use and transportation of radioactive materials has increased the possibility of radiological hazards in addition to such other hazards as might result from accidents involving these materials. Accidents may occur in facilities where radioactive materials are used or processed, or during transportation.

In the event that local Emergency Services are not adequate to cope with the situation, State radiological emergency response assistance should be requested. If the State's resources are inadequate to cope with the problem, the State or locality can obtain Federal assistance by calling a Department of Energy office or a Military Service installation. In accordance with an Interagency Radiological Assistance Plan, the radiological emergency response capabilities of Federal agencies will be used to protect the public health and safety or to assist organizations or individuals who need immediate radiological emergency assistance. Coordinated by the DOE, there are men and equipment available 24 hours a day on request to assist at the scene of all kinds of radiological incidents believed to require capabilities beyond those available locally. These emergency personnel are prepared to deal with all aspects of a radiological incident.

Special emergency response capabilities have been established by the DOE and Department of Defense for coping with accidents involving nuclear weapons and so-called peaceful nuclear explosives. The locations and telephone numbers of DOE Regional Coordinating Offices for radiological assistance follow section G.

If a radiological incident occurs in a public place, some degree of immediate response by State and local public safety personnel usually will be required. Initial action may be by local fire or police personnel first at the scene of the incident. This section suggests the general actions and responsibilities of local governments for dealing with peacetime radiological incidents.

B. In the event of a radiological accident or incident—take the following actions:

1. Notify the chief executive and civil defense director who, if the situation warrants, will initiate activation of the local Emergency Operating Center (EOC), coordinate multiple services operations, request outside assistance as necessary, and implement emergency public information broadcasts to inform the public on actions to be taken in accordance with the "Executive Leadership Actions for All Major Emergencies."

2. Notify the local government department or agency that is assigned emergency radiological monitoring responsibility: (list the responsible agency and telephone numbers, day and night.)

<i>Organization (Person)</i>	<i>Location</i>	<i>Telephone</i>	
		<i>Day</i>	<i>Night</i>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

3. Advise the State Civil Defense Office. Request State emergency radiological assistance. If such assistance is not available locally through normal channels, the State will notify the nearest Department of Energy Office or military installation. (See accompanying DOE chart of offices of responsibility. If normal, established local-to-State channels are inoperative, make direct contact, per chart.)

C. In Incidents Involving Radioactive Materials Spillage or Leakage, local police and fire department personnel (as assigned) will take the following emergency actions at scene of incident pending the arrival of radiological emergency experts:

1. Rescue injured or trapped persons and remove them from the area.
2. Limit first aid to those actions necessary to save life or minimize immediate injury.
3. Try to hold all people who have been involved in the incident area until the radiation monitoring team arrives. They must be checked with a radiation survey instrument for radioactive contamination before being allowed to leave scene.
4. When it is necessary to send an individual to a hospital or other medical facility BEFORE a radiological emergency team or physician knowledgeable in radiological health arrives, inform ambulance and other transporting vehicle personnel who will be in contact with the individual, of the possibility of radioactive contamination. Also, inform the hospital or medical facility that the individual may be contaminated with radioactive material.
5. Be sure no one except Emergency Service personnel is admitted into the area, and advise all persons not to handle or remove any part of the debris from the incident.
6. Fight fire, and to the extent possible, keep upwind and avoid smoke, fumes, and dust.
7. DO NOT eat, drink, or smoke in the incident area, or use food or drinking water that may have been in contact with radioactive material.
8. DO NOT handle, use, or remove from the incident area any material, equipment, or other items suspected of being radioactively contaminated unless released by radiation monitoring personnel.

D. When the emergency radiological monitoring team arrives on the scene—it will advise and act as requested by and under the general direction of the official in charge to assume control of the technical operations, and as necessary, perform the following operations:

1. Survey and determine facilities, equipment, area or environmental radioactive contamination.
2. Initiate steps to minimize personnel exposure and the spread of contamination.
3. Conduct instrument check for contamination of exposed emergency workers and other persons involved in the incident area.
4. Segregate and, if necessary, have contaminated persons decontaminated.
5. Initiate or recommend other decontamination action as required.
6. Provide information to the Emergency Operating Center for release to the public, when necessary, to minimize public alarm or to assist in the conduct of emergency activities.
(Advice and instructions to be issued to the public would be dictated by requirements of the developing situation. Because of this, a companion section, "Suggested Citizen Instructions," is not provided.)

E. When decontamination is required—take the following actions:

1. Have the local public works department assist in decontamination and disposal of contaminated material if the use of heavy equipment is required.
2. Have the Fire Department provide personnel and equipment (for wash down, etc.) to assist in decontamination.
3. Have police obtain names and addresses of all persons involved; restrict access to the incident area and prevent unnecessary handling of incident debris; and if necessary, initiate evacuation of areas subject to contamination.
4. When a transportation incident involves radioactive material, DO NOT move vehicles, shipping containers, or wreckage, except to rescue people. Detour pedestrian and vehicular traffic. If a right-of-way must be cleared before radiological emergency assistance arrives, move vehicles and debris the shortest distance required to open a pathway. Before permitting the passage of traffic,

spillage on the cleared pathway should be washed, or wetted and swept, to the edge of the pathway with a minimum dispersal of wash water and spilled material.

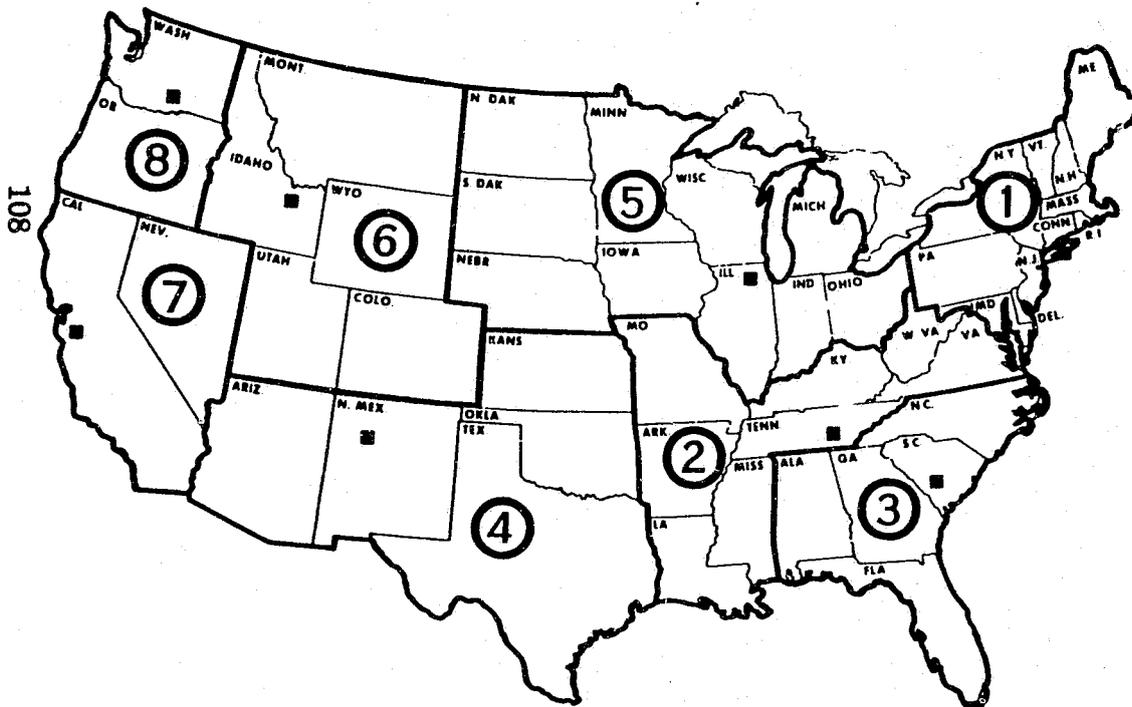
F. If no explosion has occurred and it is believed that a nuclear weapon is involved—take the following actions:

1. Restrict area of incident and keep public as far from scene as practicable. Restrict the area 2,000 feet or more in all directions.
2. Rescue injured or trapped persons as quickly as possible—remove them and rescue team from the incident area.
3. Evacuate all unnecessary personnel within the area as quickly as possible, except those involved in emergency operations.
4. Do not allow public entrance to the area.
5. Fight fire as though toxic chemicals are involved; keep upwind and avoid smoke, fumes, and dust.

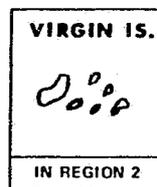
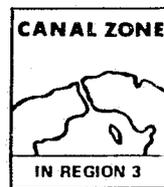
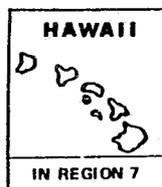
G. If an explosion has occurred and a nuclear weapon is believed to be involved, take the following actions:

1. Restrict the area for 2,000 feet or more in all directions.
2. Rescue injured or trapped persons.
3. Evacuate all persons from the area and prevent access until advice can be obtained from appropriate radiological and ordnance experts.
4. Fight fires and handle other emergency situations that may occur as an aftermath, in accordance with appropriate Emergency Services checklists.
5. When the radiological monitoring (and ordnance, if applicable) experts indicate the incident area is safe, resume normal routine, notify the Emergency Operating Center, and submit final reports as required.

DEPARTMENT OF ENERGY
REGIONAL COORDINATING OFFICES
 FOR
RADIOLOGICAL ASSISTANCE
 AND
GEOGRAPHICAL AREAS
OF RESPONSIBILITY



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REGIONAL COORDINATING OFFICE	POST OFFICE ADDRESS	TELEPHONE for ASSISTANCE
① BROOKHAVEN AREA OFFICE	UPTON, L. I. NEW YORK 11973	(516) 345-2200
② OAK RIDGE OPERATIONS OFFICE	P. O. BOX E OAK RIDGE, TENNESSEE 37830	(615) 576-1005 or (615) 525-7885
③ SAVANNAH RIVER OPERATIONS OFFICE	P. O. BOX A AIKEN, S. C. 29801	(803) 726-3333
④ ALBUQUERQUE OPERATIONS OFFICE	P. O. BOX 5400 ALBUQUERQUE, NEW MEXICO 87115	(505) 264-4667
⑤ CHICAGO OPERATIONS OFFICE	9800 S. CASS AVE. ARGONNE, ILLINOIS 60439	(312) 872-4800 Duty Hrs. -5731 Off Hrs.
⑥ IDAHO OPERATIONS OFFICE	P. O. BOX 2108 IDAHO FALLS, IDAHO 83401	(208) 528-1515
⑦ SAN FRANCISCO OPERATIONS OFFICE	1333 BROADWAY OAKLAND CALIFORNIA 94612	(415) 273-4237
⑧ RICHLAND OPERATIONS OFFICE	P. O. BOX 550 RICHLAND, WASHINGTON 99352	(509) 942-7381

SEARCH AND RESCUE

Emergency Services Actions

A. General Information

Every community at some time experiences the need for search and rescue. In mountainous areas, under certain conditions, the search and rescue operation can involve several of the military support units of the Air Force (The National SAR Plan), Army, Navy, and Coast Guard, and Federal agencies such as the Forest Service and the Park Service. These sometimes are supplemented by volunteer resources such as the Civil Air Patrol, the Explorer Scouts, the Red Cross, Mountain Rescue, and motorized units. Usually, though, the smaller community is on its own in situations involving burning and demolished buildings, gas ridden areas, major electrical hazards, mine disasters, earth cave-ins, water accidents, storms, floods and other local accidental occurrences.

The general conditions in which victims may be expected include trapping, pinning, burning, shock, exposure, minor or major injury, unconsciousness, intoxication, and panic. Regardless of the incident, the call for rescue is answered, the victim is usually located, his person is protected, first aid is rendered, and he is transported to safety and recovery. Rescue practices range from assisting a victim to walk to carrying him on a stretcher under hazardous conditions, such as lowering or raising him after he has been extricated. The rescuer should be trained and equipped to do the job despite hazards to himself.

Because rescue may be required in practically every type of emergency covered in this handbook, it is recommended that every community develop a capability for search and rescue. When this capability is developed, the following actions can be very effective.

B. Upon receipt of a report that a search and rescue operation is required—take the following actions:

1. Notify the chief executive and civil defense director who, *if the situation warrants*, will activate the Emergency Operating Center in accordance with "Executive Leadership Actions for All Major Emergencies."

2. Assess the requirement for search; determine where search efforts should be directed; determine what land, water, and air manpower, equipment, and supplies are needed; decide how the search can best be handled and by whom. The State Civil Defense Emergency Operating Center should be contacted for assistance. Additional sources of searchers include: (list here names and telephone numbers of such sources as: sheriff or police department, fire department, rescue squad, Air Force (Airlift), Civil Air Patrol, Coast Guard, Army Base, Navy Base or Fleet Unit, State Aeronautic Unit, U.S. Forest Service, U.S. Park Service, and Cave Explorers.)

Organization (Person)	Location	Telephone	
		Day	Night
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Make any arrangements needed for support of search units or personnel (e.g., feeding arrangements with Red Cross, church groups, etc.; lodging arrangements if required; etc.).

3. While the search is underway, review local rescue plans and initiate preparedness actions for rescue operations, based upon whether access to the victim(s) will require air, water, or land rescue forces, or a combination. Determine any special type of training, equipment, and supplies required (e.g., water rescue operations are considerably different from those required in mountainous areas or in building collapses).

4. When the search produces the location of victim(s), dispatch correct type(s) of rescue unit if available locally *or* obtain rescue assistance from one or more of the above sources.

5. Obtain details from the senior rescue officer at the scene of operations as to what general strategy and tactics he intends to use and whether there is need for more aid and what kind is needed.

6. At this point be prepared to provide specific information for broadcasts by radio _____
(station)
and television _____
(channel)

7. If the rescue problem calls for *special skills* and equipment, such as a cave rescue, call for specialists to augment the rescue unit at the scene. These may be located through State or area civil defense offices.

8. Heavy rescue generally calls for (1) gaining access to the victim(s), which is usually hazardous and time consuming, (2) giving emergency first aid to the victim(s), and (3) carefully extricating the victim(s) who is injured and in shock; this may call for considerable communications among several Emergency Services, cordoning the area, providing medical assistance and feeding, and relieving members of the rescue crew. The Emergency Operating Center is the central point for coordinating these interrelated actions.

9. If the rescue problem is beyond local capability, such as *heavy structural rescue operations*, initiate mutual aid in accordance with agreements. A massive heavy rescue problem can follow such catastrophes as flash floods and earthquakes. If this happens, use appropriate Emergency Services Action Checklists; coordinate all actions at the Emergency Operating Center; keep the public informed.

10. Maintain rescue operations until all known victims are found. Notify relatives by messenger, phone, or telegram. Close out rescue operations and put the scene of operations in a safe condition to prevent accidents and further victims.

11. When rescue operations are completed, notify the Emergency Operating Center and prepare final reports, as required.

NOTE: A "Suggested Citizen Instructions" section is not considered necessary for search and rescue, and is not included in this handbook.

TORNADOES

Emergency Services Actions

A. General Information

This checklist covers actions for tornadoes. Use separate checklists for hurricanes and winter storms.

Tornadoes are usually highly localized, normally 200 yards to one mile wide, and usually travel a path five to fifty miles in length at 25 to 40 miles-an-hour. They sometimes double back or move in circles and some have remained motionless for periods of time before moving on. They can strike any place, although the principal areas are in the Gulf and Midwestern States. More details are contained in the accompanying "Suggested Citizen Instructions."

Because tornadoes are highly localized and recurring in some areas, it is recommended that communities in areas prone to tornadoes establish a *Tornado Watch System* built around a local Emergency Service, usually the local police department.

B. Definitions

The National Weather Service is responsible for issuing weather warnings to the public. When weather conditions develop which may produce severe local storms, a weather watch is issued. The objective of the Watch is to alert the people that meteorological conditions are developing over the specified area, usually 140 miles wide and 200 miles long, which may result in severe local storms during the specified time interval, usually of six hour duration.

Two types of Watches are issued: Severe Thunderstorm Watch and Tornado Watch. The SEVERE THUNDERSTORM WATCH is an alert for a thunderstorm with damaging winds of either sustained speed or gusts of 50 knots (58 mph) or greater and/or hail of 3/4 inch (about the size of a dime) or more in diameter. The TORNADO WATCH is an alert that tornadoes are expected and implies that thunderstorm activity, usually severe, is expected also.

Until a Severe Thunderstorm or a Tornado Warning is issued, persons in watch areas should not interrupt their normal routines except to watch for threatening weather. When a severe thunderstorm is sighted or is indicated by radar, a SEVERE THUNDERSTORM WARNING is issued. When a tornado has been sighted or is indicated by radar, a TORNADO WARNING is issued. When a tornado warning is issued, persons in the path of the storm should take immediate safety precautions.

C. In the event the National Weather Service issues an advisory bulletin of a severe thunderstorm watch or a tornado watch for the area, take the following actions:

1. Inform chief executive and civil defense director who will activate the Emergency Operating Center to the extent required. (See "Executive Leadership Actions for All Major Emergencies.")

2. Insure that appropriate information and instructions based on the latest weather service warnings are broadcast by radio and TV stations (identify each). For example, "Radio Station _____ and Television Channel _____ will broadcast tornado information. Your local government's advice and instructions will also be issued over these stations by _____"

(Mayor/CD Director/Other Authorized Official)

3. Alert spotters and implement tornado watch system for the area. The tornado watch system consists of local storm spotters, previously trained—if possible by Weather Service personnel—on how to recognize and report severe weather conditions and tornadoes from preassigned locations within the area. (List the names of spotters and telephone numbers here, including any alternates available.)

Organization (Person)	Location	Telephone	
		Day	Night
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

4. Instruct local spotters to report:

a. Type of condition:

- | | |
|------------------------------------|--------------------------|
| (1) Tornado | (5) Damaging hail |
| (2) Severe thunderstorm--lightning | (6) Extremely heavy rain |
| (3) Funnel cloud | (7) Flooding |
| (4) Damaging wind | |

b. Place or area affected by the severe weather condition

c. Time observed

d. Direction of movement (west to east, etc.)

5. Relay the report to one of the following offices, depending on the statewide system established by the State civil defense office. This would be done by local EOC if in operation at the time. (List nearest National Weather Service Office and nearest National Attack Warning System location and telephone numbers.)

Organization (Person)	Location	Telephone	
		Day	Night
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

NOTE: A tornado WATCH usually covers a very large area, including many cities and counties. Therefore, the local government should relay reports into the above statewide system to assist other communities who may also be in the path of the impending danger.

D. After receiving report of impending danger—especially a Tornado Warning—take the following actions:

1. Direct sounding of local public warning system, if authorized, and follow up immediately with radio and TV broadcasts. (See "Suggested Citizen Instructions.")
2. Keep public advised of governmental actions being taken by local Emergency Operating Center.
3. After passage of tornado, initiate search for victims. They can be found in all sorts of unusual places—blown into fields, under debris, and on top of roofs. Search should be thorough, including a margin of at least 100 yards either side of the tornado path.

4. Conduct rescue operations with skilled rescue squads to prevent debris collapse and to assure proper first aid. Victims can be plastered with mud requiring careful handling and washing before moving to hospitals.

5. Provide continuing advice to storm victims on where to go to obtain assistance—housing, food, medical services, etc.

6. Close out emergency operations and notify Emergency Operating Center. Submit reports, as required.

TORNADOES

Suggested Citizen Instructions

A. General Information

The tornado is a violent local storm with whirling winds of tremendous speed. It appears as a rotating, funnel-shaped cloud which extends toward the ground from the base of a thundercloud. It varies from gray to black in color. The tornado spins like a top and may sound like the roaring of an airplane or locomotive. These small short-lived storms are the most violent of all atmospheric phenomena, and over a small area, the most destructive.

Tornado *WATCH*—means tornadoes are expected to develop
Tornado *WARNING*—means a tornado has actually been sighted
or indicated on radar

B. Warnings

The National Weather Service issues severe weather warnings to the public over radio and TV stations. (Describe here any additional prearranged local warning system, e.g., radio, television, sirens, fire alarm, etc., as established for your local area.)

C. The Following Are Example General Announcements

1. Radio _____ and television stations _____ will
(local station identification) (local channel identification)
broadcast the latest severe weather warnings and tornado watch information. Local government advice and instructions will also be issued over these stations by _____
(Mayor/CD Director)

2. Knowing what to do when a tornado is approaching may mean the difference between life or death. If you see any revolving, funnel-shaped clouds on a cloudy day, report them by telephone immediately to the local police department, sheriff's office, or National Weather Service office. But do not use the phone to get information and advice—depend on radio or TV as indicated above. (List here local police, sheriff, Weather Service, and other emergency telephone numbers.)

Organization (Person)	Location	Telephone	
		Day	Night
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

D. The Following Are Example Tornado Safety Rules

1. When a *TORNADO WATCH* is announced:

a. Keep your radio or television on and listen for the latest Weather Service warnings and advisories. If power fails, use portable battery radio or your car radio.

b. Keep watching the sky, especially to the south and southwest. (When a tornado watch is announced during the approach of a *hurricane*, however, keep in mind the tornado may move from an easterly direction.)

2. When a **TORNADO WARNING** is announced:

- a. Your best protection is an underground shelter or cave, or a substantial steel-framed or reinforced concrete building. (If none is available, take refuge in other places as indicated below.)
- b. If your home has no basement, take cover under heavy furniture on the ground floor in the center part of the house, or in a small room on the ground floor that is away from outside walls and windows. (As a last resort, go outside to a nearby ditch, excavation, culvert or ravine).
- c. Doors and windows on the sides of your house away from the tornado may be left open to help reduce damage to the building, but stay away from them to avoid flying debris.
- d. Do not remain in a trailer, recreation vehicle or mobile home if a tornado is approaching. Take cover elsewhere.
- e. If advised that you are likely to be in the path of a tornado, and if time permits, electricity and fuel lines should be cut off. (Local Officials Note: Before making announcements on shutting gas valves, check local gas company policy.)
- f. If you are outside in open country, drive away from the tornado's path, at a right angle to it. If there isn't time to do this—or if you are walking—take cover and lie flat in the nearest depression, such as a ditch, culvert, excavation, or ravine.
- g. **SCHOOLS**—If the school building is of good steel reinforced construction, stay inside away from the windows and remain near an inside wall on the lower floors if possible.
- h. **AVOID AUDITORIUMS AND GYMNASIUMS** with large, unsupported roof spans.
- i. In rural schools that do not have reinforced construction, move school children and teachers to areas providing best available protection within the building if storm shelters are not available.
- j. **FACTORIES AND INDUSTRIAL PLANTS**—When possible, shut off electrical circuits and fuel lines if tornado approaches plant. Workers should be moved to sections offering the best possible protection, in accordance with advance plans.
- k. **SHOPPING CENTERS**—Go to a designated shelter area (NOT to your parked car).
- l. **OFFICE BUILDINGS**—Go to an interior hallway on the lowest floor, or to a designated shelter area. Stay away from windows.

