The ASPEP Journal 2004

The Journal of the American Society of Professional Emergency Planners

2004

American Society of Professional Emergency Planners

ASPEP

The American Society of Professional Emergency Planner (ASPEP) is a professional organization of certified emergency managers dedicated to the advancement of knowledge of disasters and to the improvement of the practice of emergency management. ASPEP works towards these goals through continuing education, through professional development and exchange, and through the publication of an annual Journal. Because of the changing environment, ASPEP is disbanding in 2004.

The ASPEP Journal

The ASPEP Journal has been a peer-reviewed journal published annually in the fall. The Journal has been dedicated to the sharing of ideas, research, lessons, practice, and new ideas. The ASPEP Journal has been a voice for practicing emergency managers to exchange ideas

This edition of the ASPEP Journal will be the last for ASPEP. The International Association of Emergency Managers (IAEM) has agreed to become the sponsor of the Journal beginning in 2005.

Thoughts from the Journal Editor

Growing out of the civil defense days of the cold war, through the effort to turn emergency management from a trade into a profession, and into the new world of Homeland Security there has been a need to provide practicing emergency managers a forum to discuss best practices. The ASPEP Journal has been a major outlet for the exchange of ideas between people who spend their days working in the real world of emergency management. It is my hope that IAEM continues this tradition.

Since 1994 professional emergency managers have volunteered their time and expertise to publish the Journal each year in the fall. As the Journal Editor for the last three years my editorial committee and I stand on the shoulders of some excellent emergency managers. I would like to express my gratitude to those people as well as the people who have helped with the editing and review of each article.

I have learned several lessons during my term as editor. First, there is wealth of experience in the field. The ASPEP Journal has been a great way of sharing their expertise with fellow emergency managers. Second, making selection of articles and editing them for publication means making hard decisions that do not always please everyone. I encourage everyone to get involved in the editing process through IAEM. Finally, nothing is ever done without the dedication of many dedicated people. My job as editor would have been much more difficult without these people. To them I express my gratitude and thanks.

Bruce Binder, MPH, CEM
Editor, ASPEP Journal 2002-2004

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ASPEP Student Papers

Implementing a New Approach to Emergency Management: Managing Our Vulnerability to Reduce the Occurrence and Impact of Disasters

David A. McEntire

Introduction

The profession of emergency management appears to be at a major crossroads. The field's initial focus was on comprehensive emergency management during the Cold War when FEMA was created (NGA 1979). This policy, in turn, has recently been questioned (Rosenthaul and Kouzmin 1997; Britton 1999), and other concepts including resistance, resilience and sustainability have been put forward to guide our efforts to more effectively reduce disasters (Geis 2000; Buckle, Mars and Smale 2000; Mileti 1999). After the terrorist attacks on 9/11, the direction of emergency management again shifted, and the priority of the country became homeland security. In an almost ironic twist of fate, the field appears to be back where it started (although modern terrorism is certainly distinct from the singular threat of a nuclear exchange during the Cold War). While virtually no one would deny the possibility of future terrorist attacks, some do point out the lopsided approach to emergency management (Waugh 2004). All of this begs the questions: what approach should guide the future of emergency management and how can that be implemented?

Hazards or Vulnerability?

One of the major problems that have continually hindered the advancement of emergency management has been an over-emphasis on hazards. Of course, it is vital that we understand the distinct characteristics of differing triggering agents so we are able to prevent and respond to those types of disasters. However, interest in specific hazards has caused the profession to bounce radically from a civil defense orientation in the 1960s to others based on technological hazards in the 1970s and 1980s, natural hazards in the 1990s, and terrorism after September 11, 2001. Although there are good reasons for addressing the most significant hazards that confront us, there is also danger in reforming policy too frequently. We always seem to be preparing for the last disaster instead of the variety of events which will undoubtedly occur in the future.

In addition, concentrating our efforts on hazards in general is illogical and bound to produce failure. It is true that there is some debate as to whether hazardous events are increasing. Some scholars and policy makers declare that certain hazards are becoming more frequent (e.g., industrialization has led to more hazardous materials spills, we are entering a period of increased hurricane activity, it is likely that we will experience more terrorist attacks in the future). Others assert that hazards are no more prevalent than they were in the past; it is the media and better record keeping that can account for the perceived increase of hazardous events. Assuming both of these views have some merit, hazardous events are either rising slightly or are remaining constant over time. If this is

true, why are the occurrence and impacts of disasters increasing exponentially? The answer must be found in our rising vulnerability to disasters. Therefore, redirecting our attention away from hazards to vulnerability may help to reverse this disturbing trend.

What is more, a policy based on hazards is likely to produce frustration and further losses. As humans we may influence to some extent the quantity of technological and civil hazards. But we undoubtedly have less or no control over natural hazards (i.e., we cannot always contain flood waters, and we are not able to prevent a tornado from forming or an earthquake from occurring). In contrast, we do determine our degree of vulnerability to floods, tornadoes, earthquakes and all other types of hazards based upon the steps we take for disaster prevention and preparedness. Thus, disasters are really dependent upon the extent of vulnerability. We should therefore give priority to our vulnerability to hazards rather than to hazards alone. Aware of this argument, Weichselgartner has recommended that "vulnerability . . . be integrated as part of ongoing policies and programs" (2001, 86). Others also agree that we should shift our emphasis from hazards to vulnerability (Salter 1997).

Managing Our Vulnerability

As we move toward a new policy for emergency management, we must admit that we cannot completely eliminate our vulnerability to every type of hazard. Nonetheless, it is possible to *manage* our vulnerability to many disasters. This means that we must intentionally and actively *reduce liabilities* and *build capacities* in both the physical and social environments (McEntire et. al. 2002) (see Table 1).

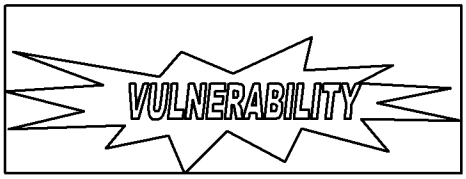
Liabilities are those factors that produce or aggravate disasters – whether they emanate from nature around us, the built infrastructure, technology, politics, culture, economic systems, etc. For instance, unsafe land-use planning or poor construction may make us vulnerable just as shortsighted policies and a lack of enforcement of regulations may. Such activities consequently increase our risk and susceptibility to disaster, and these must be corrected. Capabilities are also a product of variables from the physical and social environments, but these – as opposed to liabilities - actually reduce the possibility and brunt of disaster. Examples of capabilities would include using GIS to estimate risk, creating redundancy in power grids, improving warning systems, and training or exercising personnel on emergency operations plans. Augmenting these capabilities would enhance both resistance and resilience to disaster, and these attributes should be aggressively sought and acquired.

Table 1

Physical
(Including natural,
built, technological)

Social/Organization
(including cultural, political, psychological, economic)

Liabilities *Risk* *Susceptibility*



Environmental Capabilities **Resistance** **Attributes Resilience**

McEntire, David A. (2001). Triggering Agents, Vulnerabilities and Disaster Reduction: Towards a Holistic Paradigm, *Disaster Prevention and Management* 10 (3): 189-196.

Although it may be tempting to view the liabilities of risk and susceptibility as well as the capabilities of resistance and resilience as mutually exclusive, doing so masks the complexity of the problems confronting us. A home may be built according to the latest engineering codes but it may be situated in a flood prone area. A person's earning power may very well influence if he or she purchases insurance, which has significant bearing on recovery after a disaster. An inadequately constructed transportation system may make response operations extremely challenging. The values of a society may determine to what extent a community utilizes technology to mitigate disaster. Politicians' perception of hazards may positively or negatively affect our degree of risk. A building constructed with disaster in mind will assist businesses to resume daily operations more quickly than when engineering codes are lax or overlooked. Risk, susceptibility, resistance and resilience are thus categorical determinants of vulnerability, and they interact in complex ways. The at times unpredictable nature of disaster does not deny the fact that steps can be taken to limit liabilities and foster capabilities though.

Implementing the New Approach

Several activities must be pursued to initiate a modern emergency management policy. These include acquiring more knowledge about vulnerability, conducting regular assessments of vulnerability, educating policy makers and citizens about disasters,

strengthening prevention and preparedness institutions, harnessing technology in a careful manner, protecting the environment, reducing poverty, promoting community and individual empowerment and responsibility, and fostering integrated and coordinated efforts to deal with disasters. Each of these measures will be discussed in turn.

First, a policy based on liability reduction and capacity building will necessitate a better understanding of vulnerability (in both conceptual and practical terms). For this reason, it is vital that all academic disciplines contribute to the study of disaster. Geography, for example, assists in the identification of vulnerable areas so that urban planning can be more sustainable. Engineering points out vulnerable designs so that buildings and the infrastructure can be built to withstand diverse hazards. Anthropology and Psychology uncover how people's attitudes and practices lead to vulnerability, as well as how victims can better cope with disaster losses. Political Science illustrates why policy making plays a role in the creation of vulnerability while Public Administration indicates how laws and regulations can be more effectively implemented. Sociology reiterates why some individuals and groups are more vulnerable than others and Economics underscores the value of insurance. Emergency Management shows why a lack of preparedness makes us vulnerable and stresses the value of effective mitigation, response and recovery functions. As each discipline gains knowledge individually, effort must also be given to collaborative research. Sociologists, Economists and Geographers can draw out the factors that encourage some people to live in vulnerable locations and structures.

Political Scientists may conduct research with Engineers and students of Public Administration to promote the enforcement of building codes and regulations. Disciplines must individually and collectively seek an understanding of vulnerability as a first step toward improved emergency management.

While acquiring a better comprehension of vulnerability, it will be vital that those involved in emergency management assess liabilities and capabilities in a consistent and recurring manner. Cities expand continually and edifices become dilapidated over time. Populations migrate across the country and demographic patterns change as a result of immigration and aging. Industries are established each day and emergency operations plans become irrelevant if the training needs of first responders are often neglected.

Continued assessments of vulnerability will be needed if the frequency and intensity of disasters are to be reduced in any significant way. This suggests that we must repeatedly assess those factors that lead to disasters as well as those that discourage them from happening. Knowledge about the current status of vulnerability is a major key to reducing the frequency and intensity of disaster.

After generating knowledge about vulnerability and conducting periodic assessments of liabilities and capabilities, it will be imperative that decision makers and citizens be educated about the probability and consequences of disasters. Apathy must be overcome and the advantages and disadvantages of divergent courses of action must be made explicit. No longer can we ignore disasters or fail to be aware of the true costs of our choices. Public education should be directed toward the goal of challenging and changing people's beliefs and attitudes about disasters and development. Political

support is needed and public awareness will become even more important for the future of emergency management.

Increased awareness alone will not in and of itself address disaster vulnerability. Prevention and preparedness institutions need to be strengthened. Additional monetary and human resources must be devoted to emergency management and other professions related to disasters. Further time and energy should be given to mitigation, planning, training and exercises. New laws should be created and increased enforcement will be needed for compliance. Carrots such as grants and reduced insurance premiums should be awarded to those who take disasters seriously. Fines and decreased disaster aid should be applied to communities that intentionally neglect their responsibility to prevent and prepare for disaster. Budgets, incentives and regulations can be shaped as part of efforts to limit rising disaster losses and impacts.

A sixth step to make emergency management policy more effective is to carefully harness modern technology. Although machinery and computers may make us more vulnerable to certain types of disasters, this need not be so. With improved design, manufacturing and operation of our technology our vulnerability to technological hazards can be minimized. Furthermore, technology can assist us as we correct disaster vulnerabilities. As a case in point, GIS can help us to critically evaluate our vulnerability and the Internet, computer programs, and communications equipment may augment our ability to prevent disasters and deal with their aftermath. Technology must be regarded as an integral part of emergency management policy in the future.

Protecting the environment is another necessary component of improved disaster policy. The mistreatment of our natural resources has created numerous disasters in the past (e.g., deforestation leads to flooding and overgrazing produces desertification) and many of our current disasters create environmental degradation (e.g., from improper debris management). What is more, our daily activities and current emergency management policies may harm the environment further and create new disasters. While there is still much debate about global warming, we should be cautious nonetheless about its potential for altered weather patterns. A better course of action would consider environmental vulnerabilities (although it would certainly be broader than sustainable development and more closely related to disasters).

Reducing poverty is the eighth means to implement an improved emergency management paradigm. Research reveals that the poor are most likely to be vulnerable to disaster and be the least able to recover quickly (Mileti 1999). Finding ways to improve the distribution of resources and subsidize insurance for those who need it most should be a priority among those determining disaster agenda for the future. The modern emergency management profession should have deep interest in social equity issues. Expanding this principle to the international level may also minimize the probability of terrorist attacks in the future.

Promoting individual and community empowerment and responsibility is a ninth way to instigate a more advanced approach to emergency management. Because all disasters are local, it is imperative that the financial burden of disaster be shifted away from the

federal government (although this should not eliminate all federal assistance). The federal and state governments should try to avoid subsidizing communities that fail to reduce liabilities and raise capabilities on their own. If the federal government always covers the costs of disasters there will be no incentive to prevent disasters. This must be reversed as time goes by.

The final measure to achieve a modern emergency management policy is to foster integrated and cooperative efforts to deal with disasters. At the outset, it should be recognized that a holistic and proactive approach to emergency management will not always be popular. In fact, there will be many interests groups opposed to disaster prevention and preparedness (e.g., developers, real estate agents, land owners, other city departments, etc.). Moreover, there will even be differences of opinion within the disaster community. For instance, should we concentrate attention on vulnerabilities to natural, technological or civil hazards? There has been and will continue to be disagreement on this subject. Others suggest that we can reduce losses by concentrating on mitigation instead of preparedness, response and recovery. Environmentalists have worked to ban certain fire fighting foams to protect air and water resources even though this may jeopardize our ability to deal with chemical explosions. We don't always have easy or clear-cut answers to the problems that confront us. However, common ground can be found – or at least the agencies in the public, private and non-profit sectors should strive to find as much consensus as is possible for the new disaster paradigm.

Conclusion

All of the above implies at least two things for the future of emergency management. First, we must see a much bigger and more complicated picture than we have in the past. Any future approach must take into account our vulnerability to all types of hazards and include all disaster phases and actors involved in emergency management as well. The complicated interaction of diverse variables must also be appreciated and become a central feature of the new paradigm. Second, public management in the disaster area must evolve and improve. We can no longer afford to be reactive and expect that our disasters will be different in the future. It is for this reason that a knowledgeable and dedicated profession must be created among those individuals and agencies who are interested in disasters. It is hoped that this article has assisted the field in moving in these directions.

Developing an Emergency Operations Plan

Michael J. Fagel, PhD, CEM

What Is an EOP?

A jurisdiction's emergency operations plan (EOP) is a public document that:

- Assigns responsibility to organizations and individuals for carrying out specific actions, at projected times and places, in emergencies that exceed the capability or routine responsibility of any one agency.
- Sets forth lines of authority and organizational relationships, and shows how all actions will be coordinated.
- Describes how people and property will be protected in emergencies and disasters.
- Identifies personnel, equipment, facilities, supplies, and other resources available within the jurisdiction, or by agreement with other jurisdictions, for use during response and recovery operations.
- Identifies steps to address mitigation concerns during response and recovery activities.

Why Your Jurisdiction Should Have an EOP

Planning to respond to emergencies and disasters is typically the responsibility of state and local governments. The elected leadership in each jurisdiction is legally responsible for ensuring that necessary and appropriate actions are taken to protect people and property from the consequences of emergencies and disasters.

When a disaster threatens or strikes a jurisdiction, citizens expect their elected leaders to take immediate action to deal with the situation. The government is expected to marshal its resources, channel the efforts of voluntary agencies and private enterprises in the community, and solicit assistance from outside of the jurisdiction, if necessary. The development of a comprehensive, all-hazard EOP will help ensure that all government response activities are undertaken efficiently and effectively.

The Emergency Planning Process

In today's system of emergency management, local government must act to attend to the public's emergency needs. Depending on the size and nature of the emergency, state and federal assistance may be provided to the jurisdiction; however, local governments should not assume that this type of assistance will be available.

Therefore, the local EOP should focus on the functions that are essential for protecting the pubic before and after a disaster. Minimally, these functions include warning, emergency public information (EPI), evacuation, and providing shelter.

Emergency planning is not a one-time event. It is a continual cycle consisting of planning, training, exercising, and revision that takes place throughout the four phases of the emergency management cycle (mitigation, preparedness, response, and recovery).

The planning process does have a single purpose: The development and maintenance strategy for addressing critical needs in an emergency—to protect life and property.

Although the emergency planning process is cyclical, it does have a definite starting point. Emergency planning begins by analyzing the hazards facing the jurisdiction.

Hazard analysis is the process by which hazards that threaten the community are identified, researched, and ranked according to the risks they pose and areas and infrastructure that are vulnerable to damage from an event involving the hazards. The outcome of this step is a written hazard analysis that quantifies the overall risk to the community from each hazard.

The next step in the emergency planning process is EOP development. The outcome of this step is a completed plan, which is ready to be trained, exercised, and revised, based on lessons learned from the exercises.

The third step in the planning process is testing the plan through training and exercising. Exercises of varying types and complexity allow evaluation to see what in the plan is unclear and what does not work. The outcomes of this step are lessons learned about weaknesses in the plan. These weaknesses can then be address in the final step, plan maintenance and revision.

Plan maintenance and revision can be completed based on needs and resources, which may have changed since the development of the original EOP. After the EOP is developed, steps 3 and 4 repeat in a continual cycle to keep the plan up to date. However, if the community becomes subject to a new hazard, the planning team will need to revisit steps 1 and 2.

Performing a Hazard Analysis

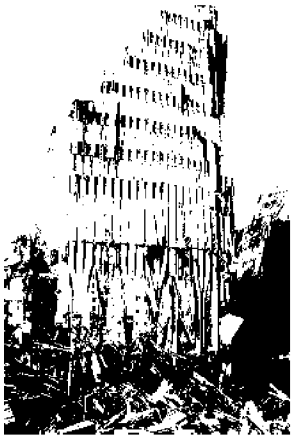
A hazard analysis determines:

- What can occur in the community.
- How often it is likely to occur.
- The damage it likely to cause.
- How it is likely to affect the community.
- How vulnerable the community is to the hazard.

There are five steps in the hazard analysis process:

1. Identify hazards.
2. Profile each hazard.
3. Develop a community profile.
4. Determine vulnerability.
5. Create and apply scenarios.

There are many potential sources of hazard information. A starting point may be to check local newspapers. However, to get a more complete picture of the types of hazards that a community has faced historically, it may be necessary to check sources, such as the State Department of Agriculture, Bureau of Labor Statistics, or other similar agencies; the National Weather Service (NWS); local historical societies; or long-time residents. If your community has an existing hazard analysis, start by reviewing it with an eye toward what has changed in the jurisdiction since the hazard analysis was completed.



During the hazard analysis process, it is important to keep in mind that the hazards a community faces may change over time because of new mitigation measures, the opening or closing of facilities, local development activities, or terrorist threats that were not considered before the attacks of September 11.

There may be other long-term changes to investigate as well. Changes in average temperature or rainfall and snowfall amounts may be harder to track but will certainly play an important role on the way to having a complete hazard analysis.

Developing a Hazard Profile

A hazard profile should consider four factors:

- Magnitude
- Duration
- Seasonal pattern
- Speed of onset

A hazard profile should address each hazard's magnitude—or size. How strong a hazard is and the areas that it could affect could dramatically change response plans. For example, a storm that drops two inches of rain very quickly over a small area requires a much different response than a Nor'easter that drops 20 inches of rain over a four-state area.

It is also important to consider a hazard's frequency, including whether a seasonal pattern exists. In some parts of the country, thunderstorms are a near daily occurrence. On the

other hand, hurricanes are a seasonal occurrence, which may or may not present a high risk to your area.

Consider each hazard's duration, or how long the hazard is expected to last. For example, the duration of even the most severe thunderstorm is much less than that of a hurricane. Finally, you need to consider the speed of onset of the hazard. This is important for determining the available time for issuing a warning, and is also critical to the response. The amount of damage and loss of life of an extreme hazard can be mitigated if emergency personnel and the public have time to take protective action.

A profile should be completed for each hazard to which the community is vulnerable, but it is important to keep in mind that some hazards pose such a limited threat that additional analysis may not be necessary. You should not, however, ignore low-risk hazards that have a high potential for damage should they occur. These low-risk hazards may not be a planning priority, but should be planned for nonetheless. See the following Hazard Profile Worksheet (also available in Appendix A).

Chapter X Job Aid 1: Hazard Profile Worksheet

<table>
<tr><td colspan="2">HAZARD:</td></tr>
<tr><td colspan="2">Potential magnitude (Percentage of the community that can be affected):

Catastrophic: More than 50%
Critical: 25 to 50%
Limited: 10 to 25%
Negligible: Less than 10%</td></tr>
<tr><td>Frequency of Occurrence:

▪ Highly likely: Near 100% probability in next year.
▪ Likely: Between 10 and 100% probability in next year, or at least one chance in next 10 years.
▪ Possible: Between 1 and 10% probability in next year, or at least one chance in next 100 years.
▪ Unlikely: Less than 1% probability in next 100 years.</td><td>Seasonal Pattern:</td></tr>
<tr><td colspan="2">Areas Likely to be Affected Most:</td></tr>
<tr><td colspan="2">Potential Speed of Onset (Probable amount of warning time):</td></tr>
<tr><td colspan="2">▪ Minimal (or no) warning.
▪ 6 to 12 hours warning.
▪ 12 to 24 hours warning.
▪ More than 24 hours warning.</td></tr>
<tr><td colspan="2">Existing Warning Systems:</td></tr>
</table>

*Does a Vulnerability Analysis Exist?**
Yes ☐
No ☐

Creating a Jurisdiction Profile

After completing the hazard analysis process, it is necessary to combine hazard-specific information with a profile of the community to determine the community's vulnerability to or risk of damage from the hazard. Because different communities have different profiles, vulnerabilities to the same hazard will vary. The following table summarizes key factors that are included in the community profile.

Key Community Factors				
Geography	**Property**	**Infrastructure**	**Demographics**	**Response Organizations**
▪ Major geographic features ▪ Typical weather patterns	▪ Numbers ▪ Types ▪ Building codes ▪ Critical facilities ▪ Potential secondary hazards	▪ Utilities construction, layout, access ▪ Communication system layout, features, back up ▪ Road systems ▪ Air and water support	▪ Population size, distribution, concentrations ▪ Numbers of people in vulnerable zones ▪ Special populations ▪ Animal populations	▪ Locations ▪ Points of contact ▪ Facilities ▪ Services ▪ Resources

After gathering this information about the community, develop the community's jurisdiction profile by plotting vulnerable areas on a jurisdiction map. The following table shows the use of community factors in the jurisdiction profile.

