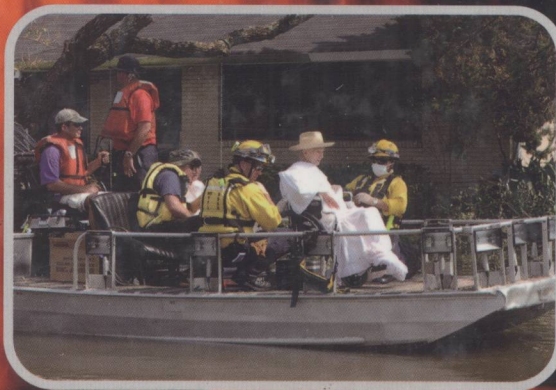


Paul A. Erickson

EMERGENCY RESPONSE PLANNING

***for Corporate and
Municipal Managers***



Second Edition

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For Corporate and
Municipal Managers

Second Edition

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EMERGENCY
RESPONSE
PLANNING

For

Dato' Soh Chai Hock, Kuala Lumpur, Malaysia

Augustine Koh, Tokyo, Japan

Rowan Amalia Luff (no other address than in grampa's heart)

PREFACE

Effective emergency response planning, whether for incidents that derive from natural causes or for those that derive from human actions, demands both persistent and consistent liaison and coordination among a large diversity of governmental agencies, response services, and community support resources.

Although it remains true that professional fire services continue to bear the day-to-day responsibility of responding to local disasters, it is also true that several factors in modern society converge toward a broader expansion of this responsibility into both public and private domains. These factors include: (a) the complexity of modern industries and technologies that are dependent on the continual development of new materials that, beyond their functional roles, also become new sources of physical, chemical, and biological hazards and risks; (b) the on-going merging of dense population areas with diverse technology and production centers; and (c) the increasing availability of hazardous technologies and agents to those sociopaths otherwise known as terrorists.

The increasingly global recognition that any incident—whether a hurricane or a bombing, an accidental release of a toxic industrial gas or a purposeful contamination of items essential for daily commerce—can easily be magnified in its toll of human life by the very way we conduct our lives and structure our societies has profound implications for the emergency planning process. This book addresses some of the more important of these implications, especially with regard to industrial and municipal planning and response.

As a second edition to my previous *Emergency Response Planning for Corporate and Municipal Managers* (1999), I have made changes in the original sequence of chapters and in the content of appendices. I have also corrected (all too many) previous grammatical and syntactical errors. Of course, I also have updated some materials, especially with regard to recent developments in both law and public events. However, the basic scope and much of the detail of the first edition remain intact. Like the previous edition, this edition focuses on proactive and reactive aspects of emergency planning, and on the need for partnerships among federal, state, and local governmental agencies as well as among public and private community sectors.

For the development of this edition, I am indebted to Dato' Soh Chai Hock, for sharing his professional insight and for affording me his always enthusiastic

support; to Augustine Koh, who continues to sustain (by means of his patient counsel and personal example) my best professional effort; and to Dr. Christine Holmes for her encouragement as well as for her active participation in the effort.

I also remain indebted to a large number of governmental agencies and divisions for the information they provide in both electronic and printed formats, including the U.S. Environmental Protection Agency; Centers for Disease Control; U.S. Public Health Services; Federal Emergency Management Agency; National Response Team; National Institute of Occupational Safety and Health; Occupational Safety and Health Administration; and (with special respect and admiration) U.S. Fire Administration.

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1

SCOPE OF EMERGENCY RESPONSE

INTRODUCTION

Emergency response is an integral component of routine corporate and municipal management that, while directly influenced by diverse and long standing regulations at all levels of government, is also influenced by nonregulatory considerations that predate the infamous terrorism attacks of more recent history, including (a) obligations imposed by corporate insurance policies, (b) corporate and municipal stakeholder concerns over tort liability, and (c) the demands of both *ad hoc* and formal in-plant safety committees engendered by both regulatory and societal concerns over workplace health and safety. Overt and spectacular terrorist acts throughout the world over the past several decades, of course, have given particular public impetus to the importance of both emergency planning and emergency management practices.

At the municipal level, emergency response planning and management, accordingly, have become increasingly complex tasks that, despite a long and distinguished historical development, are continually compounded by social, technical, and political developments including (a) jurisdictional confusion among federal, regional, state, county, and municipal authorities; (b) the economic burden of maintaining adequately staffed, trained, and provisioned emergency response teams; (c) the sheer structural and operational complexity of modern municipalities; (d) the proliferation of sources and agents of potential public hazard; and most recently, (e) the widespread anxiety regarding the terrorist acts of politically (or otherwise) motivated groups and individuals (see Image 1.1).

