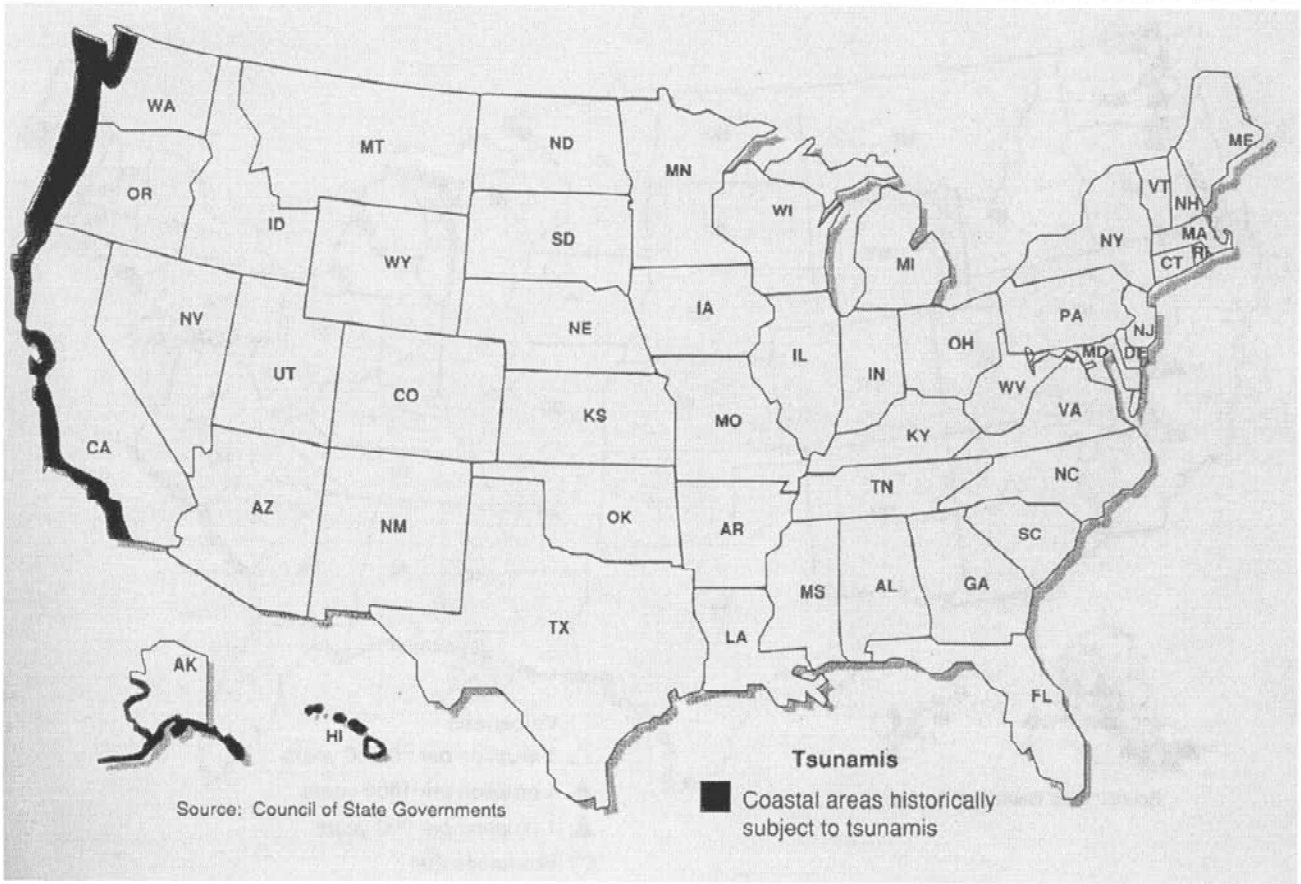


Coastal Areas Historically Subject to Tsunamis

TSUNAMI

Description

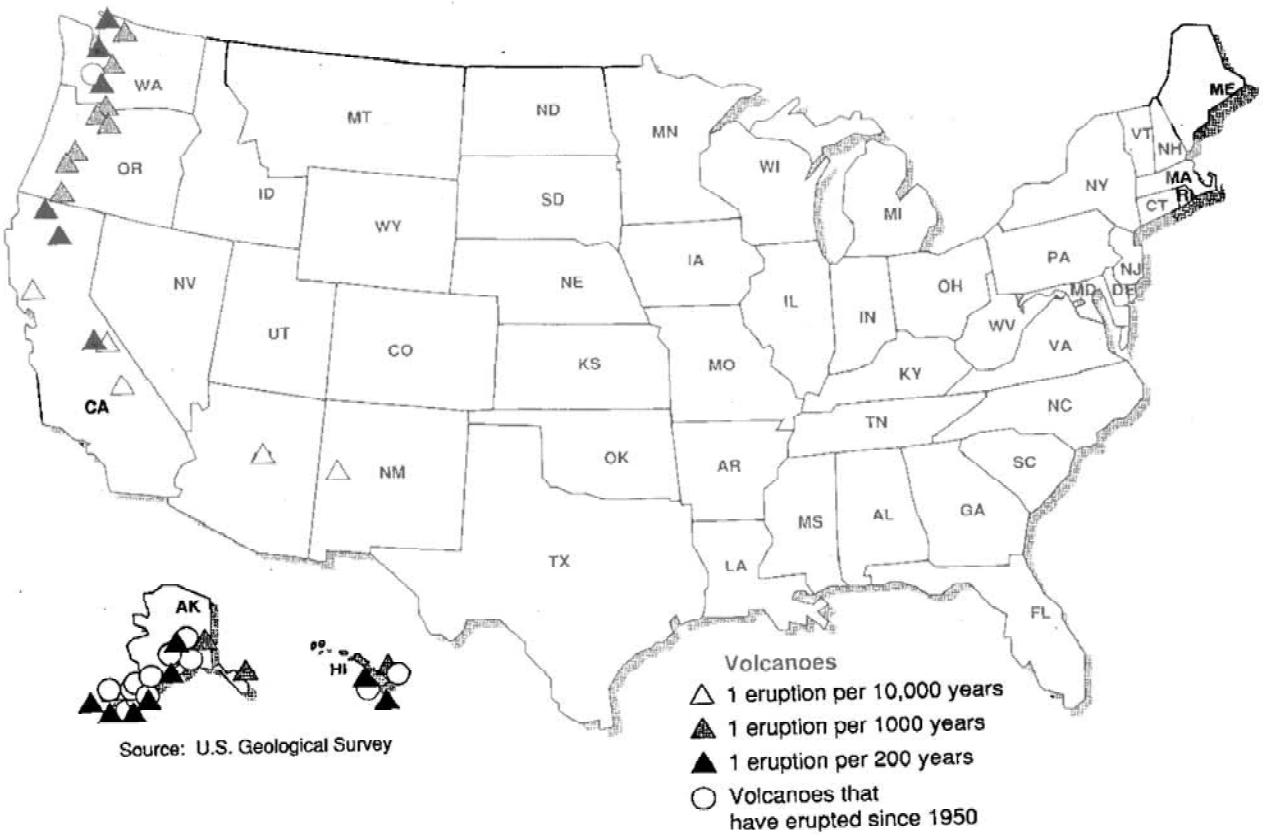
A *tsunami* is a series of giant sea waves. These are generated by earthquake or volcanic action on the ocean floor or near coastal areas. Tsunami waves can travel more than 500 miles per hour through open seas and build to heights of 100 feet or more when approaching the shoreline.

Related Hazards

Tsunamis can cause widespread flooding and erosion.

Geographical Considerations

Tsunamis have occurred mainly in the Pacific. However, it is possible for a tsunami to occur along any coastline.



