# UNIT I

## The Need for Emergency Management

EMERGENCY MANAGEMENT INSTITUTE

NATIONAL EMERGENCY TRAINING CENTER

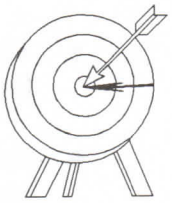
# UNIT I: THE NEED FOR EMERGENCY MANAGEMENT

## OVERVIEW

### GOAL

This unit will assist you in understanding the concept of emergency management and why it is needed.

### OBJECTIVES



By the end of this unit, you will be able to do the following:

- Specify and describe the variety of hazards that exist;
- Recognize the need for a structure within which to manage emergency-related activities;
- Define common emergency management terms and distinguish between
  - Emergency and disaster,
  - Vulnerability and risk, and
  - Emergency management and civil defense;
- Indicate potential and actual hazards in your community and understand how hazards at the State, regional, and national level may affect your community; and
- Identify the need for development and periodic updating of a hazard analysis at the community level.

# THE NEED FOR EMERGENCY MANAGEMENT

## VIDEOTAPE PRESENTATION

A ten-minute videotape segment from the Wisconsin Magazine Show *Aftermath* introduces this section of the course. Barneveld, Wisconsin is a small village--population 580--that was struck by a tornado in 1984. The tornado's path was a quarter mile wide and 30 miles long, with 200 mile per hour winds. As you watch, consider

- The effect an emergency can have on a small community--in this case, Barneveld, Wisconsin,
- Examples of the kinds of emergency services needed during and after this emergency, and
- What effect emergency planning may have had on the response to this disaster and recovery from it.

## NOTES

## TYPICAL ANNUAL EXAMPLES OF THE NEED FOR EMERGENCY MANAGEMENT

In a typical year (1987), FEMA pays nearly $40 million to help people and local governments recover from disasters. That cost, and the corresponding unquantifiable costs in human suffering, can be significantly reduced if every community, no matter how small, has in place a plan or process for responding to these potential disasters.

# WHAT IS EMERGENCY MANAGEMENT?

## SLIDE/TAPE PRESENTATION

A brief slide/tape presentation, *Disaster: Is Your Community Prepared?* introduces the concept of emergency management. As you watch, consider

- The characteristics of emergencies,
- The roles of various organizations and individuals in emergency protection, and
- Ways in which these organizations and individuals need to work together.

## NOTES

### Discussion Questions

1. The presentation depicted a number of emergencies (such as flood and hurricane). Name some other less anticipated emergencies that might threaten your community.

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2. Some areas of the United States appear to be less vulnerable to emergencies than others. Why is this so? Is this difference in vulnerability real or only apparent?

3. When any emergency strikes a community, what are some immediate effects?

- Name some extended consequences beyond those immediate effects.

4. Choose one particular emergency probable in your community. If it struck tomorrow,

- Who would be affected?

- Who would provide assistance?

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- How would various community groups know what they should do?

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- What would be *your* particular responsibilities?

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## KEY TERMS

Many emergency management terms are used throughout this course, some of which are used differently in the field. To avoid confusion during this course, we will agree on a single definition for each term. For some terms, we will "discover" definitions in the course; for others, we offer the following as working definitions. These may differ from how you use the terms in your community. However, for clear reference during the course, these are the definitions we will use.

- *A disaster* is a dangerous event that causes significant human and economic loss and demands a crisis response beyond the scope of any single agency or service, such as the fire or police department. Disasters are distinguished from emergencies by the greater level of response required.

  An *emergency*, while it may have been devastating, is a dangerous event that did not result in a request for State or Federal assistance; a *disaster* requires resources beyond those available locally.

- *A hazard* is a dangerous event or circumstance that has the potential to lead to an emergency or disaster.

- *Hazard probability* is the estimated likelihood that a hazard will occur in a particular area.

- *Vulnerability* is the susceptibility of life, property, or the environment to damage if a hazard occurs.

- *Risk* is the probability of suffering those damages.

