



SCIENCE AND TECHNOLOGY

CHILDREN AND ADOLESCENTS
CIVIL JUSTICE
EDUCATION
ENERGY AND ENVIRONMENT
HEALTH AND HEALTH CARE
INTERNATIONAL AFFAIRS
POPULATION AND AGING
PUBLIC SAFETY
SCIENCE AND TECHNOLOGY
SUBSTANCE ABUSE
TERRORISM AND
HOMELAND SECURITY
TRANSPORTATION AND
INFRASTRUCTURE
U.S. NATIONAL SECURITY

This PDF document was made available from www.rand.org as a public service of the RAND Corporation.

[Jump down to document](#) ▼

The RAND Corporation is a nonprofit research organization providing objective analysis and effective solutions that address the challenges facing the public and private sectors around the world.

Support RAND

[Browse Books & Publications](#)

[Make a charitable contribution](#)

For More Information

Visit RAND at www.rand.org

Explore [RAND Science and Technology](#)

View [document details](#)

Limited Electronic Distribution Rights

This document and trademark(s) contained herein are protected by law as indicated in a notice appearing later in this work. This electronic representation of RAND intellectual property is provided for non-commercial use only. Permission is required from RAND to reproduce, or reuse in another form, any of our research documents for commercial use.

This product is part of the RAND Corporation research brief series. RAND research briefs present policy-oriented summaries of individual published, peer-reviewed documents or of a body of published work.



Safeguarding Emergency Responders During Major Disasters and Terrorist Attacks

The Need for an Integrated Approach

RAND RESEARCH AREAS
 CHILDREN AND ADOLESCENTS
 CIVIL JUSTICE
 EDUCATION
 ENERGY AND ENVIRONMENT
 HEALTH AND HEALTH CARE
 INTERNATIONAL AFFAIRS
 U.S. NATIONAL SECURITY
 POPULATION AND AGING
 PUBLIC SAFETY
 SCIENCE AND TECHNOLOGY
 SUBSTANCE ABUSE
 TERRORISM AND HOMELAND SECURITY
 TRANSPORTATION AND INFRASTRUCTURE

Emergency response organizations are the nation’s first line of defense when disaster strikes. While their work is inherently dangerous on any scale, it becomes even more perilous in a major crisis, such as a terrorist attack or large-scale natural disaster. Emergency workers must be shielded from the increased health and safety risks they confront when responding to a catastrophe of this magnitude.

With this in mind, the National Institute for Occupational Safety and Health (NIOSH) teamed with the RAND Corporation to assess existing safety procedures and make recommendations to guide needed changes. Their central conclusion was that the exceptional complexity and scale of major disasters oblige response organizations to rethink their approach to safety management. Safety should be viewed not as an individual concern, with each organization responsible only for the well-being of its own workers, but rather as a collective one, where safety is a multiagency function and organizations join forces to keep all responders from harm.

Why Do Major Disasters Make the Work of Responders More Hazardous?

Most emergencies are comparatively small scale. One or more specialized local response organizations can handle them effectively. In these situations, steps to ensure responder safety are usually well established and familiar. But the singular nature of a major disaster presents special challenges to safety management. For example, unlike smaller emergencies, a major disaster can cover a wide geographic area, present many highly varied hazards, and take from several days to several months to contain. In short, not only does a major disaster expose emergency workers to a multitude of risks they would not normally face, it requires a complex response operation that can involve many different organizations. In such situations, it is crucial to

Abstract

When a major disaster strikes, emergency responders must act quickly and effectively. Any threat to their safety diminishes their ability to function at their best. Because safety conditions during a large-scale crisis are unfamiliar and unpredictable, standard approaches to safety management can fall short. A major disaster requires the many different agencies involved to join forces to safeguard responders—both during an event and while preparing for the next one.

have effective systems in place for managing the safety of the numerous responders on the scene.

Managing Responder Safety Really Means Managing Risk

The nature of the work of emergency responders makes it impossible to completely eliminate all danger. Consequently, measures to protect their well-being are actually efforts to manage their level of risk: Decisionmakers must continually weigh the potential benefits of actions against the hazards involved. This involves a three-step process: (1) gathering information about the situation, (2) analyzing the available options and making decisions, and (3) taking action to implement those decisions.

Major Disasters Can Make It Difficult to Follow Normal Safety Procedures

In the unfamiliar and chaotic environment of a major disaster, individual response organizations may have problems following normal safety procedures. When gathering information, they may have difficulty collecting and coordinating data on the hazards at the scene, the responder workforce, and

This product is part of the RAND Corporation research brief series. RAND research briefs present policy-oriented summaries of individual published, peer-reviewed documents or of a body of published work.

