NFPA 1600
Recommended Practice for Disaster Management

1995 Edition

National Fire Protection Association, 1 Batterymarch Park, PO Box 9101, Quincy, MA 02269-9101
An International Codes and Standards Organization

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NFPA 1600

Recommended Practice for

Disaster Management

1995 Edition

This edition of NFPA 1600, *Recommended Practice for Disaster Management*, was prepared by the Technical Committee on Disaster Management and acted on by the National Fire Protection Association, Inc., at its Annual Meeting held May 22-25, 1995, in Denver, CO. It was issued by the Standards Council on July 21, 1995, with an effective date of August 11, 1995.

This edition of NFPA 1600 was approved as an American National Standard on August 11, 1995.

Origin and Development of NFPA 1600

The NFPA Standards Council established the Disaster Management Committee in January 1991. The Committee was given the responsibility to develop documents relating to preparedness for, response to, and recovery from disasters resulting from natural, human, or technological events. The first document that the committee focused on was NFPA 1600, *Recommended Practice for Disaster Management*. NFPA 1600 was presented to the NFPA membership at the 1995 Annual Meeting in Denver, Colorado.

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This list represents the membership at the time the Committee was balloted on the text of this edition. Since that time, changes in the membership may have occurred.

NOTE: Membership on a committee shall not in and of itself constitute an endorsement of the Association or any document developed by the committee on which the member serves.

Committee Scope: This Committee shall have primary responsibility for documents on preparedness for, response to, and recovery from disasters resulting from natural, human, or technological events.

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NOTICE: An asterisk (*) following the number or letter designating a paragraph indicates that explanatory material on the paragraph can be found in Appendix A.

Information on referenced publications can be found in Chapter 8 and Appendixes B and C.

Chapter 1 Introduction

1-1 Scope. This recommended practice establishes minimum criteria for disaster management for the private and public sectors in the development of a program for effective disaster mitigation, preparedness, response, and recovery.

1-2* Purpose. The purpose of this recommended practice is to provide to those with the responsibility for disaster management planning, the minimum process to assess, mitigate, prepare for, respond to, and recover from disasters. This recommended practice is intended to aid in meeting the requirements for implementing and maintaining a comprehensive disaster management plan.

This flow chart outlines the key steps in disaster management planning.

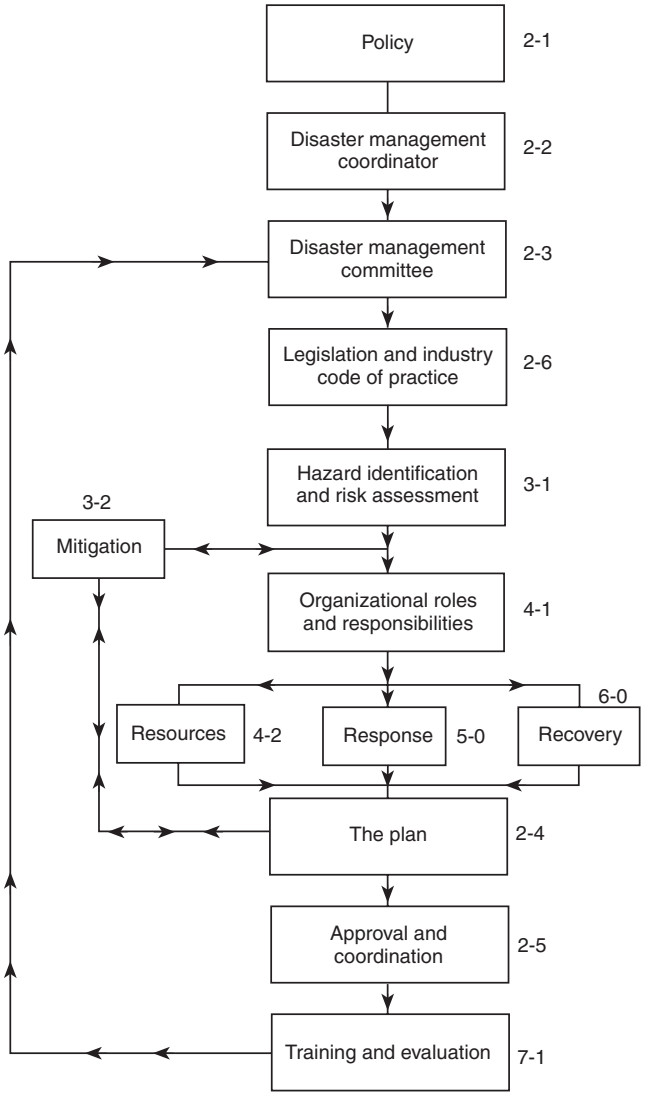

Figure 1-2 Disaster management planning.

1-3 Definitions.

Damage Assessment. The post-incident appraisal or determination of the actual effects on human, physical, economic, and natural resources.

Entity. A governmental agency or jurisdiction, private or public company, partnership, nonprofit organization, or similar organization that has disaster management responsibilities.

Hazard Identification. The process of identifying situations or conditions that have the potential of causing injury to people, damage to property, or damage to the environment.

Impact Analysis. A pre-incident study to estimate the effect that specific incidents can have on an entity's operations or activities.

Incident Command System (ICS). The combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure with responsibility for the management of assigned resources to effectively accomplish stated objectives pertaining to an incident as described in the document, *Incident Command System.*

Mass Care. The temporary housing, feeding, and care of populations displaced by a disaster.

Mitigation. Activities taken to eliminate or reduce the degree of risk to life and property from hazards, either prior to or following a disaster.