Use of Community Factors in the Jurisdiction Profile	
Type of Information:	**Used In:**
Geographic	▪ Predicting risk factors and the impact of potential hazards and secondary hazards
Property	▪ Projecting consequences of potential hazards to the local area ▪ Identifying available resources
Infrastructure	▪ Identifying points of vulnerability ▪ Preparing evacuation routes, emergency communication, and projecting response and recovery requirements

Demographic	▪ Projecting consequences of disasters on the population ▪ Disseminating warnings and public information ▪ Planning evacuation and mass care
Response Organizations	▪ Identifying response capabilities

Completing the Risk Analysis

After compiling the jurisdiction profile, the next step is to quantify the community's risk by merging the information. Risk is the predicted impact that a hazard would have on the people, services, and specific facilities in the community.

Quantifying risk enables jurisdictions to focus on those hazards that pose the highest threat to life, property, and the environment. Quantifying risk involves:

- Identifying the elements of the community (populations, facilities, and equipment) that are potentially at risk from a specific hazard.
- Developing response priorities. Risk to life is *always* the highest priority.
- Assigning severity ratings based on the potential impact to life, essential facilities, and critical infrastructure.
- Compiling risk data into the community risk profiles that show the areas of the community that are at highest risk from the hazard.

In analyzing risk, it is helpful to develop response priorities, using the following hierarchy for setting priorities:

- Priority 1: Life safety, including hazard areas, high-risk populations, and potential search and rescue situations.
- Priority 2: Essential facilities. Response personnel cannot respond if their own facilities are affected.
- Priority 3: Critical Infrastructure, including utilities, communication, and transportation systems that are essential to life safety and would adversely affect response efforts if they were disrupted.

Develop a risk index for each hazard and assign a value to each characteristic. Use the following values:

- 1=catastrophic
- 2=critical
- 3=limited
- 4=negligible

The ratings should be assigned for each of the following types of hazard data:

- Magnitude
- Frequency of occurrence

- Speed of onset
- Community impact
- Special characteristics

Average the value of all factors to determine the overall risk level for each hazard. The result of this process will be a prioritized list of hazards that pose the greatest threat to the community. The planning team in your community should plan for each hazard for which the risk index exceeds a predetermined threshold.

Next, assign each hazard a severity rating, or risk index, that will predict, to the degree possible, the damage that can be expected in the community as a result of that hazard. This rating quantifies the expected impact of a specific hazard on people, essential facilities, property, and response assets. The following table is an example of severity ratings that may be used. ***Hazard Severity Ratings***	
Severity	**Expected Impact**
Catastrophic	▪ Multiple deaths ▪ Complete shutdown of critical facilities for 30 days or more ▪ More than 50 percent of property is severely damaged
Critical	▪ Injuries and/or illnesses result in permanent disability ▪ Complete shutdown of critical facilities for at least 2 weeks ▪ More than 25 percent of property is severely damaged
Limited	▪ Injuries and/or illnesses do not result in permanent disability ▪ Complete shutdown of critical facilities for more than 1 week ▪ More than 10 percent of property is severely damaged
Negligible	▪ Injuries and/or illnesses treatable with first aid ▪ Minor quality of life lost ▪ Shutdown of critical facilities for 24 hours or less ▪ Less than 10 percent of property is severely damaged

Creating Scenarios

The final step in the hazard analysis process is to create and apply scenarios for the highest-risk hazards. Scenarios should be realistic and based on the community's hazard and risk data.

To create a scenario, brainstorm to track the development of a specific type of emergency. Each scenario should describe:

- The initial notification that the event is occurring or is about to occur.
- The potential overall impact on the community.
- The potential overall impact of the event on specific community sectors.
- The potential consequences, such as casualties, damages, and loss of services.
- The actions and resources that would be needed to deal with the situation.

Creating scenarios helps to identify situations that may exist in a disaster. These situations should be used to help ensure that a community is prepared should the hazard event occur. The following table can be used as a guide. Use the following table to make notes about key factors in your community (also available in Appendix A).

Chapter X, Job Aid 2: Jurisdiction Hazards

Using the table as a guide, make notes in the space below about the key factors in your community.

Geography	**Property**	**Infrastructure**	**Demographics**	**Response Organizations**
▪ Major geographic features: ▪ Typical weather patterns	▪ Numbers: ▪ Types: ▪ Ages: ▪ Building codes: ▪ Critical facilities: ▪ Potential secondary hazards:	▪ Utilities construction, layout, access: ▪ Communication system layout, features, backups: ▪ Road systems: ▪ Air and water support:	▪ Population size, distribution, concentrations: ▪ Numbers of people in vulnerable zones: ▪ Special populations: ▪ Animal populations:	▪ Locations: ▪ Points of contact: ▪ Facilities: ▪ Services: ▪ Resources:

Components of an EOP

An emergency operations plan describes actions to be taken in response to natural, manmade, or technological hazards. It also details tasks to be performed by specific organizational elements at projected times and place based on established objectives, assumptions, and assessment of capabilities.

An EOP should be comprehensive. In other words, it should cover all aspects of emergency preparedness and response and address mitigation concerns as well. It should also address all hazards and, thus, be flexible enough to use in all emergencies—even unforeseen events. Finally, the EOP should be risk-based. It should include hazard-specific information based on the risks that were established in the hazard analysis.

The EOP is written to provide an overview of the jurisdiction's response organization and policies. It should also provide a general understanding of the jurisdiction's approach to emergency response for all involved agencies and organizations.

An EOP consists of three parts: The basic plan, functional annexes that address the performance of a particular broad task, and hazard-specific appendices that provide additional response. So, although the basic plan provides the general approach to emergency response, it does not stand alone. Rather, it forms the basis for the remainder of the plan.

In addition, each part of the plan my have addenda in the form of Standard Operating Procedures (SOPs), maps, charts, checklists, tables, forms, etc. These addenda may be included as attachments or incorporated by reference.

The Basic Plan

Although there is no standard format, for the sake of compatibility with other jurisdictions and levels of government, it is recommended that the basic plan include the following components:

- Introduction
- Purpose Statement
- Situation and Assumptions
- Concept of Operations
- Organization and Assignment of Responsibility
- Administration and Logistics
- Plan Development and Maintenance
- Authorities and References

The introduction consists of five elements:

- The Promulgation Document, which is signed by the jurisdiction's Chief Elected Official, affirming his or her support for the Emergency Management Agency and the

planning process. It gives organizations the authority and responsibility to perform their tasks. It also mentions the tasked organizations' responsibility to prepare and maintain implementing instructions, gives notice of necessary EOP revisions, and commits to the training necessary to support the EOP.

- The Signature Page, which is signed by all partner organizations, demonstrating their commitment to EOP implementation.
- Dated title page and record of changes, which includes the date, description, and parts affected by changes to the EOP.
- Record of Distribution, which lists EOP recipients and facilitates and provides evidence of EOP distribution.
- Table of Contents.

The Purpose Statement should include a broad statement about what the EOP is meant to do. It should also include a synopsis of the EOP, annexes, and appendices. The Purpose Statement need not be complex, but should include enough information to establish the direction for the remainder of the plan.

The third component of the basic plan is the Situation and Assumptions Section. The Situation characterizes the planning environment, making it clear to the community why emergency planning is necessary. It draws from the hazard analysis to narrow the scope of the EOP and includes:

- Hazards addressed by the plan.
- Relative probability and impact.
- Areas likely to be affected.
- Vulnerable critical facilities.
- Population distribution.
- Special populations.
- Interjurisdictional relationships.
- Maps

The Assumptions Statement delineates what was assumed to be true when the EOP was developed. Additionally, the Assumptions statement shows the limits of the EOP, thus, limiting liability for the jurisdiction.

It may be helpful for your jurisdiction to list even obvious assumptions, such as:

- Identified hazards will occur.
- Individuals and organizations are familiar with the EOP.
- Individuals and organizations will execute their assigned responsibilities.
- Assistance may be needed, and if so, will be available.
- Executing the EOP will save lives and reduce damage.

The fourth component of the basic plan is the Concept of Operations, which explains the community's overall approach to emergency response (i.e., what, when, by whom). The Concept of Operations includes:

- The division of local, State, and Federal responsibilities.
- When the EOP will be activated and when it will be deactivated—and more importantly, by whom.
- Alert levels and the basic actions that accompany each level.
- The general sequence of actions before, during, and after the event.
- Forms necessary to request assistance of various types.

The Organization and Assignment of Responsibilities section lists the general areas of responsibility assigned by organizations and position. It also identifies shared responsibilities and specifies which organization has primary responsibility for a given function and which have supportive roles. In other words, the Organization and Assignment of Responsibilities section specifies reporting relationships and lines of authority for an emergency response.

The sixth component of the Basic Plan is the Administration and Logistics section. This section provides resource management policies and policies for augmenting response staff with public employees and volunteers, as well as a statement that addresses liability issues. It also includes the assumed resource needs for high-risk hazards, resources that are available within the community, and spells out resources that may be available through mutual aid agreements. It is important to note, however, that the community should not rely on mutual aid agreements because neighboring jurisdictions may be faced with the same emergency or disaster that your community is facing.

The next component is Plan Development and Maintenance. The responsibility for the coordination of the development and revision of the basic plan, annexes, appendices, and implementing instructions must be assigned to the appropriate persons. Therefore, this section:

- Describes the planning process.
- Identifies the planning participants.
- Assigns planning responsibilities.
- Describes the revision cycle (i.e., training, exercising, review of lessons learned, etc.).

The final section the basic plan is the Authorities and References Section. This section cites:

- The legal basis for emergency operations and activities, including:
  - Laws, statutes, and ordinances.
  - Executive orders.
  - Regulations.
  - Formal agreements.
  - Predelegation of emergency authorities.

- Pertinent reference materials, including related plans for other levels of government.

Annexes

An annex delineates how the community will carry out broad functions in any emergency, such as issuing warnings or resource management. Early in the planning process, it is important to determine the functions that will be included in the basic plan as annexes. When making this decision, it is important to consider the organization of the state government and that of your jurisdiction, capabilities of your jurisdiction's emergency services agencies, and the established concept of operations. During this process, it is important to keep in mind the hazard analysis information developed for your community. What the community's planning team knows about the vulnerability to the community is key to developing meaningful functional annexes.

Because communities vary so widely, there is no single list of functional annexes that is right for everyone. There are, however, eight core functions that FEMA recommends be addressed as annexes in every EOP:

- The Direction and Control Annex allows a jurisdiction to analyze the situation and decide on the best response, direct the response teams, coordinate efforts with other jurisdictions, and make the best use of available resources.
- The Communications Annex provides a detailed focus on the total communications system and how it will be used.
- The Warning Annex describes the warning systems in place and the responsibilities and procedures for using them.
- The Emergency Public Information (EPI) Annex provides the procedures for giving the public accurate, timely, and useful information and instructions throughout the emergency period. It is important to note that while a Warning Annex focuses on the procedures that the government uses to alert those at risk, an EPI Annex deals with developing messages and accurate information, disseminating the information, and monitoring how the information is received. Because the warning system is one means for an EPI organization to get information out, an EPI Annex must address coordination with those responsible for the warning system.
- The Evacuation Annex describes the provisions that have been made to ensure the safe and orderly evacuation of people threatened by hazards that the jurisdiction faces.
- The Mass Care Annex deals with the actions that are taken to protect evacuees and other disaster victims from the effects of the disaster, including providing temporary shelter, food, medical care, clothing, and other essential needs.
- The Health and Medical Annex describes policies and procedures for mobilizing and managing health and medical services under emergency or disaster conditions.
- The Resource Management Annex describes the means, organization, and process by which a jurisdiction will find, obtain, and allocate resources to satisfy needs that are generated by an emergency or disaster.

In addition to these annexes, the planning team may want to consider annexes that make sense for the community. For example, if the community has a nuclear power plant, the planning team may want to add an annex on radiological protection.

Additional functional annexes may be added based on state law or jurisdictional requirements. Examples of annexes that may be added include:

- Damage assessment.
- Search and Rescue.
- Emergency Services.
- Aviation Operation

Hazard-Specific Appendices

An appendix is a supplement to an annex that adds information about how to carry out the function in the face of a specific hazard. Therefore, every annex may have several appendices, each addressing a particular hazard. The hazard-specific appendices that the planning team deems appropriate depends on the community's hazard analysis. The decision about whether to develop an appendix rests solely with the planning team.

Unlike annexes, hazard-specific appendices are not attached to the basic plan, but are linked to each functional annex. Topics addressed in hazard-specific appendices include:

- Special planning requirements.
- Priorities identified through the hazard analysis.
- Unique characteristics of the hazard that require special attention.
- Special regulatory considerations.

The following table suggests appendix topics for each functional annex.

Annex	Appendix Topics
Direction and Control	▪ Response actions keyed to specific time periods or phases ▪ Urban Search and Rescue (US&R) inspection ▪ Protective gear for responders ▪ Detection equipment and techniques ▪ Laboratory analysis services ▪ Containment and cleanup teams
Communications	▪ Provisions made to ensure that the effects of a specific hazard do not prevent or impede the ability of response personnel to communicate with each other during response operations
Warning	▪ Hazard-specific public warning protocols ▪ Required or recommended notifications of state and federal officials
Emergency Public Information	▪ Information the public will need to know about the specific hazard (e.g., special evacuation routes and shelters, in-place protective actions, etc.) ▪ The means by which information to the public will be conveyed
Evacuation	▪ Evacuation options and timing ▪ Evacuation routes ▪ Transportation resources to support mass evacuation
Mass Care	▪ Shelter locations out of the hazard's vulnerable areas ▪ Protection of shelter occupants

	▪ Food and water stocks to support extended shelter stays ▪ Capability to decontaminate people exposed to hazardous materials
Health and Medical Services	▪ Unique health consequences and treatment options for people exposed to the hazard ▪ Environmental monitoring and/or decontamination requirements
Resource Management	▪ Provisions for purchasing, stockpiling, or otherwise obtaining special protective gear, supplies, and equipment needed by response personnel and disaster victims

Implementing Instructions

Like the basic plan, each annex or appendix may use implementing instructions in the form of:

- Standard Operating Procedures (SOPs).
- Checklists.
- Information Cards.
- Recordkeeping and combination forms.
- Maps.
- Charts.
- Tables.
- Forms.
- Checklists.

Implementing instructions may be included as attachments or by reference, and the planning team may use them as needed to clarify the contents of the plan, annex, or appendix. For example, the Evacuation Annex may be made clearer by attaching maps with evacuation routes marked. Because these routes may change depending on the location of the hazard, maps may also be included in the hazard-specific appendices to the Evacuation Annex. Similarly, the locations of shelters may be marked on maps supporting the Mass Care Annex.

Common forms of implementing instructions are Standards Operating Procedures (SOPs). SOPs provide response protocols for carrying out specific responsibilities. They describe who, what, when, where, and how. SOPs are appropriate for:

- Complex tasks requiring step-by-step instructions.
- Tasks for which standards must be specified.
- Tasks for which documentation of performance protocols is required as a protection against liability.

When developing SOPs:

- Develop a task list.
- Determine who, what, when, where, and how. Remember that who includes who performs the activity, to whom he or she reports, and with whom he or she coordinates.
- Identify the steps for each task.

- Identify the standards for task completion.
- Test the procedures.

It is important to keep the SOPs up-to-date through review and revision.

The next types of implementing instructions to be discussed are job aids. A job aid is a written procedure that is intended to be used on the job while the task is being done. SOPs may be presented as job aids. Job aids are also appropriate for:

- Complex tasks.
- Critical tasks that could result in serious consequences.
- Tasks that are done infrequently.
- Procedures or personnel that change often.

Job aids are also useful when conformity is needed among workers or across locations. Job aids should specify:

- The task title.
- The purpose of the task.
- When to do the task.
- Materials needed to perform the task.
- How to perform each step of the task.
- The desired results.
- Standards to which the task MUST be performed.
- How to ensure that the work is done properly.

A job aid may include:

- Graphics.
- Flow charts.
- If…then decision tables.
- Dos and don'ts.

Because job aids are used in the midst of completing a task, they must be clear to be effective. They should use actions verbs and everyday language, highlight important information, and place warnings before steps to which they apply.

Formatting is also important when creating job aids. Numbering steps and using space, boxes, or lines to separate steps allows users to find their place easily after looking away.

Job aids may not be useful for all tasks, especially simple tasks that are performed regularly or must be accomplished quickly, from memory. If a task cannot be completed while referring to a job aid at the same time, a job aid is not appropriate.

Checklists are also useful implementing instructions. They provide a list of tasks, steps, features, contents, or other items to be checked off as completed. They often take the

form of boxes to be checked off but can be developed in any form, including as rating scales.

Checklists are particularly useful for tasks that are made up of multiple steps that must be completed in sequence or for when it might be necessary to document the completion of steps. Checklists may be less useful when observations must be recorded, when calculations or evaluations must be made, or when detailed instructions are required to complete the task.

Information Cards provide information that is needed on the job in a convenient, often graphic, form. Examples include:

- Reference forms.
- Diagrams, labeled illustrations, charts, or tables.
- Information summarized in matrix form.
- Things that might be presented in the form of information cards include:
- Call-down rosters.
- Contact lists.
- Resource lists.
- Organizational charts.
- Task matrices.
- Equipment diagrams.

Common forms used as implementing instructions include:

- Record-keeping forms on which calculations, observations, or other information (e.g., damage assessment) can be recorded.
- Combination forms that serve multiple functions, such as checklists with record-keeping sections.

Maps may be used as implementing instructions to highlight:

- Geographic boundaries and features.
- Jurisdictional boundaries.
- Locations of key facilities.
- Transportation or evacuation routes.

It is important to note that, when using a map as an implementing instruction to show a particular feature, extraneous details are often eliminated.

Creating Effective Implementing Instructions

To be effective, implementing instructions must be appropriate for both the audience and the intended use. They must also be:

- Complete in that they cover all of the components or steps.

- Clear, concise, and easy to use. They should avoid jargon and ambiguity, be organized in a logical manner, and include instructions that identify the purpose and applicability of the particular implementing instruction.
- Sufficiently detailed in that they give all of the necessary information.
- Up-to-date. The latest revision should be included.
- Sufficient in scope. They must cover each function fully.
- Identified in the EOP so that their existence is recorded. Implementing instructions should be incorporated by reference in the basic plan, annex, or appendix to which they refer.

Implementing Instructions are used by all agency personnel who respond to disasters, whatever their function. They are developed at the agency level because agency personnel will be using them, and therefore, will know if they are effective.

Implementing Instructions used by the agency should support the agency's roles and responsibilities as described in the basic plan. For this reason, only some of the types of implementing instructions described will be useful to a particular agency, depending on its function in a response.

When developing any type of implementing instruction, the first step is to consider the job title or position and tasks that go along with that position. You can then decide what type of implementing instructions would be most useful for those tasks.

Summary

Emergency planning is a continual cycle of planning, training, exercising, and revision that takes place throughout the four phases of the emergency cycle: Mitigation, preparedness, response, and recovery.

The end of product of emergency planning is the EOP, a document describing how citizens and property will be protected in a disaster or emergency.

There are four steps in the emergency planning process.

1. The hazard analysis or the process by which hazards in the community are identified and ranked according to the risks that they pose to the community.
2. EOP development, including the basic plan, functional annexes, hazard-specific appendices, and implementing instructions.
3. Testing the plan through training and exercises to determine weaknesses in the plan.
4. Plan maintenance and revision, based on needs and resources that may have changed since the development of the original EOP.

Completing each of these steps thoroughly will help you develop an EOP that requires fewer changes and less significant changes following training and exercising.

About The Author

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The opinions expressed herein are those of the author alone, and not to be construed as official policy of any organization or entity.

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"Gripped by Fear"
Public Risk [Mis]Perception and the Washington, D.C. Sniper

Damon P. Coppola

Introduction

In America's post-911 era of terror-awareness, extreme actions of groups like al Qaeda are no longer necessary to spark detrimental anxiety-based social reactions. The two 'snipers' who placed the nation's capital under siege for three weeks with one rifle and a box of bullets con-firmed this fact. Washington, DC's duct tape and plastic panic buying spree, spurred by a Terrorism Threat Index increase, illustrated how the mere hint of a future event can induce irrational behavior. Clearly, the emergency management community can no longer simply blame the media for such strong public sentiment. Controlling public fear is a public safety responsibility that falls squarely upon local government, but like other terrorism preparedness and response functions, fear management must be supported by the Federal government to be effective. There exists a rapidly-growing need for agencies to adopt formal fear management capabilities staffed by appropriately-trained, dedicated officials. In many cases of terrorism, fear is the greatest emergency that must be managed, and irresponsible or inadequate attempts to do so can actually increase public risk. Using the October 2002 Sniper crisis as example, this article will examine the roots of public fear and the often-distorted reality of risk, and will propose methods by which emergency management agencies can successfully manage fear should a terror-based event occur within their jurisdiction.