In the United States, the primary federal influence on corporate emergency response planning is through legislation governing the workplace generation of hazardous waste (Resource Conservation and Recovery Act; RCRA) and activities associated with uncontrolled hazardous waste sites (Comprehensive Emergency Response, Compensation and Liability Act © CERCLA; also known

IMAGE 1-1

NEW YORK, NY, OCTOBER 20, 2001: URBAN SEARCH AND RESCUE TEAM AT THE SITE OF THE WORLD TRADE CENTER



Source: Andrea Booher/FEMA News Photo

as *Superfund*) and the Superfund Amendments and Reauthorization Act (SARA), although other legislation and regulations also establish emergency response requirements, including the Clean Water Act (CWA), the Hazardous Materials Transportation Act (HMTA), and the Chemical Process Safety Regulations (29 CFR 1910.119).

With respect to the health and safety of American workers involved in emergency response (see Tables 1.1–1.3), key baseline regulations include 29 CFR 1910.120 (Hazardous Waste Operations and Emergency Response) and 29 CFR 1910.38 (Employee Emergency Plans), which contain appropriate cross-references to additional regulatory requirements (e.g., respiratory protection, alarm systems, eye and foot protection). Under 29 CFR 1910.120, a written

TABLE I-1
KEY OSHA STANDARDS RELATED TO EMERGENCY RESPONSE
(CFR: U.S. CODE OF FEDERAL REGULATIONS)

Reference	Topic
29 CFR 1910	Table of contents
29 CFR 1910.119	Process safety management of highly hazardous chemicals
29 CFR 1910.119 App C	Compliance guidelines and recommendations
29 CFR 1910.119 App D	Sources of further information; non-mandatory
29 CFR 1910.120	Hazardous waste operations and emergency response
29 CFR 1910.120 App A	Personal protective equipment test methods
29 CFR 1910.120 App C	Compliance guidelines
29 CFR 1910.120 App D	References
29 CFR 1910.120 App E	Training curriculum guidelines; non-mandatory
29 CFR 1910.1027 App B	Substances technical guidelines for cadmium
29 CFR 1910.1051	1,3-Butadiene
29 CFR 1910.1052	Methylene chloride
29 CFR 1926	Table of contents
29 CFR 1926.64	Process safety management of highly hazardous chemicals
29 CFR 1926.64 App C	Compliance guidelines and recommendations
29 CFR 1926.64 App D	Sources of further information; non-mandatory
29 CFR 1926.65	Hazardous waste operations and emergency response
29 CFR 1926.65 App A	Personal protective equipment test methods
29 CFR 1926.65 App C	Compliance guidelines
29 CFR 1926.65 App D	References
29 CFR 1926.65 App E	Training curriculum guidelines; non-mandatory

emergency response plan must describe how an actual emergency will be handled to minimize risks to three groups of personnel:

1. Employees engaged in cleanups at uncontrolled hazardous waste sites.
2. Employees engaged in routine operations and corrective actions at RCRA facilities.
3. Employees engaged in emergency response without regard to location.

If an employer does not allow employees to respond to an emergency in any manner except by evacuating the premises, that employer must develop a written *emergency action plan* which, in compliance with 29 CFR 1910.39, includes the following minimum information:

- Emergency escape procedures and routes
- Procedures to be followed by employees who remain to operate critical plant operations before they evacuate
- Procedures to account for all employees after emergency evacuation has been completed
- Rescue and medical duties for those employees who are to perform them
- The preferred means of reporting fires and other emergencies

TABLE 1-2
KEY OSHA STANDARDS RELATED TO PROTECTION OF
PERSONNEL (CFR: U.S. CODE OF FEDERAL REGULATIONS)