Areas of Potential Volcanic Activity

VOLCANIC ERUPTION

Description

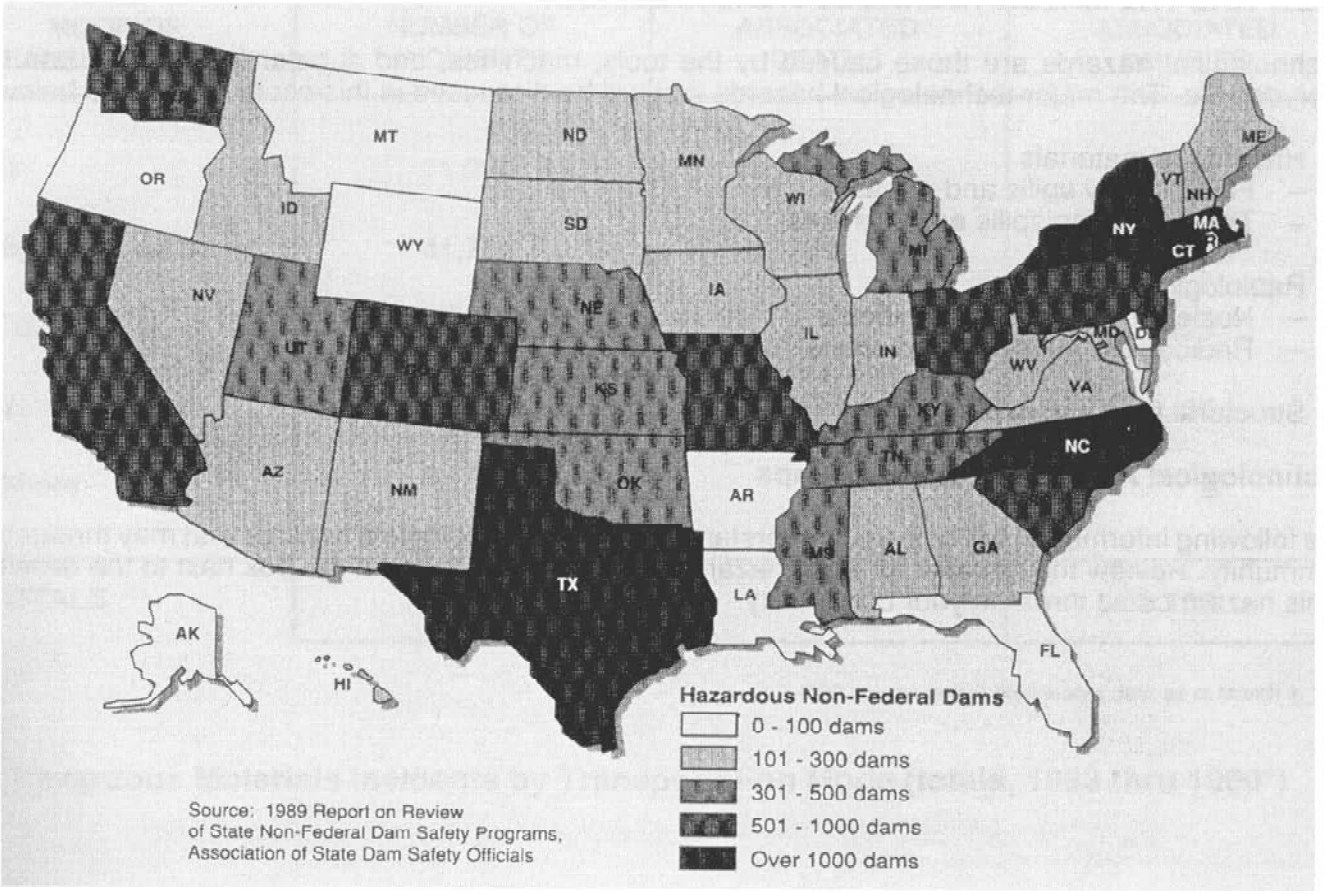
A *volcano* is an eruption from the earth's interior. The material coming from the eruption may be in the form of slow lava flow, or an explosive blast of powdered rock, steam, and other gases.

○ *Related Hazards*

Volcanic eruptions can generate mild to moderate earthquakes, mudflows, flash floods, and ash clouds that can create intense storms.

Geographical Considerations

The primary areas affected include the Pacific Rim States of Hawaii, Alaska, Washington, Oregon, and California. Montana and Wyoming also are at risk, but to a much lesser extent.



Potentially Hazardous Non-Federal Dams

DAM FAILURE

Description

The *failure of dams* due to excessive rainfall, volcanic eruption, poor construction, poor maintenance, or earthquake activity can cause catastrophic floods.

Geographic Considerations

A dam failure could affect everyone living in the floodplain downstream of a man-made dam. There are more than 80,000 dams throughout the United States; more than 20,000 are classified as posing "high" or "significant" hazards. These designations mean that if such a dam failed, lives could be lost and extensive property damage would be suffered.

WHAT ARE THE MAJOR TECHNOLOGICAL HAZARDS?