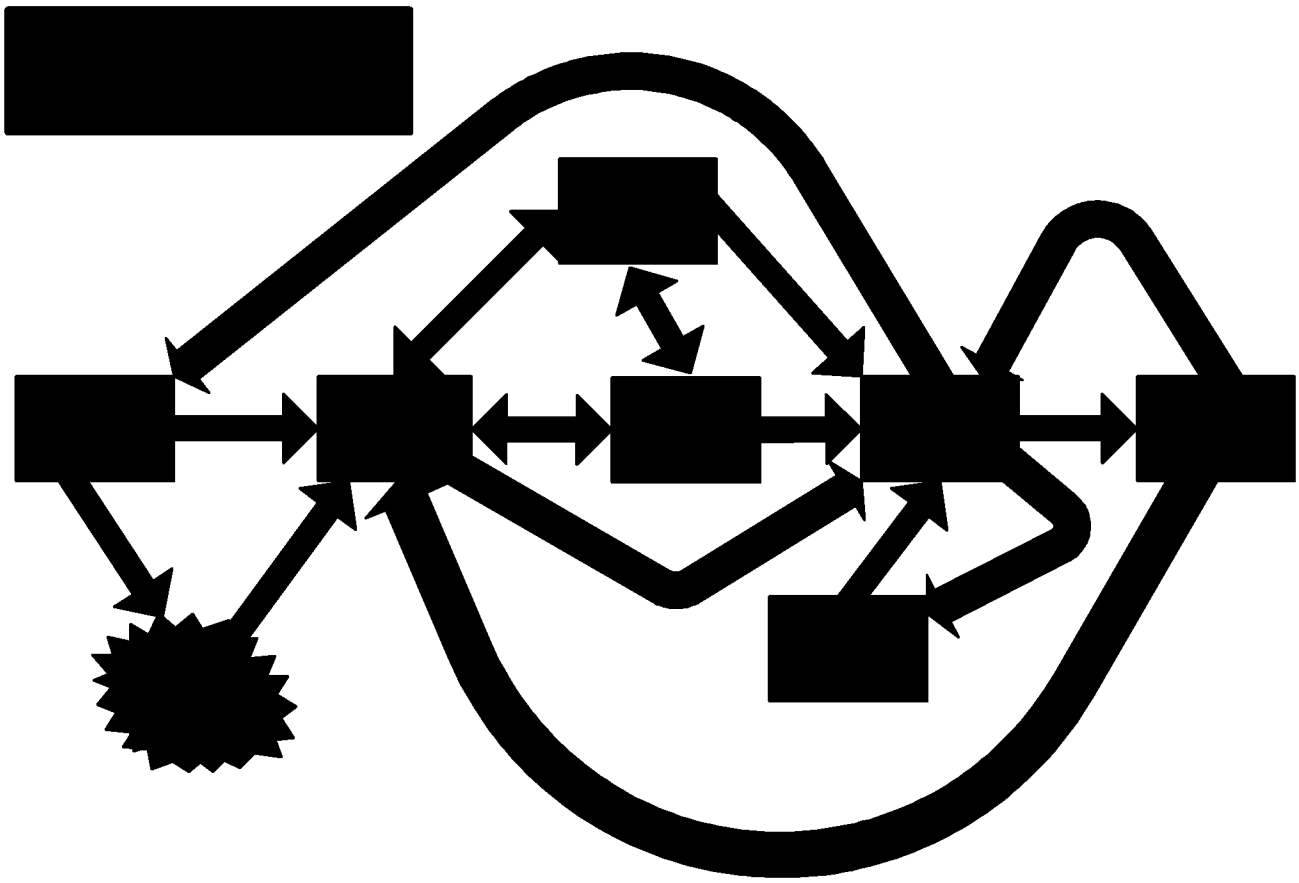
Background

Washington, DC metropolitan area residents were confronted with a heightened sense of vulnerability in the year leading up to the Sniper crisis. On September 11th, 2001, terrorists crashed a plane into the Pentagon. Three weeks later, anthrax-laced letters mailed to federal government offices arrived, resulting in building closures, mass prophylaxis, and the death of several postal workers. Ever-increasing security became the norm, including disruptive street closures and military vehicles with mounted machine guns. Meanwhile, the media continued to report that despite these measures, Washington, DC's emergency response capabilities would be severely deficient should a mass casualty event occur in the near future (Ward 2001).

It was easy to surmise that Washington, DC was a likely target to both international and 'homegrown' terrorists. Several polls in September of 2001 indicated that stress among area residents was much higher than those observed throughout the rest of the country (Diaz and O'Rourke 2002). Thus, by the time the Snipers announced their presence on the morning of October 3rd by killing four people, Washingtonians had already been pushed to the limits of their psychological stress tolerance.

Reactions and Actions

To study this case, we must first examine the actions of the authorities (police and other government officials), the media, and the public. These three groups were intimately linked by the dearth of information available. As illustrated in the Information Flow Diagram presented below, the authorities gathered and analyzed the information, the media broadcast the information, and the public received the information and acted upon it.



The Authorities

The 'authorities' include the local, state, and federal government officials involved in the various aspects of the Sniper crisis response. Because this was a law enforcement response to an event involving conventional weapons only, local police assumed lead-agency status. These authorities, as displayed above, were the sole source of credible information during the crisis.

The Montgomery County Police Department (MCPD) was the first involved in the crisis on the morning of October 3rd, as the first attacks occurred in their jurisdiction. MCPD put forth Chief Charles Moose as media spokesperson. Although Moose could provide only basic information, such as the victims' characteristics and shooting locations, he was immediately recognized by the media and the public as the crisis leader. In fact, even

though FBI agents ultimately apprehended the suspects, outside MCPD's jurisdiction, it was Chief Moose who officially announced the arrest.

Chief Moose had never assumed as challenging a public relations role (Stockwell, Ruane, and White 2002). The crisis quickly gained international attention, and he became the one man to whom the world turned for information. However, Moose faced a major problem in that he often had little information to give, and what information he had required confidentiality to prevent jeopardizing the investigation.

Chief Moose provided little risk-specific information. While he regularly assured the public that police were doing their best, focusing most of their resources on solving the case, Moose could not inform people about their personal vulnerability (even stating once, "we've not been able to assure anyone their safety in regards to this situation."(Ruane and Stockwell 2002). Meanwhile, the Washington, D.C. Metropolitan Police Department (MPD) issued 'Tips for Staying Safe', advising residents to keep moving, walk in rapid zigzag patterns, and avoid bright, open spaces, adding, "remember that a sniper with the right equipment can shoot accurately from about 500 yards, the equivalent of five football fields."(Hurdle, 2002) This list did not, however, inform residents of their actual risk levels. While some followed MPD's advice, it is arguable that the lack of Chief Moose's endorsement of the tips prevented any widespread observation.

School administrators were also instrumental to the response. Several Richmond schools closed after a letter threatening children was found there. Other Virginia and Maryland schools closed as well, though no specific threats had been received; these closings were said to have been based upon administrators' liability fears (Economist 2002) rather than evidence. Administrators claimed, "there was no other way to guarantee students' safety," (Gettleman 2002), but not one of the schools closed during the Sniper crisis was closed after the 9/11 attacks, or after any other unsolved area murders (Reel 2002). One Superintendent stated, "The decision was not based on any specific threats, but on "the volume of concern"(Gettleman 2002), strengthening arguments that such actions were in reaction to fear rather than the risk itself. The closings gained media attention and undoubtedly affected the public's opinion of personal safety.

Politicians chimed in, increasing media attention and even using the events to promote their agendas. Kathleen Kennedy Townsend, in her gubernatorial campaign, attacked her opponent's opposition to a federal assault weapons ban stating that the ban would answer voters' sniper fears (Fineman 2002). Congresswoman Connie Morella, campaigning for reelection, made a point of walking outside, knocking on doors, and claimed it was safe to be outside (Barker 2002).

Finally, the unnamed authorities that leaked information to the media deserve mention. It is important to stress both the detriment and opportunities presented by these insider 'leaks'. In numerous instances, the media were given information embargoed or never to be shared at all, broadcasting it to Moose's obvious dismay. While leaks often increased tensions between the Sniper Task Force and the media, they also ultimately led to the suspects' capture.

The Media

The media was the only bridge between the authorities and the public. Media agencies gleaned data from myriad sources, but credible information came almost exclusively from Moose. Even leaks ultimately required Moose's confirmation or denial. Media coverage, with regards to airtime, was extensive when the crisis began and rose to successively higher levels after each shooting. News programs became engrossed, if not obsessed with the topic, and 'special reports' featuring 'related' information appeared with regularity.

Coverage of the crisis spanned the globe as a growing international media gained presence. The number of national and international articles surged to new heights with each shooting, peaking the day after Muhammad and Malvo's capture at over 260 articles in 47 of the world's most prominent papers.

As the sole conduit of information, the media had particularly strong influence. As events were extremely rare (statistically), and there were few actual victims, there were startlingly few people outside of victims' social circles who had any personal contact with 'sniping' events. The public, therefore, received over 99% of crisis information from media sources. This statistic becomes significant when compared to an L.A. Times poll which found "feelings about crime" there were based 65% upon on media, and 21% on experience (Walsh 1996, p9).

Media agencies often sought alternate information sources to gain a competitive edge. It was not uncommon to see 'Serial Killer' or 'Geographic Profiling' experts speaking on talk shows, (most notably after Chief Moose announced that MCPD was using geographic profilers.) However, as the diagram illustrates, these alternate sources could only provide analysis to the public, as they depended upon the same media sources as the public for information.

A fact that must be noted for its unique nature is that the media was utilized by the police as a direct mode of communication with the Sniper. Chief Moose would 'speak' to the Sniper using cryptic messages at regularly scheduled press conferences without giving the media any prior indication he would be doing this. Despite an initial rift with the media (Shales, 2002), Moose acknowledged the important role-played by the media; one they were obviously willing to fulfill.

The Public

This group includes the citizens of the Washington, D.C. and Richmond, VA Metropolitan Areas, and constitutes the *vulnerable* group. Public demand for information fueled the media frenzy, while their fear drove many of the rational and irrational decisions made by authorities. While obviously the target of the media's and the authorities' information, and of the Sniper's aggression, they also served as a source of information and action. The public was perpetually integral to the hunt for the Sniper, ultimately participating in the Sniper's capture.

Public reaction and behavior became the subject of many of stories detailing 'newsworthy' actions performed in the name of safety. Examples of such actions, followed by percentages of people admitting to them (if available), include:

- Used different gas stations than one normally used (Morin and Deane 2002) - 36%
- Avoided stores/shopping centers close to highways (Morin and Deane 2002) - 32%
- Crouched down while pumping gas (Ropeik 2 2002)
- Ran or weaved through parking lots (Walker 2002)
- Avoided outdoor activities (Irvin and Mattingly 2002) - 44%
- Kept constant movement in public places (Eccleston 2002)
- Stayed at home except when absolutely necessary (Johnson and Finer 2002) - 13%
- Drove when one would normally have taken Metro (Washington Post 2 2002) - 11%
- Watched or listened to the news more than usual (Washington Post 2 2002) - 71%

The public was a responsible recipient of the flood of risk communication, and generally followed behavioral advice. They learned terms like "Code Blue" and "Code Red", and how to identify .223-caliber assault rifles, box trucks, AstroVans, and ladder racks (the suspected equipment of the Sniper). The public was given an FBI tip line, and by the end of the crisis over 90,000 calls were placed to this number (Whitlock 2002).

What the public did not do, however, was panic. While the media wrote stories detailing the average man's 'paralyzing fear,' life did go on with civility. Even after shootings, for example, there were no reports of people pushing each other over to get to 'safety'. The public was fearful but intelligent, receptive to advice, and able to process information well enough to locate the Sniper within twenty-four hours of learning the Sniper's car and license plate information.

So Why Was Everyone So Afraid?

In their article *Rating the Risks*, Paul Slovic, Baruch Fischhoff and Sarah Lichtenstein begin "People respond to the hazards they perceive." (Slovic, Fischhoff, and Lichtenstein 1979). The exhibited responses to the Sniper crisis at personal, local, regional, and even federal levels would indicate that sources influencing risk perception existed at prolific levels. In this section, the Sniper crisis will be compared to models developed through recent and historical research in order to better explain the peculiar public risk behavior observed. This examination will be structured according to the four 'Risk Perception Fallibility' conclusions established by Slovic, Fischhoff, and Lichtenstein.

Risk Perception Fallibility Conclusion 1: ***"Cognitive limitations, coupled with the anxieties generated by facing life as a gamble, cause uncertainty to be denied, risks to be distorted and statements of fact to be believed with unwarranted confidence."***

People tend to fear hazards less as they gain knowledge about their associated risks. That knowledge, however, will almost never be complete because the likelihood and consequence of most risks cannot be quantified for individuals (Ropeik 2002).

Conversely, the greater a risk's uncertainty, the more it is feared. The Sniper, who struck anyone, anywhere, at any time, presented citizens in the Washington, DC metropolitan area with extreme uncertainty.

Facing uncertainty, people make personal judgments based upon very imperfect information to establish individual risk (Slovic, et al, 1979) often causing them to *overstate* reality. People knew that police were working with little information, as the Sniper was leaving few clues at crime scenes (Patrick 2002). The public could not know how the Sniper threat compared to other public safety threats regularly handled by police, because such statistics were not provided. Considering the resources dedicated to it, that threat *appeared* greater than anything the area had ever faced, and considering the ineffectiveness of police actions (such as roadblocks), people generally assumed the police were powerless to combat this threat. Many other external factors reinforced this impression: media 'experts' would state that that the Sniper would likely not strike in place X or at time Y, and the Sniper would strike in that place or at that time; the fleet of white vans in general circulation that resembled the Sniper's purported vehicle gave the impression Snipers were everywhere; schools were being closed, outdoor activities were regularly cancelled, the government was talking of bringing in the national guard, and the New York-based Guardian Angels were in the area pumping gas. Talk that the Sniper may be a terrorist propagated the idea that more Snipers would follow even if this one was caught. In a survey asking Washington, D.C. Metropolitan Area citizens how concerned they were of personally becoming a Sniper victim, 19% said *a great deal* and 31% said *somewhat scared* – a total of 50% (Washington Post 2 2002).

Risk Perception Fallibility Conclusion 2: "Perceived risk is influenced (and sometimes biased) by the imaginability and memorability of the hazard. People may, therefore, not have valid perceptions even for familiar risks."

People are more afraid of things they easily imagine, remember, or hear about repetitively, thereby overestimating the likelihood of these so-called available risks. This phenomenon is referred to as the Availability Heuristic. This perception bias can be correct when considering events that are, in fact, frequent, such as automobile accidents. However, when an uncommon but spectacular risk receives constant media attention, such as the 1990 Columbine attack, people often wrongly assume similar events are likely. In the case of the Sniper, where television, radio, internet, and newspaper coverage was constant, people likely exaggerated personal risk. The omnipresence of white vans and box-trucks, reported by police to be associated with the Sniper, provided further reminders. Government decisions to close schools, restrict students' movement, and cancel outdoor activities, only reinforced such feelings. News reports describing victims as being 'regular' people, doing 'regular' things, made it very easy for people to imagine themselves succumbing to a similar fate.

Slovic and his colleagues described how events that are "out of sight [are] effectively out of mind." (Slovic, Fischhoff, and Lichtenstein. 1979). It would follow that the opposite was true of the Sniper; that which is always in sight is always on people's minds. An October 13th, 2002 Washington Post poll asking participants to rank the threat of the Sniper, anthrax, or the September 11th attacks found that 44% responded the Sniper, 29% responded the September 11th attacks, and 13% responded anthrax (Washington Post 2 2002).

Risk Perception Fallibility Conclusion 3: *"[Risk Management] Experts' risk perceptions correspond closely to statistical frequencies of death. Laypeople's risk perceptions [are] based in part on frequencies of death, but there [are] some striking discrepancies. It appears that for laypeople, the concept of risk includes qualitative aspects such as dread and the likelihood of a mishap being fatal. Laypeople's risk perceptions were also affected by catastrophic potential."*

It is often difficult to understand statistics, and even more difficult to conceptualize how they apply personally, even among experts (Jardine and Hrudley 1997). Numbers are not the sole influence on public risk perception, as people generally rely more on qualitative factors in ranking their risks than on the quantitative likelihood or consequence (Slovic, et al, 1979).

It is important to examine statistics provided by the media for their quality and usefulness. While nearly everyone knew the number of Sniper victims, few knew the total affected population, or the 'normal' murder rate within that same area. Lacking complete information, statistics can be misleading; causing people to assume their vulnerability was much greater. Economists have classified this overestimation of unknown or unclear risks "risk-ambiguity aversion" (Economist 2002).

Slovic, Fischhoff, and Lichtenstein, in their article *Facts and Fears: Understanding Perceived Risk*, proposed that eighteen risk characteristics influence risk perception. These qualitative measures have helped to explain what risk attributes cause public fear. Using their measures, the Sniper risk ranks among the most feared, as it is dreaded, new, not easily reduced, uncontrollable, and has fatal consequences, among others. The Sniper risk, not surprisingly, is similar to terrorism and crime on their ranking of risks' ability to elicit fear.

Risk Perception Fallibility Conclusion 4: *"Disagreements about risk should not be expected to evaporate in the presence of 'evidence'. Definitive evidence, particularly about rare hazards, is difficult to obtain. Weaker information is likely to be interpreted in a way that reinforces existing beliefs."*

The Sniper announced his presence with a genuine spree-murder event that garnered widespread attention. By the first day's end police had uncovered little, diminishing hopes of the Sniper's timely capture. The public quickly learned that they were dealing with a grave threat. Due to psychological factors described in the previous three Risk Perception Fallibility Conclusions, people were made to believe they were facing a high risk in regards to both consequence and likelihood. This initial frame of reference in which the public defined their personal vulnerability was to become one that was difficult to alter.

The crisis continued for three weeks. Several articles appeared that sought to enlighten residents about actual personal risk, even providing statistical data at times; however, these articles not only found infrequent front page placement, but they also competed against a great many more articles indicating that lives were in constant danger. Fear mongering and sensational articles were given priority coverage by newspapers and television networks, and as a result, appeared most credible. Considering Slovic, Fischhoff, and Lichtenstein's research conclusions, this is not surprising. They state that,

"people's beliefs change slowly and are extraordinarily persistent in the face of contrary evidence. New evidence appears reliable and informative if it is consistent with one's initial belief; contrary evidence is dismissed as unreliable, erroneous, or unrepresentative." They add that, "Convincing people that the catastrophe they fear is extremely unlikely is difficult under the best conditions. Any mishap could be seen as proof of high risk, whereas demonstrating safety would require a massive amount of evidence" (Slovic, et al, 1979).

The 'Overconfidence Heuristic', which states that people believe with overwhelming confidence that their knowledge is correct, reinforced these inaccurate personal risk analyses. People are often unaware of how little they understand a risk, believing they know much more than they actually do. Such errors were understandable in this case considering the nature of the media coverage. 'Expert' profilers giving descriptions of the 'most likely' demographics of the killer as being a lone young, white male, for instance, explains so many people's surprise the 'culprit' turned out to be two African-American males (Fears and Thomas-Lester 2002). Considering that no confirmed suspect descriptions facts were revealed prior to the arrests, their identity should have been a surprise to nobody.

Oftentimes, only time can change people's opinions about risk. One reason people are more scared about new risks than old ones is that they have yet to gather enough information to calibrate their initial impression. Through time, when their victimization expectations are not realized for themselves or any acquaintances, they begin to question their views. Had the Sniper not been caught, the public would have gained a more accurate appreciation of how small their chance of becoming a victim was, much in the manner that people are no longer as concerned about the child abductions that seemed to plague the United States during 2001. Fortunately, the Sniper was apprehended before this hypothesis could be tested.

Reality – Statistics of the Crisis

> *"Of all the grim facts surrounding [the] Oklahoma City [bombing], perhaps the grimmest is the one nobody talks about: against the backdrop of everyday American tragedy, 167 deaths is not many…. In a typical year, guns kill 38,000 Americans and about that many die on our roads. These numbers routinely go up or down 2 percent or 3 percent – half a dozen Oklahoma bombings – without making the front page."* (Political Commentator Robert Wright, Time Magazine May 1995 – From Walsh 1996, P 18)

In the three weeks that the Sniper terrorized over five million people, shooting thirteen and killing ten, 'routine' crime continued unnoticed. In Washington, DC alone there were 239 assaults with a deadly weapon, 32 people shot, and 22 people murdered (Barger 2002). As this accounts for just 10% of the total area affected it must be assumed there were far more 'routine' murders than 22. Not one of these crimes merited front-page newspaper coverage.

To understand risk perception, it was necessary to put aside statistics, but to determine the real risk people faced during those fearful weeks compared to 'unnoticed' everyday risks, the statistics must be analyzed. To calculate the

statistical risk faced by Metropolitan Washington DC residents, the population of the Sniper's operational area must be calculated. These statistics will be imperfect in that they cannot account for the ever-increasing zone in which the Sniper operated (Economist 2002). Additionally, they will not account for the unequal distribution of murders across the total area (Montgomery County was the location of seven of these murders, for example). However, these statistics will be more accurate in terms of personal risk because the random selection of victims performing a wide range of activities brings the population and personal risk almost to equality.

To acquire this personal risk estimate, one might simply consider the number of victims, divided into total affected population, spread over time. This would not, however, be accurate in projecting future risk, because the Sniper's operational environment changed that first morning. With police unaware of his presence, the Sniper was able to attack repeatedly within a brief time period. Shortly thereafter, with his presence officially recognized, the Sniper's attacks required more time (presumably for planning.) Therefore, it is necessary to estimate how the murders would have progressed over time in a *post-awareness* context. Under this assumption, the four murders that occurred the morning of October 3rd would have likely been only *one* murder had the police been on alert for the Sniper. The adjusted statistics, therefore, are as follows:

Number of people shot (adjusted for *post-awareness*)	10
Number of people killed: (adjusted for *post-awareness*):	7
Population, Washington, D.C. Metropolitan Area: (83.16% of total Sniper-area population)	4,922,152
Population, Richmond-Petersburg Metropolitan Area: (16.84% of total Sniper-area population)	996,512
Population, total affected area:	5,919,152
Number of days the Sniper operated (10/2/02-10/24/02):	23
Multiplier (to find 365 day average):	15.870
National Murder Rate:	5.5 / 100,000
Washington, D.C. Metropolitan Area Murder Rate:	7.4 / 100,000
Richmond-Petersburg Metropolitan Area Murder Rate:	11.1 / 100,000
Using this data, the following population risk factors can be derived:	
Chance of being shot by the Sniper (over 12 months):	2.7 / 100,000
Or	1/37,297
Chance of being killed by the Sniper (over 12 months):	1.9 / 100,000
Or	1 / 53,325

Comparing these figures against the risks that people face in their daily lives with little or no concern introduces statistical perspective to the real risk from the Sniper. The following table lists the likelihood of death from various causes, listed in order of ***decreasing*** risk:

Hazard	Annual Risk	Lifetime Risk
2000 Murder Rate: Sniper area (weighted)	1 / 12,870	1 / 167
2000 Murder Rate: National	1 / 18,182	1 / 236
Car Accident	1 / 18,752	1 / 244
Accidental Fall	1 / 20,728	1 / 270
Accidental Poisoning	1 / 22,388	1 / 292
Murdered With a Gun	1 / 25,196	1 / 328
Shot by Sniper	1 / 37,297	1 / 484
Hit by Car While Walking	1 / 45,117	1 / 588
Killed by Sniper	1 / 53,325	1 / 693
Drowning (Accidental)	1 / 77,308	1 / 1,008
Fire/Smoke Inhalation	1 / 81,487	1 / 1,062
Lightning	1 / 4,262,813	1 / 55,578

According to these figures, a person was more likely to be accidentally poisoned, or die in a car accident, then to be shot and possibly killed by the Sniper. As previously noted, the other risks have higher variance between individual and population risk, as more can be done on the personal level to mitigate them (like wearing a seatbelt or wearing a life preserver, for example), but the fact remains that for the *average* of all people these statistics are accurate.