E. The Following Are Examples of Announcements Concerning safety measures after the passage of the tornado.

1. Use extreme caution in entering or working in buildings that may have been damaged or weakened by the disaster, as they may collapse without warning. Also, there may be gas leaks or electrical short circuits.
2. Don't take lanterns, torches or lighted cigarettes into buildings that have been damaged by a natural disaster, since there may be leaking gas lines or flammable material present.
3. Stay away from fallen or damaged electric wires—they may still be dangerous.
4. Check for leaking gas pipes in your home. Do this by smell—*Don't use matches or candles.* If you smell gas, do this: (1) Open all windows and doors; (2) Turn off the main gas valve at the meter; (3) Leave the house immediately; (4) Notify the gas company (Telephone No. _____) or the police (Telephone No. _____) or fire department (Telephone No. _____); (5) Don't re-enter the house until you are told it is safe to do so.
5. If any of your electrical appliances are wet, first turn off the main power switch in your house, then unplug the wet appliance, dry it out, reconnect it, and finally, turn on the main power switch. (Caution: Don't do any of these things while you are wet or standing in water.) If fuses blow when the electric power is restored, turn off the main power switch immediately and inspect for short circuits in your home wiring, appliances and equipment.
6. Check your food and water supplies before using them. Foods that require refrigeration may be spoiled if electric power has been off for some time.

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

8. Don't drive unless necessary, and if you must, drive with caution. Watch for hazards to yourself and others, and report them to local police or fire departments.

9. Report broken sewer or water mains to the Water Department. (Telephone No. _____.)

10. Keep tuned to your radio or TV stations for advice and instructions of your local government on:

- a. Where to go to obtain necessary medical care in your area.
- b. Where to go for necessary emergency assistance for housing, clothing, food, etc.
- c. Ways to help yourself and your community recover from the emergency.

TRANSPORTATION ACCIDENTS

Emergency Services Actions

A. General

Almost every community is exposed daily to the possibility of major air and highway accidents. Many are exposed to the possibility of railroad and water accidents in or near their boundaries. Local officials should be prepared to handle the type of problems they will have to face if their community has a major transportation accident.

Since not all communities have the same exposure nor the same resources to handle such emergencies, it is recommended that each community develop its own plan of action, including agreements on giving and receiving mutual aid. Local plans should include listings of the type of equipment or services needed, the source and location of the equipment or services, the person or point of contact to give or obtain immediate response to an emergency request, and the means and method of compensating (if appropriate) for the use of the equipment or services in an emergency.

Major transportation accidents often produce chemical spills, fires, and other aftermaths calling for special operations, such as rescue and evacuation. Usually, transportation accidents are limited in size of incident area and involve only a limited number of victims.

An airplane crash may create the need for firefighting and other operations in the area of impact.

A highway crash involving buses or carriers of hazardous cargoes can involve substantial rescue, firefighting, and evacuation operations.

A railroad accident usually is limited in fatalities but can produce hazardous situations when it occurs in or near business or residential areas, particularly if the cargo is flammable or explosive. Usually a railroad accident in or near a built-up community can be handled locally. If a railroad wreck occurs in a remote area, it may be necessary to use special vehicles or a relief train to get help to the victims.

A water accident involving chemical-carrying barges may require communitywide evacuation. If a substantial number of lives are in danger, as in ferry accidents, boat rescue, feeding, and clothing of survivors can tax a community's resources.

Regardless of the type of major transportation accident, the first consideration should be to save lives through quick response and coordination of the police, fire, and medical services.

When a transportation accident involves chemicals or other hazardous materials, the appropriate Emergency Services Actions checklist should also be used (e.g., "Chemical Accidents," "Radiological Accidents").

B. Upon receipt of a report that a major transportation accident has occurred in the vicinity, take the following actions:

1. Notify the chief executive and the civil defense director who, if the situation warrants, will activate the Emergency Operating Center in accordance with "Executive Leadership Actions for All Major Emergencies."

2. Assess the situation. Determine the potential risk area; if required, restrict and control the area of the accident; initiate reporting from the Emergency Services and from private agencies and utilities that have facilities in the risk area.

3. Assure proper handling of disaster medical care problems associated with sudden, major transportation accidents. These include:

- a. Treating the injured at the scene and sorting them (triage) for proper later handling.
- b. Notifying hospitals on when to expect the arrival of patients and the approximate number of patients.
- c. Coordination with ambulances and hospitals to assure that no one hospital is overloaded with patients.

d. Establishing an information center at each hospital to answer press queries and questions from relatives of the accident victims.

4. Notify the following, as appropriate (list of names, locations and phone numbers—day and night).

a. *Airplane crashes*—Notify: (1) Airport, (2) Airline office, (3) State aeronautics agency, if any, (4) Nearest office of Federal Aviation Administration; (5) If catastrophic, Regional office of National Transportation Safety Board, and (6) Military installations.

Organization (Person)	Location	Telephone	
		Day	Night
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

NOTE: Obtain special instructions, including cordoning area, and security procedures as required. (See other appropriate Emergency Services Actions checklists; e.g., "Radiological Accidents.")

b. *Highway crashes*, involving buses, trucks carrying hazardous cargoes or multiple passenger vehicles—Notify: (1) Company owner or agent; (list bus and trucking firm numbers); (2) School principals, etc., if crash involves school bus; (3) Owners of towtrucks and heavy equipment if cleanup of accident scene is required in the interest of public safety. (See "Chemical Accidents—Emergency Services Actions" or other appropriate checklists.)

Organization (Person)	Location	Telephone	
		Day	Night
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

c. *Railroad accidents*—Notify: (1) Railroad official or office; (2) Ambulance Dispatch Center, if there are injuries; (3) The Red Cross or Emergency Welfare representative if there is need for emergency food or shelter; and (4) Rescue Squads and Mobile Medical Teams if snowbound passengers are involved.

Organization (Person)	Location	Telephone	
		Day	Night
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

NOTE: The Association of American Railroads provides assistance 24-hours-a-day through telephone 202-293-4048.

d. *Water Accidents* involving passenger vessels or barges carrying dangerous cargoes—
 Notify: (1) Port or harbor authority, (2) Community Harbor Patrol, (3) Involved vehicle owner's office, (4) U.S. Coast Guard, and (5) Others (yacht clubs, marinas, power squadrons).
 (List day and night names, locations and emergency telephone numbers.)

Organization (Person)	Location	Telephone	
		Day	Night

5. Restrict the area of the accident. Provide information for public broadcasts over radio _____ and television _____ to inform public of the accident
 (identify local stations) (identify channels)
 and what actions should be taken. A separate "Suggested Citizen Instructions" section covering transportation accidents is not included in this handbook because of the diversity of instructions that pertain to these types of emergencies.

6. If required, establish a temporary communications post at the scene of the accident. Determine need for additional manpower and other resources and coordinate with senior Emergency Service official at the scene.

7. Evaluate overall community situation. If required, Emergency Operating Center will call for mutual aid assistance per existing agreements with neighboring communities; specify quantities and kinds of assistance needed.

8. If required, as in case of some chemical accidents, evacuate the area, designating exit routes for threatened citizens and entrance routes for emergency services. Keep the public informed.

9. Do not immediately move vehicles, containers or wreckage, except to rescue people, unless required in the interest of public safety.

10. Keep Emergency Services forces advised of conditions that may affect their operations. (See appropriate Emergency Services Action checklists.)

11. Reroute traffic on a communitywide basis, if required, and keep public informed.

12. When the incident area is safe, resume normal routine, notify the Emergency Operating Center, and submit final reports, as required.

UNAUTHORIZED OR ACCIDENTAL LAUNCH OF A NUCLEAR WEAPON*

Emergency Services Actions

A. General Information

A U.S.-USSR agreement exists for the purpose of reducing the risk of nuclear war because of an accidental, unauthorized, or any other unexplained incident involving a possible detonation of a nuclear weapon.

In the highly unlikely event of such an incident (for example, an accidental missile launch) which could threaten the U.S. with a possible nuclear detonation, warning would be disseminated over the National Warning System (NAWAS). This would provide a basis for actions to minimize casualties should a detonation result.

Research on the effects of such an incident underlines the critical importance of persons in the threatened area *immediately assuming a protective posture*—seeking cover in basements, or lying down in central parts of buildings. These actions, if taken immediately by people in the threatened area, can substantially reduce the lethal area of the blast, heat, and radiation effects of a nuclear detonation—with the result that many persons who might otherwise have been killed could survive.

Thus, *rapid warning would be critically important in the threatened area*, to reduce casualties should the accidental or unauthorized launch result in an actual nuclear detonation. **TIME WOULD BE OF THE ESSENCE**, with warning time measured in *MINUTES*. Also, people in downwind areas, in case of a nuclear surface burst, would need to seek fallout protection promptly.

Priority actions that should be taken in various parts of the U.S.—upon receipt of various types of warning—are outlined in Figure 1. The actions are discussed below.

1. Urgent Actions in Threatened Areas

If a community received NAWAS warning that it was threatened by an accidental or unauthorized launch, immediate action would be a matter of urgency.

Because of the short time available before possible detonation, movement of people to fallout shelters pursuant to local community shelter plans would *not* be the most effective protective measure for the public to take in the threatened area. Therefore, people should be advised to remain inside whatever structure they may be in. People out of doors should be advised to go immediately to the basement or center part of the nearest structure.

Essential to saving lives in an accidental launch situation is the capability of local jurisdictions in the threatened area to *immediately* broadcast instructions to take cover. State and local civil defense directors should therefore make arrangements with radio and TV stations to broadcast warning instructions if such an incident occurs.

Arrangements with the stations and with the warning point or emergency operating center (EOC), as appropriate, should provide that *telephone lines be kept open to assure that follow-on information and guidance could be transmitted to the stations for broadcast to the public*. A situation so sudden and serious as an accidental launch would result in overloading telephone circuits in many areas. Thus it would be essential to promptly secure and keep open telephone lines to broadcast stations.

2. Initial Warning and Actions in the Balance of the United States

Following issuance of the warning for the threatened area, State and local authorities in the rest of the U.S. would be instructed to advise their citizens to take no immediate action but to stand by for further instructions.

During the short period between initial warning and determination of whether a nuclear detonation had occurred, *all* jurisdictions in the U.S. should start activating their Emergency

*Some of the information in this checklist was previously distributed in Civil Preparedness Circular No. 78-1, "Accidental Launch Warning," January 23, 1978.

NAWAS Message:	Jurisdictions in Threatened Area	Jurisdictions in Rest of U.S.	
		Within about 500 Miles of the Threatened Area	Elsewhere in the U.S.
1. Initial Warning of Accidental Launch	<ul style="list-style-type: none"> -Warn citizens to take cover IMMEDIATELY -Activate EOC and secure phone line(s) to broadcast station(s) 	All U.S. jurisdictions: <ul style="list-style-type: none"> -Activate EOC and secure phone line(s) to broadcast station(s) -Advise citizens to take no protective actions but to stand by for further instructions 	
2. Nuclear detonation (NUDET) has occurred (minutes after initial warning)	<ul style="list-style-type: none"> -Citizens remain under cover -Conduct emergency operations as feasible 	<ul style="list-style-type: none"> -Advise citizens to prepare promptly to protect themselves from fallout (if NUDET proves to have been a surface burst) -Mobilize RADEF system -Prepare to provide support for impact area, if requested by State 	<ul style="list-style-type: none"> -All areas provide Emergency Public Information (EPI) -Areas of possible low-level fallout threat mobilize RADEF system, and prepare to take countermeasures
3. Impact occurred without NUDET (minutes after initial warning)	<ul style="list-style-type: none"> -Advise citizens to remain under cover until further notice -Seek assistance through State to determine if a hazard exists from weapon material 	<ul style="list-style-type: none"> -Advise citizens that fallout protection will <i>not</i> be required -Phase down EOC staffing as instructed by State 	<ul style="list-style-type: none"> -Advise citizens that no NUDET occurred and that there will thus be no fallout threat anywhere -Phase down EOC staffing as instructed by State
4. NUDET identified as air burst (no fallout resulted). (This information may be received from State or Region, one to several hours after initial warning)	<ul style="list-style-type: none"> -Citizens remain under cover -Conduct emergency operations as feasible 	<ul style="list-style-type: none"> -Advise citizens to suspend actions to protect themselves from fallout -Provide support for impact area, if requested by State 	<ul style="list-style-type: none"> -Advise citizens there will be no fallout threat anywhere

Figure 1—Priority Actions in Case of Unauthorized or Accidental Launch of a Nuclear Weapon

Operating Centers (EOC's) with at least a skeleton staff—to be in position to provide Emergency Public Information, and to be ready to respond to other developments. It would be particularly important for jurisdictions within about 500 miles of the threatened area to activate their EOC's. This is because if a nuclear surface burst occurred, lethal or highly dangerous radioactive fallout could be deposited in an area extending several hundred miles downwind, over a period of some hours, and guidance for citizens would be needed without delay. (See CPG 2-1A6, "Attack Environment Manual," Chapter 6, "What the Planner Needs to Know About Fallout.")

Also, there could be lower levels of fallout contamination at greater distances. It could be necessary to take actions to minimize the exposure of the population to low levels of radiation. Such exposure—though it would not cause immediate sickness or death—could still cause long-term health hazards. (See the checklist at page 59 in this Handbook, on "Fallout Hazards from an Overseas Nuclear Conflict," which discusses countermeasures against low but still harmful levels of radiation.)

In addition to activating EOC's, it would be essential for all U.S. jurisdictions outside the threatened area to provide Emergency Public Information and instructions for their citizens. This

would require *promptly securing and keeping open telephone lines to radio and TV stations, to assure that guidance and instructions could be transmitted to the stations for broadcast to the public.*

3. *Warning and Actions Should A Nuclear Detonation Occur*

Supplementary messages would be transmitted over NAWAS to provide additional information—such as missile impact, whether a nuclear detonation had occurred, areas of potential fallout hazard, and termination of the warning. Should a nuclear detonation occur, State and local governments in areas potentially subject to a fallout threat would instruct their citizens to move promptly to best-available fallout protection.

The NAWAS message following occurrence of a nuclear detonation would designate counties in which fallout arrival was first expected (within one hour). This would be based on analysis of wind patterns by the National Warning Center staff. This warning would be provided promptly—before it was known whether the detonation had been a surface burst, causing fallout.

However, it would be essential for the population in potential fallout areas to *take protective actions without delay*, and it would take a substantial time for radioactive monitoring to establish definitely whether a surface burst had occurred. Again, *time would be of the essence*, and thus it would be *assumed* that fallout had been produced—until it could be confirmed that this had not happened.

After warning that a nuclear detonation had occurred, all jurisdictions in the U.S. should continue actions to activate their EOC's, with a full staff. Priority actions would differ, depending on distance from the detonation area, the direction of the winds, and other factors.

In *all* areas, providing Emergency Public Information would be of high priority, in view of the nationwide alarm that would result from a nuclear detonation anywhere in the U.S.

In areas potentially subject to fallout, the *highest priority* action would be to instruct the public to seek fallout protection without delay, and wherever possible to improvise additional protection in the time available. The *next highest priority* would be to mobilize the Radiological Defense system, to detect and analyze the fallout hazard (if any), and report to the State-Area or State EOC.

Communities in the same State as the stricken area, or in nearby States, could be requested to provide various kinds of operational assistance. The type of support would depend upon such factors as distance from the detonation area, and the population involved (an accidentally launched weapon might impact in an area with very little population).

Depending on the circumstances, direct support could include rescue, firefighting, emergency medical, police, or other mobile forces. Indirect support could include transportation or hosting operations for refugees or evacuees, hospital care for the injured, or other assistance.

Mobile support should be dispatched to the detonation area *only* as directed by the State, to avoid uncoordinated and ineffective action. However, jurisdictions within about 15 or 20 miles from the detonation area may provide immediate support. All units dispatched should include Self-Protection Radiological Monitoring capability—that is, the trained Radiological Monitors and the radiological instruments (ratemeters and dosimeters) needed to limit the radiation exposure of the emergency service units. (See Civil Preparedness Guide 2-6.1, "Radiological Defense Preparedness," April 1978.)

As time passed, operations would continue to emphasize radiological defense. The purposes would be to establish conclusively whether fallout had resulted, and if so the area affected and the intensity of the radiation hazard—as a basis for sheltering and other countermeasures. In areas quite distant from the burst, these could include actions to minimize the population's exposure to low but still harmful levels of radiation.

If the nuclear detonation was determined to be an air burst, fallout countermeasures would not be required, and the public should be so informed promptly. Operations would then concentrate on relief for the stricken area.

4. Warning and Actions Should A Nuclear Detonation Not Occur

If an accidentally launched weapon impacted *without* nuclear detonation, a message to this effect would be transmitted over NAWAS, probably within minutes of the initial warning that a specific area was threatened by an accidental launch.

If the accidental launch did not result in a nuclear detonation, a relatively small area could be contaminated by toxic material from the weapon. Thus people in the impact area should be advised to remain indoors and under cover until advised otherwise. Qualified personnel would probably be dispatched from outside the area to determine if a hazard from weapon material existed and if so, the extent and level of the contamination and the countermeasures to be taken.

It is also possible that a few people could be physically injured if there was no detonation—for example, if an incoming missile warhead did not explode, but hit a building in which people had taken shelter.

If an accidentally-launched weapon impacted without detonation, the public in all areas other than the impact area should be informed *promptly* that fallout countermeasures were not needed—to allay the alarm and anxiety resulting from the earlier announcements, based on the assumption that fallout would be a hazard. EOC's could be phased down to partial staffing as directed by the State or State-Area EOC, and eventually returned to normal status.

The action checklists below include some "Suggested Citizen Instructions," provided as a starting point for development of more detailed, locally-specific instructions.

B. If NAWAS warning is received of an accidental missile launch, or any other unauthorized or unexplained incident involving a possible detonation of a nuclear weapon, take the following actions:

1. Local warning point personnel *in the threatened area* should **IMMEDIATELY**:

a. *Sound the Attack Warning signal* on sirens or other warning devices.

b. Contact specified radio and TV stations and instruct them to broadcast emergency instructions to the public *immediately*, repeating the message until instructed otherwise. Arrange for stations to *hold open a telephone line to the EOC or warning point, as appropriate.*

Station

Telephone

The emergency instructions to be broadcast should be of this type:

WE HAVE BEEN NOTIFIED BY THE NATIONAL WARNING CENTER THAT AN ACCIDENTAL MISSILE LAUNCH THREATENS THIS AREA AT _____ (local time) . A NUCLEAR EXPLOSION COULD OCCUR. TAKE COVER

IMMEDIATELY—BY LYING DOWN IN A BASEMENT, OR IN THE CENTRAL PART OF A BUILDING, OUT OF LINE OF FLYING GLASS.

c. Alert key officials, including the Chief Executive, civil defense director, Radiological Defense Officer, and others on the alerting list, to permit them to activate the EOC and conduct emergency operations as feasible:

Person/Organization	Location	Telephone	
		Day	Night
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

[Note: The foregoing points (1a through 1c) should be modified if or as required by local SOP's. All communities should develop SOP's for accidental launch—with special emphasis on pre-positioning EPI announcements with local radio and TV stations.]

2. Local warning point personnel *not* in the threatened area should *immediately*:
- a. Contact specified radio and TV stations (use list in 1b above) and instruct them to broadcast emergency information of the type shown below, and to *hold open a telephone line to the EOC or warning point, as appropriate*. The emergency message should be of this type:

WE HAVE BEEN NOTIFIED BY THE NATIONAL WARNING CENTER THAT
 _____ IS THREATENED BY AN ACCIDENTAL MISSILE LAUNCH.
 (city, state)
 YOU NEED NOT TAKE COVER OR TAKE OTHER PROTECTIVE ACTION HERE AT
 THIS TIME. WE WILL GIVE YOU ADDITIONAL INFORMATION AND ADVICE AS
 SOON AS IT IS AVAILABLE.

- b. Alert key officials (use list in 1c above).
- c. In all areas, activate the Emergency Operating Center, and *promptly secure and keep open telephone lines to radio and TV stations*, if not already done.

[Note: All communities should develop SOP's for accidental launch threatening some other area—with special emphasis on prepositioning EPI announcements with local radio and TV stations.]

Person/Organization	Location	Telephone	
		Day	Night
Skeleton EOC Staff:	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
Partial EOC Staff (add the following):	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____

Full EOC Staff (add the following):

_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

C. If NAWAS warning is received that a nuclear detonation has occurred, take the following actions:

1. In the counties specified by the NAWAS warning where you "can expect fallout within one hour," *immediately* sound the Attack Warning signal, and broadcast Emergency Public Information (EPI) instructions of this type, over local radio and TV stations:

WE HAVE BEEN NOTIFIED BY THE NATIONAL WARNING CENTER THAT AN ACCIDENTALLY-LAUNCHED NUCLEAR WEAPON EXPLODED IN _____ AT _____). THE NUCLEAR EXPLOSION MAY HAVE
(city, state) (local time)
PRODUCED DANGEROUS RADIOACTIVE FALLOUT.

FALLOUT MAY ARRIVE HERE BY _____ . IF FALLOUT DOES
(local time)
ARRIVE YOU WILL NEED PROTECTION TO AVOID DEATH OR SERIOUS RADIATION SICKNESS.

DO NOT USE THE TELEPHONE.

LISTEN CAREFULLY TO THE LIFESAVING INSTRUCTIONS WE WILL NOW BROADCAST. WE WILL KEEP REPEATING THESE INSTRUCTIONS.