Technological hazards are those caused by the tools, machines, and substances that we use in our everyday life. The major technological hazards that will be discussed in this course are listed below.

- Hazardous materials
  - Fixed facility spills and releases
  - Transportation spills and releases
- Radiological accidents
  - Nuclear power facility accidents
  - Radioactive materials and waste
- Structural fires and explosions

Technological Hazards Charts and Maps

The following information will help you understand the major technological hazards that may threaten your community. Review the material for each hazard carefully. Put a check in the box next to the description if this hazard could threaten your community.

MODE OF TRANSPORTATION	NUMBER OF INCIDENTS	ASSOCIATED DEATHS	ASSOCIATED INJURIES
Air	1,220	0	153
Highway	41,781	79	1,569
Railway	7,886	1	423
Water	83	1	35
Others	29	0	2
TOTALS	50,999	81	2,182

* 1990 figures reflect preliminary data as of March 1, 1991

Hazardous Materials Incidents by Transportation Mode (totals, 1983 thru 1990*)

HAZARDOUS MATERIALS

FIXED FACILITY

Any fixed site where chemicals are manufactured, used, or stored.

An *illegal dump site* is a place where hazardous substances are intentionally and illegally dumped. Sometimes these materials are dumped illegally along roadsides or in open areas, or are buried underground. Legal dump sites for chemical wastes must be selected, prepared, and monitored carefully to ensure that human or animal life is not endangered by a polluted environment.

Geographical Considerations

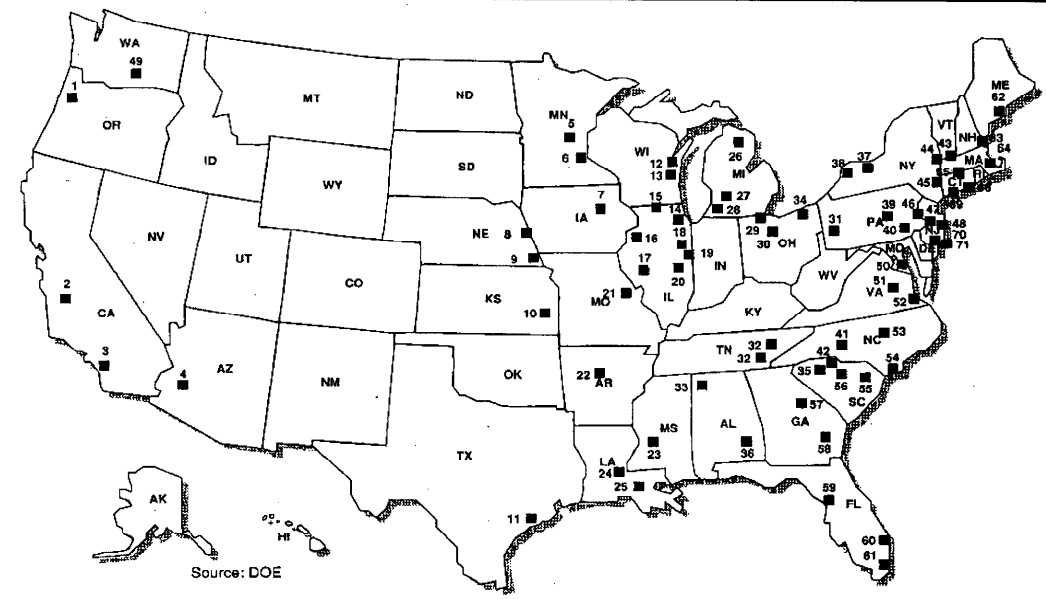
Major chemical spills can occur at any facility that produces, uses, or stores chemicals. These include chemical manufacturing plants, laboratories, shipyards, railroad yards, warehouses, or chemical disposal areas. Illegal dump sites can appear anywhere.

TRANSPORTATION

Transportation accidents involving hazardous substances occur when a vehicle carrying these materials is involved in an accident that endangers public health or the environment. Because of their increased use, hazardous substances are transported by truck, train, ship, plane, or pipeline.

Geographical Considerations

Areas at risk would be along highways, rail lines, pipelines, rivers, and port areas. Because major highways run through virtually all local jurisdictions, all sections of the country are at risk.



