EMERGENCY PLANNING AND RESPONSE

Case Studies and Lessons Learned

TERRY L. HARDY

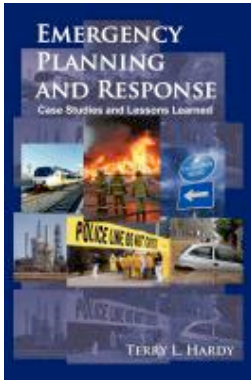*EMERGENCY PLANNING AND RESPONSE: Case Studies and Lessons Learned discusses critical elements of the emergency management discipline, and provides numerous lessons learned in this field. The cases studies identify common failings in emergency planning and response and illustrate the need to think differently about emergency preparedness efforts. The real-world lessons can be used to develop a risk-based approach to emergency management, improve emergency management programs, and help organizations develop resilient systems.*

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Preface

Despair is most often the offspring of ill-preparedness.
                                                        - Don Williams, Jr.

On February 15, 1982, the mobile offshore drilling rig Ocean Ranger *listed and sank in the Atlantic Ocean approximately 166 miles east of St. John's, Newfoundland. All eighty-four crew members died in the accident. The U.S. Coast Guard determined that the probable cause of the accident was a failure of the ballast control room window in severe weather conditions. It is likely that an ocean wave broke the window during the severe weather, leading to the shorting out of the electronics. Due to the short-circuited electronics, valves unexpectedly opened and closed on ballast tanks, and the crew likely made things worse when trying to restore power by allowing more water to enter the bow tanks. Once the crew decided to abandon the* Ocean Ranger*, they had difficulty releasing the life boats from the rig. The life boats were designed to operate in calm water, and the crew could not release them in storm conditions. The life boats were being battered against the rig as the crew members tried to release them from the platform, and only one life boat could be released. The ship* Highlander *arrived after a distress call, but this ship had no equipment to rescue the remaining survivors in high seas in the one life boat that was released, and those men died from hypothermia. The U.S. Coast Guard accident investigation identified the lack of emergency planning, equipment, and training as a contributor to the accident. There was also a lack of training and procedures for routine and*

> *emergency operation of the ballast control system. The Coast Guard also stated that the control room was not equipped with redundant power systems for the safety-critical functions.*[1]

Catastrophes like the *Ocean Ranger* incident can be devastating to families and communities. While events of this magnitude are rare, emergencies of all types happen every day. Most emergencies, such as an ice storm leading to a loss of power for a few days, are managed by individuals themselves or the professionals they hire. However, some emergencies are more widespread, leading to loss of life, property damage, economic hardship, and environmental damage. Because these events occur more often than we would like to admit, we need systematic and rational approaches to planning for and responding to these emergencies. That systematic approach is known as emergency management.

Emergency management is the coordination and integration of all activities necessary to build, sustain, and improve the capability to prepare for, protect against, respond to, recover from, or mitigate against threatened or actual natural disasters, acts of terrorism, or other man-made disasters. Emergency planning is the set of emergency management activities that occur before an incident occurs, while emergency response focuses on those activities when the event is imminent or has already occurred. Emergency management is a process that includes a number of key components, including the following:

- Identification

- Assessment

- Prevention

- Mitigation

- Preparedness

- Response

- Recovery

This book describes basic concepts behind these key components, and provides lessons learned for each step of this process. Each lesson learned is illustrated through a brief case study. The events in these case studies represent a number of different scenarios, and involve many different types of hazards. The events were selected to cover all classes of hazards (technological, natural, and man-made) to illustrate the breadth of emergency management. This book of course cannot address all possible lessons learned, but it does illustrate common issues and concerns, looking at them from many different perspectives. Because many emergency management processes make use of computing system technologies, a chapter is also included on lessons related to software and computing systems. Appendix A is a summary of the events contained in this book along with lessons learned related to that event. Appendix B provides questions that can and should be asked about one's own emergency planning and response effort, based on these case studies and lessons learned. These questions can be used by organizations to fuel discussion and debate in an effort to increase preparedness. Although much has already been written about Hurricane Katrina, it has been included in Appendix C as many lessons from that event help illustrate concepts presented in this book.

While this book includes introductory material for each emergency management component, the text does not provide significant details about how to perform emergency planning and response activities. Excellent texts already exist with such information, and this book references that information to provide the reader with sources for further review. This book is not a "how-to" in emergency management. The goal of this book is to provide examples of things that have gone wrong and suggestions based on approaches that have worked. It should serve as a resource that readers can use to better plan for and respond to emergencies.