TAKE THE FOLLOWING ACTIONS *IMMEDIATELY* TO PROTECT YOURSELF IN CASE FALLOUT ARRIVES HERE:

- (1) LOCATE THE BEST FALLOUT PROTECTION AVAILABLE THAT YOU CAN REACH IN 20 TO 30 MINUTES OR LESS.
- (2) IF YOU ARE AT HOME, AND YOUR HOUSE HAS A BASEMENT, THE BASEMENT PROVIDES FAIR TO GOOD FALLOUT PROTECTION NOW. TAKE THESE ACTIONS TO MAKE THE PROTECTION BETTER: PUT A WORK BENCH OR LARGE, STURDY TABLE IN THE CORNER OF THE BASEMENT THAT IS FARTHEST BELOW GROUND (AND FARTHEST FROM AN EXPOSED OUTSIDE WALL OF THE BASEMENT, IF THERE IS ONE). THEN PUT BOXES OR

DRESSER DRAWERS FILLED WITH EARTH ON TOP OF THE TABLE AND ON THE TWO EXPOSED SIDES. BRICKS OR OTHER HEAVY MATERIALS CAN ALSO BE USED.

ON THE TABLE, PILE AS MUCH HEAVY MATERIAL AS IT WILL HOLD WITHOUT COLLAPSING. AROUND THE TABLE, PLACE AS MUCH SHIELDING MATERIAL AS POSSIBLE.

- (3) IF YOU ARE AT HOME, AND YOUR HOUSE DOES *NOT* HAVE A BASEMENT, YOU HAVE THREE CHOICES: (a) PREPARE TO GO TO A *NEARBY LARGE BUILDING* THAT HAS A BASEMENT (PREFERABLY ONE MARKED WITH THE YELLOW-AND-BLACK "FALLOUT SHELTER" SIGN); OR (b) SEE IF YOU HAVE A NEIGHBOR WHOSE HOUSE HAS A BASEMENT WHO IS WILLING TO *SHARE HIS BASEMENT* WITH YOU AND YOUR FAMILY FOR ONE TO TWO WEEKS; OR (c) PREPARE A FALLOUT SHELTER *IN YOUR HOUSE*.

- (4) IF YOU DO *NOT* HAVE A BASEMENT, AND YOU DECIDE TO STAY AT HOME, IT IS *ESSENTIAL* TO PREPARE A FALLOUT SHELTER IN THE MIDDLE OF THE HOUSE. DO THIS BY SELECTING A PLACE IN THE CENTER OF THE HOUSE, AND PUTTING A LARGE STURDY TABLE THERE. THEN PUT *BOXES OR DRESSER DRAWERS FILLED WITH EARTH* (OR OTHER HEAVY MATERIALS) ON TOP OF THE TABLE—AND ON ALL FOUR SIDES AROUND IT. ON THE TABLE, *PILE AS MUCH HEAVY MATERIAL AS IT WILL HOLD WITHOUT COLLAPSING*. AROUND THE TABLE, PLACE AS MUCH SHIELDING MATERIAL AS POSSIBLE.

- (5) RAPIDLY GATHER *SUPPLIES* YOU WILL NEED TO STAY IN SHELTER FOR ONE TO TWO WEEKS. SUPPLIES SHOULD INCLUDE:
 - (a) AS MUCH DRINKABLE LIQUIDS (WATER, FRUIT OR VEGETABLE JUICES) AND READY-TO-EAT FOOD AS YOU CAN CARRY TO THE SHELTER AREA (AT HOME OR ELSEWHERE). WATER IS MORE IMPORTANT THAN FOOD.

 - (b) A BATTERY-POWERED RADIO, FLASHLIGHT, EXTRA BATTERIES FOR EACH, AND PAPER AND PENCIL FOR TAKING NOTES ON INFORMATION GIVEN OVER THE RADIO.

 - (c) SPECIAL MEDICINES OR FOOD REQUIRED BY MEMBERS OF YOUR FAMILY—SUCH AS INSULIN, HEART TABLETS, DIETETIC FOOD, OR BABY FOOD.

 - (d) A BLANKET FOR EACH FAMILY MEMBER.

 - (e) A METAL CONTAINER WITH A TIGHT-FITTING LID TO USE AS AN EMERGENCY TOILET; PLASTIC BAGS TO LINE THE TOILET CONTAINER; TOILET PAPER; SOAP; WASH CLOTHS AND TOWELS; A PAIL OR BASIN; SANITARY NAPKINS.

(6) REMEMBER THAT FALLOUT MAY ARRIVE HERE BY

(local time)

KEEP LISTENING TO THIS STATION FOR INFORMATION ON WHETHER FALLOUT HAS STARTED TO ARRIVE. TAKE ACTIONS FOR FALLOUT PROTECTION WITHOUT DELAY.

(7) IF FALLOUT DOES ARRIVE HERE, YOU MAY NEED TO STAY IN SHELTER FOR ONE TO TWO WEEKS. LISTEN TO THIS STATION FOR CIVIL DEFENSE INSTRUCTIONS ON WHEN YOU CAN LEAVE SHELTER.

[Note: Modify the suggested EPI instructions above if or as required for your community.]

2. In counties and States *other* than those where NAWAS warned that you "can expect fallout within one hour," request guidance from the State-Area or State EOC as to the expected fallout hazard. If such guidance is not available, local civil defense personnel (if possible the Radiological Defense Officer) should estimate areas where fallout could be deposited *after* one hour (assuming the nuclear detonation was a surface burst). Use upper wind ("DF wind") data if available. If in doubt, make conservative estimates (that is, resolve any doubts in the direction of assuming that fallout *may* arrive—not that it may not arrive).

Also estimate the *time* when fallout could arrive. This could be from one to twenty or more hours after the burst, depending on the winds.

3. In all areas where it is estimated that fallout may arrive, sound the Attack Warning signal and broadcast Emergency Public Information instructions of the general type shown under 1 above (for "fallout within one hour" areas). However, modify the EPI instructions as appropriate to reflect the greater time estimated before possible fallout arrival, and thus the somewhat lesser urgency of extremely rapid action.

4. In *all* jurisdictions in the U.S., fully activate the Emergency Operating Center, assembling the *full* staff as rapidly as possible.

5. In all areas within about 500 miles of the detonation, mobilize the Radiological Defense (Radef) system. The Radiological Defense Officer (RDO) should rapidly review the Increased Readiness actions for Radef outlined in Section Eleven of Civil Preparedness Guide 1-7, "Guide for Increasing Local Government Civil Defense Readiness During Periods of International Crisis," April 1979.

The RDO (or civil defense director, if there is no RDO) should take as many of the Radef Increased-Readiness actions as possible in the time available.

Mobilizing the Radef system is most critical in areas downwind of the burst, and closest to it—where radiation levels will be highest if a surface burst has occurred. These are also the areas where the least time will be available to mobilize the Radef system.

6. As the Radef system is activated, Radiological Monitors should be deployed to protected Weapons Effects Reporting Stations (formerly called fixed radiological monitoring stations). RM's should report initial arrival of fallout (dose-rate reading of 0.5 R/hr) to the local EOC, as specified in Civil Preparedness Guide 2-10/5, "CD Emergency Operations Reporting System—Weapons-Effects Reporting (WER) Station Procedures," June 1978. RM's then make additional reports as specified in the Guide.

Fallout reports are analyzed in the local EOC by the RDO. Reports are made from the local EOC to the State-Area or State EOC as specified in CPG 2-10/6, on "Local EOC Weapons Effects Reporting (WER) Procedures," June 1978.

7. As information is received on the fallout situation, *all* jurisdictions should broadcast updated Emergency Public Information instructions.

All jurisdictions in the U.S. should broadcast any reports of fallout arrival, including the areas affected. Also broadcast any information that fallout has not yet been detected, starting about one hour after the burst—but stress that it is *not* yet conclusively established that there is no fallout.

8. Local officials in jurisdictions within about 500 miles of the detonation should review countermeasures against low-level but still dangerous radiation levels. These are outlined in the checklist at page 59 of this Handbook, on “Fallout Hazards from an Overseas Nuclear Conflict.”

Such countermeasures would probably be directed for *downwind areas* beyond the area of greater fallout hazard (that is, beyond the areas where initial dose rates were expected to exceed 0.5 R/hr). There would not be the five or six days to prepare and implement countermeasures, however, that there would be in case of an overseas nuclear war.

Seek State guidance as to the advisability of taking countermeasures against low-level radiation, in areas beyond the predicted 0.5 R/hr area. If State guidance is not available within about 3 hours from the time of the nuclear detonation—and if it appears the nuclear detonation was a surface burst (that is, that it caused fallout)—consider the advisability of instructing the public to take countermeasures.

9. In jurisdictions *in the same State as the detonation area, and in neighboring States*, review mutual aid plans or other arrangements to provide support for the stricken area. If no such arrangements or plans exist, key officials determine what types and amounts of support can be provided, if the State so directs.

Direct support could include rescue, firefighting, emergency medical, police or other mobile forces. The Chief Executive and other key local officials should designate mobile support forces that could be made available if directed. Arrangements would be needed to maintain essential services in the community, if a substantial percentage of its emergency forces were sent to assist in the detonation area (as by changing to two 12-hour shifts).

The civil defense director or RDO should outline to other key officials how fallout (if the detonation proved to be a surface burst) would affect operations by emergency services. (See CPG 2-1A6, Attack Environment Manual, Chapter 6, “What the Planner Should Know About Fallout,” especially Panels 1 to 15, and 29-31.)

Self-Protection Monitoring capabilities would be essential for the emergency forces tentatively designated for dispatch to the detonation area, if directed by the State. The RDO should arrange for radiological instrumentation (ratemeters and dosimeters) and trained Radiological Monitors as required.

Emergency service units designated for mobile support should be alerted, and oriented on how radiation hazards could affect their operations. Mobile support units should be dispatched *only* as directed by the State.

Forces would probably be requested from localities upwind and sidewind from the detonation area, pending determination of whether fallout had been produced. Also, forces would probably be requested from areas relatively close to the detonation, rather than farther away.

Communities close to the detonation area (within about 15 or 20 miles) could provide immediate assistance although this should be coordinated, insofar as possible, with the State-Area or State EOC. Also, support should be provided only from communities upwind or sidewind from the detonation area, and mobile units should approach the area from these directions.

Local officials should also determine what types of indirect support could be provided. This could include providing bus or other transportation for refugees or evacuees from the detonation area, hosting operations for refugees or evacuees, or hospital care for the injured. Report initial estimates of indirect support capabilities to the State-Area or State EOC.

Such indirect support would probably be requested from communities in upwind or sidewind directions from the detonation area (unless the detonation proved to have been an airburst).

D. If NAWAS information is received that the accidentally-launched weapon has impacted *without* causing a nuclear detonation, take the following actions:

1. In the impact area, an emergency message of the following type should be broadcast *immediately*:

THE ACCIDENTALLY-LAUNCHED MISSILE HAS IMPACTED IN THIS AREA. A NUCLEAR EXPLOSION DID NOT—REPEAT—DID NOT OCCUR. HOWEVER, IT IS POSSIBLE THAT SOME DANGER MAY EXIST FROM MATERIALS INCLUDED IN A NUCLEAR WEAPON. THEREFORE YOU MUST REMAIN UNDER COVER UNTIL FURTHER NOTICE. THIS MAY BE FOR A NUMBER OF HOURS. KEEP LISTENING TO THIS STATION FOR FURTHER CIVIL DEFENSE INSTRUCTIONS.

The message should be repeated continually, until it can be supplemented or replaced by updated instructions.

2. In *all* jurisdictions in the U.S. outside the impact area, a message of the following type should be broadcast immediately:

WE HAVE BEEN NOTIFIED BY THE NATIONAL WARNING CENTER THAT THE ACCIDENTALLY-LAUNCHED MISSILE IMPACTED IN _____ AT _____ (city, state) _____ . A NUCLEAR EXPLOSION DID NOT—REPEAT—DID NOT OCCUR. (local time)
YOU NEED NOT TAKE COVER OR TAKE OTHER PROTECTIVE ACTION. MORE INFORMATION WILL BE PROVIDED ON REGULAR NEWS BROADCASTS.

3. In the impact area, police should enforce the instructions for the population to remain under cover. Assistance should be requested through the State to determine whether a hazard exists from contamination by weapon material, and if so what countermeasures to take.

4. EOC's in all areas should be phased down to partial staffing, and eventually to normal status, as directed by the State.

E. If it is confirmed that the nuclear detonation has *NOT* produced fallout—probably by a message from the State or Region, one to several hours after the nuclear detonation—take the following actions:

1. All jurisdictions in the U.S. should broadcast this information promptly. In areas where the population had been urged to develop fallout protection and take related actions, they should be advised to suspend such fallout countermeasures.

2. Operations should be continued to provide (or prepare to provide) direct or indirect support for the detonation area.

WINTER STORMS

Emergency Service Actions

A. General

Winter storms vary in size and intensity. A storm may affect only a part of a State or many States, and may take the form of a minor ice storm or a full-blown blizzard. Because of this variance of conditions and size of area covered, State and local governments should give particular attention to those types of storms they are most likely to encounter.

B. Pre-Storm Season Preparations

1. Organize snowmobile and ski emergency rescue and medical teams if these would be useful in your area.

2. Contact the National Weather Service and establish those *rules on definitions*, especially "Heavy Snow Warnings" and "Cold Wave Warning" that pertain to your area. (See "Suggested Citizen Instructions.")

3. Provide the local news media with Winter Storm Safety Rules, winter automobile travel considerations, advice on actions if trapped in a vehicle by a blizzard, and other appropriate information pertaining to the area.

4. Contact other government agencies, military units and installations, Civil Air Patrol units (CAP), individual amateur radio operators and organizations (e.g., RACES), and private organizations and associations to determine their willingness to assist under varying winter storm situations and to what extent. (List names, locations, and telephone numbers, day and night.)

Organization (Person)	Location	Telephone	
		Day	Night
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

5. Determine the location and amounts of snow fencing, sand and salt drums, or other materials needed, and install and fill these as required.

6. Designate and place signs on snow emergency routes if permitted by ordinance to do so.

7. Establish a system, procedures, and contacts for "school closing" or "employee stay home" announcements.

8. Develop newspaper articles and radio and television announcements for release when appropriate; e.g., requesting home owners to remove snow from fire hydrants or other places that might impede emergency actions.

C. Upon Receipt of a Report That a Severe Winter Storm Threatens or is Occurring in the Vicinity, take the following actions:

1. Notify the chief executive and the civil defense director who, if the situation warrants, will activate the Emergency Operating Center in accordance with "Executive Leadership Actions for All Major Emergencies."

2. Assess the storm situation, including a determination of the potential storm risk area, and obtain information such as speed and direction of the wind, precipitation, barometric readings, fall of snow, sleet, etc. Initiate reporting from private agencies and utilities that have facilities in the risk area. (List names, locations, and telephone numbers, day and night.)

<i>Organization (Person)</i>	<i>Location</i>	<i>Telephone</i>	
		<i>Day</i>	<i>Night</i>

3. Keep in communication with highway, police, fire, rescue, and others with Emergency Services responsibilities. (List names, locations, telephone numbers, day and night.) Obtain official information on what and how highways and streets are to be kept open, particularly those required by Emergency Service personnel in case of serious fires, accidents and other emergencies. Obtain preliminary estimates of requirements for additional manpower, equipment, and supplies.

<i>Organization (Person)</i>	<i>Location</i>	<i>Telephone</i>	
		<i>Day</i>	<i>Night</i>

4. Evaluate the overall community situation. Augment Emergency Service reports with other reports to maintain a continuing assessment of the situation. An evaluation of all reports should be the basis for decisions on whether the local forces can meet requirements, whether mutual aid is feasible, and whether the following sources of additional emergency manpower, equipment, and supplies should be tapped. (List names, locations, and telephone numbers, day and night.)

<i>Organization (Person)</i>	<i>Location</i>	<i>Telephone</i>	
		<i>Day</i>	<i>Night</i>

5. If conditions warrant, initiate or increase efforts to obtain specific information for broadcasts over radio _____ and television _____ to inform the public of the storm situation and what actions should be taken. (See accompanying "Suggested Citizen Instructions.")
(identify local stations) (identify channels)

6. Review plans for combatting severe operating conditions in case fire or rescue operations are needed. Review Emergency Services Actions for Fires, Search and Rescue, Floods, Transportation Accidents, and other potential disasters that could occur during or following the storm.

7. Remind appropriate Emergency Service personnel to position equipment, fuel, and other essential supplies for use after the storm.

8. Check auxiliary generators and other power and lighting equipment. Place reserve EOC supplies and equipment, such as antennas, where they can be obtained following the storm.

9. Review preparations for mass feeding and emergency shelter if the situation appears worsening; consider what specific operations may have to be performed and under what conditions.

10. If storm conditions hamper or overload the response capability of Emergency Services, determine priorities on the basis of number of lives that may be saved, accessibility to the scene, and amount of time required to accomplish the mission.

11. So far as it is possible to do so, put manpower and equipment on standby (ready to roll, and properly equipped) and keep in communication with operating and standby crews, such as snowmobile rescue units as well as heavy plowing and sanding crews.

12. Keep information on condition of routes up-to-date. Utilize appropriate emergency entrance and exit routes (Emergency Snow Routes) as conditions change. Keep public informed of changes in use of such routes.

13. Limit travel into the storm area as required. Cordon hazardous areas, as required. Reroute traffic on an area basis as required.

14. Initiate and maintain emergency operations when storm conditions permit. (List special instructions on procedures, etc.)

15. When storm subsides and conditions permit, resume normal routine and submit final reports in accordance with "Executive Leadership Actions for All Major Emergencies."

WINTER STORMS

Suggested Citizen Instructions

A. Warning Responsibility

The National Weather Service is responsible for the timely issuance of weather warnings to the public, including the approach of winter storms.

B. Definitions

Ice Storm—Freezing rain or drizzle is called an Ice Storm. Moisture falls in liquid form but freezes upon impact. The term “heavy” is used to indicate an ice coating sufficiently heavy to cause significant damage to trees, overhead wires, and similar objects.

Ice Storms are sometimes incorrectly referred to as “sleet storms.” Sleet is easily identified as frozen rain drops (ice pellets) which bounce when hitting the ground or other objects. Sleet does not stick to trees and wires but sleet in sufficient depth does cause hazardous driving conditions.

Snow—“Snow” in a forecast, without a qualifying word such as “occasional” or “intermittent,” means that the fall of snow is of a steady nature and will probably continue for several hours without letup.

“Heavy snow warnings” are issued to the public when a fall of four inches or more is expected in a 12-hour period, or a fall of six inches or more is expected in a 24-hour period. Some variations on these rules may be used in different parts of the country. Where four-inch snowfalls are common, the emphasis on heavy snow is generally associated with six or more inches of snow. In other parts of the country where heavy snow is infrequent, or in metropolitan areas with heavy traffic, a snowfall of two or three inches will justify a heavy snow warning.

“Snow flurries” are defined as snow falling for short durations at intermittent periods; however, snowfall during the flurries may reduce visibilities to an eighth of a mile or less. Accumulations from snow flurries are generally small.

“Snow squalls” are brief, intense falls of snow and are comparable to summer rain showers. They are accompanied by gusty surface winds.

“Blowing and drifting snow” generally occur together and result from strong winds and falling snow or loose snow on the ground. “Blowing snow” is defined as snow lifted from the surface by the wind and blown about to a degree that horizontal visibility is greatly restricted.

“Drifting snow” is used in forecasts to indicate that strong winds will blow falling snow or loose snow on the ground into significant drifts. In the northern plains, the combination of blowing and drifting snow, after a substantial snowfall has ended, is often referred to as “ground blizzard.”

“Blizzards” are the most dramatic and perilous of all winter storms, characterized by low temperatures and by strong winds bearing large amounts of snow. Most of the snow accompanying a blizzard is in the form of fine, powdery particles of snow which are whipped in such great quantities that at times visibility is only a few yards.

“Blizzard warnings” are issued when winds with speeds of at least 35 mph are accompanied by considerable falling or blowing snow and temperatures of 20° F or lower are expected to prevail for an extended period of time.

“Severe blizzard warnings” are issued when blizzards of extreme proportions are expected and indicate wind with speeds of at least 45 mph plus a great density of falling or blowing snow and a temperature of 10° F or lower.

A “cold wave warning” indicates an expected rapid fall in temperature within a 24-hour period which will require substantially increased protection to agricultural, industrial, commercial, and social activities. The temperature falls and minimum temperatures required to justify cold wave warnings vary with the changing of the season and with geographic location. Regardless of the month or the section of the country, a cold wave warning is a red flag alert to the public that during a forthcoming forecast period a change to very cold weather will require greater than normal protective measures.

"Hazardous Driving (Travelers') Warnings" are issued to indicate that falling, blowing or drifting snow, freezing rain or drizzle, sleet or strong winds will make driving difficult.

"Stockmen's Warnings" alert ranchers and farmers that livestock will require protection from a large accumulation of snow or ice, a rapid drop in temperature, or strong wind.

Wind Chill Factor—Strong winds combined with low temperatures cause a very rapid cooling of exposed surfaces. Unprotected portions of the body, such as the face or hands, can chill rapidly and should be protected as much as possible from the cold wind. A very strong wind combined with a temperature slightly below freezing can have the same chilling effect as a temperature nearly 50° F lower in a calm atmosphere. Arctic explorers and military experts have developed a term called the "wind chill factor," which states the cooling effect of various wind and temperature combinations. In certain areas, the Weather Service issues this information as the "wind chill index." The following descriptive scale compares a 20° F temperature with different wind speeds.

<u>Wind With Temperature 20° F</u>	<u>Wind-Chill Index (Equivalent Temperature)</u>	<u>Forecast Descriptive Term</u>
10 mph	2° F	Very Cold
20 mph	-9° F	Bitter Cold
35 mph	-20° F	Extreme Cold

Winter Storm Safety Rules—Keep ahead of a winter storm by listening to the latest National Weather Service warnings and bulletins on radio and television.

—*Check battery powered equipment* before the storm arrives. A portable radio or television set may be your only contact with the world outside the winter storm. Also check emergency cooking facilities and flashlights.

—*Check your supply of heating fuel.* Fuel carriers may not be able to move if a winter storm buries your area in snow.

—*Check your food and stock an extra supply.* Your supplies should include food that requires no cooking or refrigeration in case of power failure.

Prevent fire hazards due to overheated coal- or oil-burning stoves, fireplaces, heaters, or furnaces.

Stay indoors during storms and cold snaps unless in peak physical condition. If you must go out, avoid overexertion.

Don't kill yourself shoveling snow. It is extremely hard work for anyone in less than prime physical condition, and can bring on a heart attack, a major cause of death during and after winter storms.

Rural residents: Make necessary trips for supplies before the storm develops or not at all. Arrange for emergency heat supply in case of power failure. Be sure camp stoves and lanterns are filled.