■ FULL-POWER LICENSED REACTOR ON SITE

1 TROJAN
2 DIABLO CANYON
3 SAN ONOFRE
4 PALO VERDE
5 MONTICELLO
6 PRAIRIE ISLAND
7 DUANE ARNOLD
8 FT.CALHOUN
9 COOPER
10 WOLF CREEK
11 SOUTH TEXAS
12 KEWAUNEE
13 POINT BEACH
14 ZION
15 BYRON
16 QUAD CITIES
17 LA SALLE
18 DRESDEN
19 BRAIDWOOD
20 CLINTON
21 CALLAWAY
22 ARKANSAS
23 GRAND GULF
24 RIVER BEND
25 WATERFORD
26 BIG ROCK POINT
27 PALISADES
28 COOK
29 FERMI
30 DAVIS-BESSE
31 BEAVER VALLEY
32 SEQUOYAH
33 BROWNS FERRY
34 PERRY
35 OCONEE
36 JOSEPH M. FARLEY
37 NINE MILE POINT
38 GINNA
39 THREE MILE ISLAND
40 PEACH BOTTOM
41 MCGUIRE
42 CATAWBA
43 VERMONT YANKEE
44 FITZPATRICK
45 INDIAN POINT
46 SUSQUEHANNA
47 LIMERICK
48 OYSTER CREEK
49 WASHINGTON NUCLEAR PROJECT
50 CALVERT CLIFFS
51 NORTH ANNA
52 SURRY
53 HARRIS
54 BRUNSWICK
55 ROBINSON
56 SUMMER
57 VOGTLE
58 HATCH
59 CRYSTAL RIVER
60 ST LUCIE
61 TURKEY POINT
62 MAINE YANKEE
63 SEABROOK
64 PILGRIM
65 CONNECTICUT YANKEE
66 MILLSTONE
67 COMANCHE PARK
68 WATTS BAR
69 HADDAM NECK
70 SALEM
71 HOPE CREEK

Commercial Nuclear Power Reactors in the United States, 1990

RADIOLOGICAL MATERIALS

NUCLEAR FACILITY

Nuclear power-generating facilities have the greatest concentration of radioactive materials of any private source. Although extensive safeguards are required, accidents can occur. These could affect large populations through the accidental release of radiation

Geographical Considerations

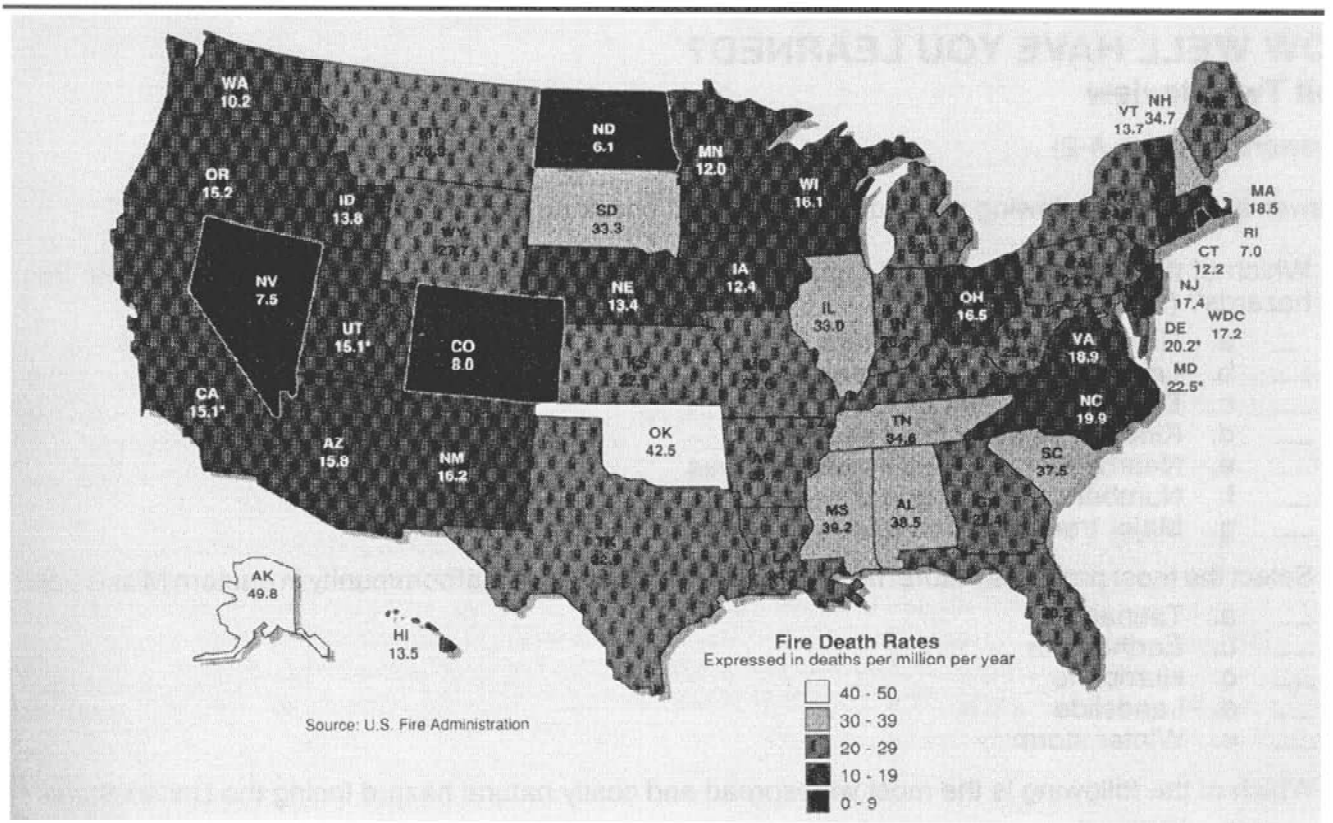
Areas at risk are normally designated as (1) within the *plume emergency planning zone* of such facilities (jurisdictions located within a 10-mile radius of a nuclear power plant) or (2) within the *ingestion emergency planning zone* (jurisdictions within a 50-mile radius of a nuclear power plant). About 75% of the States are affected, in particular the eastern half of the contiguous 48 States and the West Coast States.

