APPENDIX G

FEMA EMERGENCY MANAGEMENT GUIDE FOR BUSINESS AND INDUSTRY

A step-by-step approach to emergency planning, response, and recovery for companies of all sizes. Sponsored by a Public-Private Partnership with the Federal Emergency Management Agency.

INTRODUCTION

A hurricane blasts through South Florida causing more than $25 billion in damages. A fire at a food processing plant results in 25 deaths, a company out of business, and a small town devastated. A bombing in the World Trade Center results in six deaths, hundreds of injuries, and the evacuation of 40,000 people. A blizzard shuts down much of the East Coast for days. More than 150 lives are lost and millions of dollars in damages incurred.

Every year emergencies take their toll on business and industry—in lives and dollars. But something can be done. Business and industry can limit injuries and damages and return more quickly to normal operations if they plan ahead.

About This Guide

This guide provides step-by-step advice on how to create and maintain a comprehensive emergency management program. It can be used by

manufacturers, corporate offices, retailers, utilities, or any organization where a sizable number of people work or gather.

Whether you operate from a high-rise building or an industrial complex, whether you own, rent, or lease your property, whether you are a large or small company the concepts in this guide will apply.

To begin, you need not have in-depth knowledge of emergency management. What you need is the authority to create a plan and a commitment from the chief executive officer to make emergency management part of your corporate culture.

If you already have a plan, use this guide as a resource to assess and update your plan. The guide is organized as follows:

- Section 1: 4 Steps in the Planning Process—how to form a planning team; how to conduct a vulnerability analysis; how to develop a plan; and how to implement the plan. The information can be applied to virtually any type of business or industry.
- Section 2: Emergency Management Considerations—how to build such emergency management capabilities as life safety, property protection, communications, and community outreach.
- Section 3: Hazard-Specific Information—technical information about specific hazards your facility may face.
- Section 4: Information Sources—where to turn for additional information.

What Is an Emergency?

An emergency is any unplanned event that can cause deaths or significant injuries to employees, customers, or the public, or that can shut down your business, disrupt operations, cause physical or environmental damage, or threaten the facility's financial standing or public image. Obviously, numerous events can be "emergencies," including:

1. Fire
2. Hazardous materials incident
3. Flood or flash flood
4. Hurricane
5. Tornado
6. Winter storm
7. Earthquake
8. Communications failure
9. Radiological accident
10. Civil disturbance

11. Loss of key supplier or customer
12. Explosion

The term "disaster" has been left out of this document because it lends itself to a preconceived notion of a large-scale event, usually a "natural disaster." In fact, each event must be addressed within the context of the impact it has on the company and the community. What might constitute a nuisance to a large industrial facility could be a "disaster" to a small business.

What Is Emergency Management?

Emergency management is the process of preparing for, mitigating, responding to, and recovering from an emergency.

Emergency management is a dynamic process. Planning, though critical, is not the only component. Training, conducting drills, testing equipment, and coordinating activities with the community are other important functions.

Making the "Case" for Emergency Management

To be successful, emergency management requires upper management support. The chief executive sets the tone by authorizing planning to take place and directing senior management to get involved.

When presenting the "case" for emergency management, avoid dwelling on the negative effects of an emergency (e.g., deaths, fines, criminal prosecution) and emphasize the positive aspects of preparedness. For example:

1. It helps companies fulfill their moral responsibility to protect employees, the community, and the environment.
2. It facilitates compliance with regulatory requirements of federal, state, and local agencies.
3. It enhances a company's ability to recover from financial losses, regulatory fines, loss of market share, damages to equipment or products, or business interruption.
4. It reduces exposure to civil or criminal liability in the event of an incident.
5. It enhances a company's image and credibility with employees, customers, suppliers, and the community.
6. It may reduce your insurance premiums.

SECTION I—FOUR STEPS IN THE PLANNING PROCESS

Step 1—Establish a Planning Team
Step 2—Analyze Capabilities and Hazards
Step 3—Develop the Plan
Step 4—Implement the Plan

Step 1—Establish a Planning Team

There must be an individual or group in charge of developing the emergency management plan. The following is guidance for making the appointment.

1. Form the Team: The size of the planning team will depend on the facility's operations, requirements and resources. Involving a group of people is usually best because:

a. It encourages participation and gets more people invested in the process.
b. It increases the amount of time and energy participants are able to give.
c. It enhances the visibility and stature of the planning process.
d. It provides for a broad perspective on the issues.

Determine who can be an active member and who can serve in an advisory capacity. In most cases, one or two people will be doing the bulk of the work. At the very least, you should obtain input from all functional areas. Remember:

a. Upper management
b. Line management
c. Labor
d. Human Resources
e. Engineering and maintenance
f. Safety, health, and environmental affairs
g. Public information officer
h. Security
i. Community relations
j. Sales and marketing
k. Legal
l. Finance and purchasing

Have participants appointed in writing by upper management. Their job descriptions could also reflect this assignment.

2. Establish Authority: Demonstrate management's commitment and promote an atmosphere of cooperation by "authorizing" the planning group to take the steps necessary to develop a plan. The group should be led by the chief executive or the plant manager. Establish a clear line of authority between group members and the group leader, though not so rigid as to prevent the free flow of ideas.

3. Issue a Mission Statement: Have the chief executive or plant manager issue a mission statement to demonstrate the company's commitment to emergency management. The statement should:

Define the purpose of the plan and indicate that it will involve the entire organization

Define the authority and structure of the planning group

4. Establish a Schedule and Budget: Establish a work schedule and planning deadlines. Timelines can be modified as priorities become more clearly defined.

Develop an initial budget for such things as research, printing, seminars, consulting services, and other expenses that may be necessary during the development process.

Step 2—Analyze Capabilities and Hazards

This step entails gathering information about current capabilities and about possible hazards and emergencies, and then conducting a vulnerability analysis to determine the facility's capabilities for handling emergencies.

1. Where Do You Stand Right Now?

Review internal plans and policies. Documents to look for include:

a. Evacuation plan
b. Fire protection plan
c. Safety and health program
d. Environmental policies
e. Security procedures
f. Insurance programs
g. Finance and purchasing procedures
h. Plant closing policy
i. Employee manuals
j. Hazardous materials plan
k. Process safety assessment
l. Risk management plan

m. Capital improvement program
n. Mutual aid agreements

2. Meet with Outside Groups

Meet with government agencies, community organizations, and utilities. Ask about potential emergencies and about plans and available resources for responding to them. Sources of information include:

a. Community emergency management office
b. Mayor or Community Administrator's office
c. Local Emergency Planning Committee (LEPC)
d. Fire Department
e. Police Department
f. Emergency Medical Services organizations
g. American Red Cross
h. National Weather Service
i. Public Works Department
j. Planning Commission
k. Telephone companies
l. Electric utilities
m. Neighboring businesses

3. Identify Codes and Regulations

Identify applicable federal, state, and local regulations such as:

a. Occupational safety and health regulations
b. Environmental regulations
c. Fire codes
d. Seismic safety codes
e. Transportation regulations
f. Zoning regulations
g. Corporate policies

4. Identify Critical Products, Services, and Operations

You'll need this information to assess the impact of potential emergencies and to determine the need for backup systems. Areas to review include:

a. Company products and services and the facilities and equipment needed to produce them

b. Products and services provided by suppliers, especially sole source vendors
c. Lifeline services such as electrical power, water, sewer, gas, telecommunications, and transportation
d. Operations, equipment, and personnel vital to the continued functioning of the facility

5. Identify Internal Resources and Capabilities

Resources and capabilities that could be needed in an emergency include:

a. Personnel—fire brigade, hazardous materials response team, emergency medical services, security, emergency management group, evacuation team, public information officer

b. Equipment—fire protection and suppression equipment, communications equipment, first aid supplies, emergency supplies, warning systems, emergency power equipment, decontamination equipment

c. Facilities—emergency operating center, media briefing area, shelter areas, first-aid stations, sanitation facilities

d. Organizational capabilities—training, evacuation plan, employee support system

e. Backup systems—arrangements with other facilities to provide for:

1. Payroll
2. Communications
3. Production
4. Customer services
5. Shipping and receiving
6. Information systems support
7. Emergency power
8. Recovery support

6. Identify External Resources

There are many external resources that could be needed in an emergency. In some cases, formal agreements may be necessary to define the facility's relationship with the following:

a. Local emergency management office
b. Fire Department
c. Hazardous materials response organization
d. Emergency medical services
e. Hospitals

f. Local and State police
g. Community service organizations
h. Utilities
i. Contractors
j. Suppliers of emergency equipment
k. Insurance carriers

7. Do an Insurance Review

Meet with insurance carriers to review all policies. (See Section 2: Recovery and Restoration.)