Dress to fit the season. If you spend much time outdoors, wear loose-fitting, lightweight, warm clothing in several layers; layers can be removed to prevent perspiring and subsequent chill. Outer garments should be lightly woven, water repellent, and hooded. The hood should protect much of your face and cover your mouth to ensure warm breathing and protect your lungs from the extremely cold air. Remember that entrapped, insulating air, warmed by body heat, is the best protection against cold. Layers of protective clothing are more effective and efficient than single layers of thick clothing; and mittens, snug at the wrists, are better protection than fingered gloves.

Your automobile can be your best friend—or worst enemy—during winter storms, depending on your preparations. Get your car "winterized" before the storm season begins. Everything on the checklist shown below should be taken care of before winter storms strike your area:

- | | | |
|------------------|-----------------------|-----------------------|
| -ignition system | -lubrication | -defroster |
| -battery | -tight exhaust system | -snow tires installed |
| -lights | -heater | -chains |
| -cooling system | -brakes | -antifreeze |
| -fuel system | -wiper blades | -winter-grade oil |

Winter Storm Car Kit.—Be equipped for the worst. Carry a winter storm car kit, especially if cross country travel is anticipated or if you live in the northern States.

The kit should contain blankets or sleeping bags, matches and candles, empty 3-pound coffee can with plastic cover, extra clothing, high-calorie, nonperishable food, compass and road maps, knife, first aid kit, shovel, sack of sand, flashlight or signal light, windshield scraper, booster cables, two tow chains, fire extinguisher, axe, etc.

Winter travel by automobile is serious business. Keep these points in mind, especially for severe storms:

1. If the storm exceeds or even tests your limitations, seek available refuge immediately.
2. Plan your travel and select primary and alternate routes.
3. Check latest weather information on your radio.
4. Try not to travel alone; two or three persons are preferable.
5. Travel in convoy with another vehicle, if possible.
6. Always fill gasoline tank before entering open country, even for a short distance.
7. Drive carefully, defensively.

Trapped by a Blizzard in a Vehicle.—

Avoid overexertion and exposure. Exertion from attempting to push your car, shoveling heavy drifts, and performing other difficult chores during the strong winds, blinding snow, and bitter cold of a blizzard may cause a heart attack—even for persons in apparently good physical condition.

Stay in your vehicle. Do not attempt to walk out of a blizzard. Disorientation comes quickly in blowing and drifting snow. Being lost in open country during a blizzard is almost certain death. You are more likely to be found, and more likely to be sheltered, in your car.

Don't panic.

Keep fresh air in your car. Freezing wet snow and wind-driven snow can completely seal the passenger compartment.

Beware the gentle killers: carbon monoxide and oxygen starvation. Run the motor and heater sparingly, and only with the downwind window open for ventilation.

Exercise by clapping hands and moving arms and legs vigorously from time to time, and do not stay in one position for long.

Turn on dome light at night, to make the vehicle visible to work crews.

Keep watch. Do not permit all occupants of car to sleep at once.

Livestock.—Blizzards take a terrible toll in livestock. For both humane and economic reasons, stockmen should take necessary precautions in advance of severe winter storms.

Move livestock, especially young livestock, into sheltered areas (frequently called "shelter belts") properly oriented and laid out. These provide better protection for range cattle than shed-type shelters, which may cause cattle to overcrowd, with consequent overheating and respiratory disorders.

Haul extra feed to feeding areas before the storm arrives. Storm duration is the largest determinant of livestock losses; if the storm lasts more than 48 hours, emergency feed methods are required. Range cattle are hardy and can survive extreme winter weather providing they have some nonconfining type of shelter from the wind and are able to feed at frequent intervals.

Autopsies of cattle killed by winter storms have shown the cause of death to be dehydration, not cold or suffocation. Because cattle cannot lick enough snow to satisfy their thirst, stockmen are advised to use heaters in water tanks to provide livestock with water and feed after prolonged exposure to winter storm conditions.

ILLUSTRATIONS OF SHELTER UPGRADING TECHNIQUES

The following illustrations are illustrative only, and show concepts and approaches for crisis actions to improve the fallout protection of various types of existing buildings. Note that the illustrations indicate that some buildings may need strengthening, to assure that they can support the added burden of earth placed overhead in addition to possible low overpressures from nearby risk areas.

A qualified engineer or builder should advise local officials on which buildings would need such strengthening, before attempting to upgrade their fallout protection.

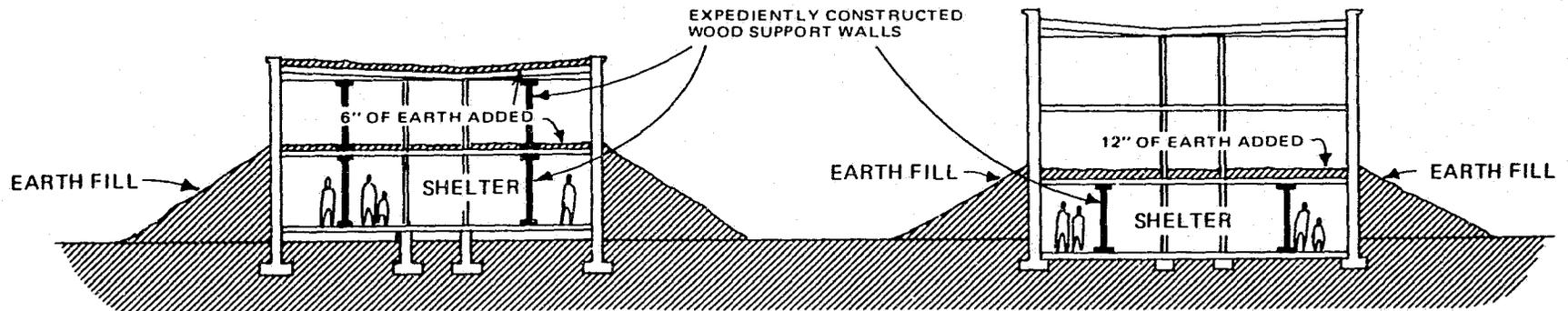
Also, a qualified Fallout Shelter Analyst, if available, should advise on which buildings offer the best potential for upgrading fallout protection.

fallout protection in school buildings



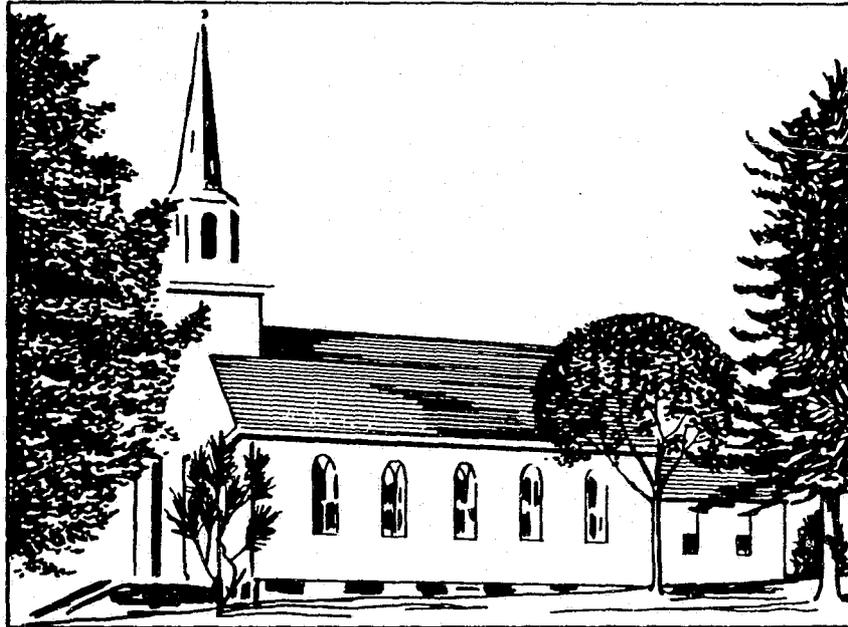
EXISTING SCHOOL BUILDING CAN SERVE AS CONGREGATE CARE FACILITIES FOR RISK AREA EVACUEES. BEST FALLOUT PROTECTION CAN BE FOUND IN INTERIOR CORRIDORS AND ROOMS ON THE LOWEST FLOOR, ESPECIALLY IF THE SCHOOL HAS TWO OR MORE STORIES AND THE EXTERIOR WALLS ARE OF CONCRETE OR MASONRY CONSTRUCTION FALLOUT PROTECTION CAN BE IMPROVED BY FIRST EXPEDITENTLY CONSTRUCTING A WOOD SUPPORT WALL AT THE MID-SPAN POINT AND THEN PROVIDING ADDITIONAL VERTICAL AND HORIZONTAL BARRIERS OF EARTH AS SHOWN IN SKETCHES. WINDOWS IN EXTERIOR WALLS THAT ARE TO BE COVERED WITH EARTH SHOULD BE PROTECTED WITH LUMBER OR PLYWOOD SHEETS SO THAT THEY WILL NOT BREAK UNDER THE EARTH FILL.

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NOTE:
ADDITIONAL VENTILATION WILL BE REQUIRED SEE DESIGN OF AIR VENTILATION PUMP

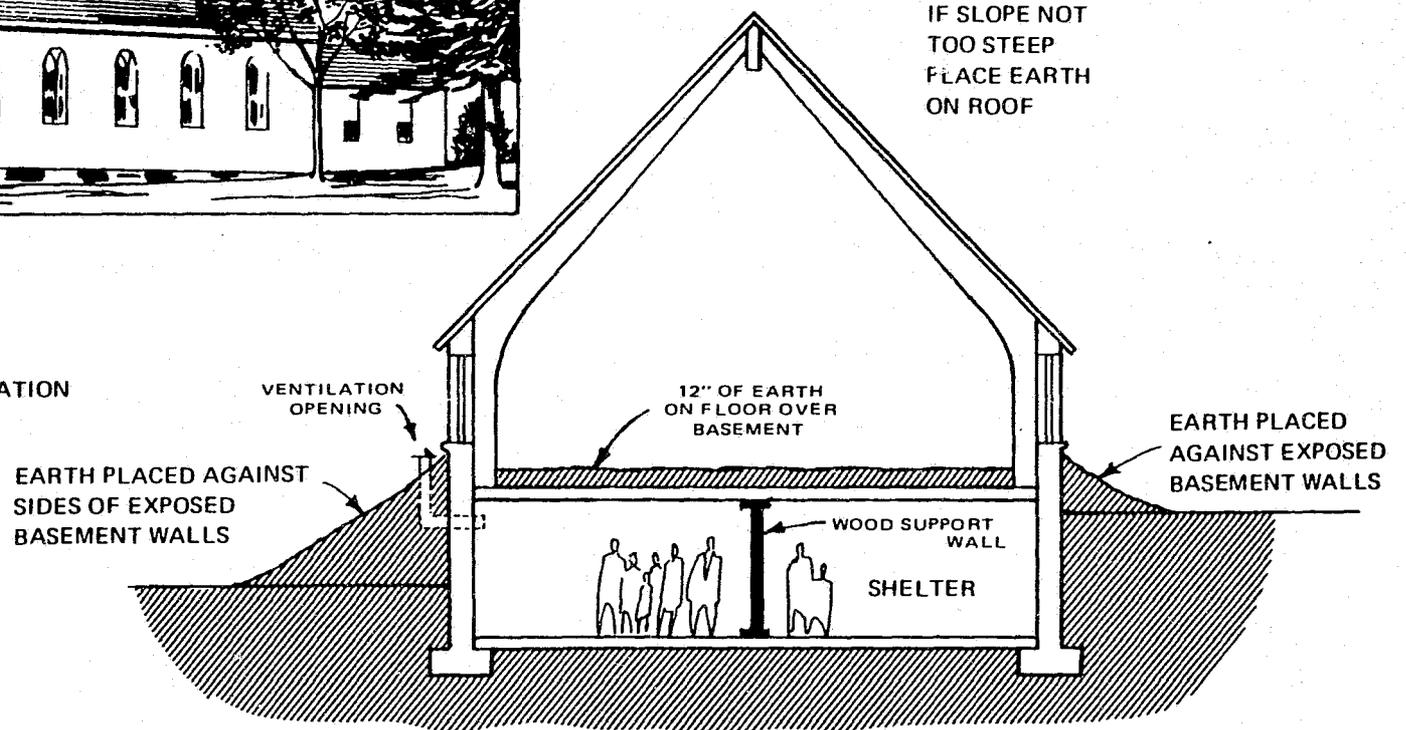
fallout protection in churches



EXISTING CHURCH BUILDINGS CAN SERVE AS CONGREGATE CARE FACILITIES FOR RISK AREA EVACUEES. BEST PROTECTION CAN BE FOUND IN THOSE BUILDINGS THAT HAVE MASONRY EXTERIOR WALLS AND BASEMENTS. SHELTER IN THE BASEMENT AREAS CAN BE IMPROVED BY FIRST EXPEDITENTLY CONSTRUCTING A WOOD SUPPORT WALL AT THE MID-SPAN POINT AND THEN PLACING 12 INCHES OF EARTH ON THE FLOOR OVER THE BASEMENT AND BY MOUNDING EARTH AGAINST THE EXPOSED BASEMENT WALLS. EARTH CAN ALSO BE ADDED TO THE ROOF PROVIDED THE SLOPE IS NOT TOO STEEP.

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NOTE:
ADDITIONAL VENTILATION
WILL BE REQUIRED.
SEE DESIGN OF AIR VENTILATION
PUMP



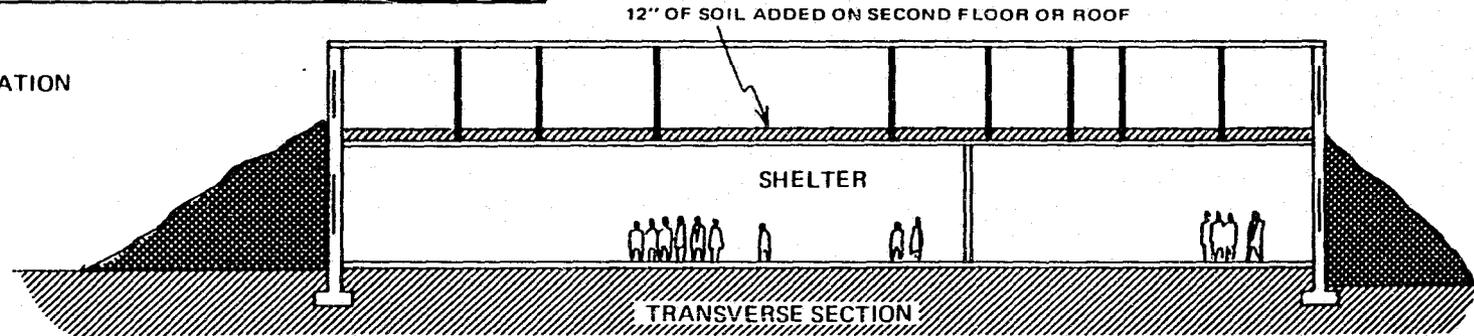
fallout protection in typical downtown row-type buildings



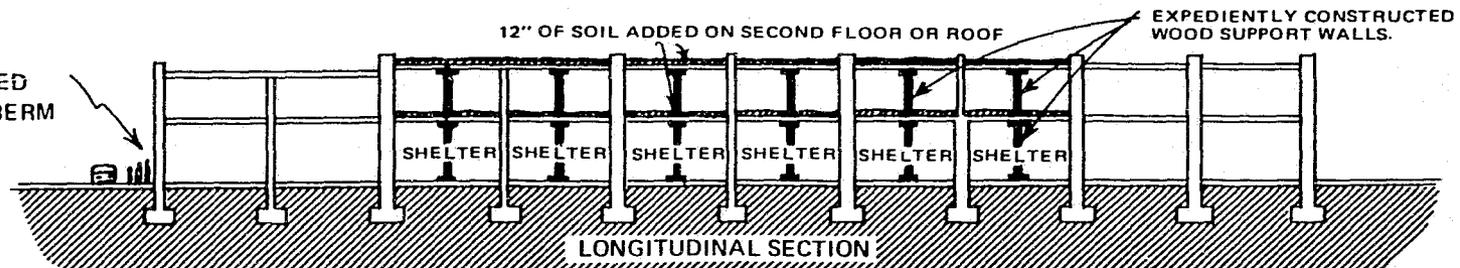
TWO-STORY BUILDINGS IN A ROW GROUPING (NO SEPARATION BETWEEN BUILDINGS) CAN HAVE THE EXISTING FALLOUT PROTECTION IMPROVED CONSIDERABLY IN THE "INTERIOR" SECTIONS BY FIRST EXPEDITENTLY CONSTRUCTING A WOOD SUPPORT WALL AT THE MID-SPAN POINT AND THEN PLACING EARTH AT THE FRONT AND REAR OF THE BUILDINGS AS WELL AS ON THE FLOOR OVER THE FIRST STORY AND/OR THE ROOF AS SHOWN IN THE SKETCHES. THE TWO BUILDINGS AT EITHER END OF THE ROW SHOULD NOT BE USED FOR SHELTER PURPOSES SINCE THEY PROVIDE SHIELDING FOR THE "INTERIOR" SECTIONS. GLASS FRONTS SHOULD BE PROTECTED FROM BREAKAGE WITH WOOD OR PLYWOOD PANELS.

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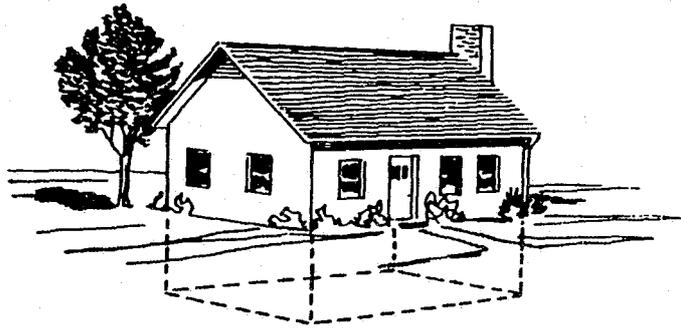
NOTE:
ADDITIONAL VENTILATION
WILL BE REQUIRED.
SEE DESIGN OF AIR
VENTILATION PUMP



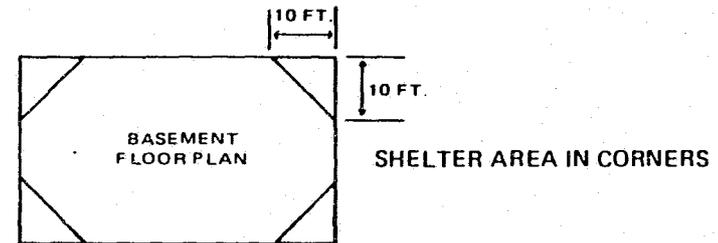
END. STORES
CAN BE UPGRADED
BY PROVIDING BERM
ON END WALLS



fallout protection for homes with basements (fully belowground)

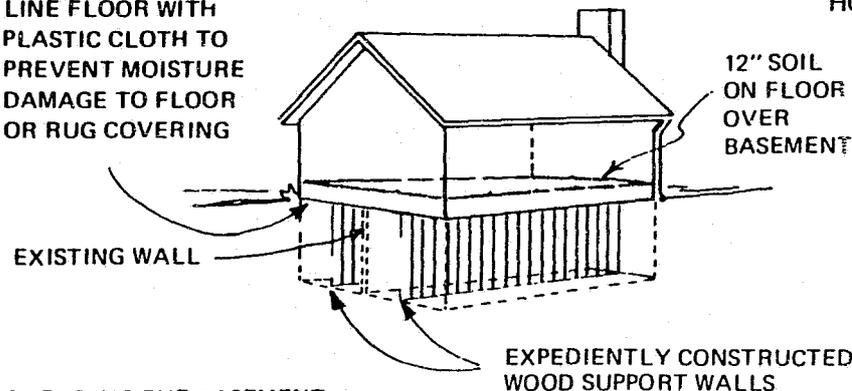


HOMES WITH BASEMENTS (COMPLETELY BELOWGROUND) ALREADY HAVE FALLOUT PROTECTION ESPECIALLY IN THE CORNERS OF THE BASEMENT.

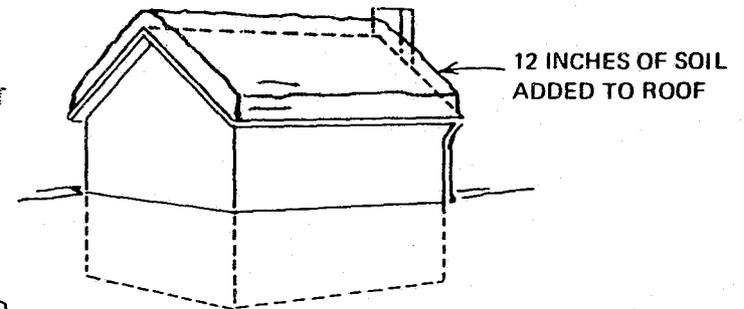


THIS PROTECTION CAN BE ENHANCED CONSIDERABLY BY FIRST EXPEDITENTLY CONSTRUCTING WOOD SUPPORT WALLS AT THE MID-SPAN AND THEN PLACING 12 INCHES OF EARTH OVER THE ENTIRE FLOOR COVERING THE BASEMENT AREA. PLACING EARTH ON THE ROOF OF THE HOME WILL ALSO INCREASE THE FALLOUT PROTECTION.

LINE FLOOR WITH PLASTIC CLOTH TO PREVENT MOISTURE DAMAGE TO FLOOR OR RUG COVERING



UPGRADING THE BASEMENT SHELTER PERMITS THE ENTIRE BASEMENT AREA TO BE FALLOUT PROTECTED, THUS ALLOWING THE HOMEOWNER TO SHARE THE BASEMENT WITH OTHERS.