Lessons Learned and Future Implications

Having compared the Sniper Crisis to risk perception models, and having calculated population risk, one can now ask, "*Should the public have been so deeply fearful during the Sniper crisis?*" The answer, according to these established models is, *yes*, they definitely *should* have been, *considering the factors they were confronted with in regards to the information they received.* However, according to the statistical data and risk comparison, they did not *need* to be so afraid, and there are ways in which the media, emergency responders, and other Federal, State and local government officials can limit this type of fear in the future. Such abilities will be crucial if and when future terrorist events occur.

1. Respond separately to the event and to the fear.

The authorities, namely the police and the government officials, dedicated vast resources to the Sniper crisis more due to high levels of public fear and concern than any disproportionate public safety threat. Conversely, they did little, if anything, to treat the fear itself. When emergency management agencies respond this way, they can actually amplify anxiety by justifying public fear, and increase risk by moving police and emergency management resources away from routine but necessary public safety work. People's susceptibility to other health-related risks is increased because freedom of movement becomes self-restricted and because fear-induced stress can result in other damaging physiological effects.

Police and government officials should, in the future, treat the event and the fear of the event as two separate problems that need to be individually addressed. This is a need that has already been recognized in past crime and terrorism crises (Warr 2000). A separate function of emergency management - a 'Fear Management Team', consisting of members with backgrounds in sociology, psychology, emergency management, public education, and public relations, among others, should be created. This team would have several sub functions, as follows:

- **Measure levels of public fear** - There are established means by which real-time fear can be measured, including surveys, recognizing behavioral indicators (fear avoidance actions – i.e., changes in routine), and establishing recognition-triggers for "transient public episodes of fear" (how a population acts in response to fear – i.e., drop in public transportation use) (Warr 2000). Emergency management can only respond to a high level of fear if they know it exists. Not all events will be as obvious as the Sniper crisis.
- **Develop informed, educational public relations message** - As a part of regular emergency management operations, a trusted leader with decision-making power must be identified and put forth to communicate with the public through the media. The Fear Management Team would process information culled from monitoring public fear to create communications (through the trusted official) that adequately and accurately addresses public fear. They would develop mental models that give emergency responders a clear idea of what exactly the public does or does not understand, and what they believe emergency responders are doing and/or are able to do to ensure their security. Working directly with the emergency response team, they would provide exact information concerning what is needed by the public to correct or adjust their beliefs. They would work with government officials as well, helping them to inform the public through reinforcement of the messages given by the emergency response spokesperson.
- **Address public fear directly** - The Fear Management Team would coordinate the services of mental health specialists in an effort to further reduce public fear. Public health officials would address the public directly through media outlets or through community groups. Having information directly related to the crisis, they would be able to make accurate and informed communications through the media (unlike the un-informed 'experts' that were prevalent in the Sniper crisis, who did not have access to secure information). Information would not be compromised, because it would not be necessary to share specific details - however, as trusted public health officials, the public would recognize that they were making informed decisions and would more likely weigh their opinions more heavily in adjusting their perceptions.
- **Assist Local Government/Community Authorities in Decision-making** - Local government and community groups must respond to crises, and their actions affect the public directly. School superintendents need guidance about when it is appropriate to cancel school, and community groups need to know when public events must be postponed. Without direction from emergency response (the most 'informed' source of information), they will act without consistency and likely send mixed messages to the public. In addition, the overreaction by one

influential government or community leader can lead to secondary responses from other less organized or less informed groups. This Fear Management Team would serve as an advisory board for government and community groups, ensuring that their leaders are able to make decisions based upon the most complete and current information, and allowing the groups to work in consensus rather than as separate entities.

2. Increase responsible reporting by the media.

The media has a responsibility to ensure that during crisis events, public safety information reaches a wide audience in a timely and accurate manner; a duty they are recognizing and embracing more each year (Moore 2002). However, most newspaper and television news employees have no idea how to successfully fulfill this role, as they have never received crisis communications training. The media is a business entity and is therefore motivated primarily by the ratings and viewer/reader-ship that ensure steady income generation. As such, they cannot be expected to cease provisions of blanket coverage during extreme events like the Sniper crisis.

The media is adroit at using scare tactics and fear mongering to harness public attention, and often does little to calm nerves once that attention is grabbed. These agencies must learn as an industry that they can contribute to public safety by providing accurate, responsible, and useful information, while maintaining these traditional 'shock' methods to attract viewers, thus preserving a competitive edge without sacrificing integrity. For the media to participate in a crisis response constructively, they need to add to the glut of sensationalism a balance of rationality - a reality check for the public to process information and judge individual risk. If they broadcast a message that says *"Four of the victims have been shot while pumping gas at local gas stations,"* for example, they need to qualify this statement by adding, *"however, there have been approximately 10.5 million gas transactions made at over 1000 gas stations in the affected area during the crisis so far"* (Memmott 2 2000).

The media should recognize and act upon the public's tendency to anchor and adjust in their forming of perceptions on risk. *This cannot be denied.* If a story informs citizens that, "This is the greatest number of law enforcement officers ever dedicated to a criminal investigation in county history," a person may incorrectly imply that their life is at greater risk than ever before, and all future information will be processed within this context. If they are later told in an article *that is given proportional emphasis*, for instance, that, "although ten people have been killed by the Sniper in the past three weeks, there are an average of thirty-eight people killed in traffic accidents alone during the same time period in the Washington D.C. Metropolitan Area," (Memmott 2, 2002) they will be able to rank their personal risk more appropriately.

The media are not villainous. Quite the contrary, they are a vital component to emergency management that without which risk communication would be nearly impossible. Also, not all of today's media reporting is misinformed or irresponsible. There are several news agencies that employ reporters trained and/or knowledgeable in

crisis communications and risk perception, and who regularly practice the suggestions made above, and the knowledge and experience of reporters like this must be shared across the industry. The journalist's goal is to provide the public with timely information; the extent to which that information is both accurate *and* effective depends largely upon the level of cooperation provided by emergency management.

3. Establish public risk perception and risk communication training standards for emergency management, government officials, and the media.

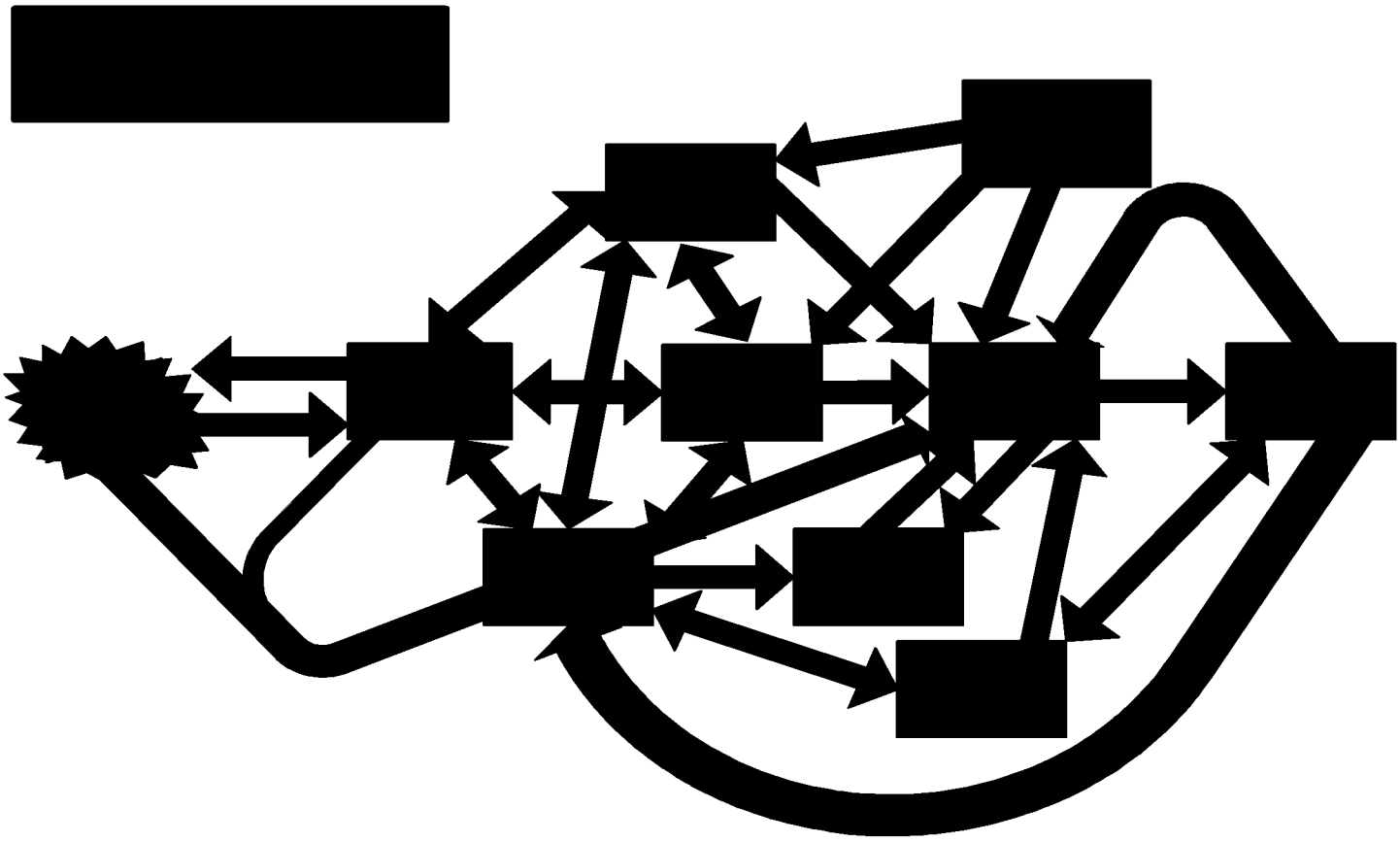
The federal government requires both emergency responders and public officials to complete training and prove competencies in performing many of the tasks associated with their job duties. While many first responders who communicate directly with the public are trained in public relations and communications, they are often not trained in crisis communications, risk perception or risk communication. An ATF agent who described probable injuries from a .223 bullet, or the MPD safety tip reminding citizens that snipers can hit from 500 yards neither provide useful information nor control fear.

If risk perception and communication training is required for emergency management public relations staff, fear management would become organizationally routine. The existence of a Fear Management Team, as proposed, would likewise be better understood and utilized across all emergency management agencies. Industry acceptance would be more likely if federal or state governments covered applicable costs for this training as they do for many other law enforcement and public safety programs.

Chief Moose did an outstanding job as a crisis manager, and as a leader, but he did little to combat fear directly. Considering the lack of emergency response experience with terrorism in the United States, it is unlikely that many emergency managers would be prepared for such a difficult task. If the threat of terrorism is growing, as the FBI and the Department of Homeland Security claim that it is, then the need for such training should be mandated.

Modified Information Flow Diagram - The Road Ahead

The following information flow diagram proposes a solution to managing fear at the local level. The diagram depicts how a Fear Management Team would operate within the overall flow of crisis information, and within the range of emergency management activities. Federally-funded crisis communications training is included in order to indicate the likely recipients of this training. This design can be easily adapted to suit the needs of almost any local emergency response to a crisis that captures extensive public attention.



This diagram does not directly address where the additional resources provided in federally declared disasters would apply, or how the command structure would accommodate these resources, as it remains to be seen how the DHS reorganization will alter existing response systems.

Conclusion

Fear is irrational only if a person has enough information about a hazard to perform a personal risk analysis, finds that the likelihood of the hazard affecting them is smaller than or equal to risks they face on a daily basis with little or no thought, and is *still* afraid. When there are little or no means for people to gather information to make informed personal risk analyses, they tend to overestimate personal vulnerability due to incomplete and often incorrect information. Only information can combat fear, and only government and public safety officials (in partnership with the media) can provide for that need.

On November 7th, 2002, two people in New York City were hospitalized and confirmed to be infected with bubonic plague - the first cases in that city in over 100 years. Bubonic plague is a disease that is historically one of the greatest killers of man, decimating over a third of the population of Europe during the Middle Ages. To the people of New York City, this disease was dreaded, new, fatal, globally catastrophic, involuntary, and

historically hard to control. Why did fear not reign in New York when this information hit the newsstands? The answer lies in the way the information was first reported by Dr. Thomas Frieden, the health commissioner of New York City (a city that has in recent years experienced two great health crises - the first U.S. outbreak of West Nile Virus and the 2001 Anthrax letters). After announcing the two cases of the disease, Dr. Frieden added,

> "Bubonic Plague does not spread from person to person. There is no risk to New Yorkers from the two individuals who are being evaluated for plague. Those patients became ill within 48 hours of arriving in New York City. Therefore, we are confident that their exposure occurred in New Mexico. More than half of the plague cases in the United States are in New Mexico. A wood rat and fleas from the rodent that were found on the couple's property in Santa Fe, New Mexico, tested positive in July for plague. Bubonic plague is a bacterial disease in rodents transmitted to humans through the bites of infected fleas…" (CNN 2002)

The story barely lasted a week.

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Training Hospital-based Hazardous Materials Emergency Response Healthcare Workers: Up-to-Date Guidelines

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Introduction and Scenario

Mark Twain once wrote: ***"I will never let my schooling interfere with my [ongoing] education."***

Consider the following effective hypothetical, but possible, hospital response

At 9:55PM on a Friday evening, several individuals with copious tearing, salivating, and tremors stumble unannounced into the emergency department (ED) reception area at 'Geared-up Hospital'. The ED Clerk immediately suspects a hazardous materials exposure and keeps a safe distance. He directs the victims outside to the decontamination (decon) shower and immediately calls the hospital Operator with the pre-designated code. An overhead page calls the code and location. That page informs the hospital's trained Decon Team to congregate at the nearby Decon Area while informing those without pre-designated roles there to stay away. A Security Officer and ED Nurse (both part of the Decon Team) put on their personal protective equipment (PPE), go outside, and instruct the victims to quickly disrobe and shower thoroughly with soap and water. The victims report that there was a sudden explosion at the ball stadium. The responding Fire Department calls the ED to notify them that 'dozens' of victims are en-route. The Nurse conveys this information to the Operator, who immediately notifies the Nurse Supervisor and Administrator-on-Call (the designated Hospital Incident Commander, or IC). The Nurse Supervisor fulfills the role of IC until the arrival of the Administrator-on-Call. The IC immediately directs the Operator to call 911 to activate the local community's emergency response mechanism and notify neighboring hospitals; designates a Decon Supervisor, the most highly qualified of those gathered; and activates the Hospital Emergency Incident Command System (HEICS). The IC then directs Security to activate a lock down of the facility (to secure and control all points of entry); sends potentially contaminated patients to the Decon Area; and isolates the area in the ED where contaminated victims had entered. All members of the Decon Team put on their PPE and prepare for the influx of an unknown number of contaminated patients, including the non-ambulatory victims. The IC orders the activation of the Emergency Operations Center (EOC) and designates a Liaison Officer to proceed to the ED to intercept any arriving ambulances and private vehicles. Upon arrival of the Fire Department, the Fire Captain meets with the Decon Supervisor to coordinate response resources and assumes the role of Hazardous Materials Incident Commander (HMIC). The Fire Battalion Chief is directed to the Emergency Operations Center (EOC) where the hospital enters into a 'unified command' with the Fire Department. The Liaison Officer directs the arriving senior Law Enforcement Personnel to the Security Officer. An ingress/egress plan that had been worked out in pre-planning is activated. When the remaining victims arrive, they are intercepted by Law Enforcement Personnel and are quickly directed to the

Decon Area. Basic life-saving care (e.g., oxygen, control of bleeding, and antidotes) is provided by ED Physicians and Nurses pre-designated to the Decon area. The Public Information Officer has developed internal rumor control messages and, in collaboration with other members of the HEICS team, she modifies a pre-prepared public affairs release to notify the community about the incident, and to alert other patients to avoid the hospital temporarily; and sends a designee to meet arriving news reporters. Thorough decon of all of the victims quickly takes place; potentially contaminated areas are evaluated but then re-opened; the lock down is terminated; the EOC is deactivated; equipment is broken down, cleaned and restocked; and most of the participating HCWs meet in the auditorium for debriefing to ensure that no HCWs experienced exposure symptoms and to document lessons learned.

Despite this success story, the actual capability of many hospitals to manage a large-scale hazardous materials event is, in fact, a daunting challenge. Many hospitals have little (or minimal) preparation and many with elaborate plans have not provided exercises or training drills for their staff. Of all the preparedness activities pertaining to hazardous materials emergency response programs, maintaining a trained and practiced Decon Team and clinical staff (on all shifts) is perhaps the most challenging. Unless the organization has determined that their response is to lock the doors and maintain no response capability, such preparedness is mandated by several federal/industry standards and guidelines, including the Occupational Safety and Health Administration (OSHA), the National Fire Protection Association (NFPA) and the Joint Commission for Accreditation of Healthcare Organizations (JCHAO) [1-4]. Until recently, there has been little guidance as to appropriate levels of training according to individual HCWs roles during response. The remainder of this paper discusses training strategies for HCWs (clinicians and non-clinical workers) in order to adequately prepare them for an organized, effective response. The following key assumptions inform our guidance [5-8]:

- Hazardous materials emergencies can result from unintentional or intentional exposure in any of the following: household, industry, agriculture, transport, terrorist attack, or other criminal act (e.g. clandestine drug lab).
- Victims will arrive with little or no warning to the hospital.
- Information regarding the identification and/or concentration of the hazardous agent(s) will not be available immediately.
- Victims will not necessarily have been decontaminated prior to arriving at the hospital.
- Most victims will go to the hospital closest to the site where the emergency occurred.

Who Needs to be Trained?

Identifying the appropriate HCWs to fulfill emergency response functions requires an understanding of their usual job duties and their expected roles during an event. When identifying who within a facility should participate, the questions that should be asked are:

- What level of response will the organization implement and maintain?
- What are the numbers of people who may be needed to carry out the identified functions?
- What are the staffing numbers during all shifts?
- Are there HCWs with specialized expertise and skills available in the facility (e.g., Poison Control Center expertise, firefighters of HAZMAT team members)?

What standards are relevant to healthcare HCW training for hazardous materials event response?

Organizations such as OSHA, states which have an OSHA-approved state plan, JCAHO, NFPA, and other state or local government agencies set standards that govern healthcare HCW preparation, particularly regarding training and HCW protection [1-4].

OSHA has promulgated numerous standards and guidance documents that regulate and guide hazardous materials emergency response. The primary ones are: 1) Respiratory Protection Standard (29 CFR 1910.134); 2) General Requirements for Personal Protective Equipment (29 CFR 1910.132); and 3) Hazard Communication Standard (29 CFR 1910.1200). In addition, there are a number of relevant hazard-specific standards including: 1) Blood borne Pathogens (29 CFR 1910.1030), 2) Ethylene Oxide (29 CFR 1910.1047), and 3) Formaldehyde (29 CFR 1910.1048) [1].

However, the standard which most influences HCW training is the OSHA's Hazardous Waste Operations and Emergency Response Standard (HAZWOPER) (29 CFR 910.120(q)). The HAZWOPER Standard reflects OSHA's mission protect the health and safety of HCWs involved in clean-up operations at hazardous waste sites, operations at hazardous waste treatment, storage and disposal facilities; and emergency responses to releases or potential releases of hazardous substances. Community response organizations such as fire fighters, emergency medical services and hospitals must comply with 29 CFR 1910.120 when they respond to a release of hazardous substance.

The original scope of the HAZWOPER includes abandoned hazardous waste sites, hazardous waste processing or storage facilities, and release sites. However, hospitals (who may receive casualties from these sites) are not specifically mentioned in the HAZWOPER Standard. Over the past several years, hospitals have attempted to understand HAZWOPER's requirements for hospitals. In response to their questions, OHSA has provided many formal, published 'Interpretation Letters' that are now available on the Internet [9-17]. However, these letters: 1) Usually address only the specific question being asked (rather than providing a more comprehensive guidance), and 2) Have often been criticized as merely restating the specific language of the standard. Several questions remain, including:

- Is hospital-based decon considered to be a hazardous materials emergency 'response'? If not, how is it different?
- What are the levels of training are required for hospital-based 'first receivers'?
- What level(s) of PPE is recommended?

In response to these questions and other inquiries, OSHA recently published its "Guidance for Hospital-based First Receivers of Victims from Mass Casualty Incidents Involving the Release of Hazardous Substances" [1]. In the document, OSHA provides clear guidance on training (according to the HAZWOPER and Hazard Communication Standards), and differentiates 'first receivers'' PPE needs from community 'first responders' working in the hazardous substance release zone remote to the hospital. The scope of the guidance does not include situations where the hospital is the site of the release, and it *assumes* that a hospitals housekeeping staff are not trained and equipped to conduct major hazardous waste clean up and decon of the facility. Instead, many hospitals contract with external hazardous waste service providers. However, nothing in the guidance document precludes incorporating the components of the HAZWOPER Standard necessary for addressing spills internal to the hospital in a comprehensive training program.

In the guidance document, OSHA presents the following minimum training levels (which can be increased or augmented, as appropriate, to better protect HCWs, other patients, and the facility in general):

- **First Responder – HAZWOPER Operations (FRO) level** training for HCWs (including Decon Team members, physicians, nurses, and security staff) who have a major role in the hospital Decon Area.
- **First Responder – HAZWOPER Awareness (FRA) level** training for ED clerks and triage staff, and ED clinical staff who might identify unannounced contaminated victims (then notify the proper authority), and security staff working outside the hospital Decon Area.
- **Briefing at the time of the incident** for HCWs whose roles in the hospital Decon Area could not be anticipated before the incident (so-called "skilled support personnel", including a medical specialist or a trade person, such as an electrician).
- **Information similar to hazard communication training** is recommended for other ED staff (such as housekeepers), provided that contaminated victims would not have access to them.

What topics must be covered if using OSHA's new guidance? [1]
First Responder Awareness (FRA)

OSHA requires that responders trained at the Awareness level have sufficient training or have experience to objectively demonstrate 'competency' in the following areas:

- What hazardous substances are, and their risks.
- Ability to recognize the presence of hazardous substances in an emergency through signs and symptoms of exposure.
- Ability to specifically identify a hazardous substance, if possible.
- Ability to realize the need for additional resources, and to make appropriate notifications to the proper authority.

In addition to these traditional Awareness level training topics, staff who might identify contaminated victims that arrive unannounced (such as ED clerks and triage staff) should know specifically how to handle the situation. Once they suspect a patient is contaminated, they should be well trained to perform the following steps:

1. Avoid physical contact with the patient.
2. Immediately isolate the victim and allow properly trained and equipped staff to decontaminate the victim according to the emergency management plan.
3. Immediately notify supervisor and safety officer of possible hospital contamination.