- *Emergency Management* is organized analysis, planning, decisionmaking, and assignment of available resources to mitigate (lessen the effect of or prevent) prepare for, respond to, and recover from the effects of all hazards. The goal of emergency management is to save lives, prevent injuries, and protect property and the environment if an emergency occurs.

- *Emergency Program Manager* has the day-to-day responsibility for emergency management programs and activities. The role is one of coordinating all aspects of a jurisdiction's mitigation, preparedness, response, and recovery capabilities.

- *Emergency Support Services* are the departments of local government that have the capability to respond to emergencies 24 hours a day. They include law

enforcement, fire/rescue, and public works. They may also be referred to as emergency response personnel or emergency operating forces.

- *Community resources* are assets (including people, organizations, programs, equipment, and funds) that can be applied to all aspects of emergency management.

- *Civil Defense (CD)* includes all activities and measures designed or undertaken (a) to minimize the effects upon the civilian population caused, or which would be caused, by an attack upon the United States or by a natural or technological disaster, (b) to deal with the immediate disaster conditions which would be created by any such attack, natural, or technological disaster, and (c) to carry out emergency repairs to, or the emergency restoration of, vital utilities and facilities destroyed or damaged by any such attack, natural, or technological disaster.

  The Civil Defense Act of 1950, as amended, allows for "Dual Use." Civil defense funds provided by the Federal government are primarily for "civil defense" measures that focus on national security issues. Funds may be used for other activities (natural and technological hazards) provided the activities are *consistent with*, *contribute to*, and *do not detract from* attack-related preparedness. "Dual use" of civil defense funds is authorized only when these three conditions are met.

**NOTES**

## HAZARDS AND RISKS

The range of potential hazards in any locality is staggering. Examining the hazards that have an effect on a community is an essential component of any emergency management program. By analyzing the hazards that pose the greatest risk to a community, we can derive guidance on how best to organize available resources and manage emergencies.

Until recently, most emergency program managers* relied upon emergency operations that were activated only after emergencies occurred. A growing number of officials now recognize that emergency management requires continuous resource coordination, not only to prepare for and respond to emergencies, but also to prevent crises, reduce their probability, and coordinate long-term recovery. Understanding this fact led to the development of the concept of integrated emergency management, which is discussed in Unit II.

Emergency management demands a broad approach on the part of emergency program managers. Developing an integrated emergency management perspective on the community requires

- Expanded data gathering efforts,
- Research into new areas,
- Improved research methods and skills, and
- New analytical techniques.

The concept of a **community analysis** has been developed to meet this need. The term *community* as defined here refers to any jurisdiction--State, county, municipality, township, etc.--undertaking the study. A community analysis is the systematic identification and analysis of all hazards--including attack--that could occur in a community, and the identification and analysis of available resources and authorities for managing these potential emergencies. This analysis is the first step in developing an integrated emergency management program in the community. Using this information, a

*The local emergency management position is referred to with different titles across this country, such as civil defense coordinator or director, civil preparedness coordinator or director, disaster services director, emergency management director, emergency services coordinator or director, etc. This course uses the term *emergency program manager* for all these titles.

community can develop an overall **emergency management strategy** that serves as the basis for program activities and allocation of resources.

The study can be usefully subdivided into five components.

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|---|---|
| • Hazard Identification | A review of hazards and of locations and conditions associated with hazards in a particular area. |
| • Vulnerability Analysis | An examination of the degree to which populations, structures, and land areas are vulnerable to hazards. |
| • Resource Inventory | An analysis of the resources a community can call upon in the event of an emergency. |
| • Authorities Review | A detailed examination of laws, ordinances, and regulations applicable to emergency management in a community. |
| • Funding Analysis | A review of funding and funding sources for emergency management activities. |

The hazard identification and vulnerability analysis are inherently interrelated, and usually conducted at once. The two together may be called a hazard analysis, hazard/vulnerability analysis, or risk analysis. The term *hazard analysis* will be used in the following materials to refer to both components of a community analysis.

Conducting a hazard analysis is as complex as it is crucial. It requires devotion of time and energy on the part of personnel, in addition to some funding support. For our purposes, however, we will look at a limited aspect of community analysis--the identification of hazards and of locations and conditions associated with hazards, or hazard sources.