8. Conduct a Vulnerability Analysis

The next step is to assess the vulnerability of your facility—the probability and potential impact of each emergency. Use the Vulnerability Analysis Chart on p. 70 of this book to guide the process, which entails assigning probabilities, estimating impact, and assessing resources, using a numerical system. The lower the score the better.

9. List Potential Emergencies

In the first column of the chart, list all emergencies that could affect your facility, including those identified by your local emergency management office. Consider both:

a. Emergencies that could occur within your facility, and
b. Emergencies that could occur in your community.

Below are some other factors to consider:

Historical—What types of emergencies have occurred in the community, at this facility, and at other facilities in the area?

a. Fires
b. Severe weather
c. Hazardous material spills
d. Transportation accidents
e. Earthquakes
f. Hurricanes
g. Tornadoes
h. Terrorism
i. Utility outages

Geographic—What can happen as a result of the facility's location? Keep in mind:

a. Proximity to flood plains, seismic faults, and dams
b. Proximity to companies that produce, store, use, or transport hazardous materials
c. Proximity to major transportation routes and airports
d. Proximity to nuclear power plants

Technological—What could result from a process or system failure? Possibilities include:

a. Fire, explosion, hazardous materials incident
b. Safety system failure
c. Telecommunications failure
e. Computer system failure
f. Power failure
g. Heating/cooling system failure
h. Emergency notification system failure

Human Error—What emergencies can be caused by employee error? Are employees trained to work safely? Do they know what to do in an emergency? Human error is the single largest cause of workplace emergencies and can result from:

a. Poor training
b. Poor maintenance
c. Carelessness
d. Misconduct
e. Substance abuse
f. Fatigue

Physical—What types of emergencies could result from the design or construction of the facility? Does the physical facility enhance safety? Consider:

a. The physical construction of the facility
b. Hazardous processes or by-products
c. Facilities for storing combustibles
d. Layout of equipment
e. Lighting
f. Evacuation routes and exits
g. Proximity of shelter areas

Regulatory—What emergencies or hazards are you regulated to deal with? Analyze each potential emergency from beginning to end. Consider what could happen as a result of:

a. Prohibited access to the facility
b. Loss of electric power

c. Communication lines down
e. Ruptured gas mains
f. Water damage
g. Smoke damage
h. Structural damage
i. Air or water contamination
j. Explosion
k. Building collapse
l. Trapped persons
m. Chemical release

10. Estimate Probability

In the Probability column, rate the likelihood of each emergency's occurrence. This is a subjective consideration, but useful nonetheless. Use a simple scale of 1 to 5 with 1 as the lowest probability and 5 as the highest.

11. Assess the Potential Human Impact

Analyze the potential human impact of each emergency—the possibility of death or injury. Assign a rating in the Human Impact column of the Vulnerability Analysis Chart. Use a 1 to 5 scale with 1 as the lowest impact and 5 as the highest.

12. Assess the Potential Property Impact

Consider the potential property for losses and damages. Again, assign a rating in the Property Impact column, 1 being the lowest impact and 5 being the highest. Consider:

a. Cost to replace
b. Cost to set up temporary replacement
c. Cost to repair

13. Assess the Potential Business Impact

Consider the potential loss of market share. Assign a rating in the Business Impact column. Again, 1 is the lowest impact and 5 is the highest. Assess the impact of:

a. Business interruption
b. Employees unable to report to work
c. Customers unable to reach facility
d. Company in violation of contractual agreements

e. Imposition of fines and penalties or legal costs
f. Interruption of critical supplies
g. Interruption of product distribution

14. Assess Internal and External Resources

Next, assess your resources and ability to respond. Assign a score to your Internal Resources and External Resources. The lower the score the better. To help you do this, consider each potential emergency from beginning to end and each resource that would be needed to respond. For each emergency ask these questions:

- Do we have the needed resources and capabilities to respond?
- Will external resources be able to respond to us for this emergency as quickly as we may need them, or will they have other priority areas to serve?

If the answers are yes, move on to the next assessment. If the answers are no, identify what can be done to correct the problem. For example, you may need to:

a. Develop additional emergency procedures
b. Conduct additional training
c. Acquire additional equipment
d. Establish mutual aid agreements
e. Establish agreements with specialized contractors

15. Add the Columns

Total the scores for each emergency. The lower the score the better. While this is a subjective rating, the comparisons will help determine planning and resource priorities—the subject of the pages to follow.

Step 3—Develop the Plan

You are now ready to develop an emergency management plan. This section describes how.

Plan Components

Your plan should include the following basic components.

1. Executive Summary The executive summary gives management a brief overview of: the purpose of the plan, the facility's emergency

management policy, authorities and responsibilities of key personnel, the types of emergencies that could occur, and where response operations will be managed.

2. Emergency Management Elements This section of the plan briefly describes the facility's approach to the core elements of emergency management, which are:

a. Direction and control
b. Communications
c. Life safety
d. Property protection
e. Community outreach
f. Recovery and restoration
g. Administration and logistics.

These elements, which are described in detail in Section 2, are the foundation for the emergency procedures that your facility will follow to protect personnel and equipment and resume operations.

3. Emergency Response Procedures The procedures spell out how the facility will respond to emergencies. Whenever possible, develop them as a series of checklists that can be quickly accessed by senior management, department heads, response personnel, and employees.

Determine what actions would be necessary to:

a. Assess the situation
b. Protect employees, customers, visitors, equipment, vital records, and other assets, particularly during the first 3 days
c. Get the business back up and running

Specific procedures might be needed for any number of situations such as bomb threats or tornadoes, and for such functions as:

a. Warning employees and customers
b. Communicating with personnel and community responders
c. Conducting an evacuation and accounting for all persons in the facility
d. Managing response activities
e. Activating and operating an emergency operations center
f. Fighting fires
g. Shutting down operations
h. Protecting vital records
i. Restoring operations

4. Support Documents Documents that could be needed in an emergency include:

Emergency call lists—lists (wallet size if possible) of all persons on and off site who would be involved in responding to an emergency, their responsibilities, and their 24-hour telephone numbers.

Building and site maps that indicate:

a. Utility shutoffs
b. Water hydrants
c. Water main valves
d. Water lines
e. Gas main valves
f. Gas lines
g. Electrical cutoffs
h. Electrical substations
i. Storm drains
j. Sewer lines
k. Location of each building (include name of building, street name and number)
l. Floor plans
m. Alarm and enunciators
n. Fire extinguishers
o. Fire suppression systems
p. Exits
q. Stairways
r. Designated escape routes
s. Restricted areas
t. Hazardous materials (including cleaning supplies and chemicals)
u. High-value items

5. Resource Lists These are lists of major resources (equipment, supplies, services) that could be needed in an emergency, and mutual aid agreements with other companies and government agencies.

The Development Process

The following is guidance for developing the plan.

1. Identify Challenges and Prioritize Activities Determine specific goals and milestones. Make a list of tasks to be performed, by whom and when. Determine how you will address the problem areas and resource shortfalls that were identified in the vulnerability analysis.

2. Write the Plan Assign each member of the planning group a section to write. Determine the most appropriate format for each section.