Mutual Aid Agreement. A pre-arranged agreement developed between two or more entities to render assistance to the parties of the agreement.

Needs Assessment. The identification of resources needed to restore vital functions.

Personnel Accountability. Constant awareness of the location and function of all personnel who are within controlled access areas.

Preparedness. Activities, programs, and systems developed prior to a disaster that are used to support and enhance mitigation of, response to, and recovery from disasters.

Recovery. Activities and programs designed to return the entity to an acceptable condition.

Response. Activities designed to address the immediate and short-term effects of the disaster.

Risk Assessment. An assessment of the likelihood, vulnerability, and magnitude of incidents that could result from exposure to hazards.

Situation Analysis. The post-incident process of evaluating the severity and consequences of an incident and communicating the results. This includes needs assessment and damage assessment.

Sheltering in Place. Having personnel remain in a building or seek shelter in lieu of evacuation.

Should. Indicates a recommendation or that which is advised but not required.

Chapter 2 Organization and Documentation

2-1 Policy.

2-1.1 Every entity should have a written policy statement that clearly reflects its commitment to disaster management.

2-1.2* The policy statement should include a statement of purpose that defines the intent and objectives of the policy, and a statement of responsibility that identifies the individual or individuals responsible for the development, administration, and execution of the policy.

2-2* Disaster Management Coordinator. A coordinator should be appointed and authorized by the entity with the responsibility to develop, implement, and administer the disaster management program.

2-3* Disaster Management Committee.

2-3.1* The disaster management committee should be established by the entity in accordance with the policy statement. The committee should include the disaster management coordinator and others having the appropriate expertise and knowledge of the organization and authority to commit resources from all key functional areas within the entity and external agency representatives as appropriate.

2-3.2* The committee should ensure the preparation, implementation, evaluation, and currency of the disaster management program.

2-4* The Disaster Management Plan.

2-4.1 The disaster management program should be documented in the disaster management plan. The plan should be a formal, written document.

2-4.2 Copies of the disaster management plan should be distributed to agencies, departments, and employees having responsibilities designated in the plan.

2-4.3 A record should be kept of all holders of the disaster management plan and a system implemented for issuing all changes or revisions.

2-5 Approval and Coordination. The disaster management plan should be approved by the entity through a formal, documented approval process, and coordinated with participating agencies and organizations.

2-6 Legislation, Regulations, and Industry Codes of Practice. The disaster management program should comply with applicable legislation, regulations, and industry codes of practice.

Chapter 3 Assessment and Mitigation

3-1 Hazard Identification and Risk Assessment.

3-1.1* A hazard identification and risk assessment should be conducted. This should identify potential hazards and their likelihood of causing an incident. The risk assessment should quantify or qualify the effects or consequences of an incident on the entity and the surrounding area.

3-1.2* The hazard identification should determine credible disaster scenarios. The risk assessment should develop for each scenario estimates of the likelihood of occurrence and the range of the following effects and consequences:

(a) Health and safety of persons in the affected area at the time of the incident (injury and death).

(b) Health and safety of personnel responding to the incident.

(c) Property and infrastructure damage.

(d) Shutdown of facilities and interruption to services.

(e) Environmental impact.

(f) Economic impact.

3-1.3* Risk assessments should employ techniques appropriate to the type of hazard involved.

3-1.4 The hazard identification and risk assessment should be documented.

3-1.5 The hazard identification and risk assessment should be reviewed and updated on a scheduled basis and as operational or organizational changes occur.

3-2 Mitigation.

3-2.1 A mitigation plan should be developed and implemented.

3-2.1.1 The mitigation plan should establish interim and long-term actions to eliminate hazards, or to reduce the effects of those hazards that cannot be eliminated.

3-2.1.2 The mitigation plan should be based upon the results of the hazard identification and risk assessment and disaster experience.

3-2.2 As a minimum, the mitigation plan should consider the following strategies:

(a) Remove or eliminate the hazard.

(b) Reduce or limit the amount or size of the hazard.

(c) Segregate the hazard from that which is to be protected.

(d) Reduce the likelihood of a hazard occuring.

(e) Modify the basic characteristics of the hazard.

(f) Control the rate of release of the hazard.

(g) Establish hazard warning and communication procedures.

(h) Conduct training and education.

Chapter 4 Preparedness

4-1 Organization Roles and Responsibilities.

4-1.1 The internal and external agencies, departments, and individuals with responsibilities during the assessment and mitigation, preparedness, response, and recovery phases should be identified and documented.

4-1.2 Lines of authority for those agencies, departments, and individuals operating within the phases identified in 4-1.1 should be identified and documented.

4-1.3 The Incident Command System (ICS) should be the basis for incident management.

4-1.3.1* The specific entity roles, titles, and responsibilities should be identified for each ICS function.

4-1.4 A mechanism should be identified to determine the level of implementation of the ICS according to the magnitude of the incident and the capabilities of the entity.

4-2 Resources.

4-2.1* A resource needs and availability assessment for each credible disaster scenario should be conducted.

4-2.1.1 A resource inventory should be maintained and kept current.

4-2.2 The resource needs and availability assessment should include personnel, equipment, facilities, and materials.

4-2.3 The resource needs and availability assessment should address voluntary donations.

4-2.4* To evaluate resource use and availability, the following should be considered: quantity; response time; capability; limitations; cost; and liability connected with using the involved resources.

4-2.5 A method should be established for resource coordination and integration among responding agencies, departments, and individuals.

4-2.6* The need for mutual aid should be determined and agreements established.