The *Emergency Planning* course, also developed by the Emergency Management Institute (EMI) of FEMA and delivered by the States, can help you to clarify further what must be done in a thorough community analysis.

## INDIVIDUAL AND SMALL GROUP ACTIVITY: HAZARDS CHECKLIST AND HAZARD LOCATION LIST

The Hazards Checklist and Hazard Location List on pages I-22 to I-24 will assist you in making a preliminary assessment of the hazards and hazard sources that exist in your community. Even if you already have this information, structuring it in this form will reinforce your understanding of your area's vulnerability. It also may call attention to hazardous situations that you have not considered.

The Hazards Checklist considers several categories of hazards. The list focuses on the local level, although the occurrence of any hazards that apply to your State or region also may have an effect on your community.

For each hazard or hazard source listed, check the box for those that apply to your area. Descriptive definitions of hazards and hazard sources begin on page I-11.

When you have completed the lists, examine the results and draw preliminary conclusions. Then, write brief answers to the five questions on pages I-26 and I-27. Your answers will form the basis of your contribution to the small group discussions that your instructor will set up.

You will have 25 minutes to complete the lists and questions. Your instructor will call time.

# HAZARDS AND HAZARD SOURCE DESCRIPTIVE DEFINITIONS FOR HAZARDS CHECKLIST AND HAZARD SOURCE LIST

The following descriptive definitions of hazards and hazard sources can be applied to the Hazards Checklist and Hazard Source List to make a preliminary assessment of the hazards that exist in your community.

## TYPES OF DISASTERS

If you view the effect of each disaster as wholly unique, you will require an exhaustive list of potential disasters in order to manage effectively. However, it is possible to categorize emergencies according to three general types. This will help you examine and manage them efficiently.

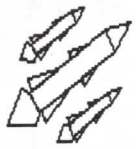
In general, disasters are natural, technological, or national security events. **Natural** events include occurrences such as

- Drought,
- Flood,
- Hurricane,
- Landslide,
- Sleet and hail,
- Wind,
- Tornado,
- Blizzard, and
- Earthquake.

**Human-caused**, or **technological**, events are more varied and complex. The easiest way to examine technological events is to subdivide them into six types:

- Dam Failures,
- Fire (accidental, arson),
- Internal disturbance (strikes, riots),
- Hazardous materials accident (transportation-related),
- Hazardous substance risk (chemical spills, pollution), and
- Disastrous shortage (energy or materials).

**National Security** hazards include those shown below



- Attack, whether
  - Conventional
  - Chemical
  - Nuclear or
  - Biological
- Terrorism, whether
  - Conventional
  - Chemical
  - Nuclear or
  - Biological
- Nuclear Weapon Proliferation
- Chemical Weapon Proliferation
- Ballistic Missile Proliferation
- Continuing International Frictions and Instabilities

How do the categories differ? Statistics show that the frequency of technological events is increasing dramatically; this is an important trend for the field of emergency management.

Surveys indicate that, in recent experience, technological events entail

- Less warning,
- Shorter duration,
- Less government preparedness activity,
- Less response coordination,
- Greater local and private involvement,
- Greater State-level involvement, and
- Less Federal involvement.

Emergencies also differ in the extent of interagency coordination they require as well as the types of expertise necessary to plan for and manage them. The following suggests some basic differences.

- Natural Disasters require significant information from State (and sometimes Federal) natural resource and land-use agencies, massive search and rescue, evacuation, and planning and execution of relocation operations.

- Internal Disturbances require more information from State and local emergency and security personnel. The effects are felt among a much smaller population or geographic area than are those resulting from warfare. Politics, intelligence operations, negotiations, and public communications play a major role.

- Hazardous Substance Accidents require specialized technical information and assistance.

- Energy and Materials Shortages require significant information from public and private companies and Federal regulatory agencies. Special issues relate to the monitoring and reporting of resource utilization rates, resource distribution plans, public information programs, and specialized technical information.

- National Security Emergencies require the most information from Federal, State, and local military, paramilitary, and emergency personnel. The effects are widely dispersed instead of localized. Key issues in such emergencies would include national survival, resource management, evacuation planning and implementation, sheltering, warning, communications, and public information programs.