Establish an aggressive timeline with specific goals. Provide enough time for completion of work, but not so much as to allow assignments to linger. Establish a schedule for:

a. First draft
b. Review
c. Second draft
d. Table-top exercise
e. Final draft
f. Printing
g. Distribution

3. Establish a Training Schedule Have one person or department responsible for developing a training schedule for your facility. For specific ideas about training, refer to Step 4.

4. Coordinate with Outside Organizations Meet periodically with local government agencies and community organizations. Inform appropriate government agencies that you are creating an emergency management plan. While their official approval may not be required, they will likely have valuable insights and information to offer.

Determine state and local requirements for reporting emergencies, and incorporate them into your procedures.

Determine protocols for turning control of a response over to outside agencies. Some details that may need to be worked out are:

a. Which gate or entrance will responding units use?
b. Where and to whom will they report?
c. How will they be identified?
d. How will facility personnel communicate with outside responders?
e. Who will be in charge of response activities?

Determine what kind of identification authorities will require to allow your key personnel into your facility during an emergency.

5. Maintain Contact with Other Corporate Offices Communicate with other offices and divisions in your company to learn:

a. Their emergency notification requirements
b. The conditions where mutual assistance would be necessary
c. How offices will support each other in an emergency
d. Names, telephone numbers, and pager numbers of key personnel

Incorporate this information into your procedures.

6. Review, Conduct Training, and Revise Distribute the first draft to group members for review. Revise as needed.

For a second review, conduct a table-top exercise with management and personnel who have a key emergency management responsibility. In a conference room setting, describe an emergency scenario and have participants discuss their responsibilities and how they would react to the situation. Based on this discussion, identify areas of confusion and overlap, and modify the plan accordingly.

7. Seek Final Approval Arrange a briefing for the chief executive officer and senior management and obtain written approval.

8. Distribute the Plan Place the final plan in three-ring binders and number all copies and pages. Each individual who receives a copy should be required to sign for it and be responsible for posting subsequent changes.

Determine which sections of the plan would be appropriate to show to government agencies (some sections may refer to corporate secrets or include private listings of names, telephone numbers, or radio frequencies). Distribute the final plan to:

a. Chief executive and senior managers
b. Key members of the company's emergency response organization
c. Company headquarters
d. Community emergency response agencies (appropriate sections)

Have key personnel keep a copy of the plan in their homes. Inform employees about the plan and training schedule.

Step 4—Implement the Plan

Implementation means more than simply exercising the plan during an emergency. It means acting on recommendations made during the vulnerability analysis, integrating the plan into company operations, training employees, and evaluating the plan.

Integrate the Plan into Company Operations

Emergency planning must become part of the corporate culture. Look for opportunities to build awareness; to educate and train personnel; to test procedures; to involve all levels of management, all departments and the community in the planning process; and to make emergency management part of what personnel do on a day-to-day basis.

Test how completely the plan has been integrated by asking:

a. How well does senior management support the responsibilities outlined in the plan?

b. Have emergency planning concepts been fully incorporated into the facility's accounting, personnel, and financial procedures?

c. How can the facility's processes for evaluating employees and defining job classifications better address emergency management responsibilities?

d. Are there opportunities for distributing emergency preparedness information through corporate newsletters, employee manuals, or employee mailings?

e. What kinds of safety posters or other visible reminders would be helpful?

f. Do personnel know what they should do in an emergency?

g. How can all levels of the organization be involved in evaluating and updating the plan?

Conduct Training, Drills, and Exercises

Everyone who works at or visits the facility requires some form of training. This could include periodic employee discussion sessions to review procedures, technical training in equipment use for emergency responders, evacuation drills, and full-scale exercises. Below are basic considerations for developing a training plan.

1. Planning Considerations Assign responsibility for developing a training plan. Consider the training and information needs for employees, contractors, visitors, managers, and those with an emergency response role identified in the plan. Determine for a 12-month period:

a. Who will be trained?
b. Who will do the training?
c. What training activities will be used?
d. When and where each session will take place?
e. How the session will be evaluated and documented?

Use the Training Drills and Exercises Chart in the appendix section to schedule training activities or create one of your own. Consider how to involve community responders in training activities.

Conduct reviews after each training activity. Involve both personnel and community responders in the evaluation process.

2. Training Activities Training can take many forms:

a. Orientation and Education Sessions—These are regularly scheduled discussion sessions to provide information, answer questions, and identify needs and concerns.

b. Table-Top Exercise—Members of the emergency management group meet in a conference room setting to discuss their responsibilities and how they would react to emergency scenarios. This is a cost-effective and efficient way to identify areas of overlap and confusion before conducting more demanding training activities.

c. Walk-through Drill—The emergency management group and response teams actually perform their emergency response functions. This activity generally involves more people and is more thorough than a table-top exercise.

d. Functional Drills—These drills test specific functions such as medical response, emergency notifications, and warning and communications

procedures and equipment, though not necessarily at the same time. Personnel are asked to evaluate the systems and identify problem areas.

e. Evacuation Drill—Personnel walk the evacuation route to a designated area where procedures for accounting for all personnel are tested. Participants are asked to make notes as they go along of what might become a hazard during an emergency, e.g., stairways cluttered with debris, smoke in the hallways. Plans are modified accordingly.

f. Full-scale Exercise—A real-life emergency situation is simulated as closely as possible. This exercise involves company emergency response personnel, employees, management, and community response organizations.

3. Employee Training General training for all employees should address:

a. Individual roles and responsibilities
b. Information about threats, hazards, and protective actions
c. Notification, warning, and communications procedures
d. Means for locating family members in an emergency
e. Emergency response procedures
f. Evacuation, shelter, and accountability procedures
g. Location and use of common emergency equipment
h. Emergency shutdown procedures

The scenarios developed during the vulnerability analysis can serve as the basis for training events.

4. Evaluate and Modify the Plan Conduct a formal audit of the entire plan at least once a year. Among the issues to consider are:

a. How can you involve all levels of management in evaluating and updating the plan?

b. Are the problem areas and resource shortfalls identified in the vulnerability analysis being sufficiently addressed?

c. Does the plan reflect lessons learned from drills and actual events?

d. Do members of the emergency management group and emergency response team understand their respective responsibilities? Have new members been trained?

e. Does the plan reflect changes in the physical layout of the facility? Does it reflect new facility processes?

f. Are photographs and other records of facility assets up to date?

g. Is the facility attaining its training objectives?

h. Have the hazards in the facility changed?

i. Are the names, titles, and telephone numbers in the plan current?

j. Are steps being taken to incorporate emergency management into other facility processes?

k. Have community agencies and organizations been briefed on the plan? Are they involved in evaluating the plan?

In addition to a yearly audit, evaluate and modify the plan at these times:

a. After each training drill or exercise
b. After each emergency
c. When personnel or their responsibilities change
d. When the layout or design of the facility changes
e. When policies or procedures change
f. Remember to brief personnel on changes to the plan.

SECTION 2—EMERGENCY MANAGEMENT CONSIDERATIONS

This section describes the core operational considerations of emergency management. They are:

Direction and Control
Communications
Life Safety
Property Protection
Community Outreach
Recovery and Restoration
Administration and Logistics

Function: Direction and Control

Someone must be in charge in an emergency. The system for managing resources, analyzing information, and making decisions in an emergency is called direction and control.

The direction and control system described below assumes a facility of sufficient size. Your facility may require a less sophisticated system, though the principles described here will still apply.

The configuration of your system will depend on many factors. Larger industries may have their own fire team, emergency medical technicians, or hazardous materials team, while smaller organizations may need to rely on mutual aid agreements. They may also be able to consolidate positions or combine responsibilities. Tenants of office buildings or industrial parks may be part of an emergency management program for the entire facility.

1. Emergency Management Group (EMG)

The EMG is the team responsible for the big picture. It controls all incident-related activities. The Incident Commander (IC) oversees the technical aspects of the response.

The EMG supports the IC by allocating resources and by interfacing with the community, the media, outside response organizations, and regulatory agencies.