4-2.6.1* Mutual aid agreements, whether written or verbal, should be referenced in the disaster management plan.

Chapter 5 Response

5-1 Notification and Activation. Procedures should be established for:

(a) Processing emergency calls or information.

(b) Activation of disaster management plan.

(c) Notification of personnel who have disaster management duties.

(d) Mobilization and demobilization of resources.

(e) Continuity of management.

5-2* Communications. Communications procedures in support of disaster management should be established.

5-3* Public Information. Procedures to disseminate and respond to requests for pre-disaster, disaster, and post-disaster information involving employees, responders, the public, and the media should be established.

5-4 Evacuation and Sheltering in Place. Procedures to authorize, initiate, and accomplish evacuation or sheltering in place should be established.

5-5* Personnel Identification and Accountability. Procedures should be established for:

(a) Control of access to the area affected by the disaster.

(b) Identification of personnel engaged in activities at the incident.

(c) Accountability of personnel engaged in incident activities.

5-6 Mass Care. Procedures for providing mass care to populations affected by the disaster should be established.

5-7* Disaster Health Services. Procedures to provide for the mental health and physical well-being of individuals affected by the disaster should be established.

5-8* Fatality Management. Procedures to recover, identify, and safeguard remains should be established.

Chapter 6 Recovery

6-1 Goals and Objectives.

6-1.1 A pre-incident impact analysis should be conducted in order to establish goals and objectives for short- and long-term recovery.

6-1.1.1 The impact analysis should utilize the hazard identification and risk assessment identified in Section 3-1.

6-1.1.2 The impact analysis should consider, but not be limited to:

(a) Economic impact.

(b) Regulatory and contractual requirements.

(c) Health and safety.

(d) Environmental impact.

(e) Good will.

6-1.2 Recovery goals and objectives should be established.

6-1.2.1 Short-term goals and objectives should consider, but not be limited to:

(a) Identified vital systems and operations.

(b) Priorities for reinstatement.

(c) Maximum acceptable down-time before reinstatement to a minimum level.

(d) Minimum resources needed to accomplish the reinstatement.

6-1.2.2* Long-term recovery goals and objectives should consider, but not be limited to:

(a) Strategic planning.

(b) Management and coordination of activities.

(c) Funding and fiscal management.

(d) Management of volunteer, contractual, and entity resources.

(e) Opportunities for mitigation.

6-2 Tasks and Responsibilities.

6-2.1 Recovery tasks and responsibilities should be identified for agencies, departments, and individuals in order to achieve short- and long-term goals and objectives identified in Section 6-1.

6-2.1.1 Recovery tasks and responsibilities should include, but not be limited to:

(a) Organization and staffing.

(b) Vital records recovery and restoration.

(c) Resource procurement.

(d) Restoration of utility services.

(e) Recordkeeping and documentation.

(f) Public and employee information.

(g) Entity, agency, and community coordination.

(h) Debris and waste removal.

(i) Restoration and salvage.

(j) Population reunification.

(k) Identification of sources and obtaining funding.

(l) Continuity of management.

6-3 Post-Incident Situation Analysis.

6-3.1 Procedures for conducting a situation analysis, which includes a needs assessment and a damage assessment, should be established.

6-3.1.1 The results of the post-incident situation analysis should be used to determine the scope of tasks and responsibilities identified in 6-2.1.1.

6-4 Integration of Response and Recovery. Procedures should be established for maintaining the continuity of response activities that must continue into the recovery phase, and integrating these activities with those tasks and responsibilities identified in 6-2.1.1, 4-1.3, and 4-1.4.

Chapter 7 Training and Evaluation

7-1 A training program should be established for agencies, departments, and individuals identified in the disaster management plan to fulfill their roles and responsibilities.

7-2 All elements of the disaster management plan should be evaluated on a regular basis to validate that the plan is current and effective. Evaluation should include, but not be limited to: drills, exercises, tests, periodic reviews, and post-incident reports.

7-3 Procedures should be established to revise the disaster management plan as a result of evaluation.

Chapter 8 Referenced Publications

The following documents or portions thereof are referenced within this recommendedpractice and should be considered part of the recommendations of this document. The edition indicated for each reference is the current edition as of the date of the NFPA issuance of this document.

Incident Command System, ISBM -87939-051-4, First edition, 10/83, Fire Protection Publications, Oklahoma State University, Stillwater, OK 74078.

Appendix A Explanatory Material

This Appendix is not a part of the requirements of this NFPA document but is included for informational purposes only.

A-1-2 The terminology "disaster management" will mean different things to different entities. The definition of disaster includes a component of judgment regarding whether the scale or effect of an event is a disaster rather than a more routine emergency.

A-2-1.2(a) Sample Corporate/Company Policy Statement.

SUBJECT: Disaster Management

I. Purpose and Scope.

It is _____'s policy to conduct its operations with the highest regard for the safety and health of its employees and the public and for the protection and preservation of property and the environment. _____'s Disaster Management Program is a coordinated function encompassing the areas of safety and health, fire protection, environmental control, security, training, public affairs, communications, quality control maintenance, and operations. The program provides an effective state of readiness to respond to, prepare for, mitigate, and recover from a range of credible or potential emergencies/disasters at its facilities. Such capability is considered a fundamental responsibility of this_____.

Disaster management procedures provide a clear, concise description of the overall emergency response organization. They designate responsibilities, demonstrate interface between organizations, and describe notification procedures necessary to cope with all aspects of disasters. Planning documents are available containing detailed program requirements.