## NATURAL AND TECHNOLOGICAL HAZARDS

### Floods

Potential damage from floods annually is $4 billion. About 175,000,000 acres of land in the U.S. are flood-prone. Some of these flood-prone areas are undeveloped, but many populated areas are threatened by flooding. About twenty-one thousand communities are subject to flooding--more than 9,000 had populations over 2500, as of 1980.

### Hurricanes

Hurricane winds do much damage, but drowning is the greatest cause of hurricane deaths. As the storm approaches and moves across the coastline, it brings huge waves, raising the tides 15 feet or more above normal. The rise may come rapidly and produce flash floods in coastal lowlands, or it may come in the form of giant waves (mistakenly called "tidal waves"). Waves and currents erode beaches and barrier islands, undermine waterfront structures, and wash out highway and railroad beds. The torrential rains produce sudden flooding; as the storm moves inland and its winds diminish, floods become the hurricane's greatest threat. Hurricanes can be tremendously costly. For

example, in 1981, only one hurricane (Dennis) struck the United States. Although Dennis caused no fatalities, it did result in $25 million in damage. In 1989, 49 lives were lost and over $1.25 billion in property damage resulted from Hurricane Hugo.

**Tornadoes**

Tornadoes occur in many parts of the world and in all 50 states. In February of each year, when tornado danger begins to increase, the center of maximum frequency--the place where most tornadoes are expected to occur--lies over the central Gulf states. Then, during March, this center moves eastward to the southern Atlantic states, where tornado frequency reaches a peak in April. During May, the center of maximum frequency moves to the southern Plains states and, in June, northward to the northern plains and the Great Lake areas and as far as western New York State. Texas, Oklahoma, and Kansas experience the greatest of these storms.

In 1981, 722 tornadoes caused 24 deaths and more than $500 million in damages. The death toll, however, was well below the 1953-81 annual average of 105. In 1985, one series of tornadoes caused 90 deaths in New York, Pennsylvania, Ohio, and Ontario. In 1989, 46 states were affected by a total of 834 tornadoes. Forty-eight lives were lost.

**Volcanic and Subsidence Hazard Areas**

Most people do not realize the major role geology plays in hazard management. Volcanoes form where weak spots or breaks in the earth's crust allow molten rock (magma) to push through toward the surface. When the pressure of gas and molten rock becomes too great, the volcano erupts. Magma then pours through the vent opening as lava flows, or it shoots into the air as dense clouds of gas and dust (ashfall).

In the United States, the likelihood of any future eruptions that could damage populated areas is greatest in the active volcanoes of Hawaii and Alaska. The 1990 eruption of the Kilauea Volcano in Hawaii destroyed more than 100 houses and businesses and over 1,000 acres of land. In recent years active volcanoes of the Cascade Mountain Range in California, Oregon, and Washington have created dangers. The danger area around a volcano covers approximately a 20-mile radius. Associated dangers extend as far as 100 miles beyond the volcano.

In 1980, the violent eruption of Mt. St. Helens resulted in 82 deaths and millions of dollars in damages. The eruption spread thick layers of ash over thousands of square miles and caused massive flooding and mudflows in the immediate area. The Mt. St. Helens eruption raised concern about the possibility of future eruptions in the Cascade Range.

Some communities do not consider cavernous areas as hazardous. However, Youngstown, Ohio, which rests on a honeycomb of abandoned mine shafts, suffers increasingly frequent cave-ins. Accidents in Florida's sink holes also are well known.

**Earthquake Risk Zones**

An earthquake is a sudden motion or trembling of the ground produced by the abrupt movement of rock masses, usually within the upper 10 to 20 miles of the earth. Most earthquakes result from the movement of one rock mass past another along a fault. Most moderate to large earthquakes are followed by smaller earthquakes, called *aftershocks*, which can occur over a period of several months.

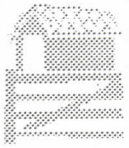
Earthquakes are unique among natural disasters because they occur suddenly and without advance warning. Although the science of earthquake prediction is still in its infancy, scientists have long identified regions where the likelihood of earthquakes is high. All 50 states and all U.S. territories are vulnerable to the hazards of earthquakes, and at least 39 states are subject to major or moderate earthquake risk.