The EMG is headed by the Emergency Director (ED), who should be the facility manager. The ED is in command and control of all aspects of the emergency. Other EMG members should be senior managers who have the authority to:

a. Determine the short- and long-term effects of an emergency
b. Order the evacuation or shutdown of the facility
c. Interface with outside organizations and the media
d. Issue press releases

2. Incident Command System (ICS)

The ICS was developed specifically for the fire service, but its principles can be applied to all emergencies. The ICS provides for coordinated response and a clear chain of command and safe operations.

The Incident Commander (IC) is responsible for front-line management of the incident, for tactical planning and execution, for determining whether outside assistance is needed, and for relaying requests for internal resources or outside assistance through the Emergency Operations Center (EOC).

The IC can be any employee, but a member of management with the authority to make decisions is usually the best choice.

The IC must have the capability and authority to:

a. Assume command
b. Assess the situation
c. Implement the emergency management plan
d. Determine response strategies
e. Activate resources
f. Order an evacuation
g. Oversee all incident response activities
h. Declare that the incident is "over"

3. Emergency Operations Center (EOC)

The EOC serves as a centralized management center for emergency operations. Here, decisions are made by the EMG based upon information provided by the IC and other personnel. Regardless of size or process, every facility should designate an area where decision makers can gather during an emergency.

The EOC should be located in an area of the facility not likely to be involved in an incident, perhaps the security department, the manager's office, a conference room, or the training center. An alternate EOC should be designated in the event that the primary location is not usable.

Each facility must determine its requirements for an EOC based upon the functions to be performed and the number of people involved. Ideally, the EOC is a dedicated area equipped with communications equipment, reference materials, activity logs, and all the tools necessary to respond quickly and appropriately to an emergency.

4. Planning Considerations

To develop a direction and control system:

a. Define the duties of personnel with an assigned role. Establish procedures for each position. Prepare checklists for all procedures.
b. Define procedures and responsibilities for fire fighting, medical and health, and engineering.
c. Determine lines of succession to ensure continuous leadership, authority, and responsibility in key positions.
d. Determine equipment and supply needs for each response function.

At a minimum, assign all personnel responsibility for:

a. Recognizing and reporting an emergency
b. Warning other employees in the area
c. Taking security and safety measures
d. Evacuating safely
e. Provide training

5. Security

Isolation of the incident scene must begin when the emergency is discovered. If possible, the discoverer should attempt to secure the scene and control access, but no one should be placed in physical danger to perform these functions. Basic security measures include:

Closing doors or windows
Establishing temporary barriers with furniture after people have safely evacuated
Dropping containment materials (sorbent pads, etc.) in the path of leaking materials
Closing file cabinets or desk drawers

Only trained personnel should be allowed to perform advanced security measures. Access to the facility, the EOC, and the incident scene should be limited to persons directly involved in the response.

6. Coordination of Outside Response

In some cases, laws, codes, prior agreements, or the very nature of the emergency require the IC to turn operations over to an outside response organization. When this happens, the protocols established between the facility and outside response organizations are implemented. The facility's IC provides the community's IC a complete report on the situation.

The facility IC keeps track of which organizations are on-site and how the response is being coordinated. This helps increase personnel safety and accountability, and prevents duplication of effort.

Function: Communications

Communications are essential to any business operation. A communications failure can be a disaster in itself, cutting off vital business activities.

Communications are needed to report emergencies, to warn personnel of the danger, to keep families and off-duty employees informed about what's happening at the facility to coordinate response actions, and to keep in contact with customers and suppliers.

1. Contingency Planning

Plan for all possible contingencies from a temporary or short-term disruption to a total communications failure.

Consider the everyday functions performed by your facility and the communications, both voice and data, used to support them.

Consider the business impact if your communications were inoperable. How would this impact your emergency operations?

Prioritize all facility communications. Determine which should be restored first in an emergency.

Establish procedures for restoring communications systems.

Talk to your communications vendors about their emergency response capabilities. Establish procedures for restoring services.

Determine needs for backup communications for each business function. Options include messengers, telephones, portable microwave, amateur radios, point-to-point private lines, satellite, and high-frequency radio.

2. Emergency Communications

Consider the functions your facility might need to perform in an emergency and the communications systems needed to support them. Consider communications between:

a. Emergency responders
b. Responders and the Incident Commander (IC)
c. The IC and the Emergency Operations Center (EOC)
d. The IC and employees
e. The EOC and outside response organizations
f. The EOC and neighboring businesses
g. The EOC and employees' families
h. The EOC and customers
i. The EOC and media

Methods of communication include:

a. Messenger
b. Telephone
c. Two-way radio
d. FAX machine
e. Microwave
f. Satellite
g. Dial-up modems
h. Local area networks
i. Hand signals

3. Family Communications

In an emergency, personnel will need to know whether their families are okay. Taking care of one's loved ones is always a first priority.

Make plans for communicating with employees' families in an emergency. Also, encourage employees to:

Consider how they would communicate with their families in case they are separated from one another or injured in an emergency.

Arrange for an out-of-town contact for all family members to call in an emergency.

Designate a place to meet family members in case they cannot get home in an emergency.

4. Notification

Establish procedures for employees to report an emergency. Inform employees of procedures. Train personnel assigned specific notification tasks.

Post emergency telephone numbers near each telephone, on employee bulletin boards, and in other prominent locations.

Maintain an updated list of addresses and telephone and pager numbers of key emergency response personnel (from within and outside of the facility).

Listen for tornado, hurricane, and other severe weather warnings issued by the National Weather Service.

Determine government agencies' notification requirements in advance. Notification must be made immediately to local government agencies when an emergency has the potential to affect public health and safety.

Prepare announcements that could be made over public address systems.

5. Warning

Establish a system for warning personnel of an emergency. The system should:

a. Be audible to or within view of all people in the facility
b. Have an auxiliary power supply
c. Have a distinct and recognizable signal

Make plans for warning persons with disabilities. For instance, a flashing strobe light can be used to warn hearing-impaired people.

Familiarize personnel with procedures for responding when the warning system is activated.

Establish procedures for warning customers, contractors, visitors, and others who may not be familiar with the facility's warning system.

Test your facility's warning system at least monthly.

Function: Life Safety

Protecting the health and safety of everyone in the facility is the first priority during an emergency.

1. Evacuation Planning

One common means of protection is evacuation. In the case of fire, an immediate evacuation to a predetermined area away from the facility may be necessary. In a hurricane, evacuation could involve the entire community and take place over a period of days.

To develop an evacuation policy and procedure:

a. Determine the conditions under which an evacuation would be necessary.

b. Establish a clear chain of command. Identify personnel with the authority to order an evacuation. Designate "evacuation wardens" to assist others in an evacuation and to account for personnel.

c. Establish specific evacuation procedures. Establish a system for accounting for personnel. Consider employees' transportation needs for community-wide evacuations.

d. Establish procedures for assisting persons with disabilities and those who do not speak English.

e. Post evacuation procedures.

f. Designate personnel to continue or shut down critical operations while an evacuation is underway. They must be capable of recognizing when to abandon the operation and evacuate themselves.

g. Coordinate plans with the local emergency management office.

2. Evacuation Routes and Exits

Designate primary and secondary evacuation routes and exits. Have them clearly marked and well lit. Post signs.

Install emergency lighting in case a power outage occurs during an evacuation.

Ensure that evacuation routes and emergency exits are:

a. Wide enough to accommodate the number of evacuating personnel
b. Clear and unobstructed at all times
c. Unlikely to expose evacuating personnel to additional hazards
d. Have evacuation routes evaluated by someone not in your organization.

3. Assembly Areas and Accountability

Obtaining an accurate account of personnel after a site evacuation requires planning and practice.

Designate assembly areas where personnel should gather after evacuating.

Take a head count after the evacuation. The names and last known locations of personnel not accounted for should be determined and given to the EOC. (Confusion in the assembly areas can lead to unnecessary and dangerous search and rescue operations.)

Establish a method for accounting for non-employees such as suppliers and customers.

