2 Analyzing the Risks

In this unit, you will learn

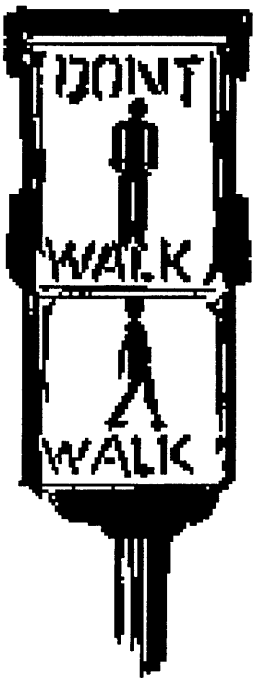
- Descriptions of the major hazards,
- Related hazards that can be caused by another hazard,
- How to determine hazards in your community, and
- Risk factors related to geography and location.

Everyday life has hazards and risks that you can avoid by taking normal precautions. Crossing the street with the WALK signal rather than the DON'T WALK signal is a precaution you can take to avoid being struck by a moving vehicle. This is a simple action that is easy to follow. However, more complex precautions must be taken for hazards that are more complicated and potentially disastrous. To deal with such hazards, you will need to develop a family disaster plan. As you make this plan, you will make decisions that will prepare you for appropriate on-the-spot actions.

In the following units you will begin to develop your family disaster plan by finding out what emergencies are most likely to occur in your community, and what actions should be taken before, during, and after these particular emergencies. For different types of hazards (natural, technological, or national security emergencies) you will follow four steps.

1. Acquire information on local and home hazards.
2. Work with members of your household to develop a family disaster plan.
3. Carry out the preparedness and mitigation steps identified in your family disaster plan.
4. Exercise (practice) your family disaster plan and update it periodically.

Although you should analyze risks for your own community, you also should know some general information about all major hazards. Emergencies can occur any time, even when you are on a trip to another area. While you do not need a specific emergency plan for every possible emergency, you should be familiar with the most common emergencies and know what actions you should take to protect yourself at home or elsewhere.



Just as you take precautions in everyday life to avoid unnecessary injuries, there are precautions you can take in emergencies that will help protect your life and property.

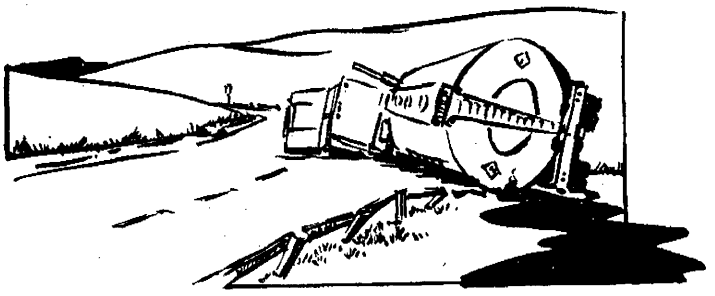
DETERMINING LOCAL HAZARDS

There are many factors to be considered when you determine the dangers to your community from natural hazards, technological hazards, or national security emergencies. These factors include

- Your community's past history of emergencies caused by the hazard,
- Geographical considerations,
- Community characteristics, and
- Distance from transportation routes, large urban areas, large industrial areas, or military bases.

1. *Past History*
   Does your community have a past history of certain types of emergencies?

If your community has had floods, forest fires, or industrial accidents before, these emergencies could happen again. The risk may be higher than in communities that have not experienced these emergencies. You can learn about the history of emergencies from local newspaper records, emergency management offices, or your local American Red Cross chapter. However, there is no guarantee that *only* those emergencies experienced in the past will happen in the future.



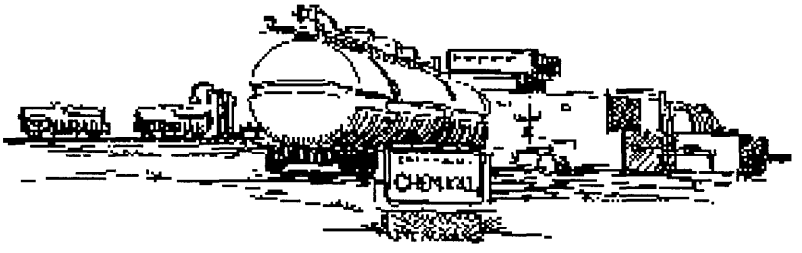
A study of your community's history could reveal its vulnerability to certain types of emergenciesÑsuch as hazardous materials accidents, flooding, or earthquakes.