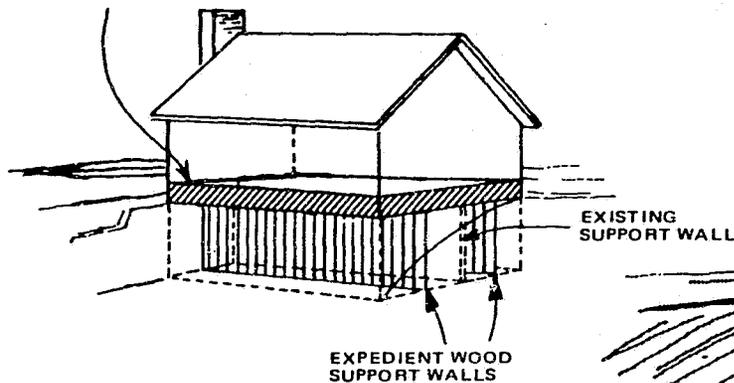
REMEMBER: THE MORE MATERIAL YOU ADD THE GREATER THE PROTECTION. A WORD OF CAUTION: PLACING MORE THAN 12 INCHES OF EARTH ON THE ROOF WITHOUT PROVIDING ADDITIONAL SHORING MAY CAUSE JOISTS TO SAG EXCESSIVELY AND FAIL.

fallout protection for homes with basements (partially belowground)



STEP ONE – EXPEDIENTLY CONSTRUCT A WOOD SUPPORT WALL AT THE MID-SPAN TO SUPPORT EARTH ON FLOOR.

STEP TWO – PROVIDE OVERHEAD BARRIER BY PLACING 12" OF EARTH ON ROOF OR ON FLOOR OVER BASEMENT

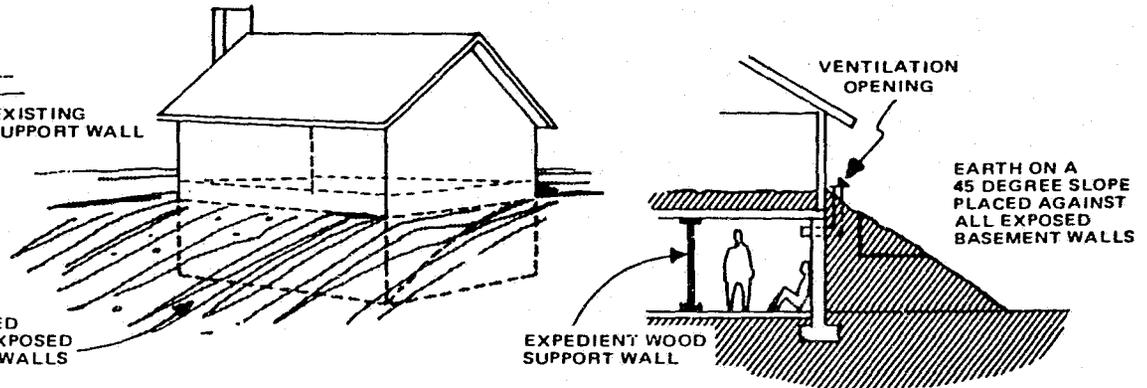


EARTH PILED AGAINST EXPOSED BASEMENT WALLS

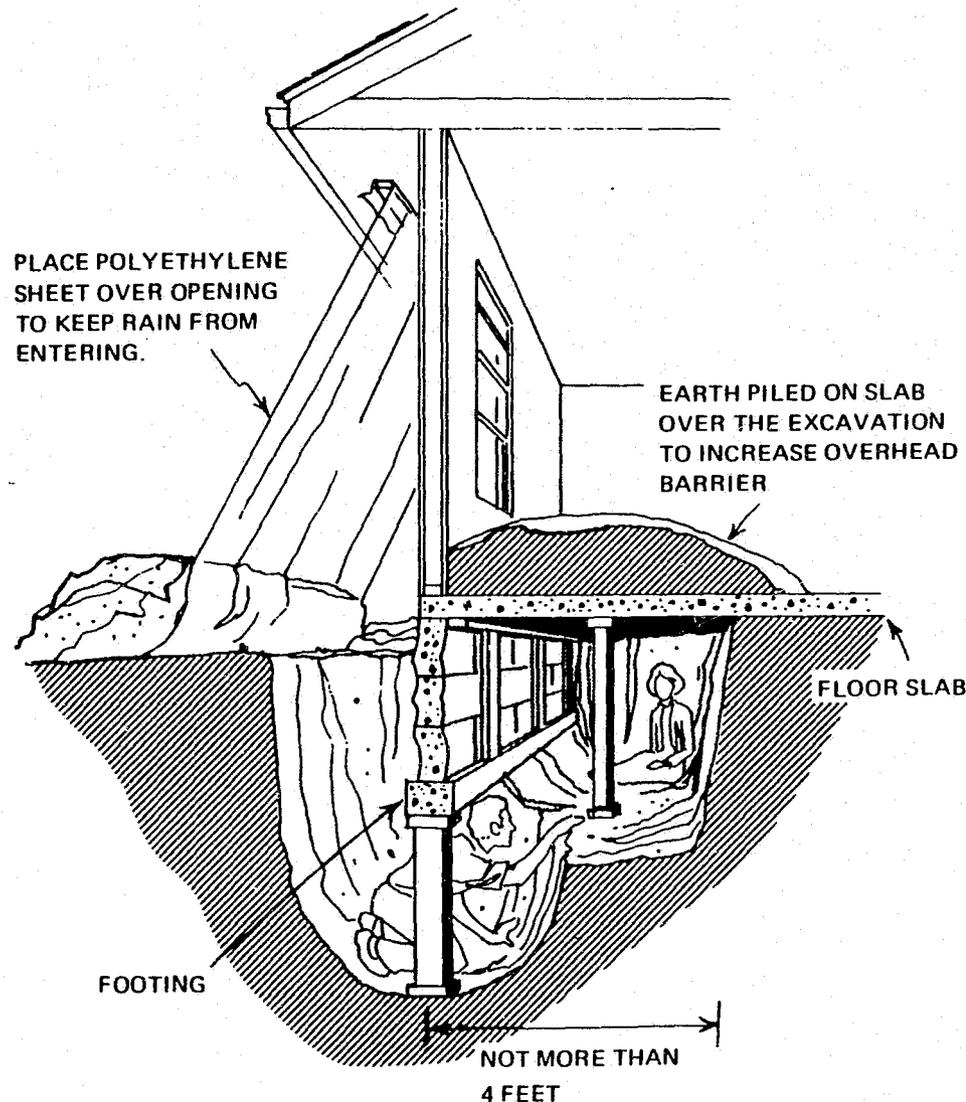
HOMES WITH BASEMENTS PARTIALLY BELOWGROUND ALSO HAVE POTENTIAL FOR PROVIDING FALLOUT PROTECTION BUT NOT AS MUCH AS THOSE WITH BASEMENTS COMPLETELY BELOWGROUND.

TO IMPROVE THE FALLOUT PROTECTION IN THE BASEMENT AREA, TWO THINGS MUST BE DONE; (1) PROVIDE AN OVERHEAD BARRIER AND, (2) INCREASE THE BARRIER (THICKNESS) OF THE EXPOSED BASEMENT WALLS. THIS CAN BE ACCOMPLISHED AS SHOWN IN SKETCHES. BOTH STEPS MUST BE TAKEN TO OBTAIN THE FALLOUT PROTECTION. DOING ONLY ONE STEP IS NOT ENOUGH.

STEP THREE – IMPROVE VERTICAL BARRIER BY PLACING EARTH AGAINST ALL EXPOSED BASEMENT WALLS. COVER WINDOWS IN BASEMENT WALLS WITH WOOD TO PREVENT GLASS BREAKAGE DUE TO EARTH PRESSURE.



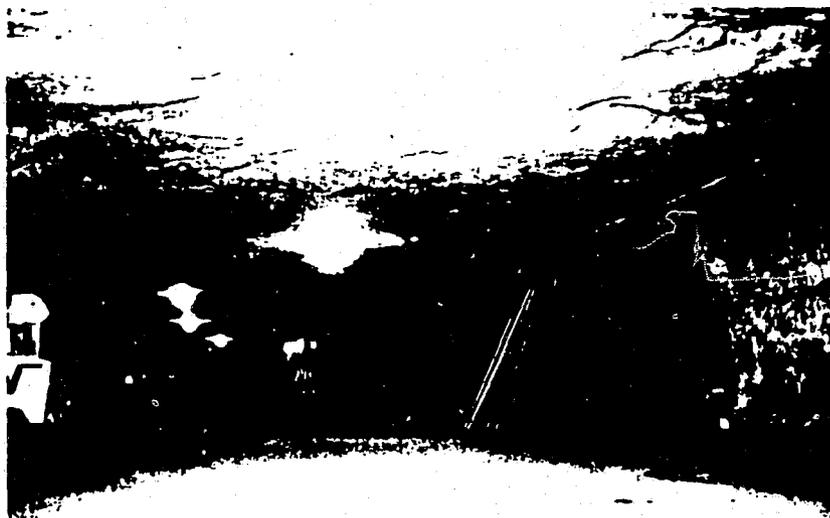
fallout protection for homes without basements



IN ORDER TO PROVIDE EXPEDIENT FALLOUT PROTECTION TO HOMES WITHOUT BASEMENT, ONE APPROACH IS TO EXCAVATE BENEATH THE FLOOR SLAB AS DEPICTED IN THE SKETCH. BEING UNDER AN EAVE WILL, IN MANY CASES, KEEP RAINWATER OUT OF THE TRENCH AND THE SHELTER ENTRY TUNNEL. ONCE THE BOTTOM OF THE FOUNDATION WALL IS REACHED, A TUNNEL IS DUG UNDER THE FOOTING AND THE MATERIAL REMOVED FROM UNDERNEATH THE SLAB TO CREATE THE SHELTER. THE SHELTER IS OFFSET FROM THE TRENCH SO THAT THE SHELTER WALL IS NOT EXPOSED ON THE OUTSIDE. THE "HOLLOWED-OUT" SHELTER AREA CAN VARY IN SIZE, BUT IT SHOULD NOT EXTEND MORE THAN 4 FEET FROM THE FOUNDATION WALL.

IT IS EXPECTED THAT A TYPICAL SIZE FOR A 4-PERSON SHELTER MIGHT BE 4 FT. DEEP, 4 FT. HIGH, AND 6 TO 8 FT. LONG. SOME OF THE DIRT FROM THE TRENCH CAN BE PILED ON THE SLAB OVER THE SHELTER AND ALSO AGAINST ANY EXPOSURE AT THE TOP OF THE FOUNDATION WALL. ALTHOUGH THE EAVE WILL HELP TO KEEP RAIN OUT OF THE TRENCH, IT WOULD PROBABLY BE WELL TO STRETCH A SHEET OF POLYETHYLENE FROM THE ROOF TO THE OUTER EDGE OF THE DIRT PILE. THIS WOULD HELP TO ASSURE RAINWATER NOT ENTERING THE SHELTER TUNNEL.

mines, caves and tunnels...



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... ARE ANOTHER RESOURCE FOR PROVIDING FALLOUT SHELTER. WHILE MOST OF THIS RESOURCE IS NOT LOCATED WITHIN OR NEXT TO MAJOR METROPOLITAN AREAS, IT IS CLOSE ENOUGH TO BE REACHED BY CITY DWELLERS. MINES, CAVES AND TUNNELS EXIST AND ARE IN COMMERCIAL USE. IN SUCH PLACES AS KANSAS, MISSOURI, PENNSYLVANIA, VIRGINIA, UTAH, AND MONTANA. THE MAJOR PROBLEM IN GETTING THESE FACILITIES READY FOR PEOPLE TO USE THEM AS SHELTERS IS LIGHTING AND VENTILATION. TESTS CONDUCTED IN A LIMESTONE MINE NEAR DOWNTOWN KANSAS CITY INDICATED THAT EMERGENCY GENERATORS WOULD BE REQUIRED TO PROVIDE POWER FOR LIGHTING AND OPERATING THE VENTILATION EQUIPMENT IN THE MINE. A LOCAL CONTRACTOR WAS ABLE TO INSTALL LIGHT AND POWER OUTLETS AT DESIGNATED LOCATIONS IN THE MINE, IN ACCORDANCE WITH A PRE-DESIGNED LAYOUT IN A SHORT PERIOD OF TIME.

LARGE FANS (5 FT. DIAMETER, 60,000 CFM) ARE NEEDED AT THE ENTRANCES TO IMPROVE VENTILATION. THOSE MINES WITH DOUBLE ENTRANCES (TWO ALONGSIDE EACH OTHER AS OPPOSED TO THOSE WITH ENTRANCES AT OPPOSITE ENDS OF THE MINE) REQUIRE CONSTRUCTION OF SPECIAL DUCTING TO PREVENT AIR FROM "SHORT CIRCUITING" BETWEEN ENTRY WAYS. A DIVIDING WALL FORMED BY COVERING WOODEN FRAMES WITH POLYETHYLENE SHEETS, IS NEEDED TO SEPARATE THE TWO ADJOINING ENTRANCES. WITH THIS DUCTING ARRANGEMENT, THE EXHAUST FANS EXPEL AIR ON ONE SIDE OF THE DIVIDER WALL WHILE FRESH AIR IS DRAWN INTO THE MINE THROUGH THE ENTRANCE ON THE OTHER SIDE OF THE WALL.

SMALL MINES, IF HABITABLE, OR IF THEY CAN BE MADE HABITABLE IN A CRISIS, SHOULD BE INCLUDED IN CRP PLANNING IF THERE IS AN INSUFFICIENT NUMBER OF UPGRADABLE BUILDINGS TO OVERCOME THE SHELTER DEFICIT.

ANY MINES CONTAINING DANGEROUS GASES, HARMFUL BACTERIA, OR EXTENSIVE WETNESS, SHOULD NOT BE USED. ALTHOUGH CAVES AND TUNNELS CONSTITUTE ONLY A SMALL PERCENTAGE OF THE AVAILABLE UNDERGROUND SPACE, THEY TOO SHOULD BE INCLUDED IN THE PLANNING WHERE AVAILABLE AND THE SPACE IS NEEDED.

ILLUSTRATIONS OF EXPEDIENT SHELTER DESIGNS

The following designs have all been field tested. In these tests, over 40 typical American families were given only simple instructions (such as the illustrations which follow).

The tests showed that *a typical family can construct these shelters in the daylight hours of a single day.*

Note that expedient shelters provide *excellent fallout protection* (PF's of 100 to 200 or better, if constructed as shown in the following designs), and *significant blast protection as well.* Thus, expedient shelters could provide good protection for key workers or others who were in risk areas at the time of an attack.

These are PLANS FOR EXPEDIENT FALLOUT SHELTERS



SAVE THESE PLANS—THEY MAY SAVE YOUR LIFE

● GENERAL INFORMATION

WITHOUT PROTECTION, UNTOLD NUMBERS OF AMERICANS WOULD DIE NEEDLESSLY IN THE EVENT OF A NUCLEAR ATTACK. THE EXPEDIENT SHELTERS ILLUSTRATED IN THE FOLLOWING PAGES PROVIDE PROTECTION TO OCCUPANTS FROM THE DEADLY RADIATION OF RADIOACTIVE FALLOUT GENERATED BY A NUCLEAR DETONATION — THEIR USE CAN SAVE THE LIVES OF MILLIONS OF AMERICANS.

EVEN THOUGH THE ILLUSTRATED SHELTERS ARE VERY AUSTERE, THERE ARE A NUMBER OF THINGS THAT CAN BE DONE TO IMPROVE THEIR HABITABILITY AFTER THEY HAVE BEEN BUILT. WITH THE USE OF A LITTLE INGENUITY AND EFFORT, THE SHELTERS CAN BE MADE MORE COMFORTABLE. SOME OF THE THINGS THAT CAN BE DONE ARE

- CONSTRUCT SEATS, HAMMOCKS, OR BUNKS.
- COVER THE FLOOR WITH BOARDS, PINE BOUGHS OR LOGS AND DRAPE SHEETS OR MATERIAL OVER THE EARTH WALLS
- PROVIDE SAFE, DEPENDABLE LIGHT
- FOR HOT WEATHER, CONSTRUCT THE EXPEDIENT AIR VENTILATION PUMP.
- FOR COOKING, CONSTRUCT THE EXPEDIENT COOK STOVE FOR USE IN THE ENTRYWAY. IN COLD WEATHER, SEAL THE ENTRANCE AND USE THE STOVE FOR HEATING THE SHELTER AREA. BE SURE VENTILATION IS PROVIDED WHENEVER THE STOVE IS USED.
- STORE SHELTER SUPPLIES IN ENTRYWAY FOR MORE LIVING SPACE. COVER ALL OPEN CONTAINERS. RADIATION WILL NOT DAMAGE THESE SUPPLIES

HUMANS MUST HAVE WATER AND FOOD TO LIVE. WHEN PEOPLE ARE TO LIVE IN A SHELTER FOR A WEEK OR TWO, SUFFICIENT FOOD AND SUPPLIES MUST BE PROVIDED FOR THE OCCUPANTS. THE MINIMUM NECESSITIES ARE:

- WATER — MINIMUM REQUIREMENTS (DEPENDENT UPON TEMPERATURE — LESS IN

COLD WEATHER, MORE IN WARMER) WILL BE FROM ONE QUART TO ONE GALLON PER PERSON PER DAY. STORAGE CAN BE ACCOMPLISHED BY USING DISINFECTED METAL OR PLASTIC TRASH CANS OR BOXES LINED WITH STRONG POLYETHYLENE FILM OR STRONG PLASTIC BAGS. FOR PURITY, EIGHT DROPS (ONE TEASPOON) OF A 5% CHLORINE SOLUTION (e.g., CLOROX) SHOULD BE MIXED INTO EACH 5 GALLONS OF WATER.

- FOOD — ALL FOOD SHOULD REQUIRE NO REFRIGERATION AND SHOULD BE BROUGHT TO THE SHELTER IN AIRTIGHT TINS OR BOTTLES. UNDER SHELTER CONDITIONS, PEOPLE WILL REQUIRE ABOUT HALF AS MUCH FOOD AS USUAL. FOODS SHOULD HAVE A HIGH NUTRITIONAL VALUE AND A MINIMAL AMOUNT OF BULK (i.e., CANNED MEATS — FRUITS — VEGETABLES, DRIED CEREALS, HARD CANDY, ETC.)

- SANITATION — A METAL CONTAINER WITH A TIGHT-FITTING LID FOR USE AS A TOILET WITH WHICH PLASTIC BAGS CAN BE USED. TOILET PAPER, SOAP, TOWELS, SANITARY ITEMS AND A QUANTITY OF STRONG PLASTIC BAGS WILL BE NEEDED.

- MEDICAL SUPPLIES — A WELL-STOCKED FIRST-AID KIT COMPARABLE TO WHAT IS USUALLY KEPT AT HOME. TAKE SPECIAL MEDICINES FOR INFANTS AND OTHERS AND A GOOD FIRST-AID HANDBOOK.

- CLOTHING AND BEDDING — SEVERAL CHANGES OF CLEAN CLOTHING, ESPECIALLY SOCKS AND UNDERCLOTHING — DEPENDENT UPON THE WEATHER, BLANKETS, PILLOWS AND SLEEPING BAGS MAY ALSO BE NEEDED.

- PORTABLE RADIO — LASTLY, BUT HARDLY LEAST IMPORTANT, A PORTABLE RADIO WITH FRESH AND EXTRA BATTERIES. RADIO STATION BROADCASTS WILL ADVISE YOU WHEN IT IS SAFE TO ABANDON THE SHELTER AND ALSO PROVIDE YOU WITH OTHER IMPORTANT EMERGENCY INFORMATION.

EXPEDIENT FALLOUT SHELTER

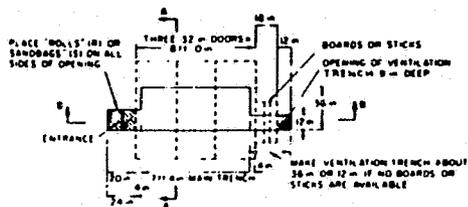
DOOR COVERED TRENCH SHELTER

GENERAL INFORMATION

THIS SHELTER IS DESIGNED FOR AREAS WHERE THERE IS A SHORTAGE OF SMALL TREES AND/OR BUILDING MATERIALS. THE DEPTH TO GROUND WATER AND ROCK MUST ALSO BE BELOW THE BOTTOM OF THE TRENCH. IN ADDITION, THE EARTH MUST BE SUFFICIENTLY FIRM AND STABLE SO THAT THE TRENCH WALLS WILL NOT COLLAPSE. THE SHELTER (3 PERSON CAPACITY) CAN BE CONSTRUCTED BY 3 PEOPLE WORKING AN APPROXIMATE TOTAL OF 12 HOURS EACH. READ AND STUDY ALL INSTRUCTIONS BEFORE BEGINNING TO BUILD.

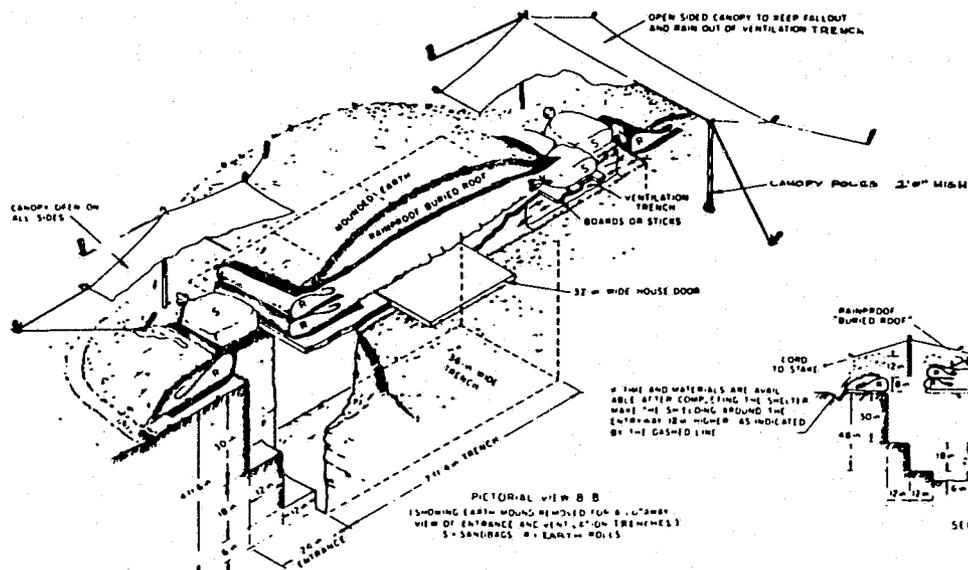
STEP 1

SELECT A REASONABLY LEVEL SITE. LAY OUT THE SHELTER AS ILLUSTRATED BY LAYING DOORS SIDE BY SIDE TO DETERMINE THE SHELTER LENGTH. DOOR KNOBS SHOULD BE REMOVED.