Establish procedures for further evacuation in case the incident expands. This may consist of sending employees home by normal means or providing them with transportation to an off-site location.

4. Shelter

In some emergencies, the best means of protection is to take shelter either within the facility or away from the facility in a public building.
Consider the conditions for taking shelter, e.g., tornado warning.
Identify shelter space in the facility and in the community. Establish procedures for sending personnel to shelter.
Determine needs for emergency supplies such as water, food, and medical supplies.
Designate shelter managers, if appropriate.
Coordinate plans with local authorities.

5. Training and Information

Train employees in evacuation, shelter, and other safety procedures. Conduct sessions at least annually or when:

a. Employees are hired
b. Evacuation wardens, shelter managers, and others with special assignments are designated
c. New equipment, materials, or processes are introduced
d. Procedures are updated or revised
e. Exercises show that employee performance must be improved

Provide emergency information such as checklists and evacuation maps.
Post evacuation maps in strategic locations.
Consider the information needs of customers and others who visit the facility.

6. Family Preparedness

Consider ways to help employees prepare their families for emergencies. This will increase their personal safety and help the facility get back up and running. Those who are prepared at home will be better able to carry out their responsibilities at work.

Function: Property Protection

Protecting facilities, equipment, and vital records is essential to restoring operations once an emergency has occurred.

1. Planning Considerations

Establish procedures for:

a. Fighting fires
b. Containing material spills
c. Closing or barricading doors and windows
d. Shutting down equipment
e. Covering or securing equipment
f. Moving equipment to a safe location

Identify sources of backup equipment, parts, and supplies.

Designate personnel to authorize, supervise, and perform a facility shutdown. Train them to recognize when to abandon the effort.

Obtain materials to carry out protection procedures and keep them on hand for use only in emergencies.

2. Protection Systems

Determine needs for systems to detect abnormal situations, provide warning, and protect property. Consider:

a. Fire protection systems
b. Lightning protection systems
c. Water-level monitoring systems
d. Overflow detection devices
e. Automatic shutoffs
f. Emergency power generation systems

Consult your property insurer about special protective systems.

3. Mitigation

Consider ways to reduce the effects of emergencies, such as moving or constructing facilities away from flood plains and fault zones. Also consider ways to reduce the chances of emergencies from occurring, such as changing processes or materials used to run the business.

Consider physical retrofitting measures such as:

a. Upgrading facilities to withstand the shaking of an earthquake or high winds
b. "Flood-proofing" facilities by constructing flood walls or other flood protection devices (see Section 3 for additional information)
c. Installing fire sprinkler systems
d. Installing fire-resistant materials and furnishings
e. Installing storm shutters for all exterior windows and doors

There are also nonstructural mitigation measures to consider, including:

a. Installing fire-resistant materials and furnishings
b. Securing light fixtures and other items that could fall or shake loose in an emergency
c. Moving heavy or breakable objects to low shelves
d. Attaching cabinets and files to low walls or bolting them together
e. Placing Velcro strips under typewriters, table-top computers, and television monitors
f. Moving work stations away from large windows
g. Installing curtains or blinds that can be drawn over windows to prevent glass from shattering onto employees
h. Anchoring water heaters and bolting them to wall studs

Consult a structural engineer or architect and your community's building and zoning offices for additional information.

4. Facility Shutdown

Facility shutdown is generally a last resort but always a possibility. Improper or disorganized shutdown can result in confusion, injury, and property damage.

Some facilities require only simple actions such as turning off equipment, locking doors, and activating alarms. Others require complex shutdown procedures.

Work with department heads to establish shutdown procedures. Include information about when and how to shut off utilities. Identify:

a. The conditions that could necessitate a shutdown
b. Who can order a shutdown
c. Who will carry out shutdown procedures
d. How a partial shutdown would affect other facility operations
e. The length of time required for shutdown and restarting

Train personnel in shutdown procedures. Post procedures.

5. Records Preservation

Vital records may include:

a. Financial and insurance information
b. Engineering plans and drawings
c. Product lists and specifications
d. Employee, customer, and supplier databases

e. Formulas and trade secrets
f. Personnel files

Preserving vital records is essential to the quick restoration of operations. Analyzing vital records involves:

a. Classifying operations into functional categories, e.g., finance, production, sales, administration
b. Determining essential functions for keeping the business up and running, such as finance, production, and sales
c. Identifying the minimum information that must be readily accessible to perform essential functions, e.g., maintaining customer collections may require access to account statements
d. Identifying the records that contain the essential information and where they are located
e. Identifying the equipment and materials needed to access and use the information.

Next, establish procedures for protecting and accessing vital records. Among the many approaches to consider are:

a. Labeling vital records
b. Backing up computer systems
c. Making copies of records
d. Storing tapes and disks in insulated containers
e. Storing data off-site where they would not likely be damaged by an event affecting your facility
f. Increasing security of computer facilities
g. Arranging for evacuation of records to backup facilities
h. Backing up systems handled by service bureaus
i. Arranging for backup power

Function: Community Outreach

Your facility's relationship with the community will influence your ability to protect personnel and property and return to normal operations.

This section describes ways to involve outside organizations in the emergency management plan.

1. Involving the Community

Maintain a dialogue with community leaders, first responders, government agencies, community organizations, and utilities, including:

a. Appointed and elected leaders
b. Fire, police, and emergency medical services personnel
c. Local Emergency Planning Committee (LEPC) members
d. Emergency management director
e. Public Works Department
f. American Red Cross
g. Hospitals
h. Telephone company
i. Electric utility
j. Neighborhood groups

Have regular meetings with community emergency personnel to review emergency plans and procedures. Talk about what you are doing to prepare for and prevent emergencies. Explain your concern for the community's welfare.

Identify ways your facility could help the community in a community-wide emergency.

Look for common interests and concerns. Identify opportunities for sharing resources and information.

Conduct confidence-building activities such as facility tours. Do a facility walk-through with community response groups.

Involve community fire, police, and emergency management personnel in drills and exercises.

Meet with your neighbors to determine how you could assist each other in an emergency.

2. Mutual Aid Agreements

To avoid confusion and conflict in an emergency, establish mutual aid agreements with local response agencies and businesses. These agreements should:

a. Define the type of assistance
b. Identify the chain of command for activating the agreement
c. Define communications procedures

Include these agencies in facility training exercises whenever possible.

3. Community Service

In community-wide emergencies, business and industry are often needed to assist the community with:

a. Personnel
b. Equipment

c. Shelter
d. Training
e. Storage
f. Feeding facilities
g. EOC facilities
h. Food, clothing, building materials
i. Funding
j. Transportation

While there is no way to predict what demands will be placed on your company's resources, give some thought to how the community's needs might influence your corporate responsibilities in an emergency. Also, consider the opportunities for community service before an emergency occurs.

4. Public Information

When site emergencies expand beyond the facility, the community will want to know the nature of the incident, whether the public's safety or health is in danger, what is being done to resolve the problem, and what was done to prevent the situation from happening.

Determine the audiences that may be affected by an emergency and identify their information needs. Include:

a. The public
b. The media
c. Employees and retirees
d. Unions
e. Contractors and suppliers
f. Customers
g. Shareholders
h. Emergency response organizations
i. Regulatory agencies
j. Appointed and elected officials
k. Special interest groups
l. Neighbors

5. Media Relations

In an emergency, the media are the most important link to the public. Try to develop and maintain positive relations with media outlets in your area. Determine their particular needs and interests. Explain your plan for protecting personnel and preventing emergencies.

Determine how you would communicate important public information through the media in an emergency. Designate a trained spokesperson

and an alternate spokesperson. Set up a media briefing area. Establish security procedures. Establish procedures for ensuring that information is complete, accurate, and approved for public release. Determine an appropriate and useful way of communicating technical information. Prepare background information about the facility.

When providing information to the media during an emergency:

Do's

Give all media equal access to information.
When appropriate, conduct press briefings and interviews. Give local and national media equal time.
Try to observe media deadlines.
Escort media representatives to ensure safety.
Keep records of information released.
Provide press releases when possible.