Reference	Topic
29 CFR 1910 Subpart I App B 29 CFR 1910.120	Non-mandatory compliance guidelines Hazardous waste operations and emergency response
29 CFR 1910.120 App A	Personal protective equipment test methods
29 CFR 1910.120 App B	General description and discussion
29 CFR 1910.120 App C	Compliance guidelines
29 CFR 1910.120 App E	Training curriculum guidelines; non-mandatory
29 CFR 1910.132	General requirements
29 CFR 1910.183	Helicopters
29 CFR 1910.261	Pulp, paper, and paperboard mills
29 CFR 1910.266	Logging operations
29 CFR 1910.268	Telecommunications
29 CFR 1910.269	Electric power generation, transmission, and distribution
29 CFR 1910.335	Safeguards for personnel protection
29 CFR 1910.1001 App H	Medical surveillance guidelines for asbestos
29 CFR 1910.1027	Cadmium
29 CFR 1910.1030	Bloodborne pathogens
29 CFR 1910.1047	Ethylene oxide
29 CFR 1910.1048	Formaldehyde
29 CFR 1910.1050	Methylenedianiline
29 CFR 1910.1052	Methylene chloride
29 CFR 1915	Table of contents/authority for 1915
29 CFR 1915 Subpart I App A	Non-mandatory guidelines
29 CFR 1915.12	Precautions and the order of testing
29 CFR 1915.1001 App I	Medical surveillance guidelines for asbestos
29 CFR 1926	Table of contents
29 CFR 1926.28	Personal protective equipment
29 CFR 1926.60	Methylenedianiline
29 CFR 1926.65	Hazardous waste operations and emergency response
29 CFR 1926.65 App A	Personal protective equipment test methods
29 CFR 1926.65 App B	General description and discussion
29 CFR 1926.65 App C	Compliance guidelines
29 CFR 1926.65 App E	Training curriculum guidelines; non-mandatory
29 CFR 1926.95	Criteria for personal protective equipment
29 CFR 1926.300	General requirements
29 CFR 1926.302	Power-operated hand tools
29 CFR 1926.551	Helicopters
29 CFR 1926.1101	Asbestos
29 CFR 1926.1101 App I	Medical surveillance guidelines for asbestos
29 CFR 1926.1127	Cadmium

- Names or job titles of persons or departments who can be contacted for further information or explanation of duties associated with emergency response

Depending on relevant regulatory requirements, the overall in-plant responsibility for emergency response planning and implementation may be assigned to the *primary emergency response coordinator* (i.e., under RECRA regulations), the *site safety and health supervisor* (i.e., under 29 CFR 1910.120), or to any number of variously titled personnel having specialized knowledge and

TABLE 1-3
KEY OSHA STANDARDS RELATED TO MEDICAL SURVEILLANCE
OF PERSONNEL (CFR: U.S. CODE OF FEDERAL REGULATIONS)

Reference	Topic
29 CFR 1910.120	Hazardous waste operations and emergency response
29 CFR 1910.120 App E	Training curriculum guidelines; non-mandatory
29 CFR 1910.1001	Asbestos
29 CFR 1910.1001 App H	Medical surveillance guidelines for asbestos
29 CFR 1910.1001 App I	Medical surveillance guidelines for asbestos
29 CFR 1910.1003	13 Carcinogens (4-nitrobiphenyl, etc.)
29 CFR 1910.1018 App C	Medical surveillance guidelines
29 CFR 1910.1025	Lead
29 CFR 1910.1025 App B	Employee standard summary
29 CFR 1910.1025 App C	Medical surveillance guidelines
29 CFR 1910.1027	Cadmium
29 CFR 1910.1027 App A	Substance safety data sheet for cadmium
29 CFR 1910.1028 App C	Medical surveillance guidelines for benzene
29 CFR 1910.1043	Cotton dust
29 CFR 1910.1044	1,2-dibromo-3-chloropropane (DBCP)
29 CFR 1910.1044 App C	Medical surveillance guidelines for DBCP
29 CFR 1910.1045	Acrylonitrile
29 CFR 1910.1045 App C	Medical surveillance guidelines for acrylonitrile
29 CFR 1910.1045 App C	Medical surveillance guidelines for ethylene oxide
29 CFR 1910.1048	Formaldehyde
29 CFR 1910.1048 App A	Substance technical guidelines for formaldehyde
29 CFR 1910.1048 App C	Medical surveillance for formaldehyde
29 CFR 1910.1050	Methylenedianiline (MDA)
29 CFR 1910.1050 App C	Medical surveillance guidelines for MDA
29 CFR 1910.1052	Methylene Chloride
29 CFR 1910.1052 App B	Medical surveillance for methylene chloride
29 CFR 1926.60	Methylenedianiline (MDA)
29 CFR 1926.60 App C	Medical surveillance guidelines for MDA
29 CFR 1926.62	Lead
29 CFR 1926.62 App B	Employee standard summary
29 CFR 1926.62 App C	Medical surveillance guidelines
29 CFR 1926.65	Hazardous waste operations and emergency response
29 CFR 1926.65 App C	Compliance guidelines
29 CFR 1926.65 App E	Training curriculum guidelines; non-mandatory
29 CFR 1926.1101	Asbestos
29 CFR 1926.1101 App I	Medical surveillance guidelines for asbestos
29 CFR 1926.1127	Cadmium
29 CFR 1990.151	Model standard
29 CFR 1990.152	Model emergency temporary standard

experience (see Tables 1.4–1.7). In many facilities, the facility manager or operations manager assumes all responsibility for emergency response activities. The key regulatory objective in assigning overall responsibility is to ensure that corporate authority is in fact commensurate with that responsibility—a requirement that is increasingly reflected in the consolidation of emergency response management duties within a corporate executive level function.