II. General Data.

Disaster management encompasses the areas of personnel training, acquisition of resources, and the evaluating and testing of plans and procedures to mitigate and prepare for credible disasters. Should a disaster occur, the disaster management plan provides for effective response and rapid recovery.

Effective response includes those actions in areas such as warning, personnel safety, property protection, security, and restoration taken to prevent or minimize the effects of a disaster. Once a disaster has occurred, every effort will be taken to safely ameliorate the situation. Facility response plans provide for the implementation of disaster management requirements.

Chief Executive Officer _____

A-2-1.2(b) Sample Public Sector Policy Statement.

Government at all levels has the responsibility to plan for and respond to disasters resulting from hazards that are known to threaten the jurisdiction. In view of this fact, the City has established a Disaster Management Program to provide overall planning and coordination for emergencies. The Disaster Management Coordinator is the (insert title), and duties are further delegated to department directors and the Disaster Management Committee.

Disasters may require the City government to operate in a manner different from normal day-to-day routines and may seriously overextend City resources. This Disaster Management Plan provides specific guidance to City departments during disasters. The Plan will also serve as an indicator of City capability; if the City is unable to provide adequate coverage for a particular resource or potential hazard, alternate sources or contingency plans shall be developed within political and budgetary constraints.

The accomplishment of disaster management goals and objectives depends on the development and maintenance of competent program staff, adequate funding, and on the familiarization of other City personnel with their disaster responsibilities and this Plan. It is hereby directed that review of this Plan and overall disaster responsibilities by all City department directors and the Disaster Management Committee be accomplished prior to July 1, annually, or as indicated through Plan activation or exercise. Thorough familiarity with this Plan will result in the efficient and effective execution of disaster responsibilities, and in better service to the citizens.

Government entities complying with this plan shall not be liable for injury, death, or loss of property except in cases of willful misconduct or gross negligence.

A-2-2 For the purposes of this document, where the committee has identified disaster management coordinator or disaster management committee, it is not the committee's intent to restrict users to these exact titles. It is the function and responsibilities that are important, not the titles.

A-2-3 See A-2-2.

A-2-3.1 It is recognized that different entities use various forms and names for their planning committees that perform the functions identified in the recommended practice (e.g., disaster management committee, local emergency planning committee, planning advisory committee, emergency steering committee, integrated emergency management committee, or disaster management council, to name only a few).

Members of the disaster management committee should be appointed with the clear understanding that the appointment is long term and the objective is to minimize turnover of committee members so as to maintain as consistent and effective a committee as possible.

Within the private sector, representatives may be drawn from plant operations, maintenance, engineering, personnel, public relations, environment, legal, finance, risk management, health and safety, security, and fire fighting/rescue. Within the public sector, representatives may be drawn from police, fire, ambulance, engineering, public works, environmental protection, public health, finance, education, emergency management, legal, and other agencies, such as airport and port authorities and the military (including the National Guard). When determining the representation on the committee, consideration should given to having public sector representation on a private sector committee and vice versa. This will help to establish a coordinated and cooperative approach to disaster management.

A-2-3.2 A disaster management plan is a dynamic document that is continually impacted by various internal and external factors. It should be evaluated through a regular program of tests, drills, and exercises to ensure that affected personnel are knowledgeable and proficient with their tasks under the plan.

The plan should be reviewed annually and updated as necessary. It should also be re-evaluated when any of the following occur:

(a) Regulatory changes,
(b) New hazards are identified or existing hazards change,
(c) Resources or organizational structures change,
(d) After tests, drills, or exercises,
(e) After disaster responses,
(f) Infrastructure changes,
(g) Funding or budget level changes.

A-2-4 See A-2-2.

A-3-1.1 A complete hazard analysis will identify the range of possible risks that might impact the entity and or surrounding area. The system should address, and the entity should be prepared to manage, disasters from the least to most serious within the identified range.

The hazard identification and risk assessment will determine "what" can occur, "when" (how often) it is likely to occur, and "how bad" the effects could be. For certain of the hazards identified, it will be determined after this preliminary analysis that it is not necessary to carry out a full analysis. These are hazards for which no further action is required.

The hazard identification and risk assessment should include, but are not limited to, the following types of potential hazards:

(a) Natural Events
1. Drought
2. Fire (forest, range, urban)
3. Avalanche
4. Snow/Ice/Hail
5. Tsunami
6. Windstorm/Tropical Storm
7. Hurricane/Typhoon
8. Biological
9. Extreme Heat/Cold
10. Flood/Wind Driven Water
11. Earthquakes/Land Shifts
12. Volcanic Eruption
13. Tornado/Cyclone
14. Landslide/Mudslide
15. Dust/Sand Storms
16. Lightning Storm.

(b) Technological/Industrial Events
1. Hazardous Material Releases
2. Explosions/Fire
3. Transportation Accidents
4. Building/Structure Collapse
5. Power/Utility Failure
6. Extreme Air Pollution
7. Radiological Accidents
8. Dam/Levee Failure

9.Fuel/Resource Shortages
10. Strikes
11. Business Interruption
12. Financial Collapse.

(c) Civil/Political Events
1. Economic
2. General Strike
3. Terrorism
4. Sabotage
5. Hostage Situation(s)
6. Civil Unrest
7. Eco-Terrorism
8. Enemy Attack.

A-3-1.2 A credible disaster scenario is a broad description of a potential event that can impact an entity. The scenario is not a rigid sequence of events requiring a complete risk assessment for each potential sequence.

The term scenario implies that the entity will consider impacts external to its area of influence that can impact the entity's ability to cope with a disaster.