Don'ts

Do not speculate about the incident.
Do not permit unauthorized personnel to release information.
Do not cover up facts or mislead the media.
Do not place blame for the incident.

Function: Recovery and Restoration

Business recovery and restoration, or business resumption, goes right to a facility's bottom line: keeping people employed and the business running.

1. Planning Considerations

Consider making contractual arrangements with vendors for such postemergency services as records preservation, equipment repair, earthmoving, or engineering.

Meet with your insurance carriers to discuss your property and business resumption policies (see the next page for guidelines).

Determine critical operations and make plans for bringing those systems back on-line. The process may entail:

a. Repairing or replacing equipment
b. Relocating operations to an alternate location
c. Contracting operations on a temporary basis

Take photographs or videotape the facility to document company assets. Update these records regularly.

2. Continuity of Management

You can assume that not every key person will be readily available or physically at the facility after an emergency. Ensure that recovery decisions can be made without undue delay. Consult your legal department regarding laws and corporate bylaws governing continuity of management.

Establish procedures for:

a. Assuring the chain of command
b. Maintaining lines of succession for key personnel
c. Moving to alternate headquarters

Include these considerations in all exercise scenarios.

3. Insurance

Most companies discover that they are not properly insured only after they have suffered a loss. Lack of appropriate insurance can be financially devastating. Discuss the following topics with your insurance advisor to determine your individual needs.

a. How will my property be valued?
b. Does my policy cover the cost of required upgrades to code?
c. How much insurance am I required to carry to avoid becoming a co-insurer?
d. What perils or causes of loss does my policy cover?
e. What are my deductibles?
f. What does my policy require me to do in the event of a loss?
g. What types of records and documentation will my insurance company want to see? Are records in a safe place where they can be obtained after an emergency?
h. To what extent am I covered for loss due to interruption of power? Is coverage provided for both on- and off-premises power interruption?
i. Am I covered for lost income in the event of business interruption because of a loss? Do I have enough coverage? For how long is coverage provided? How long is my coverage for lost income if my business is closed by order of a civil authority?
j. To what extent am I covered for reduced income due to customers not all immediately coming back once the business reopens?
k. How will my emergency management program affect my rates?

4. Employee Support

Since employees who will rely on you for support after an emergency are your most valuable asset, consider the range of services that you could provide or arrange for, including:

a. Cash advances
b. Salary continuation
c. Flexible work hours
d. Reduced work hours
e. Crisis counseling
f. Care packages
g. Day care

5. Resuming Operations

Immediately after an emergency, take steps to resume operations.

Establish a recovery team, if necessary. Establish priorities for resuming operations.

Continue to ensure the safety of personnel on the property. Assess remaining hazards. Maintain security at the incident scene.

Conduct an employee briefing.

Keep detailed records. Consider audio recording all decisions. Take photographs of or videotape the damage.

Account for all damage-related costs. Establish special job order numbers and charge codes for purchases and repair work.

Follow notification procedures. Notify employees' families about the status of personnel on the property. Notify off-duty personnel about work status. Notify insurance carriers and appropriate government agencies.

Protect undamaged property. Close up building openings. Remove smoke, water, and debris. Protect equipment against moisture. Restore sprinkler systems. Physically secure the property. Restore power.

Conduct an investigation. Coordinate actions with appropriate government agencies.

Conduct salvage operations. Segregate damaged from undamaged property. Keep damaged goods on hand until an insurance adjuster has visited the premises, but you can move material outside if it's seriously in the way and exposure to the elements won't make matters worse.

Take an inventory of damaged goods. This is usually done with the adjuster, or the adjuster's salvor if there is any appreciable amount

of goods or value. If you release goods to the salvor, obtain a signed inventory stating the quantity and type of goods being removed.

Restore equipment and property. For major repair work, review restoration plans with the insurance adjuster and appropriate government agencies.

Assess the value of damaged property. Assess the impact of business interruption.

Maintain contact with customers and suppliers.

Function: Administration and Logistics

Maintain complete and accurate records at all times to ensure a more efficient emergency response and recovery. Certain records may also be required by regulation or by your insurance carriers, or may prove invaluable in the case of legal action after an incident.

1. Administrative Actions

Administrative actions prior to an emergency include:

a. Establishing a written emergency management plan
b. Maintaining training records
c. Maintaining all written communications
d. Documenting drills and exercises and their critiques
e. Involving community emergency response organizations in planning activities

Administrative actions during and after an emergency include:

a. Maintaining telephone logs
b. Keeping a detailed record of events
c. Maintaining a record of injuries and follow-up actions
d. Accounting for personnel
e. Coordinating notification of family members
f. Issuing press releases
g. Maintaining sampling records
h. Managing finances
i. Coordinating personnel services
j. Documenting incident investigations and recovery operations

2. Logistics

Before an emergency, logistics may entail:

a. Acquiring equipment

b. Stockpiling supplies
c. Designating emergency facilities
d. Establishing training facilities
e. Establishing mutual aid agreements
f. Preparing a resource inventory

During an emergency, logistics may entail the provision of:

a. Providing utility maps to emergency responders
b. Providing material safety data sheets to employees
c. Moving backup equipment in place
d. Repairing parts
e. Arranging for medical support, food, and transportation
f. Arranging for shelter facilities
g. Providing for backup power
h. Providing for backup communications

SECTION 3—HAZARD-SPECIFIC INFORMATION

This section provides information about some of the most common hazards:

Fire
Hazardous Materials Incidents
Floods and Flash Floods
Hurricanes
Tornadoes
Severe Winter Storms
Earthquakes
Technological Emergencies

1. Hazards: Fire

Fire is the most common of all the hazards. Every year fires cause thousands of deaths and injuries and billions of dollars in property damage.

Planning Considerations

Consider the following when developing your plan:

a. Meet with the fire department to talk about the community's fire response capabilities. Talk about your operations. Identify processes and

materials that could cause or fuel a fire, or contaminate the environment in a fire.

b. Have your facility inspected for fire hazards. Ask about fire codes and regulations.

c. Ask your insurance carrier to recommend fire prevention and protection measures. Your carrier may also offer training.

d. Distribute fire safety information to employees: how to prevent fires in the workplace, how to contain a fire, how to evacuate the facility, where to report a fire.

e. Instruct personnel to use the stairs—not elevators—in a fire. Instruct them to crawl on their hands and knees when escaping a hot or smoke-filled area.

f. Conduct evacuation drills. Post maps of evacuation routes in prominent places. Keep evacuation routes including stairways and doorways clear of debris.

g. Assign fire wardens for each area to monitor shutdown and evacuation procedures.

h. Establish procedures for the safe handling and storage of flammable liquids and gases.

i. Establish procedures to prevent the accumulation of combustible materials.

j. Provide for the safe disposal of smoking materials.

k. Establish a preventive maintenance schedule to keep equipment operating safely.

l. Place fire extinguishers in appropriate locations.

m. Train employees in use of fire extinguishers.

n. Install smoke detectors. Check smoke detectors once a month; change batteries at least once a year.

o. Establish a system for warning personnel of a fire. Consider installing a fire alarm with automatic notification to the fire department.

p. Consider installing a sprinkler system, fire hoses, and fire-resistant walls and doors.

q. Ensure that key personnel are familiar with all fire safety systems.

r. Identify and mark all utility shutoffs so that electrical power, gas, or water can be shut off quickly by fire wardens or responding personnel.

Determine the level of response your facility will take if a fire occurs. Among the options are:

Option 1—Immediate evacuation of all personnel on alarm.

Option 2—All personnel are trained in fire extinguisher use. Personnel in the immediate area of a fire attempt to control it. If they cannot, the fire alarm is sounded and all personnel evacuate.

Option 3—Only designated personnel are trained in fire extinguisher use.

Option 4—A fire team is trained to fight incipient-stage fires that can be controlled without protective equipment or breathing apparatus. Beyond this level fire, the team evacuates.

Option 5—A fire team is trained and equipped to fight structural fires using protective equipment and breathing apparatus.