When we conduct Awareness level training for HCWs, we use an acronym – commit a "SIN":

S = Safety is first, last and always!

I = Isolate the scene and deny entry (i.e., don't let anyone that is contaminated leave the area and don't let anyone that hasn't been contaminated to become contaminated).

N = Notify appropriate authority immediately [18].

First Responder Operations (FRO): OSHA requires that responders trained at the Operations level have sufficient training (defined as a minimum of 8 hours and, at the least, an annual refresher; Awareness level training hours may contribute to the 8 hours) or have had sufficient experience to objectively demonstrate 'competency' in the following areas:

- What hazardous substances are, and their risks.
- Understand basic hazardous materials terms.
- Ability to recognize the presence of hazardous substances in an emergency through signs and symptoms of exposure.
- Ability to specifically identify a hazardous substance, if possible.
- Ability to realize the need for additional resources, and to make appropriate notifications to the proper authority.
- Understand their role in the hospital's emergency response plan, including site security and control, and decon procedures.
- Ability to realize the need for additional resources, and to make appropriate notifications to the communication center.
- Knowledge of the basic hazard and risk assessment techniques.
- Know how to perform basic control, containment and/or confinement operations within the capabilities of the resources and PPE available.
- Know how to implement basic decon procedures.
- Understand relevant standard operating procedures and termination procedures.

The Operations level training related to the use of PPE should include topics such as those specified by OSHA's General Requirements for Personal Protective Equipment Standard (29 CFR 1910.132 and OSHA's Respiratory Protection Standard (29 CFR

1910.134). Several examples of HAZWOPER First Responder – Awareness and Operations Level training curricula are available for hospitals preparing HCWs to conduct decon activities [19,20]. However, these curricula are not necessarily designed as 8-hour presentations (some are longer, while others are shorter and are intended for use when workers are able to demonstrate specific areas of competency). Although OSHA defines the minimum number of training hours for the Operations level training, it gives employers the option to instead demonstrate employee 'competency' in specific areas. However, it is very difficult to ensure and adequately document that workers have sufficient experience to waive the minimum training hour requirements. Readers are encouraged to consider the recommended hours we have outlined in Figure 1.

In addition to complying with OSHA standards, hospitals might also seek to gain or maintain accreditation by JCAHO. In its updated Emergency Management (EM) Standard (2001), JCAHO requires healthcare facilities to: 1) Have emergency management, hazardous materials and waste management plans; 2) Implement the plans; and 3) Conduct exercises to test emergency preparedness. JCAHO also requires "an orientation and education program for all personnel, including licensed independent practitioners, who participate in implementing the emergency management plan" [3,4].

All hospitals, even if opting out of JCAHO accreditation, must comply with pertinent NFPA standards in order to obtain Medicare or Medicaid reimbursements. Specifically, this includes: 1) NFPA 101, the Life Safety Code, which references NFPA 99 Chapter 12 - Health Care Emergency Management, and 2) NFPA 1600, the Disaster Management Standard regarded as the 'gold standard' that guides emergency management at the international, national, state and local levels [2].

What is "HEICS" and why is it so important?

The Hospital Emergency Incident Command System (HEICS) is an outgrowth of the Incident Command System (ICS) developed to standardize emergency response. ICS has slowly become the preferred organizational structure for emergency management throughout the United States. In the early 1990s, the California Emergency Medical Services Authority (CA-EMSA) adapted ICS for healthcare and it now becoming the accepted system nationwide. One of the keystones of both ICS and HEICS is the use of 'job action sheets' that identify the roles, responsibilities, and tasks of each position in the organizational structure. By using terminology and an organizational structure traditionally used by emergency services (such as Fire and Rescue), hospitals can easily coordinate their response activities with community responders and other hospitals [21]. HEICS is consistent with the newly adopted National Incident Management System.

Why are exercises and training drills necessary in addition to training?

One of the valuable lessons learned in response to many of the large-scale natural or man-made (intentional or unintentional) emergencies over the past months and years is the value of testing and refining response plans during exercises (so-called 'pop quizzes' which stress the system). Short of actual events, exercises (usually designed to identify

shortfalls) and drills (usually designed to provide specific training) stress the response capabilities of hospitals – their communications, personnel, supplies, equipment, and space. Many hospitals acknowledge that decon facilities have been very infrequently (if ever) used but are crucial to comprehensive preparedness. Therefore, decon exercises are critical to testing equipment and ensuring HCW competency [22]. Our suggestions on how to maximize the benefits of exercises and training drills are listed in Table 1.

Discussion - Why did the Geared-up Hospital described in the opening scenario do so well?

In a review of the hospital's response, we learn that the 'Geared-up Hospital's':

- EMP anticipated a large numbers of ambulatory and non-ambulatory victims even though there are larger hospitals in the area.
- HCWs (on all shifts) had been trained and had recently participated in a hospital-wide decon and ED drill that involved community emergency responders.
- Decon set-up, triage, decon, and medical treatment were all rapidly instituted.
- EMP ensured that victims' contaminated clothing and possessions were not only to be quickly removed but also double-bagged, thereby preventing exposure to others.

The hospital clearly benefited from it's involvement in community emergency preparedness, including

- Understanding the type of chemicals manufactured, stored and transported in the community.
- Decon equipment and PPE was purchased using a volume discount from several hospitals purchasing their equipment from one vendor.
- Partial funding was received from the community to conduct training drills with the Fire Department.
- Fire Department provided hands-on training for the hospitals' Decon Team.
- During the response, the hospital, Fire Department, and Law Enforcement Personnel successfully used compatible Incident Command System structures.

In their training program, the 'Geared-up Hospital' followed up-to-date OSHA guidance and has provided the following training to staff. These are outlined in Table 2.

Summary

'Geared-up Hospital's' effective response to a large-scale hazardous materials event was largely because of a well-developed and updated Emergency Management Plan (EMP) that was not just shelved. A tiered approach to training, followed by exercises and training drills, allowed the staff to effectively and safely provide comprehensive decon and medical management. The long-term commitment from hospital executives, particularly sufficient funding to maintain the decon facility, PPE and training were also

critical to a successful response. To be effective in any future response, they will need to continue training their HCWs and conduct exercises/drills → evaluate their drills and actual responses → modify their EMP accordingly → re-train HCWs → then

DRILL, DRILLS and more DRILLS!

Figure 1: Recommended-Tiered Approach to Hazardous Materials Training in Healthcare

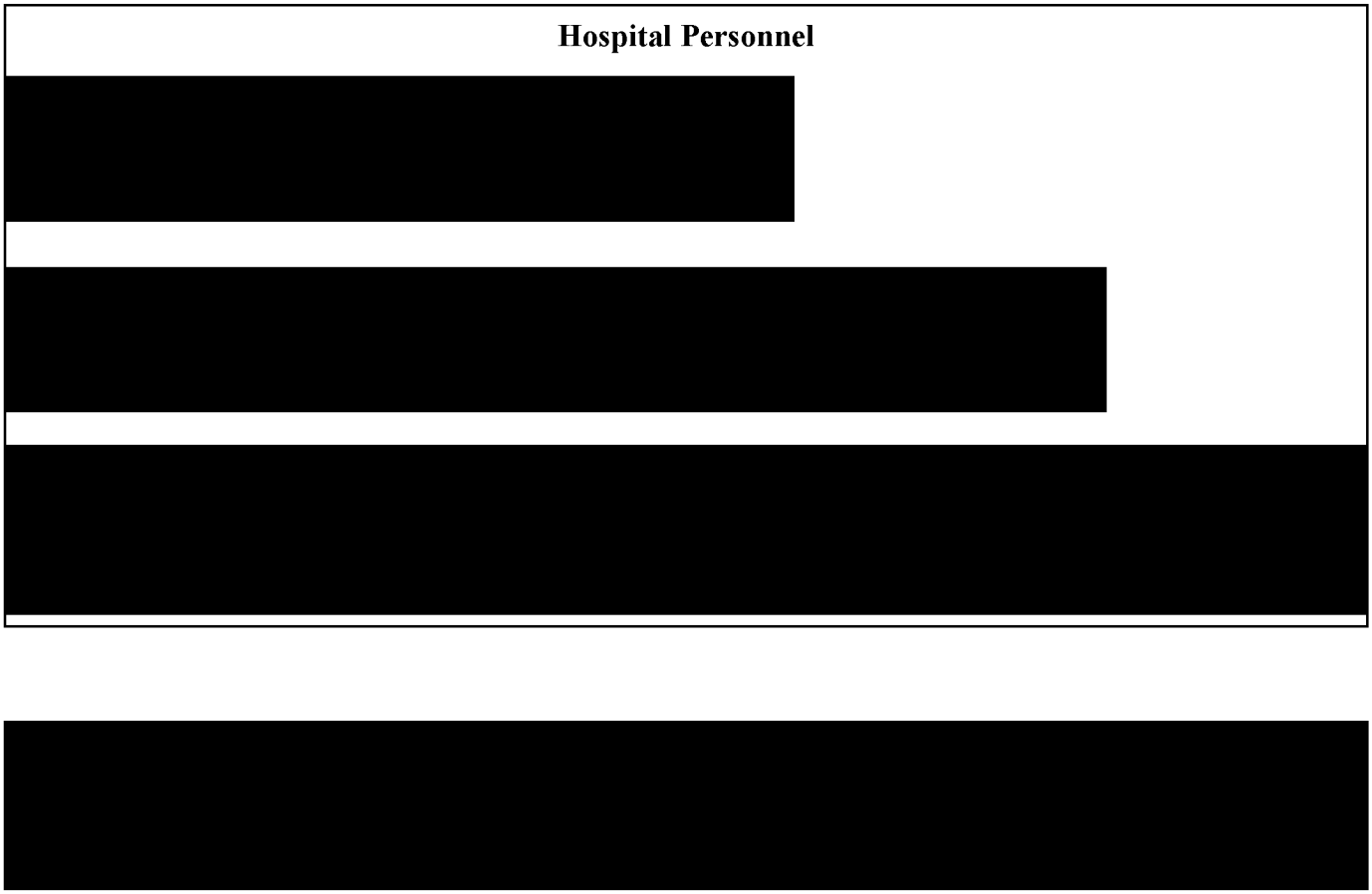

Table 1: 7 Keys to *Successful* Exercises and Training Drills

1. Get unequivocal executive support at the onset --- *including finances*
2. Involve department representation in the design --- *improves participation*
3. Make the scenarios realistic & include simulated casualties --- *more interesting &, ultimately, most useful*
4. Involve outside evaluators --- *makes the critiques more objective*
5. Exercise a series of smaller-scale training drills; periodically conduct larger, hospital-wide exercises --- *individuals & departments need to learn their specific roles*
6. Clearly identify shortfalls (lessons learned) from each exercise and drill, write 'after-action' reports, & develop corrective action plans --- *then ensure new procedures are in place, HCWs are re-trained & then re-tested during exercises/drills*
7. Exercises/drills on off-shifts --- *true emergencies are anything but predictable!!!*

Table 2: Training at 'Geared-up Hospital'

All HCWs with designated roles in the Decon area, including medical providers [1.]	First Responder Operations (FRO)
Security personnel, set up crew, & patient tracking clerks assigned only to patient receiving areas proximate to the Decon area [2.]	First Responder Awareness (FRA)
ED clinicians (e.g., MDs, nurses, other clinical HCWs); ED clerical & triage staff	First Responder Awareness (FRA)
Other personnel working in patient care areas after decon (e.g., ED) (such as housekeepers) [3.]	Training similar to that outlined in the Hazard Communication Standard
Administrator-on-call	FRA, Hospital Emergency Incident Command System (HEICS), Incident Commander
HAZMAT Group Supervisor (if exists within the hospital)	FRO, Hazardous Materials Incident Commander (HMIC), preferably Technician (Tech)
Public Information Officer	FRA, HEICS
Liaison Officer	FRA, HEICS

1. Including decon victim inspectors; clinicians who will triage &/or stabilize victim prior to decon; security staff (i.e., those providing crowd control & controlling access to the emergency department (ED)); set-up crew; & patient tracking clerks.
2. Where they might encounter, but should not have contact with, contaminated victims, their belongings, equipment, or waste.
3. Who would not be expected to encounter or come in contact with unannounced contaminated victims, their belongings, equipment or waste?

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TOWARD A COMMON APPROACH TO PUBLIC-PRIVATE SOLUTIONS

We Can Help Each Other, or….

John Laye FBCI

We must all work together. That was true long before 9-11, which day only emphasized the truth that all nations' public sectors (government) and their private sectors (businesses) must work together to stop disruptive events from entering the graveyard spiral that leads to catastrophe.

When thinking about the phases of emergency / crisis management, which have been the generally accepted starting point for studying and training to avoid disasters for at least the last 20 years, there is no phase that does not require cooperation and coordination between public and private sectors for real effectiveness.

The purpose of this article is to help corporate and government managers who have the responsibility for planning and training to avoid disasters deal with their government or corporate counterparts. It will discuss: commonalities, some of the acknowledged differences, and several unspoken differences that make coordination and cooperation both a necessity and a challenge. This article also points out training opportunities with government agencies that can benefit business continuity managers.

Dueling Viewpoints – A Challenge for Business Continuity Managers

For most people in business it is almost in their genetic code that the basis for commerce is that businesses are required and structured to produce revenue –enough revenue to cover all costs and still return a profit, and those businesses should be managed to try to keep profits greater than those of their competitors. That fundamental concept escapes most people who work in government.

It's not that they can't intellectually grasp it or recognize that government and business must coexist in the same communities, but very few truly understand the necessity for businesses to thrive so that government can function well and so that the community's quality of life can bloom. Almost no government decision-makers think about that when they are making the day-to-day decisions of their jobs. At the same time, few people in the private sector believe there are many functions government can perform as well as a business could, often feeling that governments grasp more power than they are entitled to, wastes the resources entrusted to them, and increasingly endows themselves with regulatory powers that border on harassment of businesses. Many corporate senior managers believe that the less contact their companies have with government, the better.

Those divergent viewpoints put the manager who would assemble an efficient organization to thwart disasters in a challenging situation. Even so, public-private

coordination and cooperation can be done --indeed, *have been done* in the face of major disruptive events, and joint public-private systems have been pre-established, knowing such events were surely approaching.

It's Not *All* Bad – Some Commonalities

One public-private coordination familiar to many occurs when local fire departments and their counterparts from refineries and other chemical processing companies have joined forces. In the author's experience, joint planning and training have been credited with keeping communities' losses down and successfully concluding emergencies sooner than otherwise would have been probable. The need for coordination and compatible training continues to be important. Here are examples looking along the line of authority from first responders to senior management.

During one event which threatened to turn into a large uncontrolled chemical reaction and send a cloud of hazardous materials ("methyl-ethyl death", is how one Chief put it) into a large district of homes, three fire chiefs –two from nearby refineries and one from the surrounding fire district-- used one of the refineries' emergency operating centers to plan ahead and stop the graveyard spiral. They combined public and private resources with a strategy that eliminated the impending disaster. The fact that all were members of an existing public-private group for information exchanges (The Inter-Refinery Chiefs' Association) and was aware of who commanded what resources, including the companies' chemical experts, is an example of cooperation and coordination at management levels with a payoff in a serious crisis.

Another commonality occurs when senior management or policy-level executive backing is needed for disaster avoidance programs –usually at budgeting time. The city of Milpitas, California long ago formed Business Partners for Emergency Preparedness, a group of corporations teamed with the city. All the members recognize their exposures in a part of California that can generate a number of serious disruptive events, including strong earthquakes that usually cause simultaneous hazardous materials spills and fires. Couple those with structural damage to buildings and disruption of the region's infrastructure (read: "water supply, power, and communications") to see why Business Partners for Emergency Preparedness members feel their organization is vital. One of its great strengths is its ability to point out the investments of highly respected corporations with their dependence on the community's (in this case the Fire Department's Office of Emergency Services) support, and their availability to support their community's governmental emergency preparedness in turn[1].

Committees, commissions, and other stakeholder groups are formed as adjuncts to communities' governments after (and sometimes even before) disasters. It is worth emphasizing that corporate representation on those civic bodies is an excellent way to keep informed about proposed mitigation activities and other issues that are likely to

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[1] Informal interviews with (now retired) Emergency Services Director Cecil L. Williams, City of Milpitas, California Fire and Rescue Services, 1995-2000.

affect local companies, and to make a significant and highly visible contribution to the community beyond the direct economic effects of just being there (payrolls, purchases, paying for services, et cetera).

Some issues for public-private coordination that have surfaced in past events and preparedness seminars, and therefore might be something for pre-planning discussions between local government and community businesses are:

- **Access during emergencies**

Businesses almost always want to get into their premises to get their vital records out, to do damage assessment, and to insure security. One organization thought they had this issue managed until the local police invoked mutual aid for an aircraft crash into a shopping mall. The highway patrol relieved local police at the traffic control points, but knew nothing of prior agreements for access. Among other issues was getting the water agency's experts near enough to assure uninterrupted fire flow. One approach is ID cards that can be recognized by all law enforcement agencies in a region.

- **Infrastructure restoration**

Even other government agencies have trouble with this one. What is the priority for getting utilities restored? Who controls that? There may not be much a company can do to change its position in the sequence, but its better to know in advance in order to begin planning for the darkness.

- **Emergency generators**

1. Companies that provide generators have some that are *very* quiet. Local government's decision-makers probably haven't heard (faint humor intended).
2. They need not be bolted down or in highly visible places. An outside plug-in will work (rental companies have them on roadworthy chassis). Can you get an agreement to get one through traffic control and parked "for the duration" where foresight landscaping renders it invisible?
3. Local fire codes may not differentiate between emergency generator fuel and other flammable liquid / gas storage. Not until your company opens the discussion, anyway. Watch out for a new issue! Environmental groups now take issue with emissions from even seldom-run emergency generators.

- **Training**

1. Local fire and rescue services like the visibility that comes with helping to train companies' Emergency Response Teams. Often live (pan) fire extinguisher training and CPR are *very* low cost, and provide excellent contacts before real events.
2. Local police services like the visibility that comes with training in their areas of expertise. Bomb threats-through-detonation realities and self-protection

against intentional workplace violence are examples. Ditto inexpensive, and ditto the excellent contacts previously noted.

- **Avoiding trouble before it arrives, one**

Local governments' Fire Marshals and often the nearest engine company will conduct no-cost life and electrical safety inspections. Their recommendations are seldom written, almost always based on their real-world experiences, and easy to implement.

- **Avoiding trouble, two**

Local police agencies will share local crime statistics and trends while offering ways to divert muggers, graffiti vandals, and wannabe burglars elsewhere. They usually leave employee briefings to the company and point out where adding or brightening a light or trimming foliage will be an inexpensive investment. Criminals fear light and unobstructed sight lines.

- **Evacuations / relocations**

Most public health departments have specialists who provide services for disabled people. Their advice could reduce liability exposures at no cost and prevent an impossible public and employee confidence salvage requirement.

Differences we talk about

With some commonalities identified above, it is also true those distinct differences between the public and private sectors surface. One of them is that in governmental agencies there are numerous detailed rules, which must be adhered to before progress can be made. In short, government agencies are often process-driven. This is especially true when something unusual is being purchased beyond routine supplies and services. In an attempt to minimize the influence of salespeople who solicit program personnel, rules often forbid contact beyond a status check once the specifications have been given to a Purchasing Officer to be contracted out. While a number of large corporate organizations exhibit milder versions of being process-driven, especially at lower levels, businesses in general tend to be more focused on quicker action. In short, companies are usually more objective-driven.

What business people often miss in dealing with government employees is that the detailed rules slowing progress are equally frustrating to government people. This shouldn't surprise corporate business continuity managers –we're all somewhat nervous about the next disruptive event that could escalate into disaster, after all. It's just that government managers have a bigger paperwork train to try to accelerate. A second difference between government's management situation and that for business people is time. Whereas, government employees often determine early in a program's lifetime whether it is funded by "carryover money", (meaning the budgetary appropriation can be used in a succeeding year or years), business people are usually given an objective coupled to a fixed date.

In fairness to the governmental process, program slack time is sometimes built in because funding from elected officials may become sporadic, and sometimes only part of the total funds necessary for a program's completion is appropriated. Nonetheless, this can become a source of friction because the government's part of a program is not under a compelling sense of urgency, while the company counterpart watches a deadline inexorably approach –and with it, an interview with the boss one would rather avoid.

Differences we *don't* talk about

One of the things that company managers working with their counterparts in governmental agencies' should prepare for is that government managers have to work with considerably less funding –both in their personal compensation and for program funding-- than most corporate program managers. For example, very few government agencies' Senior Managers have "signature authority" for significant amounts. Their corporate counterparts can often direct appreciable funds with little need to obtain authorization before each purchase. Government agencies seldom have a line item in their budgets for charitable or public relations contributions, while most corporations do. This often leads to the discovery by government managers that their private sector colleagues have resources that they might put to use in the service of the public.

In one instance, the public safety agencies in a county had discovered multiple-casualty events, and were struggling to coordinate the many responders from several jurisdictions necessary to control those scenes, manage (especially the medical) response and transport casualties to the specialized care facilities appropriate for their injuries. Although the issues were cloaked in the professional terminology of "mortality", "morbidity" and "contributing factors", the responders understood that they were really talking about human lives lost or saved, the quality of the survivors' remaining lifetimes, and how to prevent recurrences.

In that county, a large refinery was preparing to phase out a block of portable radios as part of an overall communications upgrade. The radios were donated to the county for use as a low-power scene-of-action intercommunications system ("interoperability" is the current phrase). The refinery's General Manager had signature authority for the value of those radios, and was trying to convince the local community that his refinery was a good and responsible neighbor, and… –the scene management issue went away.

Without mutual representation on a joint public-private committee, neither refinery nor government representatives would likely have recognized the potential for that life saving match and subsequent gift.

Shortly thereafter, it was payback time. A tragic industrial accident occurred at that refinery and the interpersonal relationships between the government and corporate managers insured the information flows that made an effective and efficient response.

In another instance, a major natural disaster hit. The government regional coordinating agency was understaffed, and a private-sector manager had an advanced degree that

matched one of the needed positions. For several days, his company made him available pro bono public to fill that position. He then selected additional staff to take that emergency operating center into 24 / 7 operations, transition from manual to computer data and records, help with the After Action Report and respond to later audits.
The unspoken (and at first poorly understood) key factors were: *signature authority* coupled with the *need for favorable publicity*, and the *flexibility in assigning* managers. Both private and public sectors –and ultimately, the people in those counties—benefited in times of emergency.