One example is a hurricane that impacts several states. The specific hazard to the entity may be flooding; however, the greater community impact in the scenario can involve a complete disruption of all emergency services. This description will influence the severity in the risk assessment outlined in A-3-1.3(b).

A-3-1.3(a) Risk Assessment Methodologies. There are a number of methodologies and techniques for risk assessment. These include, but are not limited to:

(a) What-if.
(b) Check list.
(c) What-if check list.
(d) Hazop, hazard, and operability studies.
(e) Failure modes and effect analysis.
(f) Fault tree.
(g) Failure-logic diagrams.
(h) Dow and mond indices.
(i) Event tree analysis.
(j) Human reliability analysis.
(k) Capability and hazard identification program for local governments.

A-3-1.3(b) Risk Assessment Code Matrix. This section contains only one among many approaches to hazard analysis. The Risk Assessment Coding Matrix is used to determine and express the risk assessment and the effectiveness of controls for identified hazards. The matrix is based on the life cycles currently used by industry and the possible hazards.

Hazard Severity is an assessment of the worst credible mishap resulting from a hazard. Severity codes have been devised to recognize consequences such as: public — health and safety of persons in the affected area at the time of the incident (injury and death); personnel — health and safety of personnel responding to the incident; property — property and infrastructure damage; facilities — shutdown of facilities and interruption to services; environmental — environmental impact; and economic — financial loss or shortage of funds.

Hazard Probability is the likelihood that an identified hazard will result in a mishap. Hazard probability, or frequency, codes have been devices to be more easily understood by the risk assessors. For example, the proposed matrix recognizes that the negative effects of a hazard are "highly likely" if their chances are 100 percent of happening in the first year the hazard is identified; "likely" if the chances of the hazard impact are one in 10 years; etc. The frequency definitions make potential impacts clearer to decision-makers.

Risk is the combination of severity and frequency. Frequency abbreviations are shown as H(ighly likely), L(ikely), P(ossible), and U(nlikely). Risk categories have been more clearly labeled as *high*, *medium*, *low*, and *very low*. Thus, a hazard with a severity of IV and a frequency of P (IV/P) would be a low risk hazard. Severity categories are expressed in uppercase Roman numerals from I to IV; probabilities in alpha characters H, L, P. U. The relationship between the two is clearly illustrated in the graphic presentation of the matrix [Table A-3-1.3(b)].

Matrix Definitions

Severity Categories. Each severity category includes the consequences to personnel, the public, investment loss, the environment, compliance, and the mission impact. As before, the hazard is placed in the highest category for which it meets one or more criteria; i.e., a potential death will be "catastrophic" even if all other consequences are negligible.

Catastrophic: I	
Personnel:	Death or fatal injury
Public:	Death or fatality(ies) due to direct exposure.
Environment:	A major hazardous chemical spill that is uncontained.Regional or total species/subspecies loss.
Economic Impact:	Total loss of financial base, incapacitating the entity. Funding not available within one week to initiate urgent recovery procedures.
Facilities:	Complete shutdown of facilities and critical services for more than a month.
Property:	More than 50 percent of the property located in the proximity of the entity is severely damaged.
Critical: II	
Personnel:	Permanent disability, severe injury or illness.
Public:	Permanent disability, severe injury or illness.
Environment:	A minor hazardous chemical spill that is uncontained. Local or species/subspecies damage.
Economic Impact:	Partial loss of financial base, temporarily incapacitating the entity. Funding not available within four days to initiate recovery procedures.
Facilities:	Complete shutdown of facilities and critical services for more than two weeks.

Property:	More than 25 percent of the property located in the proximity of the entity is severely damaged.
Marginal: III	
Personnel:	Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
Public:	Injury or illnesses not resulting in disability, major quality of life loss, or perceived illness.
Environment:	A major hazardous chemical spill that is contained. Portion of local organisms negatively impacted.
Economic Impact:	Minor loss of financial base, temporarily incapacitating the entity. Funding not available within 24 hours to initiate recovery procedures.
Facilities:	Complete shutdown of facilities and critical services for more than a week.
Property:	More than 10 percent of the property located in the proximity of the entity is severely damaged.
Negligible: IV	
Personnel:	Treatable first aid injury.
Public:	Minor quality of life loss.
Environment:	A minor hazardous chemical spill that is contained. No measurable impact to environs.
Economic Impact:	Minor loss of financial base, which does not incapacitate the entity. Funding not available within 12 hours to initiate recovery procedures.
Facilities:	Complete shutdown of facilities and critical services for more than 24 hours.
Property:	No more than 1 percent of the property located in the proximity of the entity is severely damaged.

Frequency Categories. Occurrence frequency is based upon the hazard probability or the likelihood that an identified hazard will result in a mishap based on an assessment of such factors as location, population size, and exposure. Exposure may be assessed in terms of cycles, hours of operation, or years. This risk matrix is based upon the number of expected occurrences in a given number of years. Nonlinear risk impacts are assessed on an average yearly rate based on a normal equipment or scenario life cycle.

Frequency revision was intended to accomplish several goals:

Highlight immediate risks.

Not de-emphasize high severity/low probability occurrences; be easily translatable.

Highly Likely (H)

A hazard whose potential impact is very probable (100%) (within the next year).

Likely (L)

A hazard whose potential impact is probable (10% - 100%) within the next year, or one whose impact has at least one chance of occurring within the next ten years.

Possible (P)

A hazard whose potential impact is possible (1% - 10%), or has one chance of occurrence in a hundred years.