The actual movement of the ground in an earthquake seldom is 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. As a result of this type of disaster 64 people were killed in the San Fernando, California earthquake of 1971. The Loma Prieta earthquake of 1989 resulted in 62 deaths and more than three thousand injuries; additionally, over 12,000 people were made homeless. Most of the deaths occurred due to the collapse of an elevated section of freeway. Earthquakes also can spawn tsunamis, huge ocean waves. A tsunami occurred in the Alaskan earthquake of 1964, contributing to 177 deaths.

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

Although earthquake damage is possible everywhere in the United States, it occurs more frequently in states west of the Rocky Mountains. A damaging earthquake occurs somewhere in the Eastern United States on the average about every 25 years. Three great earthquakes, plus 203 damaging aftershocks, occurred near New Madrid, Missouri, in the three-month interval from December 16, 1811, through March 15, 1812. The New Madrid earthquakes and the earthquake that shook Charleston, South Carolina in 1886, were felt over two million square miles.

**Agriculture**



Almost all of the natural and technological hazards that exist can bear directly on the agricultural industry.

The United States has more high-quality agricultural land than any other country. Of the agricultural areas, the Corn Belt States (Iowa, Missouri, Wisconsin, Illinois, Indiana, Ohio) suffer less soil damage than do the Lake States (Minnesota, Wisconsin, Michigan), the Northern Plain States (North Dakota, South Dakota, Nebraska, Kansas), or the Delta States (Louisiana, Arkansas, Mississippi). These areas are subject to varying patterns of severe storms, blight, infestation, range fires, winter freezing, drought, contamination, and other natural and technological hazards that affect farm production. Droughts and extreme heat are possible *anywhere* in the United States. However, the possibility for *long-term* droughts is much greater in the western states, excluding the Pacific Northwest.

Areas subject to erosion, lack of land cover, and varying climatic conditions are particularly susceptible to natural and technological hazards. For example, in 1981-1982, wind damaged approximately five million acres in the Great Plains Region, of which 91 percent was cropland. The previous year, more than double this number were lost as insufficient snow cover and soil moisture contributed to the land's vulnerability.

Much of the United States suffered through the worst drought in more than 50 years during the spring of 1988. The U.S. Department of Agriculture attributed the drought to a division of the jet stream, which pushed precipitation to the north and south of affected areas. By June of 1988, 1,390 counties--one half of the nation's agricultural counties--had been designated as disaster areas. Some of these areas received less than one-fourth of their normal rainfall, and dust storms stirred up by the drought had eroded 13.1 million acres, the highest figure since 1955.

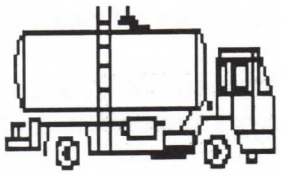
**Dams**

Torrents of water suddenly unleashed by the failure of a dam can have catastrophic effects on life and property downstream. Dam failure can be caused in a number of ways, not only during flooding conditions which can cause overtopping. Failure can result from faulty operation, lack of maintenance and repair, piping, erosion, and structural failure. Regardless of the cause, when a dam collapses huge quantities of water rush downstream with great destructive force. Such failures usually are catastrophic because they occur unexpectedly, allowing no time for evacuation.

Between 1972 and 1982, dam failures at Buffalo Creek in West Virginia, Laurel Run in Pennsylvania, Kelly Barnes in Georgia, Lawn Lake in Colorado, and the Federally owned Grand Teton Dam in Idaho caused hundreds of deaths, injured thousands, and

damaged billions of dollars of property. The number of failures, and the consequence of failures, can be lessened by coordinated dam safety programs which combine effective safety regulations, adequate maintenance and inspection, emergency planning and awareness, and State, local, and community involvement.

**Transportation System**



*Airports, Interstate Highways, and Railroads*

Highways can become hazards when arteries are blocked because of heavy snow and ice and, in some cases, flooding.