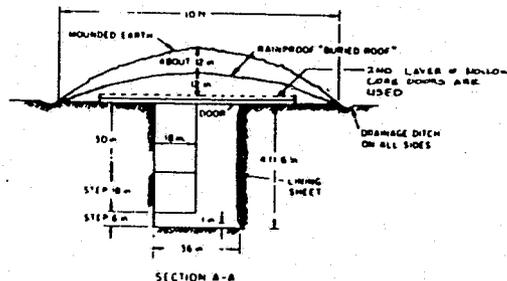


LAYOUT FOR 3-PERSON CAPACITY

STEP 2 EXCAVATE THE SHELTER TRENCH, ENTRYWAY AND VENTILATION TRENCH AS SHOWN. PILE THE EXCAVATED EARTH AT LEAST 3 FEET BEYOND THE TRENCH LIMITS SO THAT IT WILL NOT INTERFERE WITH THE LATER PLACEMENT OF DOORS OVER THE TRENCH.



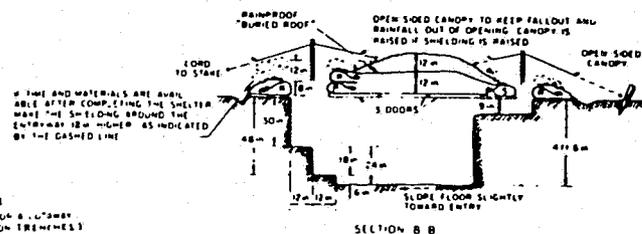
STEP 3 IF THERE ARE ADEQUATE SHEETS OR FABRIC AVAILABLE, LINE THE TRENCH WALLS WITH THEM. THEN PLACE DOORS OVER THE TRENCH.



STEP 4 IN ORDER TO HOLD IN PLACE AN ADEQUATE AMOUNT OF EARTH ON TOP OF THE DOORS, CONSTRUCT EARTH "ROLLS" AROUND THE ENTRYWAY AS SHOWN. THE "ROLLS" WILL KEEP THE EARTH FILL IN PLACE. SEE HOW TO MAKE AN EARTH ROLL.

STEP 5 PLACE EARTH FILL AND THE WATERPROOFING MATERIAL OVER THE DOORS. PLACE SANDBAGS AS SHOWN ON THE ILLUSTRATIONS.

STEP 6 CONSTRUCT SHALLOW DRAINAGE DITCHES ON ALL SIDES AND PLACE CANOPIES OVER THE OPENINGS.

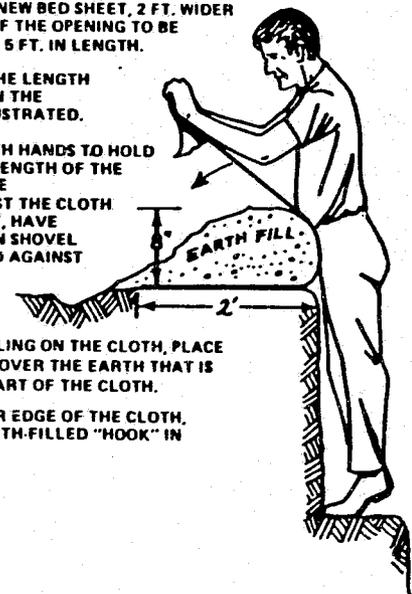


TOOLS AND MATERIALS

1. DOORS (INTERIOR SOLID OR HOLLOW-CORE) - 1 FULL SIZE (32" MINIMUM WIDTH) FOR EACH PERSON. IF DOORS MEASURE LESS THAN 32" IN WIDTH, USE A COMBINATION OF DOORS TO PROVIDE THE MINIMUM WIDTH PER PERSON. IF DOORS ARE HOLLOW CORE-USE TWO LAYERS.
2. PICK AND/OR MATTOCK.
3. LONG-HANDLED SHOVELS AND SQUARE BLADED SHOVEL.
4. RAINPROOFING MATERIAL - (e.g., PLASTIC SHEETING, CANVAS, PLASTIC TABLE COVERS, ETC.) AT LEAST 25 SQUARE FEET PER PERSON PLUS 2 PIECES ABOUT 6 FT. by 6 FT. FOR USE AS CANOPIES.
5. ONE BEDSHEET OR THE EQUIVALENT OF 50 SQ. FT. OF CLOTH OR PLASTIC PER PERSON TO LINE TRENCH AND MAKE EARTH-FILLED ROLLS.
6. TWO PILLOWCASES PER PERSON TO USE AS SANDBAGS.
7. STRING OR CORD TO TIE THE CANOPIES AND SANDBAGS.
8. KNIFE.
9. SEVERAL BOARDS ABOUT 3 FEET LONG.
10. MEASURING TAPE AND/OR RULER.
11. WORK GLOVES FOR EACH WORKER.
12. HAMMER AND HAND SAW.

HOW TO MAKE AN EARTH ROLL

1. SELECT A PIECE OF CLOTH OR PLASTIC AT LEAST AS STRONG AS A NEW BED SHEET, 2 FT. WIDER THAN THE SIDE OF THE OPENING TO BE PROTECTED, AND 5 FT. IN LENGTH.
2. PLACE 2 FT. OF THE LENGTH OF THE CLOTH ON THE GROUND, AS ILLUSTRATED.
3. WHILE USING BOTH HANDS TO HOLD UP 3 FT. OF THE LENGTH OF THE CLOTH AND WHILE PRESSING AGAINST THE CLOTH WITH YOUR BODY, HAVE ANOTHER PERSON SHOVEL EARTH ONTO AND AGAINST THE CLOTH.
4. WHILE STILL PULLING ON THE CLOTH, PLACE THE UPPER PART OVER THE EARTH THAT IS ON THE LOWER PART OF THE CLOTH.
5. COVER THE UPPER EDGE OF THE CLOTH, FORMING AN EARTH-FILLED "HOOK" IN THIS EDGE.



EXPEDIENT FALLOUT SHELTER

TILT-UP DOORS AND EARTH

GENERAL INFORMATION

READ AND STUDY ALL INSTRUCTIONS BEFORE STARTING TO BUILD. THE LOCATION SELECTED FOR THIS SHELTER SHOULD BE LEVEL OR GENTLY SLOPING DOWN AND AWAY FROM THE MASONRY WALL. A THREE PERSON SHELTER CAN BE CONSTRUCTED BY THREE PEOPLE WORKING A TOTAL OF 6 HOURS EACH.

STEP 1

LAY OUT THE TRENCH AND EARTH NOTCH WIDTHS, AS DIMENSIONED ON THE SECTION BELOW, ADJACENT TO A MASONRY WALL. DETERMINE THE LENGTH OF TRENCH AND NOTCH BY ALLOWING ONE DOOR WIDTH OF LENGTH PER PERSON TO BE SHELTERED.

STEP 2

EXCAVATE TRENCH AND EARTH NOTCH. PLACE EXCAVATED EARTH OUTSIDE SHELTER LIMITS FOR LATER USE.

STEP 3

REMOVE DOOR KNOBS FROM ALL DOORS. PLACE DOUBLE LAYER OF DOORS IN NOTCH AND AGAINST WALL AS SHOWN IN SKETCH. NAIL 1" X 8" BOARD TO DOOR EDGES AT ENTRANCE TO SERVE AS EARTH STOP. AFTER ATTACHING PLASTIC ENTRANCE COVER AS SHOWN, OR BUILD RETAINING WALL OF SANDBAGS IN LIEU OF BOARD. PLACE ONE DOOR ON EDGE LENGTHWISE AS THE END CLOSURE.

STEP 4

PLACE ONE END OF THE ROLLED UP WATERPROOFING MATERIAL UNDER THE TOP EDGE OF THE DOORS BEFORE EARTH FILL IS PLACED. BEGIN PLACEMENT OF EARTH FILL ON DOORS. COVER THE EARTH FILL WITH WATERPROOFING MATERIAL, SECURING IT WITH EARTH THAT TOP AND BOTTOM TO PREVENT IT FROM BLOWING AWAY.

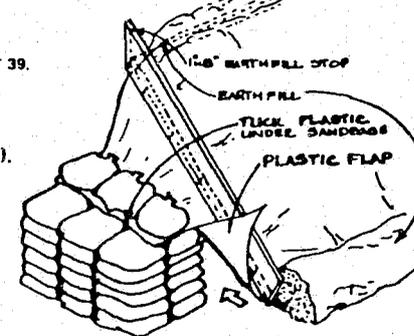
STEP 5

CONSTRUCT ENTRANCE - FILL "SANDBAG PILLOWCASES" WITH EARTH TAKEN FROM THE TRENCH AND STACK TO DIMENSIONS SHOWN AFTER DOORS ARE IN PLACE. PLASTIC OR POLYETHYLENE (WATERPROOFING MATERIAL) ENTRANCE COVER SHOULD BE IN PLACE BEFORE EARTH FILL IS PUT ON THE DOORS.

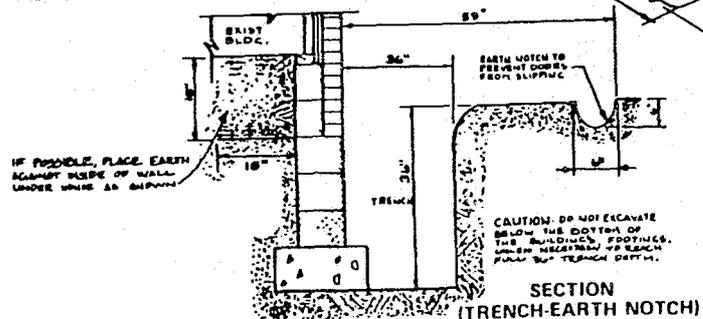
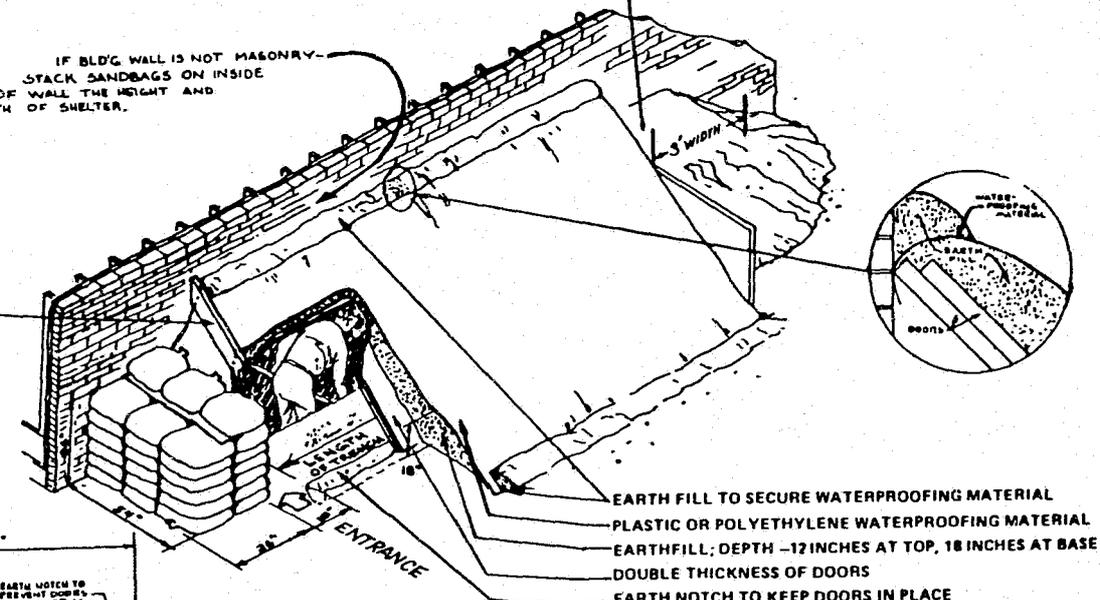
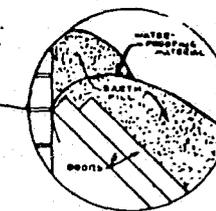
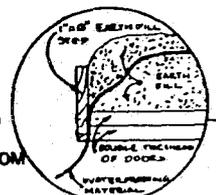
TOOLS AND MATERIALS

1. TOOLS: PICK, SHOVEL, HAMMER, SAW, SCREWDRIVER, KNIFE, YARDSTICK.
2. SANDBAGS PILLOWCASES OR PLASTIC GARBAGE BAGS - AT LEAST 39.
3. LUMBER: 1" X 8" PIECE 7' LONG (OR 20 MORE SANDBAGS) FOR EARTH-FILL STOP AT ENTRANCE EDGE OF DOORS.
4. ROPE OR CORD TO TIE SAND BAGS.
5. DOORS: TWO LAYERS FOR LENGTH OF SHELTER PLUS ONE FOR END CLOSURE. (EXAMPLE: 7 DOORS FOR 3 PERSON SHELTER).
6. NAILS: 8 PENNY (2 1/2" LONG), ABOUT 10 TO NAIL EARTH STOP TO DOOR EDGES AT ENTRANCE.
7. PLASTIC OR POLYETHYLENE (WATERPROOFING MATERIAL) TO COVER DOUBLE LAYER OF DOORS PLUS ENTRANCE.
8. WORK GLOVES FOR EACH WORKER.

ENTRY DETAIL



IF BLD'G WALL IS NOT MASONRY - STACK SANDBAGS ON INSIDE OF WALL THE HEIGHT AND WIDTH OF SHELTER.



EXPEDIENT FALLOUT SHELTER

CAR-OVER-TRENCH

GENERAL INFORMATION: READ AND STUDY ALL INSTRUCTIONS BEFORE BEGINNING. IF A BIG STATION WAGON IS USED, SHELTER CAN BE PROVIDED FOR UP TO 6 PERSONS, LESS IF CAR IS SMALLER. THIS SHELTER CAN NOT BE BUILT IN AREAS WHERE GROUNDWATER OR ROCK IS CLOSE TO THE GROUND SURFACE. SHELTER CAN BE CONSTRUCTED BY TWO PERSONS WORKING A TOTAL OF ABOUT 8 HOURS EACH.

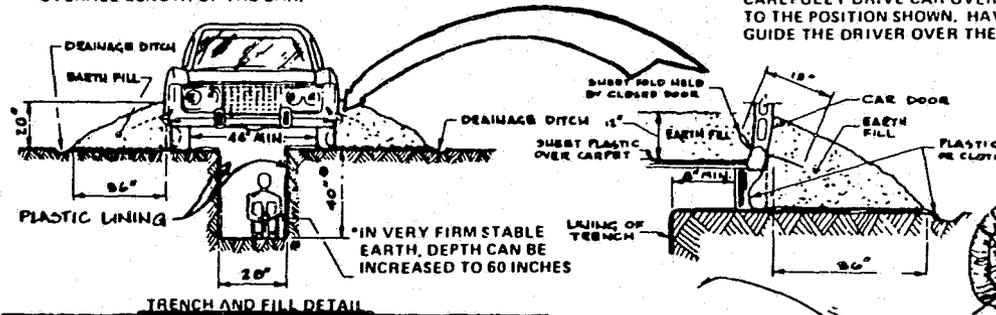
STEP 1

SELECT A LEVEL SITE. DIG A SMALL TEST HOLE ABOUT 10 INCHES DEEP. REMOVE ALL LOOSE EARTH FROM THE BOTTOM. PUSH THE POINT OF YOUR THUMB INTO THE UNDISTURBED EARTH IN THE BOTTOM OF HOLE. IF YOU CANNOT PUSH YOUR THUMB DEEPER THAN ONE INCH, THE EARTH SHOULD BE SUITABLE FOR THIS SHELTER. IF THUMB PENETRATES DEEPER THAN ONE INCH, MOVE TO ANOTHER SITE AND REPEAT TEST. BECAUSE EARTH AT THE TESTED SITE IS NOT SUITABLE

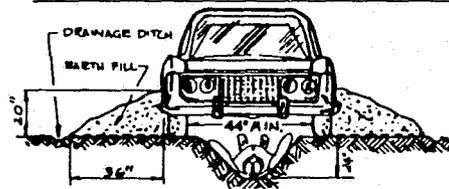


STEP 2

STAKE OUT DIMENSIONS SHOWN FOR TRENCH AND ENTRYWAY. NOTE THAT THE LENGTH OF TRENCH MUST BE 4 FEET LESS THAN THE OVERALL LENGTH OF THE CAR.



ALTERNATIVE METHOD FOR SANDY SOILS



A "SIT IN" SHELTER CANNOT BE DUG IN BEACH TYPE SAND, BECAUSE THE TRENCH WALLS WILL CAVE IN. HOWEVER, A "LIE IN" TRENCH CAN BE DUG AS SHOWN ABOVE AND STILL PROVIDE GOOD FALLOUT PROTECTION. ALL OTHER STEPS REMAIN THE SAME.

TOOLS AND MATERIALS

1. CAR, CAUTION: CAR MUST HAVE AT LEAST 44 INCHES OF WIDTH BETWEEN INSIDE WALLS OF TIRES.
2. PICK AND LONG-HANDLED SHOVEL.
3. PLASTIC SHEETING AND/OR CLOTH APPROX. 10-12 BEDSHEETS OR EQUIV. AREA OF OTHER MATERIALS WILL BE REQUIRED.
4. SANDBAGS, SACKS OR PILLOWCASES, 9 REQUIRED.
5. 50 FEET OF STRONG STRING OR CORD AND A KNIFE.
6. YARDSTICK OR MEASURING TAPE
7. WORK GLOVES FOR EACH WORKER.
8. STAKES, 4 REQUIRED.

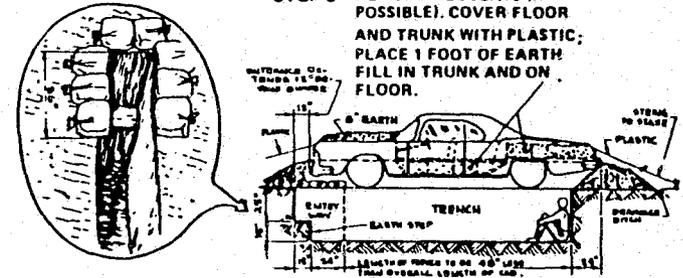
STEP 3

EXCAVATE TRENCH AND ENTRYWAY. AS TRENCH DEEPENS, REPEAT EARTH STABILITY TEST ON BOTTOM OF TRENCH. IF EARTH BECOMES "SOFTER" DO NOT DEEPEN TRENCH. PLACE EXCAVATED EARTH AWAY FROM TRENCH SO THAT CAR CAN BE DRIVEN OVER TRENCH.

STEP 4

LINE TRENCH WITH PLASTIC OR CLOTH. LINING SHOULD TOUCH FLOOR OF TRENCH AND EXTEND OUTWARD TO THE LIMIT OF EARTH FILL. AFTER TRENCH IS LINED, CAREFULLY DRIVE CAR OVER TRENCH TO THE POSITION SHOWN. HAVE SOMEONE GUIDE THE DRIVER OVER THE TRENCH.

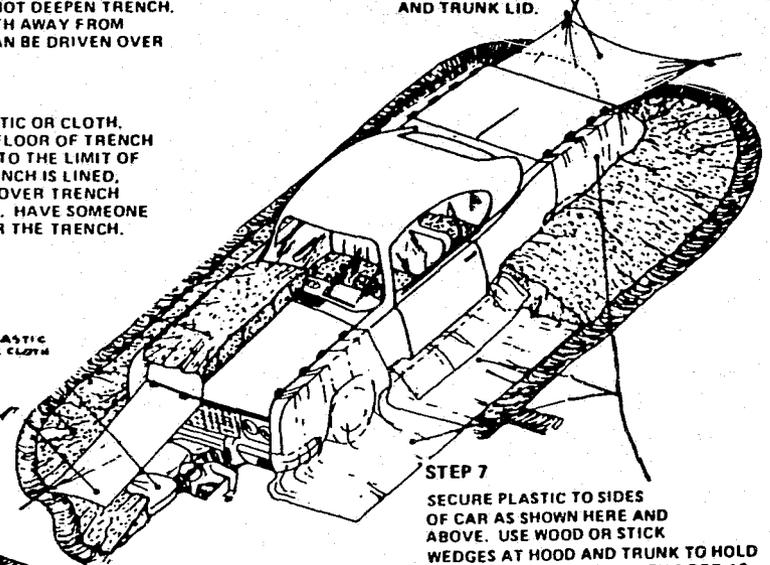
- ### STEP 5
- REMOVE ALL SEATS (IF POSSIBLE). COVER FLOOR AND TRUNK WITH PLASTIC; PLACE 1 FOOT OF EARTH FILL IN TRUNK AND ON FLOOR.



TRENCH AND ENTRYWAY DETAIL

STEP 6

PLACE PLASTIC COVER OVER ENTRANCE AND VENTILATION OPENINGS. SECURE UNDER HOOD AND TRUNK LID.



STEP 7

SECURE PLASTIC TO SIDES OF CAR AS SHOWN HERE AND ABOVE. USE WOOD OR STICK WEDGES AT HOOD AND TRUNK TO HOLD PLASTIC. ALSO SECURE WITH DOOR AS SHOWN ABOVE.

STEP 8

BANK EARTH AROUND CAR TO HEIGHT OF 20 INCHES

STEP 9

PLACE SANDBAGS AROUND ENTRANCE AND BANK EARTH AROUND THEM.

STEP 10

PLACE 8 INCHES OF EARTH ON CAR HOOD

STEP 11

DIG SHALLOW DRAINAGE DITCH AROUND FILL.

SANDBAG TO REDUCE AIRFLOW WHEN REQUIRED DURING COLD WEATHER

EXPEDIENT FALLOUT SHELTER

ABOVE-GROUND DOOR-COVERED SHELTER

GENERAL INFORMATION

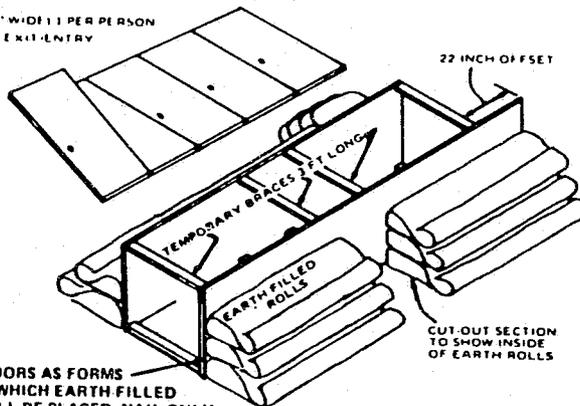
THE ABOVE GROUND DOOR COVERED SHELTER IS DESIGNED FOR AREAS WHERE BELOW GROUND SHELTERS ARE IMPRACTICAL BECAUSE THE GROUNDWATER TABLE OR BEDROCK IS CLOSE TO THE GROUND SURFACE. THIS SHELTER CAN BE BUILT BY FOUR PERSONS WORKING A TOTAL OF 10 HOURS EACH

READ AND STUDY ALL INSTRUCTIONS BEFORE STARTING TO BUILD IF DOOR WIDTHS MEASURE LESS THAN 32 INCHES, USE A COMBINATION OF DOORS TO PROVIDE A MINIMUM OF 32 INCHES OF DOOR WIDTH PER PERSON

STEP 1

SELECT A SHELTER LOCATION WHERE THERE IS LITTLE OR NO CHANCE OF RAINWATER PONDING ON THE GROUND SURFACE. STAKE OUT SHELTER, REMOVE DOOR KNOBS. ALLOW 1 DOOR FOR EACH PERSON PLUS 1 DOOR FOR ENTRY/EXIT AT ENL. LIMIT IS 8 PERSONS PER SHELTER.