2. *Geographical Characteristics*
   If you live near an ocean, a river, a fault line, or mountains, related natural hazards could affect you. Learn the geography in your area, and the associated hazards.

3. *Community Characteristics*
   Your community has many important characteristics. A large city with important industries or military bases may be at risk from both natural and technological hazards. A small rural community may have few risks from technological hazards but high risks from natural hazards. Your emergency manager or city planner can provide information about major industries and the other characteristics of your community relevant to its hazard vulnerability.

Geographic characteristics could predispose your community to emergencies such as landslides.

4. *Distance from Transportation Routes, Cities, Industries, or Military Bases*
   Although your community may appear to have few risks, you may be close to high risk areas. The closer you are, the greater the chance of some disasters. For example, airplanes may fly over your area. Also, hazardous materials are transported by train, truck, or pipeline, and their routes may run through or near your community. Your local emergency management office can give you information to help you analyze your risk from those hazards.



The presence of a chemical plant or similar site in your community would indicate a need for specific preparedness steps.

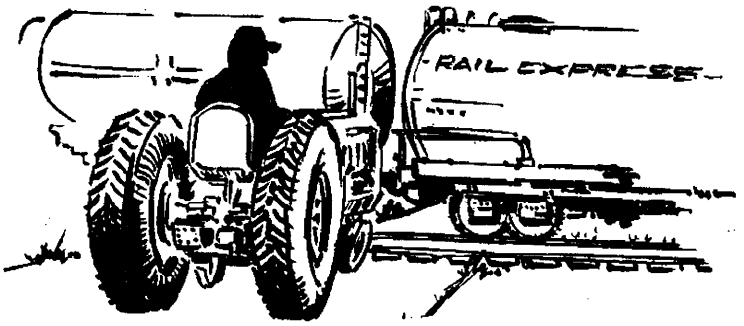
Vulnerability Analysis

To prepare yourself to deal with natural hazards, technological hazards, or national security emergencies, you must learn what the potential disasters are and *which* ones are most likely to affect you. Once you know this, you can learn more about *how* to mitigate and prepare for those specific hazards.

After you have considered all of the risk factors, you can determine which hazards are most likely to impact your community. The next step is to find out how much damage these hazards could cause in your community. This process is called *vulnerability analysis*. Your local emergency manager regularly conducts vulnerability analyses for your community. Ask your emergency manager for the results of these analyses.

WHAT ARE THE MAJOR NATURAL HAZARDS?

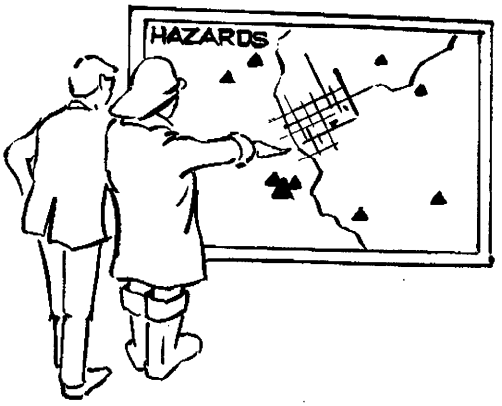
Natural hazards are those caused by natural events that pose threats to lives, property, and other assets society values. We will discuss natural hazards separately from the others, because these often can be predicted, and you can mitigate against many of the damaging effects. Natural hazards tend to occur repeatedly in the same geographical locations either because they are related to *weather patterns* (tornados, blizzards, floods, hurricanes), or because they are related to the *physical characteristics of an area* (volcanos, earthquakes).



Even communities free from obvious hazards may be a thoroughfare for hazardous materials being transported via train, truck, or pipeline.

In this course, you will analyze the risk to your community from the following natural hazards:

- Severe thunderstorm;
- Flood and flash flood;
- Landslide and mudflow;
- Tornado;
- Hurricane;
- Winter storm;
- Drought and extreme heat;
- Wildfire;
- Earthquake;
- Tsunami;
- Volcanic eruption; and
- Dam failures.



An analysis of your community's vulnerability to different types of hazards is an essential step in both family and community preparedness.

Now let's begin to examine your risk from natural hazards.

The following charts and maps provide an overview of the major natural hazards that may threaten your community. Become familiar with these charts and maps because they include important information for your emergency plans. It is important to know the types of hazards, as well as the locations where these hazards are most likely to strike. This information will help you to understand the nature of the specific hazards that can affect you.