Aside from these natural hazards, most communities face the potential threat of accidents involving hazardous materials carriers. Major transportation accidents often produce chemical spills, fires, and other aftermaths which call for special operations such as rescue and evacuation.

The lack of a standardized manifest system that readily identifies all materials transported across the nation creates additional risks since undue delays occur after accidents while emergency program managers identify cargoes to ascertain hazardous potential.

While relatively infrequent, aviation accidents also must be considered. Most accidents can be classified as weather-related approach and landing accidents and midair collisions.

**Energy Transportation System**

*Pipelines, Crude Oil, and Natural Gas*

In general, pipelines are considered a relatively safe form of transport for crude oil and refinery products. Safety measures that help prevent pollution include regular pipeline inspections, ultrasonic leak detections, corrosion preventives, and automatic shutdown techniques.

However, while it is true that the petroleum industry historically has, overall, had a fine safety record, the threat of fire, explosions, ruptures, and spills nevertheless exists. In addition, chemical hazards are possible: hydrogen sulfide and sulfur dioxide abound near petroleum wells, and petroleum high in sulfur content is found in pipeline terminals, storage facilities, and transportation facilities.

In 1989 the petroleum industry's fine safety record was shattered when the tanker Exxon Valdez rammed into an underwater reef in Prince William Sound, Alaska, creating the biggest oil spill in U.S. history. An estimated 270,000 bbl. of oil flowed into the sea waters--an ecological disaster that environmentalists had warned about since oil first began flowing from Alaska's north slope in 1977.

The hazards associated with the energy transportation system are heightened by the country's dependence on crude oil and natural gas, both for public utilities and strategic military reserves. The oil and gas transport systems are susceptible to human error, to breakdown of equipment, to the hazardous nature of the materials, and to potential threats of terrorism and civil disturbances. Because much of the system reaches crossroads in the St. Louis area, the New Madrid earthquake-prone area is one focus of concern lest a major earthquake disrupt the system.

*Coal Movement*

Transporting coal can cause several environmental problems. Both rail and slurry pipelines can have detrimental effects on natural habitats and communities. Coal-hauling trains cause noise pollution, as well as traffic, land-use, and community disruptions. Coal movement is an increasingly important factor to consider in hazard management, as the nation expands coal production in order to meet today's increasing energy needs.

**Electrical Power System**

*Hydroelectric Power Plants*

Hydropower, or water power, is the oldest known mechanical power source. Hydropower supplies about 23 percent of the world's electricity and about 13 percent of the electricity produced in the United States.

Despite the large number of traditional energy generating plants, much of hazards management focuses on nuclear power plants, neglecting the vast dams and hydrology systems the country depends upon for its energy.

*Nuclear Power Plants (Licensed, Under Construction, and Proposed), Electric Generating Plants, and Major High-Voltage Transmission Lines*

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 promptly would 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.

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 at the time--and other factors.

Awareness of the risks associated with nuclear power plants has increased greatly since the incident at the Three Mile Island nuclear facility in 1979. Since then, much work has gone into emergency plans and permitting requirements for such facilities. As of 1986, there were 95 operable nuclear reaction sites in the U.S. According to the Critical Mass Energy Project of Public Citizens, over 2800 accidents occurred in U.S. commercial nuclear power plants in 1986. The possibility of an accident that would threaten nearby citizens should not, therefore, be discounted. One example of such an accident occurred at Kerr-McGee plant at Gore, Oklahoma in 1986, when a cylinder of nuclear materials burst after being improperly heated. One worker died and 100 more were hospitalized.

Electric generating plants and major high-voltage transmission lines, respectively, also must be considered as risk elements of the country's electrical power system.

**Hazardous Materials Waste Sites**

*Radioactive Waste Sites, Chemical Waste Sites, NRC-approved Routes and End Points for Commercial Nuclear Spent Fuel*

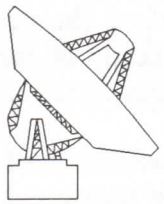
The United States Environmental Protection Agency (EPA) estimates that up to 51,000 waste sites in the country contain dangerous chemicals. Located throughout the country, these waste sites could threaten public health in any emergency which caused chemicals or their vapors to be released; these sites should always be identified in the local hazard analysis. Radioactive waste sites tend to be concentrated in certain geographic areas--the East and West Coasts, and the Ohio-Mississippi River (lower Great Lakes) region.