Unlikely (U)

A hazard whose potential impact is likely to occur less than once in a 100 years (<1%).[1]

Risk Coding Matrix. The matrix that follows is graphic presentation of the definitions when integrated to a single risk code. Hazard control priorities of high, medium, low, and very low are indicated for each risk code.

Table A-3-1.3(b) Risk Coding Matrix

Occurrence Frequency / Severity Category	Highly Likely	Likely	Possible	Unlikely
Catastrophic	IH	IL	IP	IU
Critical	IIH	IIL	IIP	IIU
	High Hazards			**Low hazards**
Marginal	IIIH	IIIL	IIIP	IIIU
		Medium Hazards		
Negligible	IVH	IVL	IVP	IVU
	Low Hazards			**Very Low hazards**

A-4-1.3.1 Organizational Crossover Matrix. The ICS chart depicted in the center panel of Figure A-4-1.3.1 on page 11 represents functions that must be accomplished by the incident management organization. Other organizations may be used, but equivalent titles must be cross-referenced and functional deficiencies addressed (the left and right panels are examples taken from CAN/CSA-Z731-M91, *Emergency Planning for Industry, A National Standard of Canada,* and FEMA *Civil Preparedness Guide* 1-20).

A-4-2.1 Resources for responding to and recovering from a disaster should be specifically identified. These include, but are not limited to:

(a) The locations, quantities, accessibility, operability, and maintenance of equipment (e.g., heavy duty, protective, transportation, monitoring, decontamination, response).

(b) Supplies (e.g., medical, personal hygiene, consumable, administrative).

(c) Sources of energy (e.g., electrical, fuel, generators, etc.).

(d) Communications systems.

(e) Food and water.

(f) Technical information.

(g) Clothing.

(h) Shelter.

(i) Specialized personnel (e.g., medical, religious, volunteer organizations, emergency management staff, utility workers, morticians, etc.).

(j) Specialized volunteer groups (e.g., Red Cross, amateur radio, religious relief organizations, charitable agencies, etc.).

[1] This category can be compared to the 100-year flood exposures used in design.

(k) External federal, state, and local agencies (e.g., Federal Response and Radiological Response Plan agencies, state National Guards, private contractors, etc.).

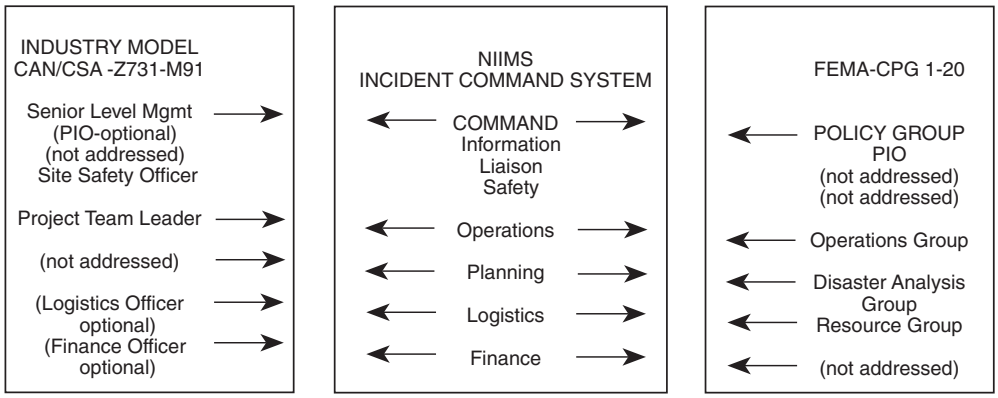

Figure A-4-1.3.1.

A-4-2.4 A resource should be available in a timely manner; should have the capability to do its intended function; restriction on its use should not reduce its capability; application should not incur more liability than would failure to use the resource. Finally, the cost should not outweigh the benefit.

A-4-2.6 Mutual aid agreements between political jurisdictions, as well as between private and public sector groups, are an effective means to obtain resources and should be developed whenever possible. Mutual aid agreements should: be in writing; be reviewed by legal counsel; be signed by a responsible official; define liability; and detail funding and cost arrangements. The term "mutual aid agreement" as used here includes cooperative assistance agreements, intergovernmental compacts, or other commonly used terms for the sharing of resources.

A-4-2.6.1 There are several methods for organizations to arrange effective mutual aid agreements. One method is to establish written agreements between parties. The other method is to establish oral agreements. Both methods have proven to be very successful in providing assistance when requested. The method of agreement usually depends upon what works in the area. Some areas have established legal precedence, making written agreements workable. Other areas utilize oral agreements that have been effective in providing assistance. The most important factor in this process is to have assistance when needed.

A-5-2 Standard terminology should be established to transmit information, including strategic modes of operation, situation and status reports, and emergency notifications of imminent hazards. The communication systems should provide a method to transmit emergency messages and notification of imminent hazards to all levels of the incident command structure with priority over routine messages.

A-5-3 In the United States, the Emergency Broadcast System (EBS) is composed of AM, FM, and television broadcast stations and non-government industry utilities operating on a voluntary, organized basis during emergencies at national, state, or local levels. It provides for the alerting of participating stations, dissemination of standardized emergency information, and possible termination of non-emergency station activities until the emergency subsides.

(a) *National Level EBS.* In a national emergency, the White House directs activation of the EBS to provide the President with a means of addressing the public on very short notice.

(b) *State Level EBS.* Activation of the EBS may also occur at the state level when authorized government authorities contact the coordinating station to disseminate emergency information state-wide.