THIORS (32" WIDE) PER PERSON PLUS 1 FOR EXIT-ENTRY

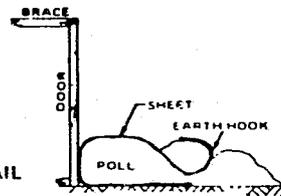


STEP 2

SET UP DOORS AS FORMS AROUND WHICH EARTH FILLED ROLLS WILL BE PLACED. NAIL ONLY TOP BRACES. NAILS MUST BE REMOVED LATER. BRACE ALL CORNERS, CENTER, TOP AND BOTTOM OF EACH DOOR.

STEP 3

BEGIN TO PLACE EARTH-FILLED ROLLS AGAINST DOOR FORMS. TO FORM EARTH ROLLS, SEE EARTH-FILLED ROLL DETAIL BOTTOM OF PAGE.



EARTH FILLED ROLL DETAIL

1. PLACE 2 FT OF SHEET ON GROUND AND TEMPORARILY DRAPE REMAINDER OF SHEET ON DOOR
2. PLACE EARTH ON SHEET - SHAPE AS SHOWN.
3. FOLD SHEET OVER SHAPED EARTH.
4. PLACE EARTH ONTO SHEET AT NARROW TRENCH.
5. FOLD SHEET TO FORM EARTH HOOK. HOOK WILL ANCHOR SHEET.
6. REPEAT TO FORM NEXT EARTH-FILLED ROLL.

STEP 4

DIG 14" DEEP, 36" WIDE TRENCH INSIDE SHELTER. EARTH CAN BE USED TO FORM SIDE EARTH FILLED ROLLS. TRENCH CAN BE MADE UP TO 3 FEET DEEP IF CONDITIONS PERMIT

STEP 5

MOUND EARTH AGAINST THE EARTH-FILLED ROLLS AS SHOWN. CONTINUE PLACING EARTH AND SHEETS TO FORM EARTH-FILLED ROLLS.

STEP 6

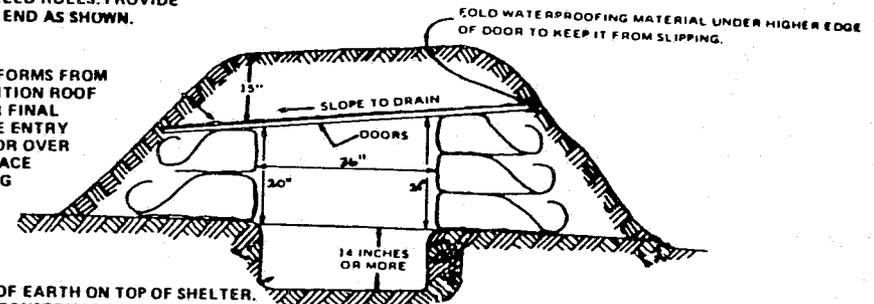
KEEP HEIGHT OF EARTH ABOUT EQUAL ON BOTH SIDEWALLS AS ROLLS ARE FORMED. AFTER SIDEWALLS HAVE REACHED PLANNED HEIGHT, REMOVE BRACES AND DOOR FORMS. USE SAME DOOR FORMS TO CONSTRUCT ENDWALLS WITH EARTH FILLED ROLLS. PROVIDE EXIT/ENTRY AT END AS SHOWN.

STEP 7

REMOVE DOOR FORMS FROM ENDWALLS. POSITION ROOF DOORS IN THEIR FINAL POSITION. PLACE ENTRY FRAME FOR DOOR OVER ENTRY/EXIT. PLACE WATERPROOFING MATERIAL ON DOORS.

STEP 8

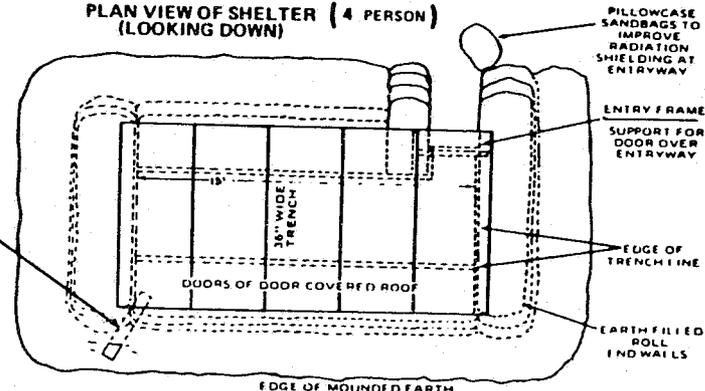
PLACE 15 INCHES OF EARTH ON TOP OF SHELTER. IN HOT WEATHER CONSTRUCT A SHELTER VENTILATION AIR PUMP. SEE AIR PUMP DETAILS ON LAST PAGE.



NOTE: IF TRENCHING IS IMPRACTICAL HEIGHTEN WALLS BY USING ADDITIONAL EARTH ROLLS.

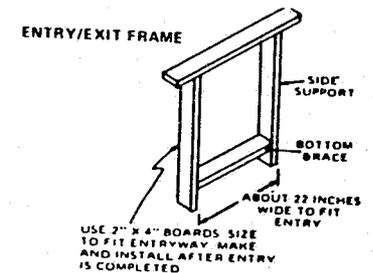
PLAN VIEW OF SHELTER (4 PERSON)

(LOOKING DOWN)



TOOLS AND MATERIALS

1. Doors as indicated.
2. Pick or Mattock and Shovel.
3. Two Buckets or Large Cans to Carry Earth.
4. Tape Measure, Yardstick or Ruler.
5. Saw, Axe or Hatchet.
6. Hammer and at least 20 Nails - 2 1/2" long.
7. At least 4 Double Bed Sheets for Each Person to be Sheltered.
8. Pillowcases and Rainproofing Materials such as Plastic or Polyethylene.
9. Work Gloves for Each Worker.
10. Lumber for use as Temporary Braces and for Entry/Exit Frame.



EXPEDIENT FALLOUT SHELTER

CRIB-WALLED SHELTER (ABOVE GROUND)

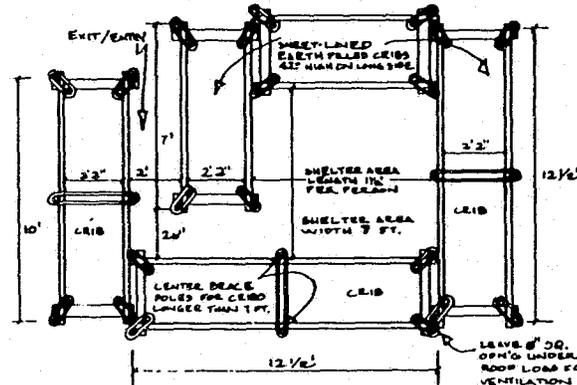
GENERAL INFORMATION

THIS SHELTER CAN BE CONSTRUCTED IN AREAS WHERE THERE IS AN ABUNDANCE OF SMALL TREES. THE APPROXIMATE AMOUNT OF TIME AND EFFORT REQUIRED TO BUILD THIS SHELTER (CAP FOR 5-15 PERSONS WORKING A TOTAL OF 18 HOURS EACH. READ AND STUDY ALL INSTRUCTIONS BEFORE STARTING TO BUILD.

TOOLS & MATERIALS (FOR 5 PERSON CAPACITY)

- 1 SAW AND/OR AXE TO CUT TREE POLES.
- 2 SHOVELS (ONE FOR EACH TWO WORKERS)
- 3 LARGE CANS, BUCKETS AND/OR POTS WITH BAIL HANDLES TO CARRY EARTH
- 4 KNIFE OR SCISSORS
- 5 AT LEAST 300 FT. OF STRONG WIRE OR 300 FT. OF ROPE, OR 8 DOUBLE BED SHEETS (TO TEAR INTO 1 FOOT WIDE STRIPS, TO SERVE AS ROPE WHEN SLIGHTLY TWISTED) FOR EACH ADDITIONAL PERSON ABOVE 5. 20 FT. OF ROPE, OR HALF A DOUBLE BED SHEET IS NEEDED.
- 6 AT LEAST 30 SQUARE YARDS, PLUS 2 SQUARE YARDS PER PERSON ABOVE 5, OF RAINFOOD ROOF MATERIALS (SHOWER CURTAINS, PLASTIC TABLE CLOTHS, PLASTIC MATRESS COVERS, ETC.)
- 7 15 DOUBLE BED SHEETS FOR AN EQUAL AREA OF CLOTH OR PLASTIC AT LEAST AS STIPED AS BED SHEETS. 7 ADDITIONAL SHEETS PER PERSON ABOVE 5.
- 8 GLOVES TO PROTECT HANDS FROM INJURY AND BLISTERS. 1 OR 2 EACH WORKER
- 9 15 POUNDS OF NEWSPAPER FOR ROOF COVER.

FLOOR PLAN



APPROX. NUMBER OF POLES REQ'D.

POLES	12'6" LONG	x	3" DIAMETER	
28				
14	10'	x	3"	
20	9'	x	4"	
10	5'	x	4"	> ROOF
28	7'	x	3"	
60	42"	x	3"	
46	42"	x	2 1/2"	"CORNER BRACES"

STEP 1

SELECT A SHELTER LOCATION WHERE THERE IS LITTLE OR NO CHANCE OF THE GROUND BEING COVERED WITH WATER IF IT RAINS HARD. STAKE OUT THE ENTIRE SHELTER, LOCATING THE 5 REQUIRED CRIBS.

STEP 2

CUT POLES HAVING TOPS WITH DIAMETERS (NOT INCLUDING BARK) NO SMALLER THAN THE DIAMETERS SPECIFIED ON THE ILLUSTRATION FOR EACH TYPE POLE.

STEP 3

SORT THE POLES BY SIZE (LENGTH AND DIAMETER) AND LAY ALL POLES OF EACH SIZE TOGETHER NEAR THE SHELTER SITE. CUT OFF ALL LIMBS SO THAT POLES ARE SMOOTH. DETERMINE IF ENOUGH LONG SINGLE POLES CAN BE OBTAINED FOR THE SIDE-POLES OF THE 2 CRIBS ON THE LONG SIDES OF THE SHELTER. USUALLY, IF THE SHELTER IS TO BE BUILT FOR MORE THAN 7 PERSONS (15 1/2 FOOT POLES REQUIRED), IT IS BETTER TO USE 2 CRIBS PLACED END-TO-END INSTEAD OF ONE CRIB THAT REQUIRES THE LONGER POLES.

STEP 4

- PLACE TWO SIDE-POLES ON THE GROUND AND PUT 2 OF THE 3 1/2 FT. END-POLES ON TOP OF THE SIDE-POLES SO THAT THE ENDS OF ALL 4 POLES STICK OUT 4" BEYOND WHERE THEY CROSS.
- STACK PAIRS OF END-POLES AND SIDE-POLES TO MAKE THE CRIB (WHILE KEEPING THE CRIB VERTICAL) TO A HEIGHT OF 42". TO KEEP THE TOP-POLES OF THE CRIB LEVEL, ALTERNATE THE DIRECTION OF THE BIG AND SMALL ENDS OF THE POLES.
- PLACE A PAIR OF VERTICAL CORNER-BRACE-POLES IN EACH OF THE 4 CORNERS OF THE CRIB. BRACE-POLES SHOULD BE CUT OFF AT THE SAME HEIGHT AS THE UPPER SIDES OF THE UPPER-MOST HORIZONTAL POLES TO WHICH THEY WILL BE TIED.
- TIE THE PAIR OF BRACE-POLES TOGETHER (AT BOTTOM, MIDDLE, AND TOP) USING 3-FT. LENGTHS OF WIRE, ROPE, OR TWISTED 1-FT. WIDE STRIPS OF CLOTH.
- IF THE CRIB IS MORE THAN 7 FT. LONG, PLACE A PAIR OF CENTER BRACE-POLES IN POSITION, ONE AGAINST THE OUTSIDE OF EACH LONG CRIB. TIE THE PAIR OF BRACE-POLES IN POSITION, ONE AGAINST THE OUTSIDE OF EACH LONG CRIB. TIE THE PAIR OF BRACE-POLES TOGETHER PERMANENTLY, JUST ABOVE THE GROUND. TEMPORARILY TIE EACH OF THEM TO THE UPPERMOST SIDE-POLE.
- LINE THE CRIB WITH CLOTH (OR PLASTIC FILM), MAKING SURE AT LEAST A FEW INCHES OF LINING HANGS OVER THE UPPERMOST POLES. TIE THE UPPER EDGE OF THE LINING TO THE UPPERMOST WALL-POLE EVERY 2 FT. AFTER FIRST CUTTING A SMALL HOLE THROUGH WHICH TO THREAD THE TIE-STRING OR A 4" WIDE STRIP OF CLOTH.
- PERMANENTLY TIE TOGETHER THE CENTER BRACE-POLES USING HORIZONTAL TIES AT CENTER AND TOP.
- FILL THE LINED CRIB WITH EARTH FROM WHICH ALL GRASS, ROOTS, ETC., HAVE BEEN REMOVED.

STEP 5

PUT THE 9 FT. ROOF POLES IN PLACE. PLACE THE STRONGEST POLES AT THE ENTRYWAY. THEN PLACE THE SHORTER (5 TO 6 FT.) POLES OVER THE ENTRYWAY.

STEP 6

TO KEEP EARTH FROM FALLING BETWEEN THE CRACKS OF THE ROOF PUT STICKS IN THE LARGER CRACKS AND COVER THE ROOF WITH TWO OR MORE THICKNESSES OF NEWSPAPER OR OTHER MATERIAL.

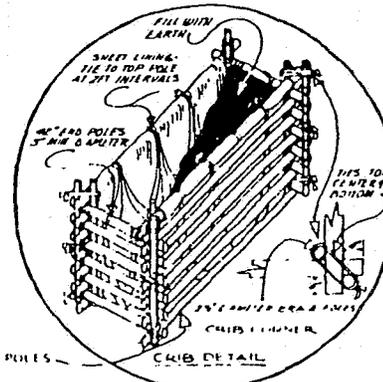
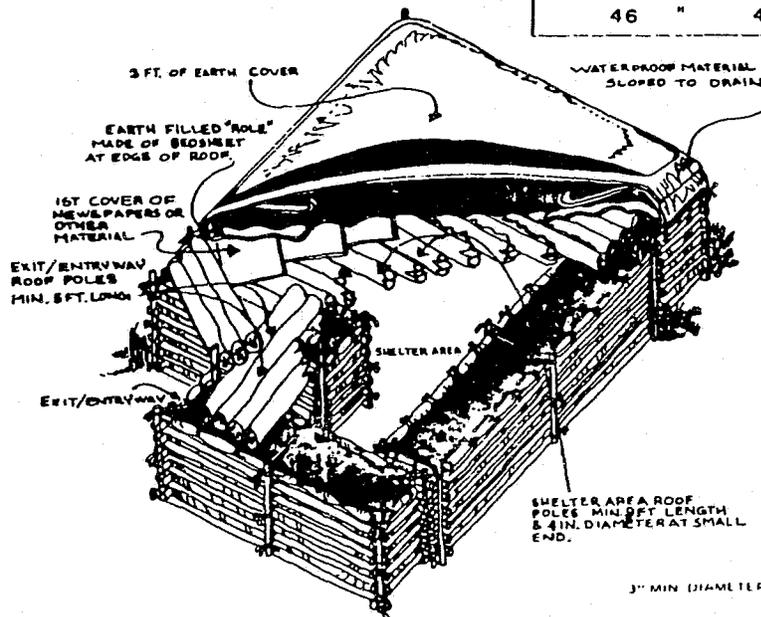
STEP 7

PUT EARTH COVER ON THE ROOF TO THE DEPTHS SHOWN ON THE ILLUSTRATIONS. BE SURE TO SLOPE THE MOUND ON THE SURFACE DOWNWARD TOWARD THE EDGES SO THE ROOF WILL SHED WATER. USE RE-SHEETS TO FORM "EARTH ROLLS" AT THE ROOF EDGES. THE SHEETS WILL SERVE AS FORMS TO HOLD EARTH IN PLACE. CLUMPS OF TURF CAN BE SUBSTITUTED AT ROOF EDGES FOR THE RE-SHEETS. PLACE THE WATER-PROOFING MATERIAL BEFORE PLACING THE FINAL 6 INCHES OF EARTH COVER.

STEP 8

IF THE WEATHER IS HOT, BUILD AND INSTALL A SHELTER VENTILATING MOUND. SEE SEPARATE INSTRUCTIONS ON VENTILATION FOR EXCELLENT SHEETINGS.

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EXPEDIENT FALLOUT SHELTER

ABOVE-GROUND RIDGE-POLE

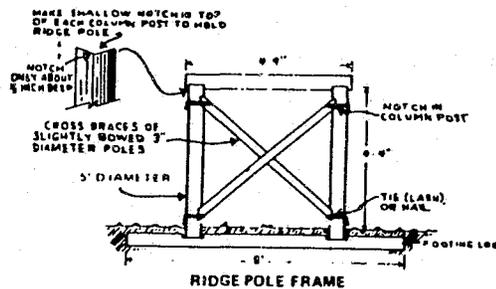
GENERAL INFORMATION

THIS SHELTER IS DESIGNED FOR AREAS WHERE THERE IS AN ABUNDANCE OF SMALL TREES AND BELOWGROUND SHELTERS ARE IMPRACTICAL. THE SHELTER IS PERSON CAPACITY CAN BE BUILT BY 5 PEOPLE WORKING A TOTAL OF 18 HOURS EACH. READ AND STUDY ALL INSTRUCTIONS BEFORE BEGINNING.

3 PERSON SHELTER IS ILLUSTRATED FOR EACH PERSON ABOVE 5, MAKE RIDGE POLE 1 FT LONGER. FOR 6 TO 8 PERSONS, USE 3 COLUMN POSTS. 10 TO 14 PERSONS, USE 4 COLUMNS.

STEP 1

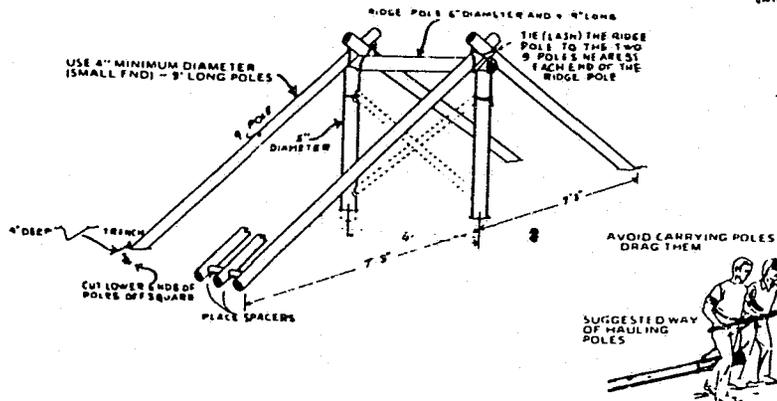
CONSTRUCT RIDGE POLE FRAME



SIDE VIEW SHOWING CROSS BRACES OF COLUMN POSTS (IF LARGE NAILS ARE AVAILABLE, SIMPLY NAIL TWO SIMILARLY SLOPING CROSS BRACES ON OPPOSITE SIDES OF THE COLUMN POSTS). FOR SHELTERS WITH THREE OR MORE COLUMN POSTS USE ONLY ONE BRACE BETWEEN EACH PAIR OF POSTS AND SLOPE BRACES ALTERNATELY IN DIFFERENT DIRECTION.

STEP 2

DIG 4" DEEP "V" TRENCH IN EARTH AND PLACE 9" ROOF POLES IN TRENCH AND ON RIDGE POLE FRAME AS SHOWN.



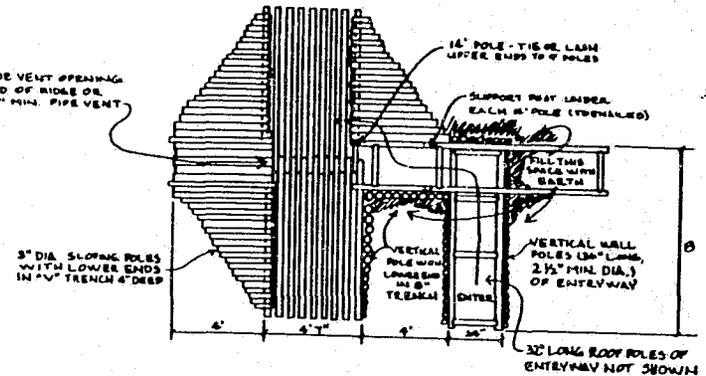
TOOLS AND MATERIALS

- SAW TO CUT GREEN POLES (BOW OR CROSSCUT SAW PREFERRED) AND AN AXE.
- SHOVEL (ONE SHOVEL FOR EACH TWO WORKERS).
- LARGE BUCKETS, CANS, OR POTS WITH BAIL HANDLES TO CARRY EARTH.
- KNIFE.
- THREE DOUBLE BED SHEETS FOR THE ILLUSTRATED 3 PERSON SHELTER, OR AN EQUIVALENT AREA OF EQUALLY STRONG FABRIC OR PLASTIC. ONE ADDITIONAL AVAILABLE. USE STICKS AND SMALL POLES PLACED ACROSS THE 9 FT SIDE POLES AND COVER WITH GRASS OR LEAVES TO FILL IN THE SPACES BETWEEN THE POLES.
- HAMMER AND AT LEAST 80 NAILS (3 IN. OR LONGER), OR AT LEAST 200 FT. OF ROPE OR STRONG WIRE, OR TWO ADDITIONAL BED SHEETS (OR OTHER FABRIC EQUALLY STRONG) FOR EACH PERSON TO BE SHELTERED. TO MAKE INTO FOOT WIDE STRIPS TO SERVE AS "ROPE" WHEN TWISTED.
- AT LEAST 7 SQUARE YARDS PER PERSON OF RAIN-PROOFING MATERIAL (SHOWER CURTAINS, PLASTIC TABLE CLOTHS, PLASTIC MATRESS COVERS, ETC) - ESSENTIAL IN RAINY COLD WEATHER.
- GLOVES TO PREVENT INJURY AND BLISTERS TO HANDS.