**Fire Deaths and Damages**

According to the United States Fire Administration (USFA), based on estimates from the National Fire Protection Association, in 1988 more than 750,000 structure fires caused 6,200 deaths and 50,000 injuries. Property loss totalled over 10 billion dollars. In the same year, 136 firefighters died in the line of duty and 55,000 were injured.

These statistics make fire the primary cause of accidental death in the United States, surpassing floods, automobile fatalities, and other disasters. About 20 times more deaths are caused by fire each year than by floods, hurricanes, tornadoes, and earthquakes combined. Although nearly half of the nation's fires occur out of doors, these cause a relatively small proportion of fire losses. Fires in residential properties cause the most deaths and injuries.

**National Security**



Threats to our national security range from conventional attack to nuclear terrorism and sabotage.

In 1987, there were 832 international terrorist attacks. Over 2,000 people were injured and 600 died. This was the highest number of incidents ever reported. While the production or theft of a nuclear weapon and its detonation is still relatively unlikely, other types of nuclear terrorism are considered more probable; these range from an attack on a nuclear power plant to spread alarm and panic, to the sabotage and destruction of nuclear manufacturing and fuel facilities. Chemical/biological terrorism is even more likely because the substances are cheap and easy to acquire, pose less risk to the security of users, and can be difficult to detect.

As of 1987, the USSR's strategic nuclear arsenal approaches 12,000 warheads. Besides the US, USSR, UK, France and the People's Republic of China, which are declared nuclear weapons possessing states, it is widely believed that India, Israel, and South Africa possess nuclear weapons and the capability to deliver them. In addition, a number of Third World nations such as Argentina, Brazil, Iran, Iraq, Syria, Libya, and North Korea have taken steps to acquire or develop nuclear weapons and ballistic missile delivery systems.

The threat to the U.S. from the proliferation of nuclear and chemical weapons and delivery systems resides not just in the state that possesses these weapons, but in the increased danger that eventually these weapons of mass destruction will find themselves in the hands of a sub-state terrorist group or a fanatic.

Radioactive fallout from nuclear accidents such as Three Mile Island and Chernobyl threaten the atmosphere worldwide.

Despite all our efforts to prevent nuclear war, it may occur. Warfare has been a recurrent theme throughout human history and our time is no different. In fact, the 20th century may well be labeled by future historians as "The Century of Conflict." It has seen world wars, international military forces employed to restrain aggressors, guerrilla and counterguerrilla actions, externally sponsored political and military subversion, espionage, assassination, and psychological warfare. In such an unquiet

world, we cannot be assured that nuclear weapons will never be used. History shows that every type of weapon ever developed has been used. Deterrence can fail, and a war could as easily start from an irrational attack, a miscalculation, or an accident as from an uncontrolled escalation.

As a basis for civil defense planning, FEMA has coordinated the Nuclear Attack Planning Base-1990 Project (NAPB-90) which is a credible estimate of the potential physical effects of a nuclear attack on the population of the U.S., and an identification of potential targets. More information about the effects of nuclear war, national security threats, NAPB-90, and a basic introduction to civil defense can be found in the EMI course *Civil Defense Systems, Programs and Policies*.

| HAZARDS CHECKLIST | |
|---|---|
| **NATURAL DISASTERS** | Possible in Your Community |
| Drought | |
| Earthquake | |
| Epidemic | |
| Extreme Cold | |
| Fire | |
| - Forest | |
| - Range | |
| - Other | |
| Flood and other water | |
| Hurricane | |
| Landshift | |
| - Earthquake | |
| - Earthslide | |
| - Erosion | |
| Snow and Ice | |
| Tornado | |
| Tsunami or storm surge | |
| Volcanic eruption | |
| Wind | |
| **TECHNOLOGICAL/HUMAN-CAUSED DISASTERS** | |
| Air Crisis | |
| Fire | |
| - Accident | |
| - Arson | |
| Hazardous materials accident | |
| - Transport-related | |
| - Fixed Site | |
| Internal disturbance | |
| - Civil disorder | |
| - Riot | |
| Nuclear/radiological accident | |
| - Resource/energy disruption, shortage | |

| HAZARD CHECKLIST | |
|---|---|
| **NATIONAL SECURITY DISASTERS** | Possible in Your Community |
| Attack | |
| - Conventional | |
| - Nuclear | |
| - Chemical/Biological | |
| - Sabotage | |
| Terrorism | |
| - Nuclear | |
| - Chemical/Biological | |
| - Public Utility Disruption/Contamination | |