Public-Private Relationship Development

Stage One

Because of the usual relationship between government-as-regulator and company-as-regulated, there are stages of development before achievement of routine public-private coordination and cooperation.

Governmental managers who are likely to be called to events at sites like refineries may understandably be thinking, "What do you suppose they're up to behind that fence that is going to impact us?" At the same time, managers on the other side of the fence might understandably be thinking, "They'll be in here with their clipboards and sampling devices, looking to cite us and fine us again." That's this skeptical author's view of Stage One.

Stage Two

The second stage usually happens after an event when both government and company responders discover they could have gained control of the incident sooner or managed it more efficiently if they had understood each other's capabilities (and limitations) better. This often leads to joint training. At first, it's pretty rudimentary –"I'll show you mine if you show me yours (vehicles and their equipment).", but as both responders begin to see the advantages of mutual interaction during emergencies, managers discover one another's competencies and mutual respect develops.

Stage Three

The third stage usually occurs when those who must manage field responses from both the public and private sectors develop mutual guidelines for foreseeable disruptive events, with the goal of stopping the graveyard spiral. At this point public secton managers realize their private sector counterparts can access resources beyond what's already standing in the roadway *–and won't mind sharing them*.

In one such situation where the author was present, local fire departments were chronically short of the compressed air bottles firefighters must wear in the hostile breathing environments that are their normal habitat. Fire apparatus was being summoned as mutual aid and spare bottles stripped from fire companies still in quarters so those on

scene could continue to operate. Two refineries pooled funds to purchase a joint use cascade system that could be brought to the scene and refill bottles no matter whose fire it was. Cascades may now be obsolete, but the principle isn't.

Stage Four

The fourth stage occurs after public and private emergency field responders and their supporting managers develop that mutual respect. Please recall the illustration of the Chiefs who overcame the uncontrolled chemical reaction / impending disaster by pooling their collective knowledge and resources.

Stage Five

The fifth stage can arrive when public and private planners begin joint planning for ways to pool resources and prevent disruptive events from escalating –going so far as to conduct joint *management training exercises* that involve both teams.

Stage Six

Joint planning and expenditures to mitigate the effects of recognized threats that can impact the community will be the sixth stage. Note the future tense.

Government Training for Managers: A Brief History of Development

There are several government training institutions for emergency managers. In the United States, the Federal Emergency Management Agency's Emergency Management Institute (EMI) at Emmetsburg, Maryland leads them. EMI transitioned from teaching about an almost exclusively civil defense (war damage) environment into events occurring in the real world –disruptive events caused when natural, human-caused, and accidental threats short of war became disasters. The Emergency Management Institute draws students from all U.S. states and territories, and sometimes has foreign visitors as students. The California Specialized Training Institute at San Luis Obispo is that state's training arm of the Governor's Office of Emergency Services, and had real-world orientation before EMI, but draws almost all of its students from one state.

Both institutes train managers in *Integrated Emergency Management*, in which the management silos, or "stovepipes", isolating fire from police, from emergency medical services, from public works, from (et cetera) are recognized as impediments to efficient responses and removed. Recently, those changes that seemed almost revolutionary when first introduced have been augmented by adding the concept that the initial decisions get made in the field, and an Emergency Operations Center / Crisis Management Center, at least in the first stages of disruptive events, provides *logistics support* for the people out there where the rubber meets the road. Another advancement points to more private sector training opportunities at government institutes; it is the addition of Mitigation and Recovery phases to the established Response curriculum. A community's total recovery necessarily includes its economic recovery, and as Department of Homeland Security Director Tom Ridge very properly keeps noting, *85% of the resources for recovery are in the private sector*.

Government Training
To, or Not to, Welcome Companies' Emergency Managers?

Despite the growing recognition that joint public-private cooperation, coordination, and training are increasingly essential at every level from response through management, to policy –a viewpoint emphatically reinforced on 9/11, the opportunities for joint training remain limited, and in fact have been restricted until very recently.

At first, only private sector managers whose companies had infrastructure responsibilities (power, health care, banking, transportation, and the like) were welcomed at both the California Specialized Training Institute and at EMI as part of the student body whose expenses were paid. Other private sector manager-students had to pay their own expenses plus higher fees (even so, it was a bargain, in this author's opinion).

Then, without much elaboration, that policy was effectively relaxed to include private sector managers who came as part of a group from a community. In cases when the training came to communities, more private sector managers simply appeared in classes. Now, more private sector managers are appearing in courses at EMI. Logically, extension to incorporate those managers who should be part of the planning to restore the economic well-being of their communities can be expected to expand[2].

The California Specialized Training Institute would seem to agree. It no longer charges private sector attendees a premium over the public sector's fees.

Perhaps one of the greatest benefits is the public-private cross-pollenization and exchange of experiences that occur during informal moments at training facilities.

Training Caveats, Private and Public Offerings

Attendance at the seminars sponsored by the three main American publications for

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[2] Author's note: recruiting such private-sector managers to attend those courses remains an issue.

private sector disaster avoidance[3] has been increasing –*phenomenally* increasing; it seems to those who recall the initial round tables. Many of the training sessions offered at those seminars are excellent. However, seminars' attendees can benefit from more courses with case studies and principles for successful public and private collaborations. There is similar encouraging movement at the International Association for Emergency Managers annual conference and exhibit (Orlando, Florida in October 2003).

There are now over one hundred higher education programs around the world granting degrees and certificates in emergency management or closely related subjects, with most programs still oriented to educating public sector managers. Apparently, the case for business managers' and joint business-government curricula in disaster preparedness / avoidance is not yet fully recognized by educational institutions.

Other Countries -- Other Issues

For readers with facilities outside of Australia, New Zealand and The Americas, it might be well to add here that governments sometimes fear that "outside" organizations (like corporations and non-profits) will attempt to subvert their people. In those places, cooperation and coordination are unlikely, even if the company is merely trying to care for its own employees and their families to resume work as soon as practical.

Summing up

We must all hang together; else we shall all hang separately[4].

About the Author

John Laye FBCI
(An expansion of principles in his book, Avoiding Disaster[5])

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[3] Disaster Recovery Journal's Spring World (in Florida) and Fall World (San Diego); Contingency Planning and Management's CPM West (Las Vegas) and CPM East (Washington DC); and Continuity Insights' Management Conference (New Orleans in 2004)
[4] Benjamin Franklin, to John Hancock, on signing our Declaration of Independence, July 4th 1776.
[5] Avoiding Disaster – How to Keep Your Business Going When Catastrophe Strikes 259 pages. Publisher: John Wiley & Sons. ISBN: 0-471-22915-6

Should We Develop "Anti-terrorism" As a National Concept for Preparedness?

John J. Cline

Is it anti-terrorism or counterterrorism? It started deep in the bowels of a dull grey cement building near Washington D.C., where an analyst had reviewed seemingly innocuous reports; pieces of telephone intercepts – parts of conversations that had taken place throughout much of the Middle East and Europe over the course of nearly ten months. The National Security Agency analyst believed that she had uncovered a plot to blow up the San Onofre Nuclear Generating Station near San Diego, California. Both the FBI and the CIA, working in concert, attempted to identify the conspirators to no avail.

Working with generating station management, the Department of Energy, and local law enforcement, security specialists cancelled public tours and increased physical security around the plant to put off the would-be attack. In the end, a fluke piece of information from a coked-out junkie led investigators to a motel in Escondido, where five heavily armed men were apprehended following an intense shoot-out in the motel parking lot. A search of the motel room produced a cache of high explosives. Investigation, and a later prosecution, revealed that they were in fact, going to blow up the nuclear generating plant – to release deadly gases and radiation into the atmosphere and to release radioactive coolant into the foamy-white surf of the Pacific Ocean. This is an example of movie-making counterterrorism, and grist for a Clancy novel.

Counterterrorism is characterized by an easy to remember set of "D" words including: to detect, deter, deny, defend, detain, and prosecute. So, what is anti-terrorism?

I define antiterrorism as, "the application of human and material resources to maintain or restore domestic tranquility by promoting public awareness, conducting planning and preparedness activities, and hardening infrastructure, both physical and virtual, to limit or prevent loss of life, injury to people, and damage to property from acts of terrorism and the potential use of weapons of mass destruction." It is a definition formed by well over 30 years as a practitioner of "anti-terrorism."

Few people outside the military system and a limited number of governmental agencies, private security, and "think tank" organizations are aware of the differences between anti and counterterrorism. The Department of Defense defines anti-terrorism as "Defensive measures used to reduce the vulnerability of individuals and property to terrorist acts to include limited response and containment by local military forces."[6] They define counterterrorism as "Offensive measures taken to prevent, deter, and respond (militarily) to terrorism."[7] An overwhelming number of State Homeland Security representatives

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[6] Department of Defense Joint Publication 1.02, Anti-terrorism defined.

[7] Ibid

indicate that their state and local agencies do not distinguish between the two terms.[8] In the fifth and final Gilmore Commission Report: "Forging America's New Normalcy," the commission states, "A continuing problem is a lack of clear strategic guidance from the Federal level about the definition and objectives and how state and localities will be evaluated in meeting those objectives."[9] They continue by saying, "There are 55 states and territories; with the lack of a clear articulated vision from the Federal level, each has been moving to combat terrorism in its own way."[10]

Few states have developed strategic and operational plans that outline how they are going to support local governments to prevent, prepare, respond, and recover from terrorism.[11] It has been my observation that state and local terrorism preparedness strategies to date have largely been about money – federal funding. Who gets it, which agency will control it, and what the state or local jurisdiction has to do to spend it? One Homeland Security Advisor reports that their state strategy for terrorism "was written in 2001 to satisfy the Office of Domestic Preparedness grant cycle (for) 1999, 2000, and 2001."[12] According to survey results, that was a common state theme.[13] Richard K. Betts reflects, "Policymakers are often indifferent to it (strategy). Some find the demand for more and better strategy to be naïve resistance to inevitable ad hockery."[14] Although he was talking about federal policymakers versus senior military officers, the same could be said of many state and local officials. A national anti-terrorism program could fill the need to provide federal guidance because its core attribute is comprehensive operational and strategic planning, whereas the core attribute of counterterrorism is detection and apprehension.

To their credit, many states are starting to revise their terrorism preparedness strategies and plans. However, several State Homeland Security Advisors indicate that while millions of federal dollars are being spent for equipment, training, and exercises, there

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[8] Survey of State Homeland Security Advisors, John Cline, November 2003

[9] "Forging America's New Normalcy" is the fifth and final Gilmore Commission annual report to the President and the Congress to assess domestic response capabilities for terrorism involving weapons of mass destruction, December 15, 2003, (page 5).

[10] Ibid, (page 7).

[11] Survey of State Homeland Security Advisors, John Cline, November 2003

[12] Survey of State Homeland Security Advisors, John Cline, November 2003

[13] Ibid

[14] "The Trouble with Strategy: Bridging Policy and Operations" Richard K. Betts, Joint Force Quarterly, Autumn/winter 2001-02

has been very little federal funding appropriated to hire personnel for state and local planning.[15] One State Homeland Security Advisor explains the lack of federal funding by saying, "I think there was an (federal) assumption that "planning" was farther along than it really was."[16] The end result would seem to be that we are spending billions of dollars with no clearly defined individual state or local terrorism prevention and preparedness plans or strategies. As one Homeland Security Advisor put it, our state's major issues surrounding planning and preparedness for terrorism is "reaching law enforcement, which operate very independently, and breaking up the scrum of emergency response agencies, which have rushed the ball."[17] The ball he was referring to is federal funding.

As cited earlier in the Gilmore Commission Report, the nation (jurisdictions, agencies, organizations, and private citizens) needs a program that they can both understand and articulate. The process for implementing such a federal program is well known.

As an example, when Civil Defense began emerging into emergency management, there was a protracted period where former Federal Civil Defense officials could not articulate their new responsibilities other than to say that they were now somehow responsible for assisting communities with "recovery" from natural disasters; something that they as a department had never before done. Following Hurricane Andrew, it was clear that the Federal Emergency Management Agency (FEMA) would also provide federal assistance to states and local governments for "response."[18]

In June 1995, James Lee Witt, the Director of FEMA, called together senior staff and state emergency management directors at Emmetsburg, Maryland to forge a strategic plan for FEMA and for the states. Expanded strategic planning sessions were held in FEMA regions to ensure that the input was broad-based and clearly understood by local, state, and federal officials. Because officials could better understand and articulate their roles and relationships with other government agencies, non-government organizations, and the public, emergency management at all levels became a more professional discipline.

By placing all of the mitigation, preparedness, response and recovery initiatives into four categories, the "Four Phases of Emergency Management," by defining how those phases were to work at the operational level, employees and the public began to understand their respective roles. We need to similarly define the working relationships for prevention, preparedness, response and recovery for terrorism. I suggest that anti-terrorism as a term, definition, and concept is most appropriate to be formulated into a national program to provide the needed guidance from the Federal level. But under which directorate should an Anti-terrorism Program is placed?

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[15] Survey of State Homeland Security Advisors, John Cline, November 2003

[16] Ibid

[17] Ibid

[18] Robert T. Stafford Act

The fifth Gilmore Commission Report states that the "Current DHS structure suffers from a duplication of emergency preparedness and response efforts. In particular, the location of the Directorate of Emergency Preparedness and Response (EP&R) and the Office of Domestic Preparedness (ODP) in separate directorates have created internal and external problems."[19] The commission strongly recommends combining the two directorates. Such a move would also allow for the combined use of Federal resources for mitigation, preparedness, response, and recovery from the affects of natural disasters (emergency management), and the prevention, preparedness, response and recovery required for anti-terrorism. This is especially important given that the two programs use many of the same resources, which may be at least partially responsible for many of the misunderstandings between the two directorates. Those inter-directorate misunderstandings are not the only issues that are frustrating national terrorism preparedness efforts.

There are a number of misunderstandings concerning how emergency management roles relate to terrorism preparedness. Much of the misunderstandings come from the fact that there are new players involved in preparedness. State Homeland Security Advisors were appointed by state's Governors at the request of the White House Office of Homeland Security to act as a liaison between the Governors and the White House. However, most State Homeland Security Advisors have, or believe that they have, been placed in charge of their state's (homeland security) terrorism preparedness.[20] That was not necessarily their intended purpose.

Disparity between some State Homeland Security Advisors and Emergency Managers is best illustrated by an impassioned plea heard from one State Homeland Security Advisor who said, "We have to get rid of these damn Emergency Managers. They think that they are in charge of everything."[21] The role of the emergency manager is well explained in the book "Preparing for Terrorism – The Public Communicator's Guide," which says, "An emergency manager has the responsibility for coordinating all components of the emergency management system in the jurisdiction. The components of an effective emergency management system include the fire service, law enforcement, elected officials, public works, parks department, emergency medical services, volunteers, other government agencies, the private sector, and etcetera."[22] This coordination role is well founded in local, state, and federal law. Where National Guard, fire, law enforcement,

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[19] "Forging America's New Normalcy," the Gilmore Commission's Fifth Annual Report, (page 25).

[20] Survey of State Homeland Security Advisors, John Cline, November 2003

[21] DHS sponsored meeting of State Homeland Security Advisors at the Naval Observatory, Washington D.C.

[22] "Preparing for Terrorism the Public Safety Communicator's Guide, Dr. George Buck, Lori Buck, Barry Mogil, published by Delmar a division of Thomson Learning, 2003.

and emergency medical service agencies are accustomed to coordinating with each other in the emergency management environment, other state and local agencies clearly are not. State and local health departments, veterinary services, agriculture departments and other agencies that may now have to function as a "lead agency" for response or recovery are not comfortable in a multi-agency operations environment. A top down anti-terrorism program in a combined ODP and EP&R directorate of the Department of Homeland Security would go a long way to overcome misunderstandings and to provide the federal guidance recommended by the Gilmore Commission.

To better understand the term "anti-terrorism" (as defined herein) we need to examine each of the elements of the definition, including:

1. The application of human and material resources;
2. To maintain or restore domestic tranquility;
3. To promote public awareness;
4. To implement plans and preparedness activities;
5. To harden infrastructure, both physical and virtual;
6. To limit or prevent loss of life, injury to people, and damage to property from acts of terrorism and the potential use of weapons of mass destruction.

In the first element, the phrase "application of human and material resources" indicates that resources must physically be applied to implement each of the individual elements of the definition. It does not mean only those resources funded by the Federal Government. I would suggest that the Federal Government cannot be the only provider of funding in preventing and preparing for terrorism; that state and local governments, non-government organizations, and private citizens must also buy into the concept of anti-terrorism if we are to successfully limit the potential effects of terrorism in our communities.

It is noteworthy that the 2004 federal budget provides needed funding for planning in the Homeland Security Grant Program. State and local agencies will greatly benefit from the funding, and will finally be able to start strategic, tactical, and operational planning. The challenge will be to write plans that emphasize interoperability. Could interoperability become the buy-in needed to cement working relationships between agencies?

Emergency Managers have long known that individual and organizational buy-in is an essential ingredient for the accomplishment of all-hazards preparedness. Perhaps one reason that state and local governments have been reluctant to appropriate funding for Homeland Security planning is because a considerable number of constituents are not convinced that terrorism is a real threat to their communities. One State Homeland Security Advisor touched on this by saying; "there is some apathy and on occasion, some level of dissatisfaction with so many other problems facing the country."[23] Clearly, people need to know what we are doing and why we are doing it. By definition, the term anti-terrorism explains the "what" and the "why" of terrorism preparedness.

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[23] Survey of State Homeland Security Advisors, John J. Cline, November 2003

The second element says that we will apply human and material resources to maintain or restore domestic tranquility. This is not the same or equal to the Congressional mandate imposed upon the FEMA to restore communities to predisaster condition as a result of a federally declared natural or man-caused disaster.[24]

Clearly, the phrase domestic tranquility was taken from the Constitution of the United States of America. President Reagan referred to the uniqueness of the meaning by saying, "In setting as a proper overall objective of government, that of ensuring domestic tranquility, the Founders were referring to a general peaceable set of conditions of life in this country. Part of this involved the ability of citizens to live in circumstances that were settled and secure, with no domestic insurrections, and with their neighbors and communities adequately protected from predatory criminals abroad in the land."[25] It almost sounds as if the Founders were specifically describing today's threat of domestic terrorism.

The statement, "to maintain or restore domestic tranquility" does include restoring communities affected by terrorism to predisaster condition, but it also includes restoring confidence in the various levels of government. There is a public expectation that each level of government will arduously work to ensure the safety of the community; not just physical safety, rather it also includes the relationships between levels of government, the exercise of commerce, free trade, protection of the local and national economy, and the fair treatment of the nation's citizens. Therefore, it is particularly fitting that the term anti-terrorism includes domestic tranquility; a framework designed by our nation's Founding Fathers.

The third element of the anti-terrorism definition is to "promote public awareness." Public awareness is not just a matter of government telling people what agencies want the public to hear. Rather it is an outreach to ensure that people have the opportunity to partner in planning and preparing for terrorist acts that could adversely impact their communities, families, livelihood, and quality of life. Public awareness includes empowering citizens to become full participants in achieving the planning, prevention and preparedness goals and objectives of the state and local anti-terrorism strategy. Citizens Corps is an attempt to create such an environment, but it does not resonate very well with a majority of the nation's general public. Could this be the result of the lack of a publicly accepted vision that an anti-terrorism program could reasonably fill?

The fourth element; conducting planning and preparedness activities, includes all aspects of preparedness including planning, training, exercising strategic, tactical and

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[24] Robert T. Stafford Act

[25] Federalism and the New Conservatives, Reagan2020.com

operational plans, conducting "lessons learned" sessions after exercises, and prestaging equipment for use during response and recovery operations. Both comprehensive and detailed preparedness activities are at the very heart of an anti-terrorism program.

The fifth element is to harden critical infrastructure, both physical and virtual. Citizens do not want their communities to look like prisons or fortresses. We need to empower the private sector, the actual owners of most of the nation's critical infrastructure, through entrepreneurial enterprise, to find ways to harden critical infrastructure without making our communities look like the Maginot Line[26]. More importantly, we need to identify which infrastructure really is critical to the community and to the nation.

In a "Report for Congress" dated August 2002; the authors summarize the situation by saying, that although the Department of Homeland Security includes responsibilities for the coordination of policies and actions to protect the nation's critical infrastructure, "the proposal did not specify criteria for how to determine criticality or which infrastructures should be considered critical."[27] The report continues by saying, "…not all elements of a critical infrastructure are critical. Other approaches include focusing on vulnerabilities that cut across more than one infrastructure, interdependences where the attack on one infrastructure can have adverse affects on others, geographic locations where a number of critical infrastructure assets may be located or focusing on those infrastructures belonging solely to the federal government or on which the federal government depends."[28] In the Office of Domestic Preparedness required identification of critical infrastructure at the state and local levels, all 44 county governments in my state indicated that the courthouse is a "critical infrastructure." Another more critical look might ascertain that public safety agencies housed in the courthouse, radio and telecommunications equipment, plans and procedures and other types of information needed to sustain continuity of government is critical, but that the courthouse itself is not. Homeland Security Presidential Directive /HSPD-7 serves as a starting point for defining critical infrastructure, but it should not be construed as being all inclusive.

Possibly the most critical infrastructure today is not buildings, but Information Systems. Most utilities throughout the nation are run and monitored by computer systems. The threats to Information Systems are well documented and do not require a summarization in this paper. However, hardening critical infrastructure must also include the protection

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[26] Massive French fortifications system, built 1930-34 between the Swiss and Belgian Borders with linked underground fortresses. (The University Desk Encyclopedia, Elsevier Publishing, 1977)

[27] "Critical Infrastructures: What Makes an Infrastructure Critical?" – Moteff, Copeland, and Fischer, The Library of Congress Congressional Research Service Report for Congress dated August 30, 2002

[28] Ibid

of Information Systems, especially those systems that are used to operate, regulate, and monitor systems critical to the nation and to the communities.

In a "Report for Congress," dated, October 30, 2002, the authors stated, "…that a vague understanding of what constitutes a critical infrastructure could lead to vague and diffuse policies and actions."[29] I agree with that analysis, and I would suggest that a vague understanding of the means and methods to plan and prepare for domestic terrorism could similarly result in poor planning and unsound strategies. An anti-terrorism program would help to reduce vague and diffuse planning and preparedness policies and actions.

The sixth element explains "why" we need to conduct anti-terrorism; that is, to limit, or prevent loss of life, injury to people, and damage to property from acts of terrorism and the potential use of weapons of mass destruction.