(c) *Local Level EBS.* Local authorities may access the EBS in order to provide emergency information and instructions to the affected public in a localized emergency situation.

A-5-5(a) Passport System. The "passport" system provides a standardized method of personnel accountability for responders working incident scenes. Each employee receives three Velcroed™ nametags and a helmet shield. Upon coming on shift, the employee places the nametags on primary, secondary, and backup portable Velcro™ pads called "passports." The helmet shield is placed on his or her helmet. The primary and secondary passports are placed in the response vehicle; the third is left at the home station or office. Upon responding to an incident scene, the individual or the company officer presents the primary passport to the incident commander, or the supervisor of the working group to which the individual or company has been assigned. The secondary passport ordinarily remains in the vehicle. The incident commander or supervisors use the passports to track the assignments of the responders as they move throughout the incident. The helmet shield provides a quick visual reference; any personnel who do not display the appropriate helmet shield are "untracked" or potentially freelancing. The visual check allows supervisors to remove individual personnel who have not been properly placed into the tracking system. Upon completion of the task, or release from the incident, the individual or company officer retrieves the passport from the supervisor. If the individual is being reassigned, the passport is delivered to the new supervisor. If he/she is being released, the passport is returned to the vehicle. Upon going off shift, personnel remove their nametags and helmet shields from the passports and helmet.

A-5-5(b) British "B.A. Control System" Procedures. The "B.A. Control System" is designed to safeguard users of SCBA and to initiate search and rescue procedures in the event that an SCBA team is unaccounted for. The system is based on two premises: every fire fighter entering a potentially

contaminated environment must use SCBA and SCBA users will always operate in teams of at least two fire fighters. Every SCBA has a "tally" or tag, on which is to be indicated the user's name, SCBA cylinder pressure, and the time of entry into the area in which SCBA is required. The tally is attached to a key that is used to activate the PASS alarm. Every SCBA has a PASS alarm attached to it.

Entry into a SCBA required area is controlled by designated B.A. controllers at entry points. An SCBA team is not allowed to enter the area without each fire fighter giving the tally to the B.A. controller. To give the tally to the B.A. controller, the key must be removed from the PASS alarm, thereby activating it. The PASS alarm cannot be deactivated without inserting the key. The key can be obtained only by the SCBA user personally retrieving the tally from the B.A. controller at the entry point.

At every entry point the tallies are kept track of using a control board. The tallies are inserted into slots on the boards. Beside each tally is written the location and assignment of the SCBA team and the anticipated time the team should exit the area. The exit time is determined from a reference table on the board that shows working times for various cylinder pressures. The control boards or the apparatus on which they are carried have a clock built in.

B.A. Control System procedures require that a rescue team be standing by at each entry point. They are to be in full turnout gear with SCBA donned except for the facepiece. If an SCBA team has not exited by the estimated time indicated on the control board, the rescue team is deployed immediately to search for the individuals.

A-5-7(a) A key part of providing for the physical well-being of individuals is casualty management. This includes, but is not limited to:

(a) Selecting and setting up emergency casualty stations for screening casualties, administering first aid, initiating identification and casualty records, and arranging transportation to medical facilities if necessary.

(b) Obtaining emergency medical support during an emergency.

(c) Maintaining an adequate inventory of medical supplies for emergency use.

(d) Emergency procedures for exposure to on-site chemicals and for dealing with the injured who may also be contaminated.

(e) First aid training for personnel assigned to supplement medical staff.

(f) Information programs to ensure good health under shelter conditions.

(g) Providing mental health support.

A-5-7(b) A key part of providing for the mental well-being of individuals is managing critical incident stress. There are a number of public and private mental health programs that specialize in critical incident stress management.

A-5-8 These procedures should include coordination with local medical examiners/coroners, funeral directors, forensic identification specialists, and specialized recovery teams (e.g., dog search teams).

A-6-1.2.2 Strategic planning identifies the long-term recovery goals, using broad general statements of desired accomplishments. From these goals are developed objectives that are tactical in nature and that include measurable activities that must be accomplished to meet those goals.

Appendix B Referenced Publications

The following documents or portions thereof are referenced within this document for informational purposes only and thus are not considered part of the recommendations of this document. The edition indicated for each reference is the current edition as of the date of the NFPA issuance of this document.

Canadian Standards Association, *Emergency Planning for Industry, A National Standard of Canada*, CAN/CSA-Z731-M91, Toronto, Ontario, 1991.

Federal Emergency Management Agency, *Civil Preparedness Guide* 1-20 Washington, DC.

Appendix C Informational Material

This Appendix is not a part of the requirements of this NFPA document but is included for informational purposes only.

Blueprint for Community Emergency Management, Emergency Response Institute Inc., Olympia, WA, 1989.

Business Resumption Guidelines 6/93, California Office of Emergency Services Earthquake Program.

Capability and Hazard Identification Program for Local Governments, Federal Emergency Management Agency, U.S. Government Printing Office, Washington, DC, 1992.

Civil Preparedness Guides 1-3, 1-5, 1-8, 1-20, Federal Emergency Management Agency, Washington, DC.

Comprehensive Earthquake Preparedness Planning Guidelines, Federal Emergency Management Agency, Washington, DC, 1985.

Crisis Management, Ian Mitroff & Christine M. Pearson, Jossey Bass Publishers, San Francisco, CA, ISBN 1-55542-563-1, 1993 (139 pages).

Disaster Planning for Health Care Facilities, Hanna, James A., Ottawa, Ontario, 1988, CHA.