This book includes many examples of incidents that help illustrate key lessons learned. I do this because real-world examples can more readily help the reader understand and remember the concepts than theoretical discussions can. The danger in this approach, however, is that the reader will assume that there were only one or two causes to the events discussed. In presenting these case studies, this book does not intend to oversimplify

the conditions that led to an emergency or disaster. Most events such as those presented here are more complicated than can be described in a few paragraphs. The outcomes of these events are usually the result of multiple and complex factors that include hardware, software, humans, environmental factors, procedures, and socio-economic factors. The emergency event descriptions here are only meant to illustrate issues in emergency planning and response activities. These descriptions should be used proactively to fuel creative thinking to help improve your own planning and response efforts.

Every effort has been made to make this text as accurate as possible, but there may be mistakes and misinterpretations in the incident descriptions. Many of the case studies come from investigation reports, which themselves could be subject to bias and error. Therefore, the reader should not consider the short descriptions to be the ultimate source of information about these emergency events. The details for all of the incidents discussed in this book can be found in publicly-available reports. Readers should review the original reports themselves, and supplement those reports with other information, to fully appreciate the complexity of these mishaps and to draw their own conclusions. Mostly, however, the reader should view these case studies as examples illustrating common issues. There are likely many other examples that could easily be substituted to illustrate the various lessons learned.

It is also important to note that the purpose of the examples in this book is not to lay blame on any particular individual or organization. I have intentionally chosen examples from many different communities to show that these emergency management issues affect us all, and we may have made similar decisions as many of the people here, if we were given the same information and training. The very breadth of the accidents and incidents should illustrate the challenges for all organizations in planning for and responding to an emergency. I hope that this book will teach humility rather than fuel criticism. We must all heed the words of Lord Anthony Hidden, Chairman of the Clapham Junction railway accident investigation, "There is almost no human action or decision that cannot be made to look flawed and less sensible in the misleading light of hindsight."

This book is written with a focus on several audiences. One audience includes those who practice safety management and engineering. Examples include system safety professionals, process safety management practitioners, occupational safety personnel, and managers of safety organizations. These practitioners may not be involved in emergency planning and response except in a cursory manner, or they may be assigned to develop an emergency response plan but do not have extensive experience in the field. The text should provide them with some fundamentals of emergency planning and response to help them reduce risks in their systems. A second audience includes those who perhaps have training and education in emergency management, but are new to the field. This could include recent graduates from formal programs, trained volunteers, and those recently assigned to perform these functions within their organizations. This book will provide them with concrete examples and lessons learned to supplement their education in this discipline. A third audience includes those who may not know what emergency management is but feel it is an important subject to learn. For them, the basic concepts will help them to understand why knowledge of this field is crucial to the well-being of their organizations and communities. Finally, this book will help experienced emergency management professionals by providing examples they can include in their own training materials and use to help advocate for resources and improvements in their emergency planning and response efforts.

All authors tend to color their writing with their own personal experiences, and I certainly bring my own biases to this work. I wrote this book from the perspective of someone who practices and promotes system safety and process safety management activities, and who has helped in emergency planning for a number of organizations. I do most of my work in the management of technological risks, rather than in risks related to natural and man-made hazard sources, so the examples provided will be weighted more toward those classes of hazards. Further, I tend to believe that system safety, process safety management, and emergency management are disciplines that are more alike than they are different, and that the activities often overlap. This means that some of the material will have a similar flavor to material I have written in the past on the subject of

system safety, and some of the stories will be familiar. While these biases will become evident in the presentation of material, it is my hope that they will not detract from the lessons provided.

This book is dedicated to first responders, including police, firefighters, emergency medical personnel, and dispatch workers. These are men and women who work hard to help people in need every day, and some risk their own lives in doing so. This book describes many situations where those first responders were put in harm's way. Unfortunately, there are cases depicted here where they did not make it back home following the emergency. Some of these stories can be painful to read. But I wish to honor the memories of these responders by providing the lessons in this book. It is my hope that some of the lessons here will be used to prevent an emergency from ever occurring, or that the lessons will somehow keep first responders a little bit safer when an emergency does take place.