How can adopting the term and the proposed definition of "anti-terrorism" as a national concept accomplish the objectives of unifying citizens, policymakers, and responders for the tasks required in preparing for the affects of terrorism in America? Merely adding the term anti-terrorism to some federal lexicon will not obtain the desired outcomes.

Under this concept, anti-terrorism is more than a term or definition. It is a program that can be implemented nationwide to bring together all of the communities toward common objectives of prevention, preparedness, response, and recovery.

Implementation of the Twin Concepts of Anti-terrorism and Disaster Planning

As state and local jurisdictions, fueled by federal funding for planning, begin to formulate terrorism preparedness plans, we are in danger of creating two separate and independent federal preparedness systems, and 55 different state and territorial preparedness systems. Such independent systems would further compound what the Gilmore Commission calls "fragmentation."[30] The commission report complains, "That fragmentation continues to hamper efforts for better coordination across all levels of government and with the private sector."[31]

George Buck presents a concise explanation of military and civilian models for planning. He recommends that emergency service agencies and organizations use Comprehensive Emergency Management (CEM) and the Integrated Emergency Management System

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[29] "Critical Infrastructures: What Makes an Infrastructure Critical?" – Moteff, Copeland, and Fischer, The Library of Congress Congressional Research Service Report for Congress dated August 30, 2002

[30] "Forging America's New Normalcy," the Gilmore Commission's Fifth Annual Report, (page 1).

[31] Ibid

(IEMS) for both disaster and terrorism preparedness.[32] CEM and IEMS are planning tools that have been proven effective for several years as used by federal, state, and local jurisdictions for planning and preparing to respond and recover from natural and man-caused disasters, including terrorism. Why then does the U.S. Department of Homeland Security appear to be so hell bent on dismantling an existing proven system, but replacing it with nothing?

It is possible to have two separate and distinct programs within a single directorate that use the same tools and resources to achieve common objectives. While FEMA continues to use the "Four phases of Emergency Management;" mitigation, preparedness, response, and recovery, a collocated Office of Domestic Preparedness could initiate the use of the "Four Objectives of Domestic Preparedness;" which includes prevention, preparedness, response and recovery. In time, we might even discover and resolve initial duplicitous planning and preparedness issues and spending within the Department of Homeland Security and throughout the nation.

DHS leadership has done a magnificent job in bringing together 22 federal agencies to better combat domestic terrorism. But DHS leaders have not set a constructive example for the states and their political subdivisions. On the one hand, DHS leadership tells state and local officials that they must find ways to work together and to better support each other. On the other hand, DHS leaders have not yet achieved that level of working relationship within its own organization. Their dysfunctionality is still about money (and power), and which directorate will control it. It is time to put turf protectionism aside before real damage is done. It's time to implement the recommendations of the Gilmore Commission.

This paper asks; should we develop anti-terrorism as a national concept for preparedness? Before we become even more fragmented, the answer is clearly, yes. The nation and its responders, planners, officials, public and private agencies and organizations, and the general public all need a single concept with which they can identify. Anti-terrorism, as defined in this paper, could be that concept. As a federally driven program using existing planning and preparedness tools that have for years been proven effective at the federal, state, and local levels, it should be implemented immediately.

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[32] "Preparing for Terrorism: An Emergency Services Guide, Delmar Publishers, 1998 (pages 64-93)

Emergency Planning:
Basic Elements and Recommendations
For More Effective Preparedness

Robert T. Berry, Ph.D. (abd), CEM

Introduction

It is appropriate to go back and revisit the subject of what basic emergency management is all about. Let's return to and review some of the fundamental elements of the business (emergency planning and the related need for effective training), then move on to the need for training of state government officials. All of these elements continue to be of major relevance and importance to the field.

An instructional segment on planning was developed by the writer as part of a planning orientation presentation at a Workshop/Conference of Radio Communications Volunteers. Very basic planning concepts were presented to the audience, followed up with a short review quiz (Robert T. Berry 1993). To supplement this basic planning segment, a Project Proposal for the development of emergency orientation training for state legislators was created along with a basic Emergency Operations Plan Review Checklist (Berry 2001a; 2001b).

Background

It might be safe to say that it is a somewhat universally accepted axiom that planning is a fundamental part of every type of activity or undertaking. In order to have at least the simplest assurances that a certain project, course of instruction, a family trip or other objective will have some level of successful completion, the person or persons responsible for it, or want it to happen, must first establish (a) what must be done, (b) when must it be done, (c) how will be it be done, and (d) who is going to do it. This requires thinking ahead, preparing for the unexpected, as well as the expected, then identifying and gathering resources. All of these actions involve and require effective planning (FEMA 1996). These fundamental planning elements have not changed. They remain constant even though FEMA is now under the Department of Homeland Security and there is a shift in priority emphasis toward anti-terrorism.

In order to begin to plan, it might be wise to start by asking the following types of questions (FEMA 1990):

1. Who plans? (Everyone should plan!).
2. Why plan? (Planning is necessary in order to save lives and protect property!).
3. What are the hazards you must face? Can you identify them? (You must identify and analyze all the hazards to which you will or could possibly need to respond in your jurisdiction, now and in the future, such as fire, flood, earthquake, etc.). What resources are available to be used to respond to the concerned hazards? (You need

to identify the types, quantities, and availability of all necessary resources such as food, water, medical supplies, equipment and the people needed to perform the various tasks or jobs).

4. What needs to be done? It is vitally necessary to effectively evaluate the situation, clearly and accurately identify the problem or problems, not merely the symptom or symptoms, consider every possible alternative action or solution to the problem that is available, and then to choose or decide upon a course of action that most effectively meets your needs in solving the problem in a timely, cost-effective manner).

Once these basic questions have been clearly, accurately, and effectively answered, using reliable, confirmed and verified facts as their foundation, the actual physical plan should be constructed.

Just Get Started And Do It

Begin by writing the plan (rough draft) through the process of utilizing a planning team (the resulting networking/team relationship is critically invaluable for future emergency cooperation and coordination). Revise and correct the plan often as your learning curve improves, as factors change and as needs demand it. Evaluate and test the plan regularly through the use of exercises on a scheduled routine basis, e.g. at least annually (identify areas which need correction, improvement and revision). Provide for continuous updating of the plan on an as needed basis (changes must be constantly documented, exercised, and responded to, in order to be effective; don't wait for any yearly anniversary).

The most important thing to keep in mind when planning, and when making a plan, is that to be effective a plan must be used. In order to be used, a plan must be workable and easily understood. The key elements of a good plan require that it be clear and simple (FEMA 1990).

Next, a short quiz was given on the presented material to review the planning concepts and verify understanding. The following are questions for the material presented above. Please select the response that best answers each question.

1. What is planning?
   (a) Waste of time
   (b) Basic part of all activities
   (c) Hazard of operations
   (d) All of the above

2. Who should plan?
   (a) Everyone
   (b) No one
   (c) Only firemen
   (d) None of the above

3. Why should planning be done?
(a) To save lives
(b) To protect property
(c) To prevent damage
(d) All of the above

4. What is the first thing that must be done when preparing to make a plan?
(a) Hazard identification
(b) Theory analysis
(c) Program development
(d) Operation development

5. What factor is vital to a community's ability to cope with a hazard?
(a) Number of planners in town
(b) Birth date of the Operations Manager
(c) Availability of resources
(d) Time of the incident

6. When deciding what should be done in an emergency, what are the important things to do calmly, clearly and accurately?
(a) Evaluate the situation
(b) Identify the problem
(c) Consider alternate choices of action
(d) All of the above

7. What is the best way to evaluate or test how effective a plan really is?
(a) Ask a friend to read it and give comments
(b) Send it to F.E.M.A. for examination
(c) Exercise the plan regularly
(d) All of the above

8. What must happen in order for a plan to be effective?
(a) There must be an earthquake
(b) A plan must be used
(c) The governor must be contacted
(d) The Emergency Management Office must be notified

9. What are the key element requirements in a good plan?
(a) It should be short
(b) It should be detailed
(c) It should be clear and simple
(d) It should be long and detailed (Berry 1993)

Advanced Considerations

Now that we have reviewed very basic emergency planning elements, a presentation of some more advanced details or concepts can be beneficial in order to achieve more

effective planning. In order to make sure that a plan is effective, it is important to establish or create the proper environment within which it must function. That includes the political arena. The informing and training of the members of the State Legislature is a critical part of the planning, response and recovery puzzle. It is recommended that the following, or some similar training proposal, be implemented for the benefit of state legislators (Berry, 2001b).

It has been suggested that there exists a serious lack of emergency management knowledge in both houses of most state legislatures. This situation needs to be addressed in a positive way. The existence of this problem was brought to light through comments made by, and during a discussion with, a state senator while attending the quarterly meeting of a state organization of local emergency managers (Berry, 2001a).

Orientation Proposal

As a model, it was suggested that an Emergency Management Orientation training program be should be developed for the members of state legislatures (Berry 2001a; 2001b). In order to address this situation, it was proposed by the writer that emergency management orientation program be developed and presented by a special education committee of a local emergency management group or organization with the purpose of being presented to the full legislature before their next session convenes. Consideration must be given to the political realities concerning the amount of time needed, subject to negotiated approval, to be made available to allocate for this instruction (Berry 2001b).
In order to be effective and somewhat comprehensive, it was suggested that three, six hour days (0830-1130 and 1330-1630) be designated for the presentation of the orientation (Berry 2001b). However, time constraints being as they are, one day (0800-1200 and 1300-1700) may be all that can be made available; be prepared to make the best of it in terms of comprehensiveness of subject matter and quality of instruction. You will not get a second chance.

Recommended training content consists of four modules (mitigation, preparedness, response and recovery). Use video tapes, power point, handouts, the appropriate State Comprehensive Emergency Management Plan (SCEMP), The Federal Emergency Management Agency (FEMA) Guide For All-Hazard Emergency Operations Planning (State and Local Guide, SLG-101, September 1996, or the latest update/replacement document), FEMA Guide For the Development of a State and Local Continuity of Government Capability (CPG 1-10, July 1987), the revised Federal Response Plan (FRP, April 1999, or the new DHS Federal Response Plan, 2004, if available), Emergency Management: Principles and Practice for Local Government Thomas E. Drabek and Gerard J. Hoetmer, editors, (1991), the Robert T. Stafford Disaster Relief and Emergency Assistance Act (P.L. 93-288, as amended by P.L. 100-707), 44 Code of Federal Regulations "Emergency Management and Assistance," (44 CFR, latest edition), State Revised Statutes (as appropriate for the concerned state legislature, as amended), sample local emergency operations plans, etc. (consider including a short table top exercise to demonstrate how the system works, and how the various elements support and relate to each other, if time allows at the end of the orientation session; Berry 2001b).

It must be determined how many and which instructors would be needed (they should be local professional emergency management practitioners or similar group members who are also qualified effective instructors, one or two for each module to be presented, if possible; Berry 2001b).

The purpose of this training is to:

1. Inform legislators as to what their duties and responsibilities are in a disaster.

2. Help legislators to understand the emergency process and procedures.

3. Help make legislators become more confident and comfortable with making emergency decisions.

4. Facilitate the ease and speed of legislative actions in a disaster (Berry 2001b).

It might be wise to schedule a follow up session, questionnaire or instructor visit to reinforce concepts and answer any new questions that may have arisen (Berry 2001b).

It is suggested that this program should be prepared for presentation as a regular biennial, or annual event as a review for past participants and an orientation for newly elected first time legislators (Berry 2001b).

Effective Plan Review and Evaluation

Now that basic political training has been discussed, it is important to understand how a plan is reviewed and evaluated, and to recognize what should be addressed. When reviewing the effectiveness of a local emergency operations plan, it is necessary to consider the following elements, factors and considerations based upon valid assumptions (FEMA 1990; Drabek and Hoetmer 1991; FEMA 1996):

1. Check the date of the EOP and its latest update or revision (verify with the local Emergency Management Directors that you have the latest update; if not, request that they send you one).

2. Look for and review the Promulgation Document/Letter as to its physical location in the plan (in front), current date, text content of acceptance and the signatures of current officials still in office.

3. EOPs should be reviewed for changes and the need for update or revision at least annually, sooner if the need arises and demands it. A newly signed and updated Promulgation Letter should be issued annually, whether the EOP is revised or not, in order to keep the authorization and acceptance of the plan current. It will also be an indication that the plan has been recently reviewed and found to be still effective and legally accepted as the official plan of that jurisdiction in full force.

4. Review the Table of Contents for general content detail. Look for comprehensive effectiveness, in an alphabetical order if possible, plus ease of locating desired information, etc.

5. Compare the new plan with the most recent previous EOP Review Evaluation Form and EOP Review Letter to see if previously identified update suggestions have been effectively addressed and incorporated into the EOP as a revision.

6. Check the Table of Contents to see if new emergency management issues were addressed (e.g.: Weapons of Mass Destruction/Terrorism/Homeland Security, School Violence/Safety, Emergency Animal Care, etc.) and to verify whether basic care functional annexes are addressed (e.g.: Communications, Mass Care, Resource Support, Energy, etc.) consistent with the Federal Response Plan (FRP, 1999) Emergency Support Functions (ESFs):

(1) Transportation-Primary-State Dept. Of Transportation (SDOT).
(2) Communications-P-State Dept. of Information Technology/Div. of Emerg. Mgmt.
(3) Public Works-P-State Dept. of Administration/Nevada Public Works Board/SDOT
(4) Firefighting-P-State Division of Forestry (SDF)
(5) Info & Planning-P-State Div. of Emergency Management /State Div. of State Lands
(6) Mass Care-P-State Div. of Business & Industry/State Dept. of Human Resources/American Red Cross (ARC)
(7) Resource Support (Logistics)-P-Dept. of Admin.
(8) Health & Med Serv-P-State Dept. of Human Resources
(9) USAR-P-State Dept. of Pub. Safety /County Urban Search & Rescue Team (USAR)
(10) Haz Mat (Facility Incidents)-P-State Dept. of Conservation & Nat'l Resources
(Hwy Incidents)-P-State Dept. of Pub. Safety/State DOT
(Pipeline Incidents)-P-State Public Utilities Commission (PUC)
(Railroad Incidents)-P-PUC
(Radiological Incidents)-P-State Radiological Health Div.
(11) Food –P-Div. of Business & Industry/Amer. Red Cross/Dept. of Administration
(12) Energy-P-State Div. of Business & Industry
(13) Law Enforcement (WMD)-P-Dept. of Pub. Safety (added to list by individual states)
(14) Animal Care-P-(added to list by State Emerg. Mgmt/U.S. Dept. Of Agriculture)
(15) Military-P-State Nat'l Guard (added to list by State Emerg. Mgmt)

7. Check if Hazardous Material is addressed as an annex in the EOP or in a separate SARA, Title III, Haz Mat Plan (see Emergency Planning and Community Right to Know

Act of 1986, Section 303(g); have all of the nine elements been effectively addressed? If yes, what is the extent of detail; NRT-1 1987; NRT-1A 1988). If the jurisdiction has a separate Haz Mat annex/plan, see if there is a reference to the Haz Mat annex in the EOP Table of Contents.

8. Review the sections where changes are more likely to occur most often (e.g.: county/city resources and emergency contact phone numbers, state agency emergency contact phone numbers, etc.). Verify latest reliable information. Suggest locals review and confirm.

9. Hazards identification? What are they and prioritize them as to their level of importance.

10. Risk assessment (risk analysis)? Vulnerability assessment? How often do they occur and how severe are the results? What is the extent of the impact upon the community?

11. Resource analysis: What, where, how many, how to access, and payment process?

12. Mutual Aid agreements identified and documented.

13. Primary EOC, Alternate EOC and Mobile EOC identified with their addresses and physical location clearly stated in the plan Table of Contents and text (FEMA 1987).

14. Emergency activation responsibilities, duties and staffing provisions clearly identified.

15. Confirm that the reviewed EOP addresses the FRP ESFs consistently with those set up in the SCEMP and the FRP. Are these efforts adequate?

16. Evaluate plan's organization as to how well it provides for ease of access and rapid location of information via the Table of Contents and/or index; is it alphabetized?

17. Check for effective and appropriate provisions for application of the Incident Command System (ICS).

18. Verify correction of reference from the Emergency Broadcast System to the Emergency Alert System (EAS), which is the latest designation.

19. Refer the local EM director to the State Comprehensive Emergency Management Plan (SCEMP, October 2000), Federal Response Plan (FRP, April 1999) and the State and Local Guide (SLG-101, September 1996) for guidance, suggestions, examples, etc.

20. Disaster notification and declaration procedures clearly spelled out in the plan.

21. Identification of those officials authorized to approve, accept and sign the EOP Promulgation Letter at the present time.

22. Consider the impact of a special event on an individual, group of local jurisdictions, or states which could have a ripple effect or added impact upon neighboring jurisdictions.

23. Provide backup needs to satisfy special grant requirements (e.g.: Pre-Disaster Mitigation Funds require an approved local mitigation plan to be in place before a mitigation project grant can and will be approved; 44CFR 2000).

24. Establish an EOP follow up schedule to determine progress in revising and updating the plans.

25. The plan should be flexible enough to react to, add on, or delete additional factors that do or do not apply as situations change.

26. Plans and planning efforts should be applied creatively. They should strive to anticipate all eventualities and demands, thereby, being best prepared to deal with and respond to them (Berry, 2002/revised 2003).

Conclusion

The successive passage of the 9/11 Twin Towers Catastrophe anniversary each year should serve as a strong reminder to all of us that great dangers, risks and vulnerabilities constantly surround us. With this uppermost in our minds, we must be ever vigilant as to the potential for disaster without any warning. This demands that planning be made a high priority. We cannot afford to forget what has happened in the distant or recent past, otherwise we will be condemned to relive those disasters again.

Effective planning and general preparedness is all too often taken for granted. It is assumed that everyone and everything is and will remain all in perfect readiness. Unfortunately, this is not always true, even when effective efforts have been made to accomplish it. However, basic fundamental planning efforts do pay dividends.

When all is considered, it seems certain that most people would agree on the importance of planning for many obvious and beneficial reasons. However, time, money, expertise, purpose, need and a motivated desire to plan effectively is vital to success. Hopefully, trusted expertise and wisdom will prevail when preparedness priorities are selected and effective planning and training are conducted.

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(Quiz answer key: 1.b; 2.a; 3.d; 4.a; 5.c; 6.d; 7.c; 8.b; 9.c.)

Setting New Boundaries:
Geographic Information Systems (GIS) Goes Mobile

Angela B. Juliano

Setting New Boundaries

Geographic Information Systems (GIS) Goes Mobile

Geographic Information Systems (GISs) are computer-based tools and procedures that capture, store, analyze, and display spatially referenced data. Putting it plainly, a GIS is a set of integrated digital maps and spatial information that are electronically linked or a study of geographic features and the relationship between them.

Organizations that Currently Apply GISs Outside Public Safety

GISs have been used for hazards management since the Canadian Geographical Information System was developed in the 1960s for the management of forest inventory and threats to it. For many years, states and local jurisdictions, such as cities and counties, have developed manual field systems to monitor and track their street and roadway sign inventories. For most state and local governments current methods are cumbersome and inefficient. Sign inspectors in North Dakota are required to complete an onerous system of paper forms, and then manually enter the forms into a database following an evaluation or inspection (North Dakota, 2004).

Although the North Dakota Department of Transportation (NDDOT) currently has an automated database system, which tracks roadway sign inventory, this system was accessible in the user's office at his or her desktop computer. While in the field, the user used to complete outdated paper forms, and then return to the office to enter information into the inventory system. The sign inventory project uses handheld computers and Global Positioning System (GPS) technology to accomplish the field data collection necessary for the management of roadway sign inventory. This system contains all inventory information on the handheld computer with the capacity for field data analysis and reporting. The project also integrates a Geographical Information System (GIS) that can locate and portray specific sign conditions in a graphical manner.

The main focus of automating the sign inventory process was to make it easier and more efficient to collect and enter data. Focus was put on eliminating redundant steps in data entry and adding functionality to the process. With the handheld computer and GPS receiver, it was possible to integrate geographical coordinates into the sign inventory process. GPS allowed for sign data storage and retrieval based on the location of the sign.

The Sign Inventory was designed with several uses in mind. The data collection component was written in Microsoft eMbedded Visual Basic® for use on the IPAQ handheld device. The purpose of this component was to collect data on sign location using GPS (Global Positioning System), maintenance performed, as well as maintenance history, and sign age. The desktop component of the software was designed in Microsoft

Access and provides the user with data manipulation tools, reports and other analysis tools. The desktop component is tied to the handheld component so that data collected on the handheld can be synchronized with the desktop database. The software also uses ESRI's ArcGIS™ to illustrate locations of the signs on a state map. This software allows for the tracking of signs and their locations. This can be beneficial for planning maintenance routes and inventory management (North Dakota, 2004).

Another usage is from the Golden State Crop & Insurance Services. They are utilizing GIS and handheld computers to obtain and share field data for their clients before a loss occurs. Why? If there should be a claim, they can readily assist the grower by having the field precisely mapped to show where the specific damage occurred, and have exact acreage of the field (Golden State, 2004).

Farmers and others involved in agricultural production at the field level, through first hand knowledge have great insight as to how to best manage a farm's natural resources. To assist in the planning and implementation of important decisions related to land management, farmers need to have the best information at hand, often in the field. With GIS, and handheld computer technology, decisions about various crop growing stresses found within a field such as pest infestations, nutrient deficiencies, soil conditions and water distribution irregularities can be recorded while out in the field. This data can then be utilized more effectively by the producer in real time. They want to help their clients to begin the process or to complement the harnessing of this new technology which can aid their operations productivity.

Another usage is from the American Fisheries Society Computer User Section. A trend of interest to fisheries biologists and managers is the coalescence of Environmental Informatics. By combining extensive computer data bases with GIS and additional programs, biologists can evaluate biodiversity and environmental habitat. A project based at the University of Kansas involves networking of museum computer databases for fish collection (American Fisheries, 2003).

Organizations that Could Apply GISs Using Public Safety

It was recognized early on that hazards with a distinct spatial extent, such as floods, were perfect candidates for GISs. Today, almost every imaginable hazard has been examined, mapped, analyzed, modeled, and predicted in GISs by including data layers such as physical hazards processes, impact zones, evacuation routes, damage, and current and proposed mitigation measures. GISs hold great potential to inform actions for sustainable hazards mitigation because they can assemble and integrate all of the factors needed to consider alternative short and long-term hazards and losses (Mileti, 1999).

A GIS can also inform recovery. Damaged areas can be digitized and used to set priorities for such tasks as rebuilding and debris removal. Citizens in neighborhoods that were hard hit can be targeted for counseling, education, and disaster assistance. Areas for potential new business development can be outlined and support maps and statistics created for redevelopment efforts (Mileti, 1999).