Natural Hazards Charts and Maps

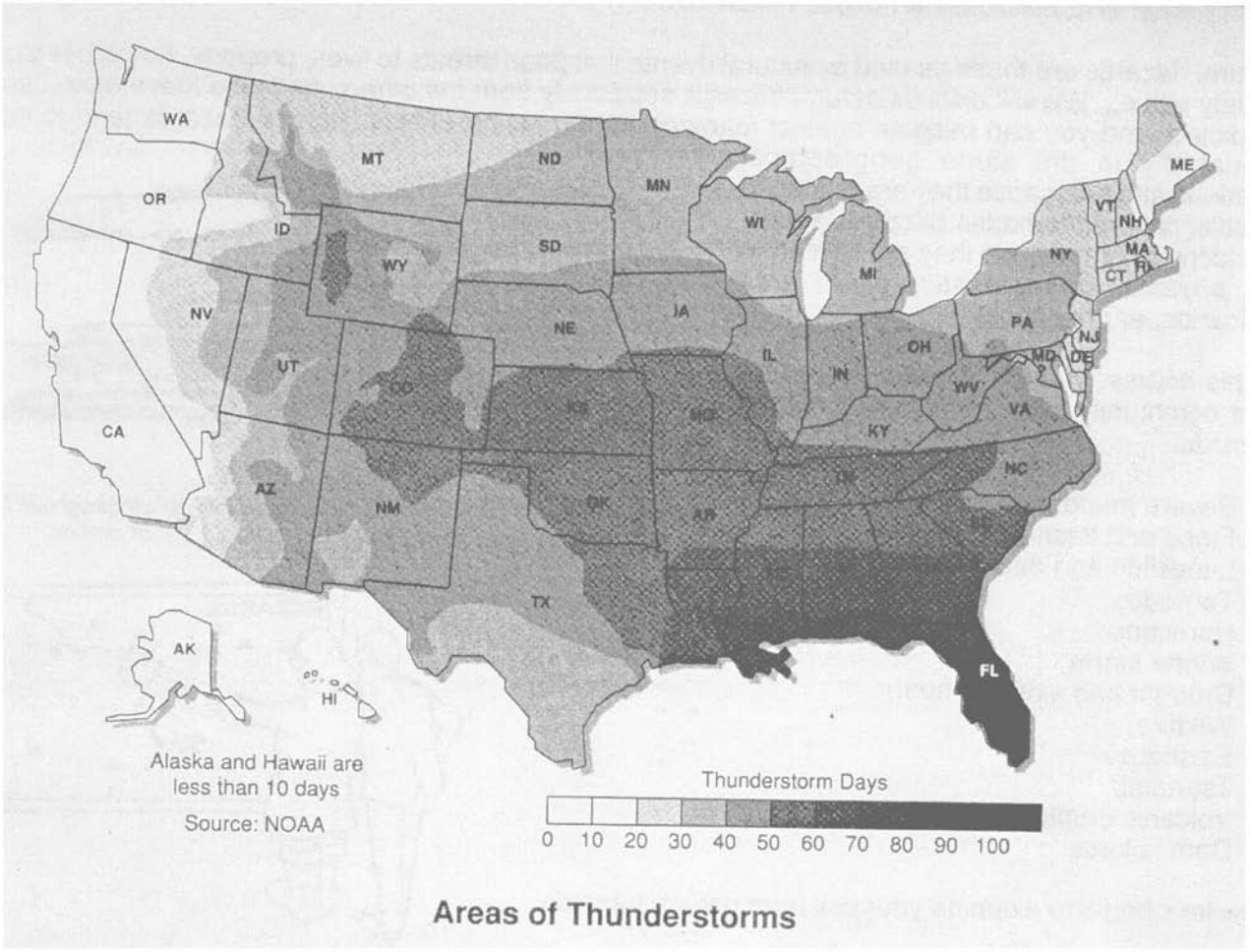
STEP 1 Review maps, descriptions, and geographical considerations.

STEP 2 Read the map key to interpret any shading or symbols used in the map. Locate your State on each map and analyze the risk in your State.

Note that the maps show general areas rather than precise boundaries. You should check local records if your community appears to be near the edge of a risk area.

STEP 3 Put a check in the box next to the description if the map suggests that this hazard could threaten your community.

STEP 4 For each hazard you checked, also check the circle next to any related hazards (other hazards that could be triggered by this one). This check will remind you to study the related hazards.