Strong emergency management efforts ensure preparedness when an event could cause personal injury, property damage, operational losses, or damage to the environment. These events could be small-scale emergencies such as a fire in one's home or large-scale emergencies such as a tornado in a city. The important point is that emergencies are events that occur frequently enough to be considered "normal." As such, it is in the interest of our families, our businesses, and our communities to make preparedness a regular part of our lives. This book should be used to create a questioning attitude about our own planning efforts, and to help promote proactive efforts to prevent and better respond to emergencies. We will not prevent natural disasters, and we cannot completely eliminate risks from technological and man-made sources. But we can lessen their impact through preparedness efforts, including emergency planning and response activities.

Terry Hardy

References

1. U.S. Coast Guard, "Marine Casualty Report: Mobile Offshore Drilling Unit (MODU) Ocean Ranger, O.N. 615641, Capsizing and Sinking in the Atlantic Ocean on 15 February 1982 with Multiple Loss of Life," USCG 16732/0001 HQS 82, May 20, 1983.

Cover design by Peg Whalen

Lessons Learned in Emergency Planning and Response

There are no secrets to success. It is the result of preparation, hard work, and learning from failure.

- Colin Powell

On December 20, 2008, Continental Airlines flight 1404 ran off the left side of the runway during takeoff from Denver International Airport in Denver, Colorado. The airplane skidded along the side of the runway and after several minutes caught fire. The captain and five of the 110 passengers were seriously injured. The airplane was significantly damaged in the accident. The U.S. National Transportation Safety Board (NTSB) determined that the probable cause of the accident was the pilot's reaction to strong winds at the time of takeoff. The unexpectedly strong winds encountered by the aircraft made maintaining control difficult. However, the reports stated that "had the captain immediately reapplied significant right rudder pedal input as the airplane was continuing its left turning motion, the airplane would not have departed the runway." The report noted that the actions of the flight crew likely saved lives after the plane came to rest. The flight attendants saw the fire on the right side of the airplane and therefore initiated emergency evacuation using only the exits on the left side of the airplane. All passengers were evacuated before fire could reach the inside of the cabin. In addition, Denver International Airport firefighting crews

helped by suppressing the interior and exterior fires upon arrival at the scene of the accident.[1]

If we could envision all the ways a disaster could occur there would not be a need for emergency management because we would already have prevented the worst from happening. But that is not how the real world works. Life is full of random, unplanned, and unexpected events, and emergencies will continue to occur in spite of our best efforts. But, as evidenced by the Continental Airlines accident, an emergency does not have to become a calamity. Emergency management can help individuals and organizations prepare for these situations and can prevent the worst from happening through planning, training, and appropriate emergency response. While this book documents many failures in emergency planning and response, there are many success stories as well. These successes are generally a result of proactive emergency management efforts.

Emergency management is the coordination and integration of all activities necessary to build, sustain, and improve the capability to prepare for, protect against, respond to, recover from, or mitigate against threatened or actual natural disasters, acts of terrorism, or other man-made disasters. Emergency management includes the following key components which have been addressed in this book:

- Identification

- Assessment

- Prevention

- Mitigation

- Preparedness

- Response

- Recovery

Emergency planning includes those activities that occur before an incident (identification, assessment, prevention, mitigation, and preparedness) while emergency response and recovery are those activities implemented after the event has occurred or when it is imminent.

Emergency planning and response activities can reduce injuries, save lives, reduce property damage, reduce environmental impacts, and allow for faster return to normal operations. However, as evidenced by the dozens of incidents provided here, emergency management efforts are often not as effective as they could be. Specific lessons have been provided related to each component of the emergency management process. However, there are some overall lessons learned that emerge from reviewing these events. Those overall lessons can be summarized as follows:

Optimistic or inadequate assessments of risk. Fortunately, catastrophic events are rare. But the examples presented here show that the worst can happen, and constant vigilance is required to be prepared for the worst. We unfortunately are often in denial about the likelihood of catastrophic consequences. Organizations often do not take a systematic approach to analyzing and assessing risk. Or when they do, they focus on one class of hazards, often based on the last catastrophe or accident, and do not consider others.

Overconfidence in mitigation measures. Organizations may implement what appear to be effective controls, but then they do not take the next step and ask what happens if those controls do not perform their function or perform the function incorrectly. Organizations make optimistic assumptions about the ability of the system, including hardware, software, and humans, to come to the rescue when the event happens. Instead of trying to prevent an emergency, organizations and individuals may instead rely on mitigation and response measures of unknown reliability. Even when good measures are put in place, these controls and practices may be allowed to deteriorate when the organization has had a string of successes or enough time has passed to forget why they were needed in the first place.