2. Hazards: Hazardous Materials Incidents

Hazardous materials are substances that are either flammable or combustible, explosive, toxic, noxious, corrosive, oxidizable, an irritant, or radioactive.

A hazardous material spill or release can pose a risk to life, health, or property. An incident can result in the evacuation of a few people, a section of a facility, or an entire neighborhood.

There are a number of federal laws that regulate hazardous materials, including: the Superfund Amendments and Reauthorization Act of 1986 (SARA), the Resource Conservation and Recovery Act of 1976 (RCRA), the Hazardous Materials Transportation Act (HMTA), the Occupational Safety and Health Act (OSHA), the Toxic Substances Control Act (TSCA), and the Clean Air Act.

Title III of SARA regulates the packaging, labeling, handling, storage, and transportation of hazardous materials. The law requires facilities to furnish information about the quantities and health effects of materials used at the facility, and to promptly notify local and state officials whenever a significant release of hazardous materials occurs.

In addition to on-site hazards, you should be aware of the potential for an off-site incident affecting your operations. You should also be aware of hazardous materials used in facility processes and in the construction of the physical plant. Detailed definitions as well as lists of hazardous materials can be obtained from the Environmental Protection Agency (EPA) and the Occupational Safety and Health Administration (OSHA).

Planning Considerations

Consider the following when developing your plan:

a. Identify and label all hazardous materials stored, handled, produced, and disposed of by your facility. Follow government regulations that apply to your facility. Obtain material safety data sheets (MSDS) for all hazardous materials at your location.

b. Ask the local fire department for assistance in developing appropriate response procedures.

c. Train employees to recognize and report hazardous material spills and releases. Train employees in proper handling and storage.

d. Establish a hazardous material response plan:

1. Establish procedures to notify management and emergency response organizations of an incident.
2. Establish procedures to warn employees of an incident.
3. Establish evacuation procedures.

e. Depending on your operations, organize and train an emergency response team to confine and control hazardous material spills in accordance with applicable regulations.

f. Identify other facilities in your area that use hazardous materials. Determine whether an incident could affect your facility.

g. Identify highways, railroads, and waterways near your facility used for the transportation of hazardous materials. Determine how a transportation accident near your facility could affect your operations.

3. Hazards: Floods and Flash Floods

Floods are the most common and widespread of all natural disasters. Most communities in the United States can experience some degree of flooding after spring rains, heavy thunderstorms, or winter snow thaws.

Most floods develop slowly over a period of days. Flash floods, however, are like walls of water that develop in a matter of minutes. Flash floods can be caused by intense storms or dam failure.

Planning Considerations

Consider the following when preparing for floods:

a. Ask your local emergency management office whether your facility is located in a flood plain. Learn the history of flooding in your area. Learn the elevation of your facility in relation to steams, rivers, and dams.

b. Review the community's emergency plan. Learn the community's evacuation routes. Know where to find higher ground in case of a flood.

c. Establish warning and evacuation procedures for the facility. Make plans for assisting employees who may need transportation.

d. Inspect areas in your facility subject to flooding. Identify records and equipment that can be moved to a higher location. Make plans to move records and equipment in case of flood.

e. Purchase a NOAA Weather Radio with a warning alarm tone and battery backup. Listen for flood watches and warnings.

f. Flood Watch—Flooding is possible. Stay tuned to NOAA radio. Be prepared to evacuate. Tune to local radio and television stations for additional information.

g. Flood Warning—Flooding is already occurring or will occur soon. Take precautions at once. Be prepared to go to higher ground. If advised, evacuate immediately.

h. Ask your insurance carrier for information about flood insurance. Regular property and casualty insurance does not cover flooding.

i. Consider the feasibility of flood-proofing your facility. There are three basic types of methods.

Permanent flood-proofing measures are taken before a flood occurs and require no human intervention when flood waters rise. They include:

a. Filling windows, doors, or other openings with water-resistant materials such as concrete blocks or bricks. This approach assumes the structure is strong enough to withstand flood waters.

b. Installing check valves to prevent water from entering where utility and sewer lines enter the facility.

c. Reinforcing walls to resist water pressure. Sealing walls to prevent or reduce seepage.

d. Building watertight walls around equipment or work areas within the facility that are particularly susceptible to flood damage.

e. Constructing floodwalls or levees outside the facility to keep flood waters away.

f. Elevating the facility on walls, columns, or compacted fill. This approach is most applicable to new construction, though many types of buildings can be elevated.

Contingent flood-proofing measures are also taken before a flood but require some additional action when flooding occurs. These measures include:

a. Installing watertight barriers called flood shields to prevent the passage of water through doors, windows, ventilation shafts, or other openings

b. Installing permanent watertight doors

c. Constructing movable floodwalls

d. Installing permanent pumps to remove flood waters

Emergency flood-proofing measures are generally less expensive than those listed above, though they require substantial advance warning and do not satisfy the minimum requirements for watertight flood-proofing as set forth by the National Flood Insurance Program (NFIP). They include:

a. Building walls with sandbags

b. Constructing a double row of walls with boards and posts to create a "crib," then filling the crib with soil

c. Constructing a single wall by stacking small beams or planks on top of each other

d. Consider the need for backup systems:

1. Portable pumps to remove flood water
2. Alternate power sources such as generators or gasoline-powered pumps
3. Battery-powered emergency lighting

e. Participate in community flood control projects.

4. Hazards: Hurricanes

Hurricanes are severe tropical storms with sustained winds of 74 miles per hour or greater. Hurricane winds can reach 160 miles per hour and extend inland for hundreds of miles.

Hurricanes bring torrential rains and a storm surge of ocean water that crashes into land as the storm approaches. Hurricanes also spawn tornadoes.

Hurricane advisories are issued by the National Weather Service as soon as a hurricane appears to be a threat. The hurricane season lasts from June through November.

Planning Considerations

The following are considerations when preparing for hurricanes:

a. Ask your local emergency management office about community evacuation plans.

b. Establish facility shutdown procedures. Establish warning and evacuation procedures. Make plans for assisting employees who may need transportation.

c. Make plans for communicating with employees' families before and after a hurricane.

d. Purchase a NOAA Weather Radio with a warning alarm tone and battery backup.

e. Listen for hurricane watches and warnings.

f. Hurricane Watch—A hurricane is possible within 24 to 36 hours. Stay tuned for additional advisories. Tune to local radio and television stations for additional information. An evacuation may be necessary.

g. Hurricane Warning—A hurricane will hit land within 24 hours. Take precautions at once. If advised, evacuate immediately.

h. Survey your facility. Make plans to protect outside equipment and structures.

i. Make plans to protect windows. Permanent storm shutters offer the best protection.

j. Covering windows with 5/8-inch marine plywood is a second option.

Consider the need for backup systems:

Portable pumps to remove flood water
Alternate power sources such as generators or gasoline-powered pumps
Battery-powered emergency lighting

Prepare to move records, computers, and other items within your facility or to another location.

5. Hazards: Tornadoes

Tornadoes are incredibly violent local storms that extend to the ground with whirling winds that can reach 300 mph. Spawned from powerful thunderstorms, tornadoes can uproot trees and buildings and turn harmless objects into deadly missiles in a matter of seconds. Damage paths can be in excess of 1 mile wide and 50 miles long.

Tornadoes can occur in any state but occur more frequently in the Midwest, Southeast, and Southwest. They occur with little or no warning.