SEVERE THUNDERSTORM

Description

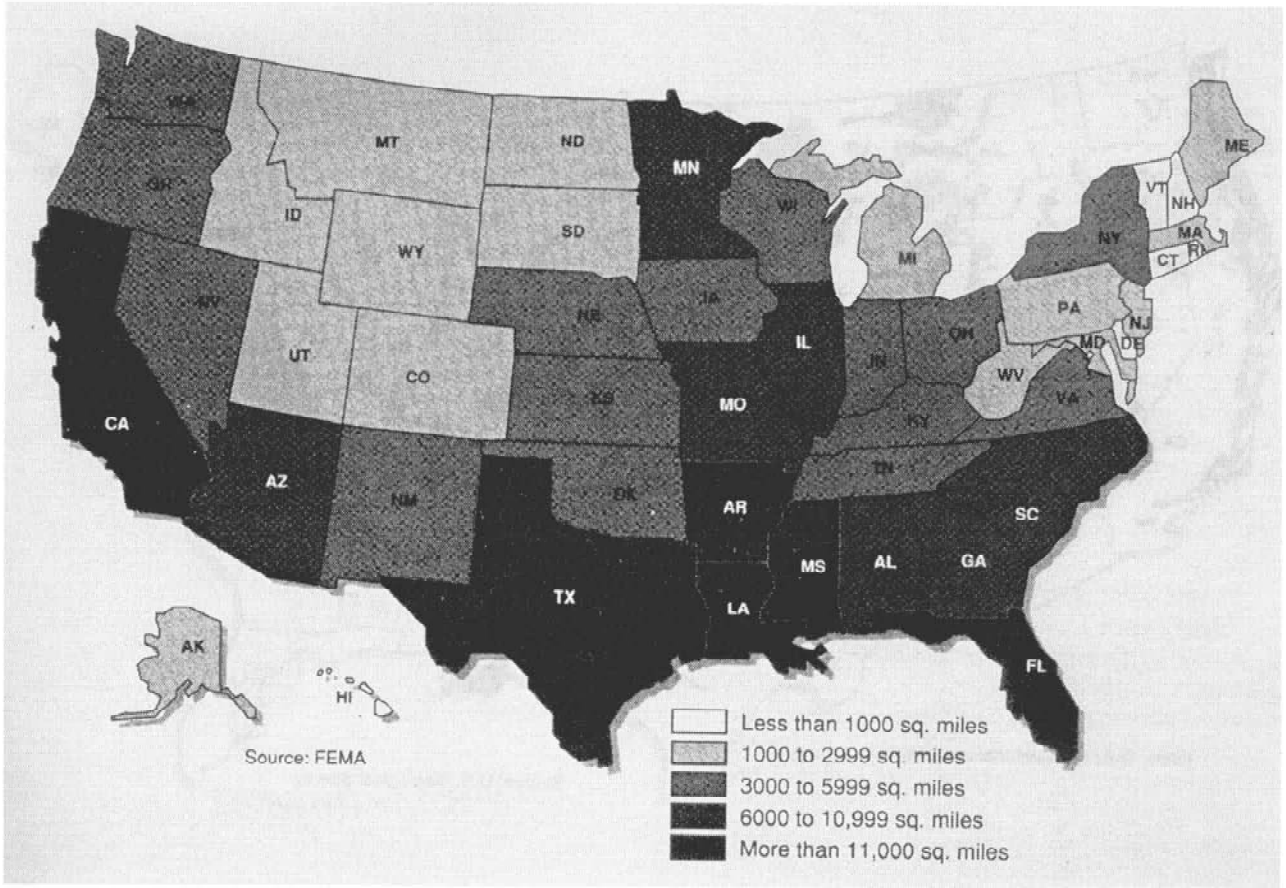
Severe thunderstorms are weather systems accompanied by strong winds, lightning, heavy rain or hail, and possibly tornados. They mayoccursingly, in groups, or in a long line that can extend hundreds of miles.

Related Hazards

Heavy rains may cause floods and flash floods. Violent thunderstorms can also cause tornados.

Geographical Considerations

Every State receives afewthunderstorms each year; the Southeast and Midwest have the greatest frequency. Florida has the greatest occurrence.