Corporate Headquarters
 1700 Main Street
 P.O. Box 2138
 Santa Monica, California
 90407-2138
 Tel 310.393.0411
 Fax 310.393.4818

© RAND 2004

responders' health and injuries. When setting out to analyze options and make decisions, they may have trouble assessing hazards, managing risks, and choosing protective equipment. When taking action, they may lack ways to implement decisions, tested measures to protect the health of responders, and reliable means of managing human resources and safety equipment.

Responder agencies need to be able to anticipate these problems and put systems in place so that they can efficiently scale up to cope with circumstances more complex and hazardous than they routinely address. To help them meet this need, the NIOSH-RAND team developed recommendations they can follow to facilitate each step in the risk-management process during a major disaster. To better gather information, for instance, agencies can enhance their systems for identifying and credentialing personnel. To improve the ability to analyze options and make decisions, organizations can consult with hazard-assessment specialists well before any crisis, during "preparedness" efforts. To lay a stronger foundation for taking action, agencies can create an infrastructure to supplement pre-incident safety training.

Protecting Responders During a Major Disaster Requires a Coordinated, Multiagency Effort

These improvements will help protect responders during a catastrophe. But alone they will not be enough. Because of its uncommon scale and complexity, a major disaster changes the nature of a response operation itself, demanding a novel approach to managing responder safety. Safeguarding responders in these exceptional circumstances should be no less a coordinated, multiagency endeavor than the overall operation is. Managers should view the workforce as a whole, from an incident-wide perspective, seeking to build a universal understanding of risks and requirements.

Building on the concept of mutual aid, an integrated approach applies the best capabilities of every organization for the benefit of all. Resources and expertise are pooled; plans are coordinated; common standards and protocols are established. Labor is divided so that only those units best qualified to operate safely in a particular risk environment do that type of work. If one agency does not have a required capability, another organization can provide it. In sum, by integrating, all involved agencies gain

- access to specialized safety capabilities of multiple organizations
- a mechanism to address safety issues that cut across organizations
- a strategic approach to managing responder safety
- a vehicle for implementing the NIOSH-RAND team's other recommendations, many of which require multiagency coordination.

Past Experience Shows the Need for a Formal, Integrated Approach

During the response operations at the World Trade Center and the Pentagon in 2001, responder agencies had trouble managing worker safety. To address these problems, they took ad hoc steps to coordinate safety efforts. Yet there were significant drawbacks to proceeding this way, and the response community recognized the downside of not putting formal mechanisms in place to integrate safety resources before a disaster hits.

To support an integrated approach, the NIOSH-RAND team recommends:

- *Building an integrated safety function into the existing structure for managing major response operations.* Make safety part of the overall management of a major incident. Manage it as a multiagency effort, consistent with the National Incident Management System developed by the Department of Homeland Security.
- *Using preparedness efforts to plan ways to integrate safety management.* Define needed safety assets and expertise, and identify available resources in advance. Establish management processes and ways of ensuring that reinforcements will be able to "plug in" to an ongoing operation.
- *Developing a cadre of highly trained "disaster safety managers" to facilitate coordination among agencies.* Identify and train key individuals with a broad-based understanding of disaster situations and cross-cutting expertise in safety management to supervise multiagency safety efforts.
- *Incorporating safety and health issues more realistically into joint exercises and training.* Make safety training more than just a "footnote" to the operational focus of training exercises. Develop exercises that are more faithful to actual disaster conditions.
- *Developing a common terminology for safety issues and procedures.* Establish standard terms and definitions to ensure that responders from different agencies have a common understanding of safety matters and can communicate without obstacles.

Preparing Now Will Pay Off Later

The ability of responders to work effectively when disaster strikes rests in large part on minimizing the risks they face. An injury to even a single worker can diminish the capacity of the total workforce. Preparing in advance is vital. Many of the NIOSH-RAND team's recommendations can be put in place right now, although others will require a longer-term effort. Starting right away will do much to safeguard emergency responders and bolster homeland security. ■

This research brief describes work done jointly by the National Institute for Occupational Safety and Health and the RAND Corporation documented in *Protecting Emergency Responders, Volume 3: Safety Management in Disaster and Terrorism Response*, by Brian A. Jackson, John C. Baker, M. Susan Ridgely, James T. Bartis, and Herbert I. Linn, MG-170-NIOSH (available at www.cdc.gov/niosh/pubs.html), 2004, 152 pp., ISBN: 0-8330-3556-8. The RAND Corporation is a nonprofit research organization providing objective analysis and effective solutions that address the challenges facing the public and private sectors around the world. RAND's publications do not necessarily reflect the opinions of its research clients and sponsors. RAND® is a registered trademark.