Planning Considerations

The following are considerations when planning for tornadoes:

a. Ask your local emergency management office about the community's tornado warning system.

b. Purchase a NOAA Weather Radio with a warning alarm tone and battery backup. Listen for tornado watches and warnings.

c. Tornado Watch—Tornadoes are likely. Be ready to take shelter. Stay tuned to radio and television stations for additional information.

d. Tornado Warning—A tornado has been sighted in the area or is indicated by radar. Take shelter immediately.

e. Establish procedures to inform personnel when tornado warnings are posted. Consider the need for spotters to be responsible for looking out for approaching storms.

f. Work with a structural engineer or architect to designate shelter areas in your facility. Ask your local emergency management office or National Weather Service office for guidance.

g. Consider the amount of space you will need. Adults require about 6 square feet of space; nursing home and hospital patients require more.

h. The best protection in a tornado is usually an underground area. If an underground area is not available, consider:

1. Small interior rooms on the lowest floor and without windows
2. Hallways on the lowest floor away from doors and windows
3. Rooms constructed with reinforced concrete, brick, or block with no windows and a heavy concrete floor or roof system overhead
4. Protected areas away from doors and windows

Note: Auditoriums, cafeterias and gymnasiums that are covered with a flat, wide-span roof are not considered safe.

i. Make plans for evacuating personnel away from lightweight modular offices or mobile home-size buildings. These structures offer no protection from tornadoes.

j. Conduct tornado drills.

k. Once in the shelter, personnel should protect their heads with their arms and crouch down.

6. Hazards: Severe Winter Storms

Severe winter storms bring heavy snow, ice, strong winds, and freezing rain. Winter storms can prevent employees and customers from reaching the facility, leading to a temporary shutdown until roads are cleared. Heavy snow and ice can also cause structural damage and power outages.

Planning Considerations

Following are considerations for preparing for winter storms:

a. Listen to NOAA Weather Radio and local radio and television stations for weather information:

b. Winter Storm Watch—Severe winter weather is possible.

c. Winter Storm Warning—Severe winter weather is expected.

d. Blizzard Warning—Severe winter weather with sustained winds of at least 35 mph is expected.

e. Traveler's Advisory—Severe winter conditions may make driving difficult or dangerous.

f. Establish procedures for facility shutdown and early release of employees.

g. Store food, water, blankets, battery-powered radios with extra batteries, and other emergency supplies for employees who become stranded at the facility.

h. Provide a backup power source for critical operations.

i. Arrange for snow and ice removal from parking lots, walkways, loading docks, etc.

7. Hazards: Earthquakes

Earthquakes occur most frequently west of the Rocky Mountains, although historically the most violent earthquakes have occurred in the central United States. Earthquakes occur suddenly and without warning.

Earthquakes can seriously damage buildings and their contents; disrupt gas, electric, and telephone services; and trigger landslides, avalanches, flash floods, fires, and huge ocean waves called tsunamis. Aftershocks can occur for weeks following an earthquake. In many buildings, the greatest danger to people in an earthquake is when equipment and nonstructural elements such as ceilings, partitions, windows, and lighting fixtures shake loose.

Planning Considerations

Following are guidelines for preparing for earthquakes:

a. Assess your facility's vulnerability to earthquakes. Ask local government agencies for seismic information for your area.

b. Have your facility inspected by a structural engineer. Develop and prioritize strengthening measures. These may include:

1. Adding steel bracing to frames
2. Adding sheer walls to frames
3. Strengthening columns and building foundations
4. Replacing unreinforced brick filler walls

c. Follow safety codes when constructing a facility or making major renovations.

d. Inspect nonstructural systems such as air conditioning, communications and pollution control systems. Assess the potential for damage. Prioritize measures to prevent damages.

e. Inspect your facility for any item that could fall, spill, break, or move during an earthquake. Take steps to reduce these hazards:

1. Move large and heavy objects to lower shelves or the floor. Hang heavy items away from where people work.
2. Secure shelves, filing cabinets, tall furniture, desktop equipment, computers, printers, copiers, and light fixtures.
3. Secure fixed equipment and heavy machinery to the floor. Larger equipment can be placed on casters and attached to tethers which attach to the wall.
4. Add bracing to suspended ceilings, if necessary.
5. Install safety glass where appropriate.
6. Secure large utility and process piping.

f. Keep copies of design drawings of the facility to be used in assessing the facility's safety after an earthquake.

g. Review processes for handling and storing hazardous materials. Have incompatible chemicals stored separately.

h. Ask your insurance carrier about earthquake insurance and mitigation techniques.

i. Establish procedures to determine whether an evacuation is necessary after an earthquake.

j. Designate areas in the facility away from exterior walls and windows where occupants should gather after an earthquake if an evacuation is not necessary.

k. Conduct earthquake drills. Provide personnel with the following safety information:

1. In an earthquake, if indoors, stay there. Take cover under a sturdy piece of furniture or counter, or brace yourself against an inside wall. Protect your head and neck.
2. If outdoors, move into the open, away from buildings, street lights and utility wires.
3. After an earthquake, stay away from windows, skylights and items that could fall. Do not use the elevators.
4. Use stairways to leave the building if it is determined that a building evacuation is necessary.

8. Hazards: Technological Emergencies

Technological emergencies include any interruption or loss of a utility service, power source, life support system, information system, or equipment needed to keep the business in operation.

Planning Considerations

The following are suggestions for planning for technological emergencies:

Identify all critical operations, including:

a. Utilities including electric power, gas, water, hydraulics, compressed air, municipal and internal sewer systems, wastewater treatment services

b. Security and alarm systems, elevators, lighting, life support systems, heating, ventilation and air conditioning systems, electrical distribution system.

c. Manufacturing equipment, pollution control equipment

d. Communication systems, both data and voice computer networks

e. Transportation systems including air, highway, railroad, and waterway

Determine the impact of service disruption.

Ensure that key safety and maintenance personnel are thoroughly familiar with all building systems.

Establish procedures for restoring systems. Determine need for backup systems.

Establish preventive maintenance schedules for all systems and equipment.

SECTION 4—INFORMATION SOURCES

1. Sources: Additional Readings from FEMA

The following publications can be obtained from FEMA by writing to: FEMA, Publications, P.O. Box 70274, Washington, DC 20024.

Disaster Mitigation Guide for Business and Industry (FEMA 190)—Technical planning information for building owners and industrial facilities on how to reduce the impact of natural disasters and man-made emergencies.

Principal Threats Facing Communities and Local Emergency Management Coordinators (FEMA 191)—Statistics and analyses of natural disasters and man-made threats in the United States.

Flood-proofing Non-Residential Structures (FEMA 102)—Technical information for building owners, designers, and contractors on flood-proofing techniques (200 pages).

Non-Residential Flood-proofing—Requirements and Certification for Buildings Located in Flood Hazard Areas in Accordance with the National Flood Insurance Program (FIA-TB-3)—Planning and engineering considerations for flood-proofing new commercial buildings.

Building Performance: Hurricane Andrew in Florida (FIA 22)—Technical guidance for enhancing the performance of buildings in hurricanes.

Building Performance: Hurricane Iniki in Hawaii (FIA 23)—Technical guidance for reducing hurricane and flood damage.

Answers to Questions About Substantially Damaged Buildings (FEMA 213)—Information about regulations and policies of the National Flood Insurance Program regarding substantially damaged buildings (25 pages).

Design Guidelines for Flood Damage Reduction (FEMA 15)—A study on land use, watershed management, design and construction practices in flood- prone areas.

Comprehensive Earthquake Preparedness Planning Guidelines: Corporate FEMA 71)—Earthquake planning guidance for corporate safety officers and managers.

2. Sources: Ready-to-Print Brochures

Ready-To-Print Brochure Mechanicals for Your Employee Safety Program. You can provide your employees and customers with life-saving information from FEMA and the American Red Cross. Available at no charge is ready-to-print artwork for a series of brochures on disaster preparedness and family safety.

Select any of the brochures below, and you'll receive camera-ready materials, printing instructions, and ideas for adding your own logo or sponsor message. Write to: Camera-ready Requests, FEMA Publications, 500 C Street, SW, Washington, DC 20472.

Your Family Disaster Plan—A four-step plan for individuals and families on how to prepare for any type of disaster.

Emergency Preparedness Checklist—An action checklist on home safety, evacuation, and disaster preparedness.

Your Family Disaster Supplies Kit—A checklist of emergency supplies for the home and car.

Helping Children Cope With Disaster—Practical advice on how to help children deal with the stress of disaster.