At the national level and reflecting the consistent and widespread concern of the American public regarding chemical hazards, the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA: SARA Title III) requires municipal authorities to:

TABLE 1-4
 ESSENTIAL ON-SITE EMERGENCY RESPONSE PERSONNEL
 (ADAPTED FROM NIOSH, USCG, AND EPA, 1985:
 OCCUPATIONAL SAFETY AND HEALTH GUIDANCE MANUAL
 FOR HAZARDOUS WASTE SITE ACTIVITIES)

Title	General Description	Specific Responsibilities
Project Team Leader	Reports to upper-level management; has authority to direct response operations; assumes total control over site activities.	<ul style="list-style-type: none"> ■ Prepares and organizes the background review of the situation, the Work Plan, the Site Safety Plan, and the field team. ■ Obtains permission for site access and coordinates activities with appropriate officials. ■ Ensures that the Work Plan is completed and on schedule. ■ Briefs the field teams on their specific assignments. ■ Uses the Site Safety and Health Officer to ensure that safety and health requirements are met. ■ Prepares the final report and support files on the response activities. ■ Serves as the liaison with public officials.
Site Safety and Health Officer	Advises the Project Team Leader on all aspects of health and safety on site; recommends stopping work if any operation threatens worker or public health or safety.	<ul style="list-style-type: none"> ■ Selects protective clothing and equipment. ■ Periodically inspects protective clothing and equipment. ■ Ensures that protective clothing and equipment are properly stored and maintained. ■ Controls entry and exit at the Access Control Points. ■ Coordinates safety and health program activities with the Scientific Advisor. ■ Confirms each team member's suitability for work based on a physician's recommendation. ■ Monitors the work parties for signs of stress, such as cold exposure, heat stress, and fatigue. ■ Monitors on-site hazards and conditions. ■ Participates in the preparation of and implements the Site Safety Plan. ■ Conducts periodic inspections to determine if the Site Safety Plan is being followed. ■ Enforces the "buddy" system. ■ Knows emergency procedures, evacuation routes, and the telephone numbers of the ambulance, local hospital, poison control center, fire department, and police department. ■ Notifies, when necessary, local public emergency officials. ■ Coordinates emergency medical care.

Continued

TABLE 1-4—Continued

ESSENTIAL ON-SITE EMERGENCY RESPONSE PERSONNEL
(ADAPTED FROM NIOSH, USCG, AND EPA, 1985:
OCCUPATIONAL SAFETY AND HEALTH GUIDANCE MANUAL
FOR HAZARDOUS WASTE SITE ACTIVITIES)

Title	General Description	Specific Responsibilities
Field Team Leader	May be the same person as the Project Team Leader and may be a member of the work party; responsible for field team operations and safety.	<ul style="list-style-type: none"> ■ Manages field operations. ■ Executes the Work Plan and schedule. ■ Enforces safety procedures. ■ Coordinates with the Site Safety Officer in determining protection level. ■ Enforces site control. ■ Documents field activities and sample collection. ■ Serves as a liaison with public officials.
Command Post Supervisor	May be the same person as the Field Team Leader; responsible for communications and emergency assistance.	<ul style="list-style-type: none"> ■ Notifies emergency response personnel by telephone or radio in the event of an emergency. ■ Assists the Site Safety officer in a rescue, if necessary. ■ Maintains a log of communication and site activities. ■ Assists other field team members in the clean areas, as needed. ■ Maintains line-of-sight and communication contact with the work parties via walkie-talkies, signal horns, or other means.
Decontamination Station Officer(s)	Responsible for decontamination procedures, equipment, and supplies.	<ul style="list-style-type: none"> ■ Sets up decontamination lines and the decontamination solutions appropriate for the type of chemical contamination on site. ■ Controls the decontamination of all equipment, personnel, and samples from the contaminated areas. ■ Assists in the disposal of contaminated clothing and materials. ■ Ensures that all required equipment is available. ■ Advises medical personnel of potential exposures and consequences.
Rescue Team	Used primarily on large sites with multiple work parties in the contaminated area.	<ul style="list-style-type: none"> ■ Stands by, partially dressed in protective gear, near hazardous work areas. ■ Rescues any worker whose health or safety is endangered.
Work Party	Depending on the size of the field team, any or all of the field team may be in the Work Party, but the Work Party should consist of at least two people.	<ul style="list-style-type: none"> ■ Safely completes the onsite tasks required to fulfill the Work Plan. ■ Complies with Site Safety Plan. ■ Notifies Site Safety Officer or supervisor of unsafe conditions.