APPROX. NUMBER OF POLES REQ'D			
20 POLES	9' LONG	x 4" DIA.	
1	49'	x 6"	
2	4'4"	x 5"	
2	14'	x 4"	
1	6'	x 3"	CROSS BRACES
2	8'	x 6"	FTG POLE
SHELTER SIDES			
40 POLES	3'-46"	x 2 1/2"	
24	1'-46"	x 2 1/2"	
120	2'-6"	x 3"	
ENTRY			
4	8'	x 2 1/2"	
13	20"	x 2 1/2"	
48	32"	x 2 1/2"	ROOF
64	36"	x 2 1/2"	SIDES

STEP 3

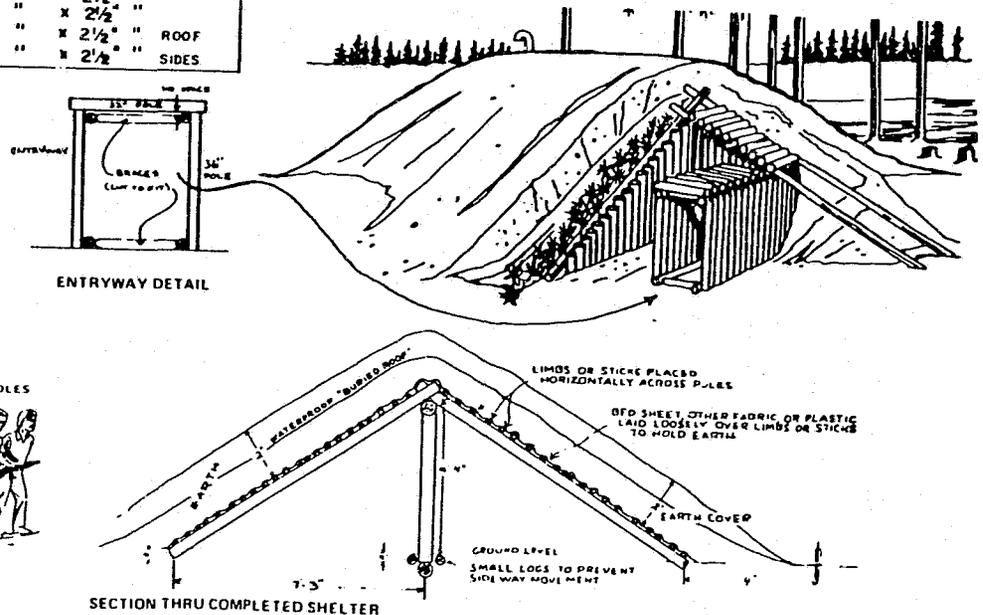
CONSTRUCT ENTRYWAY



VIEW LOOKING DOWN ON SHELTER WITH ALL POLES IN PLACE EXCEPT THE ROOF POLES OF THE ENTRYWAY

STEP 4

PLACE LIMBS OR STICKS AND BEDSHEETS ACROSS ROOF POLES. PLACE EARTH FILL AND WATERPROOFING MATERIALS AS ILLUSTRATED.



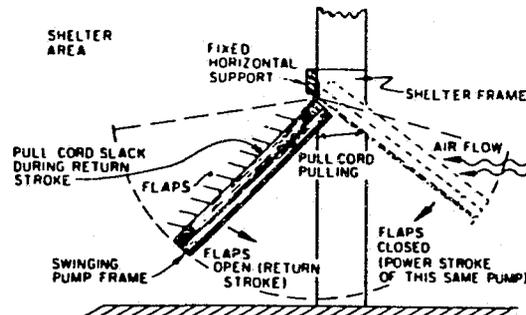
EXPEDIENT FALLOUT SHELTER

AIR VENTILATION PUMP—EMERGENCY LAMP—BUCKET STOVE

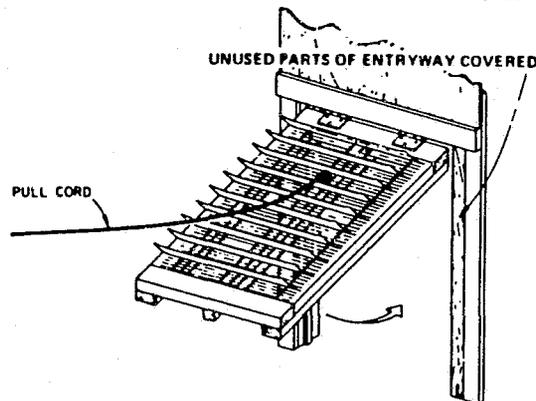
ALL EXPEDIENT SHELTERS ARE DESIGNED TO PROVIDE FOR SOME NATURAL VENTILATION. IN VERY HOT WEATHER, ADDITIONAL VENTILATION MAY BE REQUIRED TO PROVIDE A LIVABLE TEMPERATURE. CONSTRUCTION OF AN AIR PUMP THAT CAN PROVIDE ADDITIONAL VENTILATION IS ILLUSTRATED BELOW.

STUDY ALL INSTRUCTIONS BEFORE STARTING CONSTRUCTION

STEP 1 AIR PUMP



THE AIR PUMP OPERATES BY BEING SWUNG LIKE A PENDULUM. IT IS HINGED AT THE TOP OF ITS SWINGING FRAME. IT IS SWUNG BY PULLING AN ATTACHED CORD. THE FLAPS ARE FREE TO ALSO SWING AND WHEN THEY ARE IN THE CLOSED POSITION, AIR IS PUSHED THROUGH THE OPENING THAT THE PUMP IS ATTACHED TO.



TO OBTAIN MAXIMUM EFFICIENCY AND MOVE THE LARGEST AMOUNT OF AIR, THE UNUSED PORTIONS OF THE ENTRYWAY SHOULD BE COVERED WITH WOOD, PLASTIC, CLOTH, STIFF PAPER OR SIMILAR MATERIALS.

STEP 2 MATERIALS AND TOOLS NEEDED TO CONSTRUCT AN AIR PUMP

(MATERIALS SIZED FOR A 36-INCH BY 29-INCH PUMP) LUMBER SIZES CAN BE ALTERED, DEPENDING ON AVAILABILITY.

A. LUMBER

SIZE	QUANTITY	SIZE	QUANTITY
1" X 2" X 36"	2	1" X 2" X 32"	2
1" X 1" X 36"	1	1" X 1" X 32"	1
1" X 2" X 29"	2	1" X 4" X 36"	1

B. ONE PAIR ORDINARY DOOR OR CABINET BUTT HINGES, OR METAL STRAP HINGES, OR IMPROVISED HINGES MADE OF LEATHER, WOVEN STRAPS, CORDS OR FOUR HOOK & EYE SCREWS WHICH CAN BE JOINED TO FORM TWO HINGES.

C. 24 NAILS ABOUT 2" LONG, PLUS SCREWS FOR HINGES.

D. POLYETHYLENE FILM, 3 TO 4 MILS THICK, OR PLASTIC DROP-CLOTH, OR RAINCOAT-TYPE FABRIC, OR STRONG HEAVY PAPER - 10 RECTANGULAR-SHAPED PIECES, 30" X 5 1/2".

E. 30' OF SMOOTH, STRAIGHT WIRE FOR USE AS FLAP PIVOT WIRES - (ABOUT AS THICK AS COAT-HANGER WIRE) OR CUT FROM 10 WIRE COAT HANGERS, OR 35' OF NYLON STRING (COAT-HANGER WIRE THICKNESS).

F. 30 SMALL STAPLES, OR SMALL NAILS, OR 60 TACKS TO ATTACH FLAP PIVOT WIRES TO WOOD FRAME.

G. 30' OF 1/2" TO 1" WIDE PRESSURE SENSITIVE WATERPROOF TAPE THAT DOES NOT STRETCH, OR USE NEEDLE AND THREAD TO SEW HEM TUNNELS TO THE FLAPS.

H. FOR FLAP STOPS, 150 FT OF LIGHT STRING, STRONG THREAD, OR THIN SMOOTH WIRE. 90 TACKS OR SMALL NAILS TO ATTACH FLAP STOPS TO THE WOOD FRAME, OR FLAP STOPS CAN BE TIED TO THE FRAME.

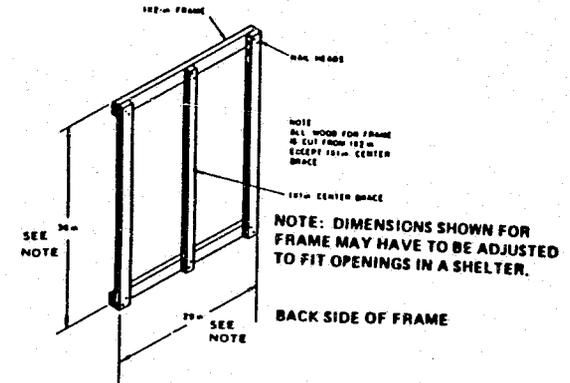
I. 10 FEET OF CORD FOR THE PULL CORD.

J. DESIRABLE TOOLS: HAMMER, SAW, WIRECUTTER-PLIERS, SCREWDRIVER, SMALL DRILL, SCISSORS, KNIFE, YARDSTICK, AND PENCIL.

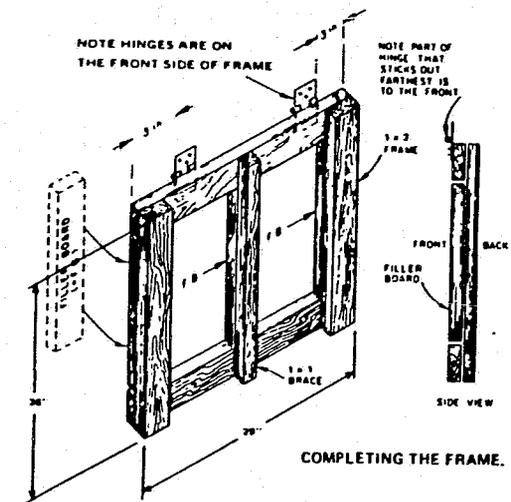
* Items must be sized or adjusted to fit opening into which airpump is to be placed.

STEP 3 HOW TO CONSTRUCT THE AIR PUMP

A. CUT LUMBER AND ASSEMBLE FRAME AS SHOWN

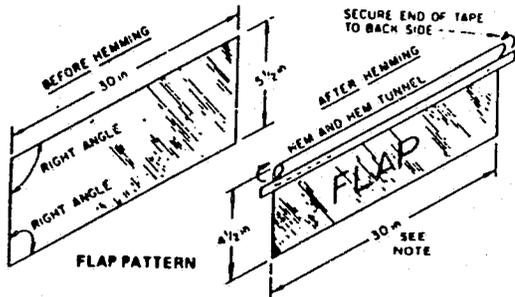


B. COMPLETE FRAME AND ATTACH HINGES. IF DRILL IS NOT AVAILABLE TO DRILL SCREW HOLES TO ATTACH HINGES, USE A NAIL TO MAKE THE HOLES.



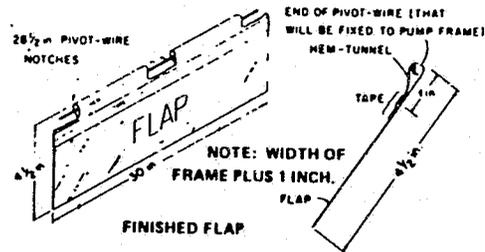
HOW TO CONSTRUCT THE AIR PUMP (CONT'D)

- C. CUT 10 RECTANGULAR STRIPS 30" LONG BY 5 1/2" WIDE FOR USE AS FLAPS. HEM FLAPS AS SHOWN. USE PRESSURE SENSITIVE TAPE OR SEW HEM SHUT TO FORM HEM TUNNEL.

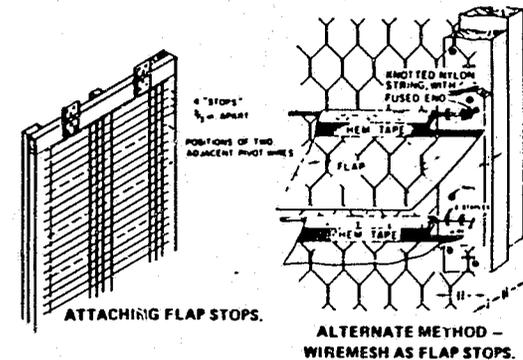


NOTE: WIDTH OF FRAME PLUS 1 INCH

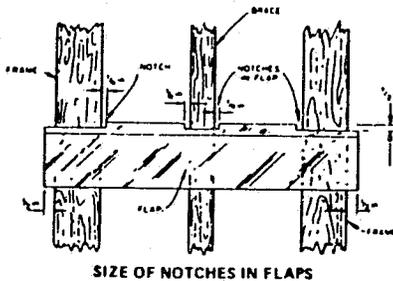
- INSERT 10 PIECES OF STRAIGHT WIRE (PIVOT WIRES) INTO FLAP HEM AS SHOWN. FLAPS SHOULD SWING FREELY. STRING CAN BE USED IF WIRE NOT AVAILABLE (WIRE COAT HANGER THICKNESS).



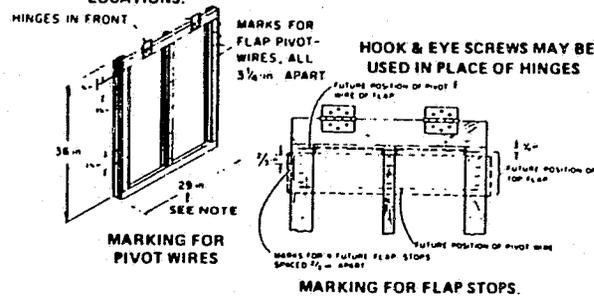
- E. ATTACH FLAP STOPS (STRINGS OR WIRES) TO THE PUMP FRAME AT THE MARKED LOCATIONS. 4 FLAP STOPS ARE NEEDED BETWEEN ADJACENT PIVOT WIRES.



- AFTER HEM'S MADE, CUT NOTCHES IN FLAPS AS SHOWN. AVOID CUTTING TAPE THAT HOLDS HEM.



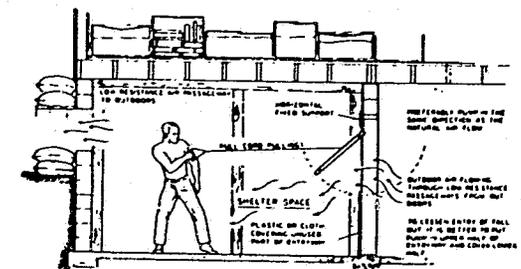
- D. MARK PUMP FRAME FOR PIVOT WIRE AND FLAP STOP LOCATIONS.



NOTE: FRAME DIMENSIONS MAY HAVE TO BE ADJUSTED TO FIT OPENING IN SHELTER

- F. STARTING FROM THE BOTTOM - STAPLE, NAIL, TACK OR TIE THE FLAP PIVOT-WIRES WITH FLAPS IN THEIR MARKED POSITIONS. ATTACH HINGES TO HORIZONTAL SUPPORT BOARD. ATTACH PULLCORD TO CENTER BRACE.

STEP 4. TYPICAL INSTALLATION OF AIR PUMP



BUCKET STOVE

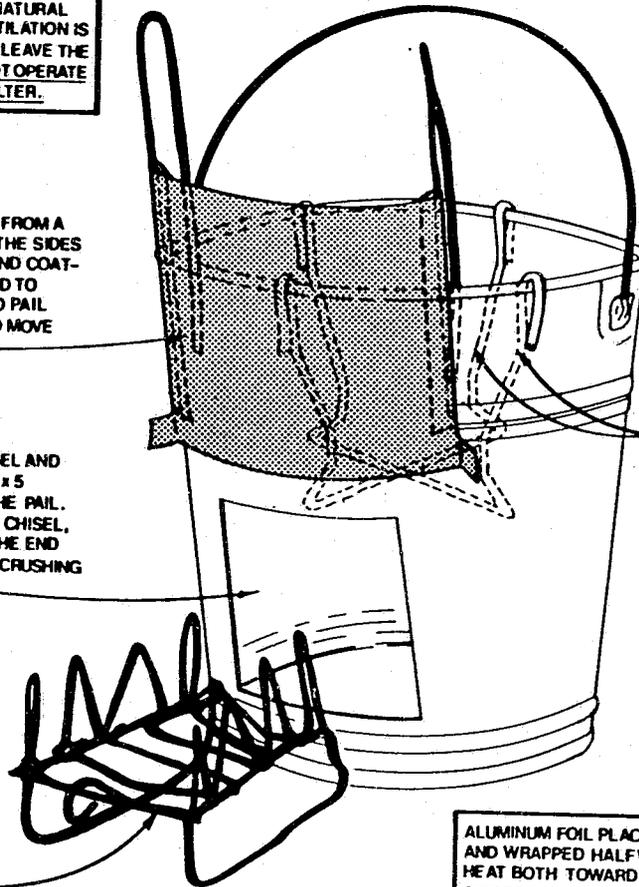
THIS COMBINATION COOK-STOVE/SPACE HEATER IS MADE USING A 10 TO 16 qt METAL PA
SOME COAT-HANGER WIRE, AND METAL CUT FROM A LARGE JUICE OR VEGETABLE CAN.
WHEN ASSEMBLED AS SHOWN, THE STOVE WILL BRING 3qts OF WATER TO A BOIL USING AS
FUEL ABOUT 1/2 lb OF DRY, TWISTED PAPER OR DRY WOOD. PIECES OF WOOD ABOUT
1/2 x 3/4 x 6 INCHES ARE BEST.

NOTE:
LOCATE COOK-STOVE ONLY
WHERE EITHER NATURAL
OR FORCED VENTILATION IS
CAUSING AIR TO LEAVE THE
SHELTER—DO NOT OPERATE
IN A SEALED SHELTER.

CUT THE DAMPER FROM A
JUICE CAN. BEND THE SIDES
WITH PLIERS AROUND COAT-
HANGER WIRE USED TO
ATTACH DAMPER TO PAIL.
THIS ALLOWS IT TO MOVE
UP AND DOWN.

USING A COLD CHISEL AND
TIN SNIPS, CUT A 5 x 5
SQUARE HOLE IN THE PAIL.
WHEN USING COLD CHISEL,
PLACE PAIL OVER THE END
OF A LOG TO AVOID CRUSHING
THE PAIL.

USE 4 OR 5 METAL
COAT HANGERS TO
FASHION A GRATE AS SHOWN



TWO COAT HANGERS USED
TO FORM COOK-POT
SUPPORT. BEND AS SHOWN
TO PRESS FIRMLY AGAINST
SIDES OF BUCKET.

ALUMINUM FOIL PLACED IN BOTTOM OF PAIL
AND WRAPPED HALF WAY AROUND IT REFLECTS
HEAT BOTH TOWARD COOK-POT AND TOWARD
SHELTER AREA WHEN DEVICE IS USED AS A
SPACE HEATER.

EMERGENCY LAMP

THIS TYPE OF LAMP WILL PROVIDE LIGHT FOR USE IN EXPEDIENT
SHELTERS — THE LAMP WILL BURN SLOWLY CONSUMING ABOUT
3 OUNCES OF COOKING OIL IN 24 HOURS.

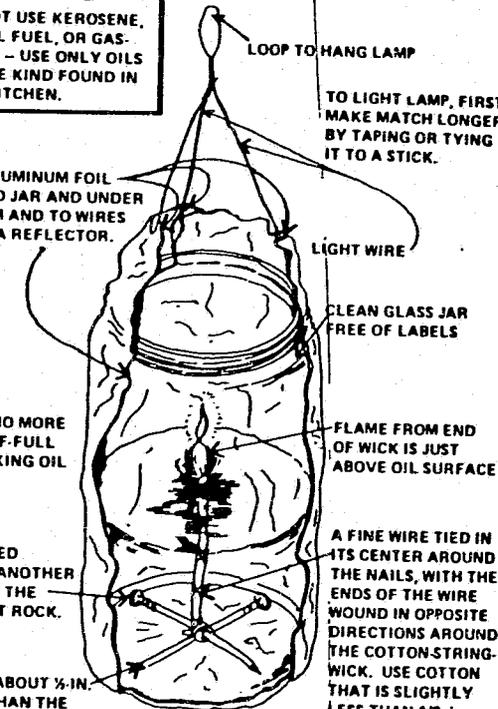
WARNING
DO NOT USE KEROSENE,
DIESEL FUEL, OR GAS-
OLINE — USE ONLY OILS
OF THE KIND FOUND IN
THE KITCHEN.

ATTACH ALUMINUM FOIL
2/3 AROUND JAR AND UNDER
ITS BOTTOM AND TO WIRES
TO ACT AS A REFLECTOR.

FILL JAR NO MORE
THAN HALF-FULL
WITH COOKING OIL

BENT NAIL, TIED
OVER TOP OF ANOTHER
BENT NAIL, SO THE
BASE WILL NOT ROCK.

USE NAILS ABOUT 1/8-IN.
SHORTER THAN THE
DIAMETER OF JAR



LOOP TO HANG LAMP

TO LIGHT LAMP, FIRST
MAKE MATCH LONGER BY
BY TAPING OR TYING
IT TO A STICK.

LIGHT WIRE

CLEAN GLASS JAR
FREE OF LABELS

FLAME FROM END
OF WICK IS JUST
ABOVE OIL SURFACE

A FINE WIRE TIED IN
ITS CENTER AROUND
THE NAILS, WITH THE
ENDS OF THE WIRE
WOUND IN OPPOSITE
DIRECTIONS AROUND
THE COTTON-STRING-
WICK. USE COTTON
THAT IS SLIGHTLY
LESS THAN 1/8-in.
IN DIAMETER. USE
WINDOW SCREEN
WIRE OR OTHER
EQUALLY FINE WIRE.

WIRE-STIFFENED WICK LAMP

KEEP EXTRA WIRE AND
WICK-STRING IN SHELTER.

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