Failure to verify that mitigations will work in an emergency. Mitigations may not work in an actual emergency, or may even create new hazards, if they are not maintained and checked regularly. Communications systems may be inoperative, personal protective equipment may not be available, sprinklers may fail, water sources may be shut off, and so on. Verification of mitigations requires as much vigilance as implementing the mitigations in the first place.

Poor planning, especially with regard to identifying what to do in an emergency. Unrealistic optimism in the assessment of risk can lead to a failure to adequately plan for the emergency. And even if planning is performed, the resulting plans may not reflect reality. Planning may be overly simplified, for example, by only focusing on fire hazards and missing many more common concerns. Or plans may become long and complex in an attempt to deal with every contingency. Plans may not be revisited as conditions change. And plans may make optimistic assumptions about the resources available, the ability to communicate during an emergency, the effectiveness of public warnings and evacuations, the availability of procedures to perform emergency actions, and a whole host of other factors. In these cases plans may create the illusion of preparedness, but they will likely be of little use in an actual emergency.

Confusing plan development and risk management. The emergency response plan is a product that is a snapshot in time, but it is not the same as planning, which is a process that is continual. Organizations may focus on preparing the plan, with an emphasis on the response. This often means that less time is spent on the up-front activities that include hazard identification, risk assessments, prevention, and mitigation; these are the things that would reduce risk and might make a response unnecessary. In addition, organizations may fail to identify methods for detecting a problem, diagnosing the issue, and providing information to make decisions in real-time during an emergency. Managing the plan is not the same thing as managing the risk.

Failure to train to the plan. As has been stated here and elsewhere, a plan is only as good as the training behind it. And while this lesson is

one of the most well-known, it continues to be violated. If training is performed, it can be superficial, and may not test realistic conditions.

Inadequate management of the response. Management of an emergency requires the use of talented, trained, and experienced personnel. Response management does not just happen on its own. And yet not enough attention may be paid to how the emergency will be managed before the event occurs. It is not always clear who is in charge, and multiple groups may operate independently without central direction. Personnel accountability systems and processes may fail, and organizations may not understand or use the Incident Command System. The result is often an *ad hoc* response with individuals "free-lancing" at great risk to themselves and their team members.

Failed communication during the response. Communication is needed on many different levels for a successful response effort. Employees need to understand when an emergency occurs, and what their role is. Responders need to inform each other and response leadership of the conditions during the emergency. The public must be informed of the risks and when to take action. But communications equipment and processes often break down during an emergency. The problems may not simply be technological, however. Communication processes and procedures may be inadequate or ineffective, and poor processes cannot be fixed by technology alone.

Failing to apply proper resources to planning and response. Resources come in many different forms, including people, medical supplies, transportation, and so on. But if these resources have not been planned for, allocated, and procured then the response can fail.

Inadequate use or misunderstanding the risks of computing technologies. Software and computing systems can provide tremendous benefits to an emergency planning and response effort. For example, software may provide trends showing an emergency is about to happen, or computing systems may automatically issue alarms and warnings that can be used to assure that personnel are appropriately evacuated. Databases in multiple forms can provide valuable information during a

response. But organizations often do not fully realize these benefits. On the other hand, computing systems can create unintended consequences if not carefully considered. Organizations may implement computing technologies without a full understanding of the risks of using software and automation.

Failure to learn from previous emergencies. All emergencies are unique in that the circumstances are never the same for any two of them. However, emergencies occur frequently enough that we should be able to learn from past events in order to prepare for the next one. In spite of this, individuals and organizations often fail to take advantage of these opportunities to learn.

There has been much written in the literature about what it takes to have an effective emergency response. The following summarizes several principles of an effective emergency response:[2]

- A clear purpose and direction is provided by management and organization leaders, specifically prioritizing emergency planning and response.

- A systematic approach is used to identify what can happen, to prioritize efforts, and to determine what can be done about it.

- Coordination and cooperation occur between various organizations and individuals before the event.

- Organizations assure that the response will occur at the lowest appropriate level, in particular by training local organizations and groups to be able to respond themselves.

- Clear roles and responsibilities are documented and communicated to all those who will be part of the response.

- Emergency response is integrated with how organizations and individuals do business.

- Communications technologies and processes are in place, and are practiced.