Disaster Planning Guide for Business and Industry, Federal Emergency Management Agency, FEMA 141, August 1987.

Disaster Response Principles of Preparation and Coordination, Erik Auf der Heide, CV Mosby Co., St. Louis, MO, ISBN 0-8016-0385-4, 1989 (363 pages).

Disaster Services Regulations and Procedures- Disaster Mental Health Services, American Red Cross, ARC 3050M, Nov. 1991.

Emergency Broadcast System Plan: Greater Portland/Vancouver Operational Area, Greater Portland/Vancouver Emergency Broadcast System Operational Area Committee, Portland, OR, October 1993.

Emergency Management: Principles and Practice for Local Government, International City Management Association, 1991.

Emergency Planning for Industry, A National Standard of Canada, CAN/CSA-Z731-M91, Canadian Standards Association, Toronto, Ontario, 1991.

The Emergency Program Manager, Federal Emergency Management Agency, HS-1, February 1989.

Exercise Design Course: Guide to Emergency Management Exercises, SM 170.2, Federal Emergency Management Agency, Emergency Management Institute, U.S. Government Printing Office, Washington, DC, 1989.

Exercise Design Course: Instructor Guide, SM 170, Federal Emergency Management Agency, Emergency Management Institute, U.S. Government Printing Office, Washington, DC, 1989.

Exercise Design Course: Student Workbook, Federal Emergency Management Agency, Emergency Management Institute, SM 170.1, U.S. Government Printing Office, Washington, DC, 1989.

The Federal Response Plan, Federal Emergency Management Agency, Washington, DC, 1992.

Guidelines for Hazard Evaluation Procedures, Second Edition with Worked Examples, American Institute of Chemical Engineers, New York, NY, 1992, "Overview of Hazard Evaluation Techniques," pp. 51-72.

Industrial Emergency Preparedness, Robert B. Kelly, Van Nostrand Reinhold, NY, NY, ISBN 0-422-20483-3, 1989 (297 pages).

Major Transportation Carrier Disasters Improving Response and Coordination, American Hospital Association, Chicago, IL, 1991 AHA.

Model Ordinances for Post-Disaster Recovery and Reconstruction, California Office of Emergency Services, Sacramento, CA.

Multihazard Functional Planning Guidance, State of California, Governor's Office of Emergency Services, 1989.

NCRP Report #111, *Developing Radiation Emergency Plans for Academic, Medical or Industrial Facilities.*

NFPA 99, *Standard for Health Care Facilities*, 1993 edition, National Fire Protection Association, Quincy, MA.

NFPA 130, *Standard for Fixed Guideway Transit Systems*, 1995 edition, National Fire Protection Association, Quincy, MA.

NRT-1, *Criteria for Review of Hazardous Materials Emergency Plans.*

NUREG-0654, *Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants.*

NUREG-0849, *Standard Review Plan for the Review and Evaluation of Emergency Plans for Research and Test Reactors.*

Planning for Emergencies, American Insurance Services Group, Engineering & Safety Services, NY, NY, 1991 (54 pages).

Post-Disaster Safety Assessment Plan. Program Organization and Response Procedures: A Guide to the Professional Organizations, California Office of Emergency Services, Sacramento, CA, June 1992.

Post-Disaster Safety Assessment Plan: Local Building Officials' Guide to the Activation and Utilization of Safety Assessment Volunteers, California Office of Emergency Services, Sacramento, CA, June 1992.

Pre-Emergency Planning, 2nd Ed., William F. Jenaway, ISFSI, Ashland, MA, ISBN 9615990-2-2, 1992 (204 pages).

Statement of Understanding Between the American Hospital Association and the American National Red Cross with Respect to Responsibility for Disaster Preparedness and Relief, American Red Cross, Washington, DC, 1985.

Statement of Understanding Between the American Psychological Association and the American National Red Cross, American Red Cross, ARC 4468, Dec. 1991.

Appendix D Disaster Management and Related Organizations

This Appendix is not a part of the requirements of this NFPA document but is included for informational purposes only.

American Public Works Association (APWA)
City of Boulder Director of Public Works
P.O. Box 791 Boulder, CO 80306
(303) 441-3200
(303) 441-4210 (FAX)
NEWSLETTER: Yes (The APWA Reporter)

American Society for Public Administration
Emergency Management Section
5580 La Jolla Boulevard
La Jolla, CA 92037
(619) 549-3581
NEWSLETTER: Yes

FEMA National Emergency Training Center (NETC)
Chief, Emergency Management Division, EMI
National Emergency Training Center (NETC)
16825 South Seton Avenue
Emmitsburg, MD 21727
(301) 447-1164
(301) 447-1081 (FAX)
NEWSLETTER: No

Federal Emergency Management Agency (FEMA)
HQ FEMA
Federal Center Plaza
500 C. Street SW, Room 512
Washington, DC 20472
(202) 646-3692
NEWSLETTER: Yes

International Association of Chiefs of Police (IACP)
Center for Police Traffic Safety
1110 N. Glebe Road, Suite 200
Arlington, VA 22201
(703) 243-6500
NEWSLETTER: Yes (IACP News)

International Association of Fire Chiefs (IAFC)
50 Eaglesville Road
Eaglesville, PA 91403
(215) 631-6507
(215) 631-6536 (FAX)
NEWSLETTER: Yes (On-Scene)

International City Management Association (ICMA)
Director Program Development
1120 G. Street NW
Washington, DC 20005
(202) 289-4262
(202) 626-4661 (FAX)
NEWSLETTER: Yes (ICMA Newsletter)