TRANSPORTATION AND STORAGE

The *transportation and disposal of radioactive materials and waste* creates problems because of the long life of radioactive materials. Although precautions are taken in packaging the materials, there is still concern that transportation accidents and other hazards, such as earthquakes near disposal sites, could cause radiation exposure or pollution.

Geographical Considerations

Dangers posed by radioactive wastes are concentrated in the immediate vicinity of the disposal sites or along the transportation routes. Disposal sites are located in remote areas or at nuclear power facilities.



Fire Death Rate Per Million Population, 1990

STRUCTURAL FIRE AND EXPLOSION

Description

Fires and explosions can result in uncontrolled burning in residential, commercial, industrial, or other properties in rural or developed areas.

Geographical Considerations

Accidental structural fire and explosion can strike anywhere. Though arson once was confined to major urban areas, it now can occur in practically any community in the United States.

HOW WELL HAVE YOU LEARNED?

Unit Two Review

(Answers on page A-2)

Answer each of the following questions by placing a check next to the *best* response.

1. Which of the following factors should you consider when analyzing your community's threat from hazards? (Check all that apply.)
   - ___ a. History of natural disasters
   - ___ b. Location of nearby military bases
   - ___ c. Distant rivers and mountains
   - ___ d. Kinds of weather in all seasons
   - ___ e. Nearby factories and industrial areas
   - ___ f. Number of school-age children
   - ___ g. Major transportation routes
2. Select the most probable natural hazard that might affect a coastal community in eastern Mississippi.
   - ___ a. Tsunami
   - ___ b. Earthquake
   - ___ c. Hurricane
   - ___ d. Landslide
   - ___ e. Winter storm
3. Which of the following is the most widespread and costly natural hazard facing the United States?
   - ___ a. Blizzard
   - ___ b. Thunderstorms
   - ___ c. Flood and flash flood
   - ___ d. Hurricane
   - ___ e. Storm surge
4. Which of the following is an example of a technological hazard?
   - ___ a. Tsunami
   - ___ b. Wildfire
   - ___ c. Tornado
   - ___ d. Factory explosion
   - ___ e. Storm surge
5. Which community might be in the greatest danger from a radiological accident?
   - ___ a. A community with a minimum security prison
   - ___ b. A community with a nuclear power plant
   - ___ c. A community with a clothing manufacturing plant
   - ___ d. A community on a large river
   - ___ e. A community on a seashore