Besides attention to these principles, successful emergency management involves efforts to create systems and organizations that are resilient. This means that systems must be designed so that they can be:

1. Proactive: anticipating a problem before it has arrived,
2. Interactive: perceiving a problem that has arrived and providing information on what to do,
3. Reactive: able and ready to solve a problem once it has been perceived, and
4. Adaptive: learning from successes and failures to better anticipate and adjust to abnormal situations and emergencies.

The ability to anticipate and manage risks before they become catastrophes requires multiple perspectives and disciplines, and requires an organization committed to the effort.

After review of hundreds of accidents, including those where the emergency response succeeded, it appears that the difference between a successful and a failed organization with respect to emergency response often has less to do with technologies and resources and more to do with attitudes. In her book *The Unthinkable*, author Amanda Ripley tells a story about the massive earthquake and tsunami that caused devastation in landmasses bordering the Indian Ocean in 2004. According to Ripley, one town affected was called Langi on the island of Simeulue. While hundreds of thousands perished in the aftermath of the tsunami, all 8,700 people in this town survived even though all of its buildings were destroyed. Ripley cited research by Humboldt State University geology professor Lori Dengler which showed that this town had a history with disasters, and the community had experienced devastating tsunamis dating back over 100 years. Succeeding generations frequently recounted stories of these past disasters, and they passed down the lesson from generation to generation that residents should head to a nearby 100-foot-high hill when the ground shook. And they did this even when the shaking turned out to be a false alarm. The community had developed a way of thinking that evolved based

on an important lesson from the past. This town had developed a culture of preparedness.[3]

Like the people of Langi, we all need to be prepared. This does not mean we all have to be in a constant state of worry. Rather, we have to create a mindset where we first identify the potential for danger, and then look for warning signs that can tell us when we are in trouble. For the Langi people their warning sign was shaking ground. For a chemical plant it could be an increase in reactor temperature. For us as individuals in our homes it could be a smoke detector siren. Regardless of the signal, we must also have a plan in place for what to do with that information. And we must practice that plan, as the Langi people did each time the ground shook.

The devil of course is in the details. The Langi people had a relatively straightforward problem, and they did not have to coordinate among a lot of different groups. Complex systems are integral to our lives, and these systems have lots of interrelated components. And the response to an emergency can truly be a complex operation. We may have many different people and groups that need to be informed in an emergency, and we are often dealing with automated industries with integrated subsystems we do not always understand. Therefore, our approach to emergency management requires a different type of thinking, one that considers complex interactions of people, technologies, and environments. Historically, emergency management efforts have been tactical in focus, with the primary emphasis on plan development and response efforts. However, much more needs to be done to develop prevention and mitigation approaches so that less response and recovery is needed. This requires strategic thinking where problems are anticipated and risks are assessed, then solutions are developed based on the level of risk. The good news is that there are engineering and safety disciplines that can help in dealing with complex systems and operations, in particular system safety and process safety management.

System safety is an engineering and management discipline used to analyze hazards, evaluate risk, and design the system to eliminate conditions that can lead to an undesired consequence. Strong system safety efforts identify, evaluate, and control hazards throughout a system's life and during various operational phases. Most importantly, organizations

with strong system safety efforts learn from past failure, disseminate lessons learned, and recognize that near-miss conditions, if not corrected, have the potential to develop into accidents. Many of the lessons learned in system safety and process safety management can be applied to emergency planning and response. Emergency response is often a complex system in itself, and therefore systems thinking is essential. Conversely, emergency management has a lot to offer to system safety, which tends to focus more on activities prior to an emergency but not as much to response efforts. To build resilient systems, system safety and emergency management efforts should be integrated using a risk-based approach to safety. Personnel with expertise in these disciplines should work together to identify hazards, assess risks, identify approaches that reduce risk, and work toward better responses to emergencies.

What also helps in emergency management is having a certain amount of creativity in imagining what is possible, and envisioning the potential consequences. One of the best ways to foster such creativity is to study what has happened in the past. Disasters are not actually exceptional or uncommon events, and they occur often in everyday life. As stated by David Alexander in his book, *Principles of Emergency Planning and Management,* "Given the repetitive nature of disasters, there is no excuse for failing to plan for them, and, to be more positive, there is every reason for being able to plan successfully."[4] Unfortunately, organizations often miss the wealth of information available in investigation reports and historical documents. All emergencies are different in detail, but many of the broader lessons remain the same. This book has provided dozens of lessons learned, big and small, gleaned from various organizations and different types of emergencies. It is hoped that readers will not live in denial and assume that "it can't happen here." Readers should use these lessons learned and see the commonalities to their own situation, rather than focus on the differences. We must look to emergencies in other communities, other companies, and other families and seek out similarities. We must all take the attitude that we will likely be affected, at least indirectly if not directly, by some sort of emergency one day. And we must believe that we have the capability and responsibility to take action to prevent a catastrophe. It is our job to assure that history is not repeated.