**HAZARDS CHECKLIST**

| LOCATION | Possible in Your Community |
|---|---|
| Agricultural hazard areas | |
| - Blight | |
| - Infestation | |
| - Severe weather | |
| Arsenals | |
| - Armories, storage centers | |
| - Military manufacturing centers | |
| Civil disorder-prone areas | |
| - Campuses | |
| - Prisons | |
| - Special population concentrations | |
| - Terrorist targets | |
| Communication systems and networks | |
| Dams | |
| Drought-prone areas | |
| Earthquake fault and risk zones | |
| Floodplains | |
| Hazardous waste sites | |
| - Chemical, biological | |
| - Nuclear, radiological | |
| Institutions | |
| - Hospitals and nursing homes | |
| - Mental health facilities | |
| - Group homes for handicapped | |
| - Prisons and jails | |
| - Halfway houses | |
| - Schools and dormitories | |

| HAZARDS CHECKLIST LIST (Continued) | |
|---|---|
| **LOCATION** | Existing in Your Community |
| Manufacturing and agricultural plants and storage facilities | |
| - Chemical, allied | |
| - Coal, uranium, and other mines | |
| - Gas, oil | |
| - Hydroelectric, electric | |
| - Nuclear | |
| - Other | |
| Military bases | |
| Missile sites | |
| Pipelines | |
| Reservoirs and dams | |
| Transportation systems | |
| - Airports | |
| Commercial | |
| Military | |
| Private | |
| - Highways | |
| County and local in high-density or hazardous route areas | |
| Federal | |
| Interstate | |
| State | |
| Transportation depots and garages | |
| - Waterways | |
| Coastal | |
| Inland rivers, lakes, canals | |
| - Railroads | |
| Passenger service | |
| Freight service | |
| Terminals | |

Complete the five questions on the following pages.

**Questions**

Respond briefly to the following questions.

1. After reviewing your responses on the checklists of hazards and hazard sources, how would you describe your community's vulnerability to emergencies?

_____

_____

_____

_____

2. What are the particular emergencies or hazards for which your community should plan? Briefly explain why.

_____

_____

_____

_____

3. Of these, which would you consider *critically* important to plan for because of their potential destructiveness?

_____

_____

_____

_____

4. What are some sources of information on hazards in a community? To your knowledge, has a detailed hazard analysis been conducted in your community? If so, what use has been made of the data gathered? What effect has it had?

_____

_____

_____

_____

5. What primary benefits could be derived from a formal, comprehensive community hazard analysis?

_____

_____

_____

_____

**NOTES**

## SUMMARY OF UNIT I

This unit focused on the variety of physical and human factors related to disasters and emergencies that confront you and others in emergency management. The videotape, slide/tape presentation, activities, and resource material were designed to assist you in analyzing your particular situation and to help you reach conclusions about the need for emergency management in your community.

You have learned several key terms in emergency management. Also, through the small group activity, you have conducted a preliminary analysis of the situations and circumstances that affect your community.

While the activity and discussions have raised a diverse and substantial set of issues, there is one outcome of this unit that all of us can recognize.

> **Disasters, hazards, and hazard sources exist in a variety of forms all around us and create a need for effective, integrated emergency management.**

## TAKE IT HOME

What steps will you personally take after this course to become more knowledgeable about the hazards facing your community?

_____

_____

_____

_____

_____

Based on what you know about steps your community has taken to analyze its hazards, what more needs to be done?

_____

_____

_____

_____

_____

What can you do to help this process?

_____

_____

_____

_____

_____