Identified Floodplain Land Areas, 1930-1980

FLOOD AND FLASH FLOOD

Description

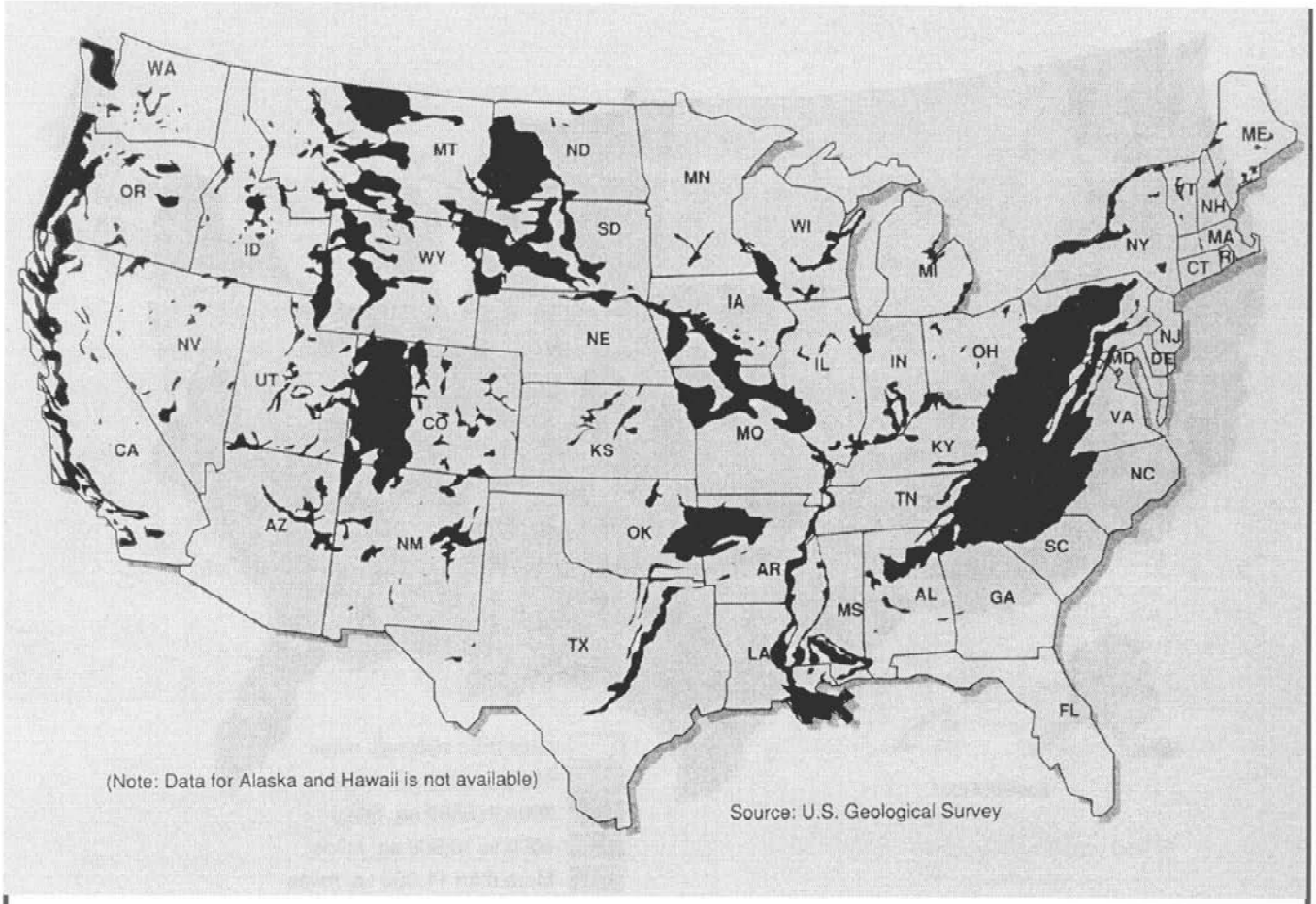
A *flood* occurs when a river or stream overflows its bed onto normally dry land. Floods can be slow to develop, or in the case of *flash floods*, they can occur suddenly with devastating power.

Related Hazards

Floods can cause landslides and mudflows as well as power shortages.

Geographical Considerations

Flooding is the most widespread and costly natural hazard facing America. Floods can occur in any State or community. Often communities with new development face floods caused by urban drainage problems that were not present prior to the development.



Regions at Risk from Landslides

LANDSLIDE AND MUDFLOW

Description

A *landslide* is the movement of unstable soil and rocks down the side of a slope.

A *mudflow* is a mixture of soil and water that runs like a river of mud down a hillside. It usually is generated by heavy rainfall.

Related Hazards

Landslides can create large crevasses and reroute streams and rivers causing *flash floods.* Also, fires may break out in damaged structures.

Geographical Considerations

Landslides occur in every State. However, the major landslides occur along the West Coast, the western slope of the Rockies, the central Mississippi Valley, and the Appalachian Region.