Governmental and non-profit organizations certainly play important roles in reducing the chances of a catastrophe. These organizations possess resources that we as individuals do not have, and they have a wealth of experience that can truly help in a disaster. But while we need these organizations in times of crisis, businesses and individuals should not rely solely on these organizations. Even in the best of circumstances we will likely be on our own, at least for a little while, when an emergency hits. If it is a catastrophe, governmental and non-profit organizations may become overwhelmed and may not be there for us immediately, if at all. Emergency management can only be successful if individuals and organizations acquire and promote an attitude where planning and response are truly high personal priorities. Everyone involved must see the personal and professional benefit in emergency preparedness. We must believe that emergency preparedness will help our neighbors and our communities in addition to protecting us and our families. If we are prepared and able to help our neighbors, our businesses and communities will recover faster from an emergency. What is true in good times is especially so in an emergency – we need each other, and we are all in this together.

As this book shows, low-probability, high-consequence events do in fact occur. But we should not only focus on rare events - emergencies happen every day. No matter how hard we try to build our technological systems to be safe, designs will be flawed, people will make mistakes, components will fail, and software will do the unexpected. In addition, there will be events beyond our control that can impact our daily lives, such as weather-related incidents and terrorist actions. However, while emergencies happen, catastrophe is not inevitable. There are many successes in emergency planning and response that can attest to the power of preparedness.
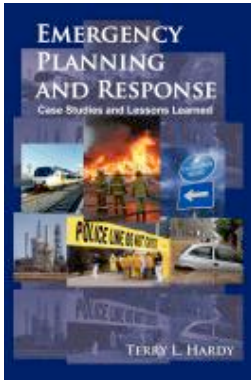
Preparedness can mean the difference between an event that is disruptive and one that is a disaster. But preparedness does not have to be expensive or overly involved. There are many simple things we can all do to be ready when an emergency strikes, from understanding what an alarm means to knowing the best exit from a building to keeping extra food and water around in case we might need it for a couple days. As Harvey Molotch stresses in his book *Against Security,* attending to the mundane

before an emergency can make all the difference during one. Even better, we can work within our organizations, or even our homes, to try to prevent an emergency or mitigate the effects of one so emergency response is not needed at all. The more we know and the more we prepare the better off we will be, but doing just a little bit can help a lot. Making preparedness part of our everyday lives, as the Langi people saw, can have enormous payoffs.[5]

Emergency preparedness is a process, not a product. Emergency planning and response require individuals and organizations that are knowledgeable in how things can go wrong, vigilant in looking for ways to reduce the risk, cooperative and communicative within their communities, flexible in their response to normal and stressful operations, and open to learning with regard to emergencies. We have to start thinking differently about emergency preparedness. For emergency planning and response to be successful, it must not be a special event, but rather it must be considered a normal and natural part of how we do things. In other words, individuals and organizations need to cultivate a culture of preparedness.

References

1. U.S. National Transportation Safety Board, "Runway Side Excursion During Attempted Takeoff in Strong and Gusty Crosswind Conditions, Continental Airlines Flight 1404, Boeing 737-500, N18611, Denver, Colorado, December 20, 2008," Aviation Accident Report/AAR-10/04, July 13, 2010.
2. MacFarlane, *A Guide to GIS Applications in Integrated Emergency Management*, Emergency Planning College, Cabinet Office, 2005.
3. Ripley, A., *The Unthinkable: Who Survives When Disaster Strikes - and Why*, Three Rivers Press, 2009.
4. Alexander, D., *Principles of Emergency Planning and Management,* Oxford University Press, 2002.
5. Molotch, H., *Against Security: How We Go Wrong at Airports, Subways, and Other Sites of Ambiguous Danger,* Princeton University Press, 2012.

EMERGENCY PLANNING AND RESPONSE: Case Studies and Lessons Learned discusses critical elements of the emergency management discipline, and provides numerous lessons learned in this field. The cases studies identify common failings in emergency planning and response and illustrate the need to think differently about emergency preparedness efforts. The real-world lessons can be used to develop a risk-based approach to emergency management, improve emergency management programs, and help organizations develop resilient systems.

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