Hot Topic in the Industry

But now GIS applications are getting out of the office, venturing a field to directly record information using handheld computers and wireless communications to instantly update bodies of knowledge. Those same GIS applications, whose information was once only accessible by the privileged few GIS specialists, are now accessible to interested parties from all over the world via the World Wide Web (Carney, 2000). This is a really hot topic in the industry right now. The ability to access enterprise data from a handheld and interact with the data is significant. Agents enter data collected in the field directly into the computer database providing the opportunity for more and better information to be recorded, reducing the chance of errors being introduced, saving time because the data doesn't need to be keyed in from paper reports and makes the reports available in a more timely fashion. The benefit of this approach is that it eliminates several steps. It shortens the process by two or three people and hours of labor, which will save federal agencies money. There is a reduction in administrative costs and, in theory, an improvement in the accuracy of the data.

The impact is better communication with the constituency, whether that is other government agencies or citizens. They don't have to call up the Federal Emergency Management Agency (FEMA) and talk to five different people to get the information they need. They can just go to the Web site. It makes access to the data easier (*Recent Articles*, 2004).

This new handheld computer and wireless communication allows the users for more strength, including analysis of real-time data, verification of hazards and vulnerability models, and more spatial analysis tools allowing emergency managers to keep up with rapidly changing situations and immediately incorporate them into response plans. Direct connections between handheld positioning units and the central GIS at command and control centers will allow managers to direct rescue and cleanup operations with more accuracy and precision in public safety.

The success of emergency planning and the potential future of a facility will depend to a great extent upon our ability to motivate and encourage the energetic group of brave public servants. Our coaching efforts must continue through all aspects of researching, writing, implementing, training, and rehearsing for the emergency you hope never happens (Schneid & Collins, 2001).

Although a variety of methods can be utilized to appropriately assess an emergency and disaster program, the important factors are to ensure that the assessment instrument appropriately identifies factors are to ensure that the assessment instrument appropriately and honestly provides an accurate assessment. An assessment instrument should be carefully designed to acquire all of the necessary information to properly evaluate a program. Prudent safety professionals should strive to make the assessment as objective as possible and avoid subjective assessments where possible (Schneid & Collins, 2001).

Enhancing Emergency Services in an Earthquake Using a Handheld Computer

On Monday, January 17, 1994, at 4:30 a.m., an earthquake of a magnitude of 6.8 shook Los Angeles, California known today as the Northridge earthquake. While the actual earthquake (and its subsequent aftershocks) lasted only about 1 minute, it damaged 114,000 residential and commercial structures spread over 2,100 square miles, took 72 lives, and significantly impaired the Los Angeles regional transportation system, generating a year's worth of highway work in a single event. The Federal Emergency Management Agency (FEMA) reported the Northridge earthquake as one of the largest and most costly federal disasters with initial cost estimates of total damages at $25 billion (Volpe, 2002). If the new commercial technology innovation of a handheld computer and wireless communication were available back in 1994, quicker knowledge of direct rescue and cleanup operations with more accuracy and precision could have happened.

Had the earthquake occurred at 4:30 p.m. instead of 4:30 a.m., this could easily have doubled the earthquake's modest death toll. The story was the same when the M7.1 Kobe earthquake shook Japan, a year to the day following Northridge, also very early in the morning (Hough, 2002).

Formula for Integrating the Mobile Handheld Computer into GIS for Earthquakes

We have not taken any steps of the importance of automating and improving early signs of earthquakes using a mobile handheld computer in the field. Reasons for this shortage of automation include a lack of computer programmers and technical resources. The changes could improve working conditions for employees. This current system is only accessible in the user's office at his or her desktop computer. The transformation is one not to be taken lightly; it requires organizations to have skills necessary to gather information into a cohesive tool that will direct decisions and not simply supply fuel for reactionary management.

Using a mobile handheld computer will make it easier and more efficient to collect and enter data into the system. This will eliminate redundant steps in data entry and adding functionality to the process. In order to implement this mobile handheld computer in the GIS for earthquakes, more computer programmers and technical resources are needed for integrating the advancement in a public safety environment. Using Geographic Information Systems (GIS) technology, allows users to compute estimates of damage and losses that could result from an earthquake. This would also support FEMA's mitigation and emergency preparedness efforts to direct rescue and cleanup operations with more accuracy and precision in public safety.

As more potential damage models are developed and community vulnerability maps are created, the opportunity to test these predictions becomes more likely and GISs will be of use in determining the strengths and weaknesses of damage predictions. The increasingly sophisticated modeling ability of GISs will allow more hazard and risk managers to ask "what if" questions about future losses in both the short and the long-term in order to guide today's mitigation decision making. A GIS enables the consolidation of data and

information from the full range of disciplines and areas (e.g., natural science, social science, engineering) to consider future impacts and loss.

More on Earthquakes

FEMA has determined that average annual earthquake losses in California will be $3.9 billion to buildings alone, three-fourths of the nation's total. A third of these losses would be in Los Angeles County alone because of the large population at risk (Yeats, 2001).

As part of its efforts to mitigate hazards and protect lives and property from the devastating effects of natural disasters, FEMA aims to provide individuals, businesses, and communities with information and tools to work proactively to mitigate hazards and prevent losses resulting from disasters. One of these tools is HAZUS or Hazards U.S., a natural hazard loss estimation methodology developed by FEMA under contract with the National Institute of Building Sciences (FEMA, 2004).

HAZUS-MH is a nationally applicable standardized methodology and software program that will contain models for estimating potential losses from earthquakes, floods, and hurricanes. HAZUS-MH is developed by the Federal Emergency Management Agency (FEMA) under contract with the National Institute of Building Sciences (NIBS). NIBS maintain committees of wind, flood, earthquake and software experts to provide technical oversight and guidance to HAZUS-MH development. Loss estimates produced by HAZUS-MH will be based on current scientific and engineering knowledge of the effects of hurricanes, floods and earthquakes. Estimating losses is essential to decision-making at all levels of government, providing a basis for developing mitigation plans and policies, emergency preparedness, and response and recovery planning.

HAZUS-MH will use state-of-the-art Geographic Information System (GIS) software to map and display hazard data, and the results of damage and economic loss estimates for buildings and infrastructure. It will also allow users to estimate the impacts of hurricanes, floods and earthquakes to populations. HAZUS-MH will be fast running to facilitate use in real time to support response and recovery following a natural disaster.

The HAZUS-MH Earthquake Model, an updated version of HAZUS99-SR2, continues to provide loss estimates of damage and loss to buildings, essential facilities, transportation and utility lifelines, and population based on scenario or probabilistic earthquakes. Direct losses are estimated based on physical damage to structures, contents, inventory, and building interiors. The earthquake model also includes the new Advanced Engineering Building Module for single- and group-building mitigation analysis.

The updated earthquake model released with HAZUS-MH includes: The new National Hazard Maps; Updated historical earthquake catalog (magnitude 5 or greater); and New Advanced Engineering Building Module for single and group building mitigation analysis (FEMA, 2004).

The media played a large role in both disseminating detour information on the day of the

earthquake in 1994 and discouraging motorists from driving if at all possible. During the 6-1/2 hours of news programming on the day of the Northridge earthquake, there were pictures showing the damaged freeway segments in 31 percent of the news programming; 18 percent of the television stories were directly about the downed freeway segments. This day-1 news coverage may have helped travelers with their alternate route planning, but more likely the news of heavy damage throughout the Los Angeles freeway system encouraged people to curtail their travel plans for at least the first few days.

In times of crisis, both the City and county of Los Angeles activate their Emergency Operations Centers (EOC), built after the 1992 Los Angeles riots. The EOCs were activated at 4:35 a.m., 5 minutes after the Northridge earthquake. The centers, originally built to withstand a nuclear blast, are intended to facilitate interagency decision making and information flow. They consist of utility representatives and representatives from various City of Los Angeles departments including public works, fire, police, building and safety, transportation, city administration, and the mayor's office. Also represented at the EOCs are the Los Angeles County Sheriff's Department.

FEMA coordinated the response of the 27 federal agencies involved in the Northridge earthquake using the FEMA Incident Command System (ICS). With the coordination of agencies, services were provided quickly, decisions were made on need and without the usual formal process, and financial challenges were overcome. FEMA positioned emergency equipment and supplies for the state's use at a nearby air force base and opened an Earthquake Service Center with representatives of all disaster assistance agencies to aid victims. Coordinating with other federal agencies, FEMA helped make some of the big decisions involving transportation, expediting the loan process for victims, and disseminating useful information to the residents of Los Angeles County.

Communication immediately after the Northridge earthquake was very difficult for both emergency workers and residents. Power was out for most of the area, which affected the operation of the central phone system. There were numerous fires at electrical stations and telephone switching stations. One reason for phone service failure after the earthquake was that the system itself was overwhelmed. There were many phones off the hook, either knocked off by the earthquake or off with people placing calls. The system will automatically turn itself off when a certain percentage of phones are off the hook, to limit the amount of damage done to switching stations and allow for faster service restoration.

Three of the more destructive California earthquakes of the past two decades, the Coalinga earthquake of 1983, the Whittier earthquake of 1987, and the Northridge earthquake of 1994, originated on faults that had not been designated as active. These three faults are all blind thrust faults. For the foreseeable future, California must still respond to a generalized earthquake threat rather than a seismic hazard that is tightly circumscribed in space and time. The only advice I could give is to be prepared as if an earthquake could strike at any time (Geschwind, 2001).

Cellular Phones During an Earthquake

During the 1989 Loma Prieta earthquake in California, cell phones were some of the only communications tools working and proved invaluable. In the first hours following the Northridge earthquake, with landlines out, cellular phones and radios were the only means of communication into and out of the earthquake area for emergency personnel. In 1994, the use of cellular phones was just starting to become widespread. However, communication in the canyon areas was intermittent due to terrain and limited coverage, and it was very difficult to get a signal for a cell phone or a radio. Since much of the earthquake damage occurred there, the surrounding terrain hindered communications during the initial stage of recovery. Other communication tools were used extensively, such as pagers, FAX machines, and electronic data sharing via computer. Another source of communication was the use of helicopter surveillance to find areas of congestion and problems and transfer the information to commuters via radio, television, or signage on the highways.

Image Management Tool

An option for saving bandwidth is image-compression technology, which makes images easier to download. Xippix Inc. has developed an image-management tool called Image Pump, which lets agencies post interactive maps on the Internet using relatively little bandwidth, for faster loading (Image Pump, 2002). This will allow agencies to post interactive maps on the internet using relatively little bandwidth, for faster loading. A Cooked image does not require a special image server in order to view it. Therefore, cooked images can be placed on CDs, on public web sites, like www.geocities.com, or on any web site. I also looked at www.geocities.com/mikegittelsohn/pariscafe for an example of a large image (11 megabytes) served by Geocities, a site which provides free web space. Geocities runs a web server, but no software specific to serving high quality images. The Cooker viewing applet (cook.jar) runs inside any web browser which supports Java 1.1, so your images can be viewed by anyone with a web browser which supports Java. The Cooker program which creates the cooked image format currently runs only on Windows machines (NT/2000/XP).

New Skills and Development

Without skills, ideas may be irrelevant, and without ideas, there may be no need for new and better skills. The invention of writing (one important idea) required the development of writing skills. Similarly, the widespread diffusion of another important idea, the computer, requires increasing computer skills. New ideas spur the development of the skills required to use these new ideas. The bridge from production of ideas to the usage of ideas is established by producing new skills. Increased use of an idea, which requires its diffusion, will lead to a constellation of other ideas, aimed at improving and extending the initial idea, which will lead to the need for further skills and so on, in a self-reinforcing cycle that leads to the accumulation of knowledge (DiVanna, 2003). The major conclusion of advanced technology activities in a development laboratory is that

advanced technology programs in the development laboratories are helpful and often necessary for transfer from research. There have been several research programs that suffered from being too narrowly aimed at a specific need and not having clear paths to technical growth and to growth in product applicability (Burgelman, et al., 2004).

Several projects never demonstrated the feasibility of research concepts because the time pressures forced transfer before demonstration could be accomplished. One thing that we learned was that we have to sometimes bridle our enthusiasm to keep from pushing an idea before we understand it well enough and can demonstrate its feasibility. Ultimately, faster digital cellular data transmission speeds will be available, but widespread deployment of such systems is at least several years off (Burgelman, et al., 2004).

Databases

Helping agencies extend GIS applications beyond their traditional boundaries is the trend toward GIS solutions that use more industry-standard components, such as databases and programming tools. Those have historically been proprietary systems, written specifically by the GIS application software vendor for use with its application. Database vendors such as IBM Corp., Informix Corp., Oracle Corp. and Microsoft Corp. have made or are making their products more suitable for use with GIS applications by adding spatial data formats to their traditional formats.

It is important for maps to be dynamic, letting users zoom in on the details that interest them, because they tend to cover large areas of territory that aren't of interest. They've found that a lot of customers have some very large images, but in those images there are only a few interesting things to look at. Also, a lot of people want to store all of their data in a single database, be it spatial data or tabular data. It is an opportunity for GIS to become main stream. That is exactly what the Environmental Protection Agency is doing with its ESRI GIS and Oracle database. They had to reprocess their old ESRI database into an Oracle spatial database. Now they have corporate data and geo spatial data in the same database instance.

Mainstream databases have embraced spatial as a data type. The existing users of spatial information are moving from proprietary databases, and they are consolidating that information into a central database. Using popular data types also makes it easier for agencies to share data. This is the way they deliver their geo spatial information and the way they exchange services with other federal and state agencies. They don't anticipate maintaining an entire separate geo spatial database (Carney, 2000).

Conclusion

Making GIS applications available to a wider audience helps people outside the GIS community understand the value of their work. When people aren't used to seeing their data displayed geographically, you sometimes have to sell them on it with a pilot program. Then the strength of the application sells itself. People are incredibly impressed. This new technology of a mobile GIS will definitely enhance the delivery of emergency services in a public safety environment, especially in an earthquake.

No matter how well management plans for the introduction of technology and assesses the organizational factors, there is bound to be employees, managerial and non-managerial, who resist any change in their job routine. Managerial practice has a great deal of influence over employee attitudes toward technological change. Employees who had the greatest control over the implementation process had more positive attitudes toward the technology than those who did not. Early communication about technology's impending arrival can help to improve employee receptivity to it. Yet it is still common management practice to withhold notification until the point of installation. An important lesson is that communication and participation will generally ensure greater receptivity to technological change (Haddad, 2002).

Philosopher George Santayana said "Those who cannot remember the past are condemned to repeat it." The discipline of emergency management is at a critical crossroad. Emergency managers are faced with new threats, new responsibilities, and new opportunities. Throughout the 1990s a new breed of emergency management professionals began to emerge. These individuals were anxious to bring a fresh face to the profession and embraced new strategies for promoting sound emergency management practices, particularly mitigation. The future of emergency management may rest on their ability to balance the new demands with the real need to make a difference in the quality of people's lives and their community's sustainability through mitigation (Haddow & Bullock, 2003).

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The Role of Internet Map Servers (IMS) in Emergency Management

Paul Freibert
And
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Introduction

Emergency response management is about managing and coordinating a complex system of information and resources (Bennett 2003). The Internet has evolved to the point where Web services have enabled Geographic Information Systems (GIS) to become the newer tools in managing, coordinating, and analyzing information for emergency planning, response, and recovery. One benefit of the new digital warehouses of geospatial information is that it can be distributed and used by multiple agencies and departments to manage and share data (Dangermond 2002). Software packages called Internet Mapping Services provide the flexibility and usability for geospatial data to become widely used by emergency managers via Web services.

What is IMS?

Internet Map Server technology, more often referred to as IMS, is a software application that allows the distribution of GIS information and mapping on the Web. It allows the end-user to interact with geospatial data, to query databases, print maps, organize, and share information with only a web browser. Without the need for analytical software (for example, ArcGIS) on the client computer; cost, training, and time are greatly reduced for the dissemination of information. Emergency managers can now use IMS to process, organize, retrieve, and share geo-spatial information housed in a secure, central server.

The key to being able to use this type of system is access to the Internet and a java-enabled web browser. An IMS is typically composed of the following elements: base map data, specialized data, and a GIS engine that allows IMS capability. One of the industry standards is the ArcIMS software module that adds IMS capability to the ArcGIS suite of products from ESRI .

This web-based GIS tool reduces the amount of hardware to purchase and software training for employees. Once the system is set up, users need only use their existing desktop computers, internet connections, and web browsers to access the data. Neighboring communities, cities, and counties can establish data sharing policies to reduce cost of data collection and maintenance. Over time, a shared spatial data infrastructure that is managed by multiple agencies for the benefit of emergency planning, response, and recovery can be created. The data can be shared, and, most importantly, remotely accessed by emergency planners and responders for real-time information and analysis.

Value to Emergency Managers

Access to data, especially if it is available in real time, is one of the crucial elements in any crisis management scenario. Databases, base map features, and specialized applications can all be run with an IMS application. That means emergency response personnel, using laptops, or handheld computers, can access the data if they have an uplink to the internet (using a satellite connection, cell phone, or wireless connection).

These elements allow very large and complex geographic data sets to be available to everyday users of the information. The interactive interface can be set at a variety of use levels and thus can be as simple or as complex as the host of the data chooses. These capabilities are part of a larger evolution in technological applications, but more specifically the applications are being developed for emergency and crisis management planning, disaster preparedness planning, as well as immediate post event response and recovery. The tools allow for community outreach programs that can now educate households as to their risk exposure to natural hazards via links to local, state, and federal datasets regarding mitigation, response, and recovery plans currently in effect.

The real payoff for this type of system is a regional source of updated data, made available to any user who has Web access, through the IMS system. If the data is of a secure nature, then access can be limited to those who need it, as may be the case in some Homeland Security scenarios.

At the state level in Kentucky, the state Division of Emergency Management and the University of Louisville are partnering to develop a statewide IMS capability, allowing users to access a range of hazard data. The effort is in response to the needs of regional planning agencies, counties and municipalities as they seek to develop Hazard Mitigation Plans as required under the Disaster Mitigation Act of 2000. The ability to provide a central and reliable source of data for these users means better planning, a better understanding of the hazards and vulnerabilities, and hopefully more informed policy-making as a result.

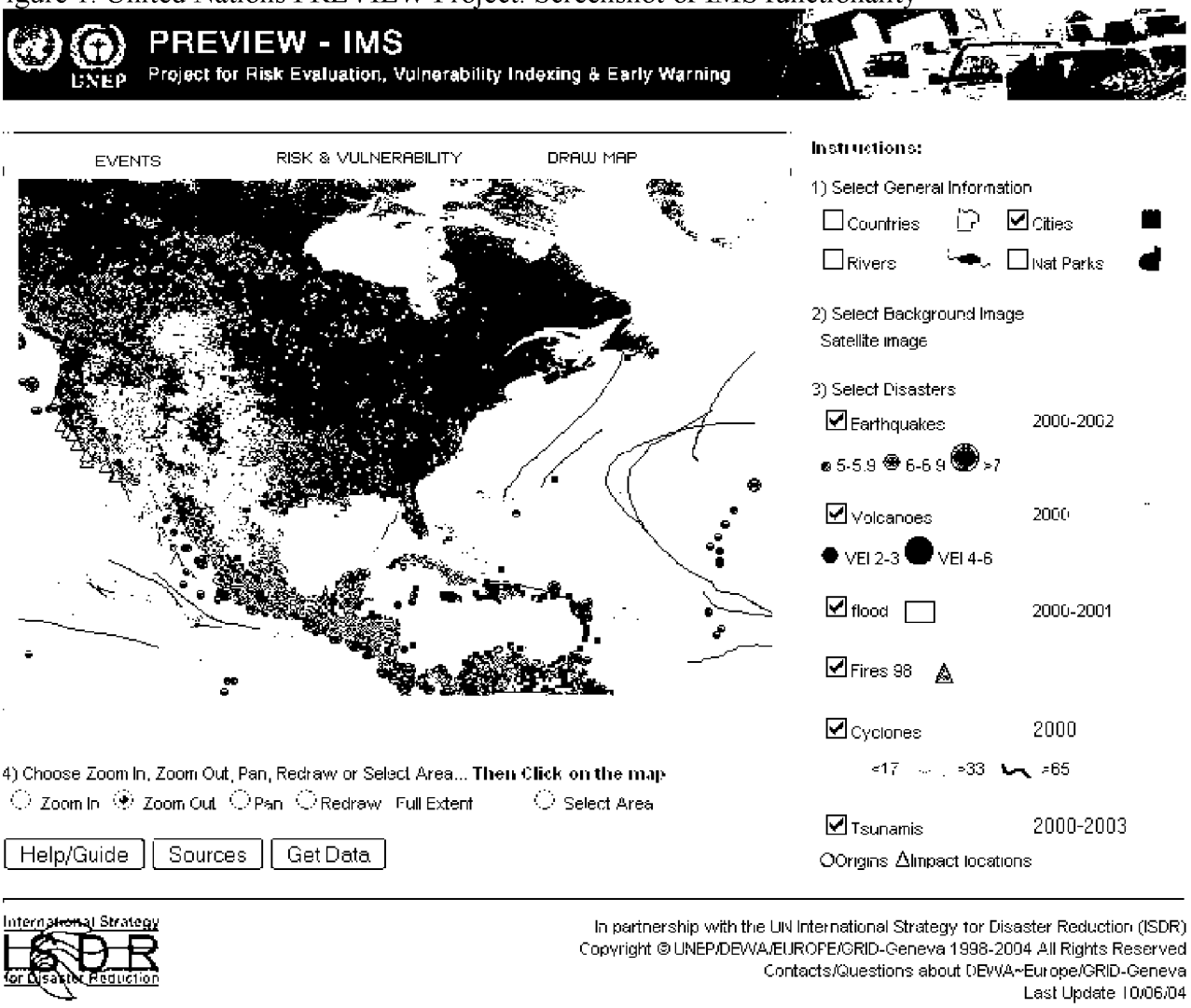
IMS and Some Hazards Examples

As part of the recently funded Project Impact (no longer funded), FEMA created an IMS feature to display hazard maps at: www.esri.com/hazards. The public can access the electronic maps on the Web to view the history of tornadoes, hurricanes, hailstorms, earthquakes, windstorms, and floods near their homes, or for any area in the United States. The IMS feature allows local governments and the public to make decisions about whether to buy certain types of disaster insurance, how much local revenue to devote to disaster preparation, and whether to develop land that may be highly susceptible to flooding (Tillett 1999).

Another IMS example is the National Atlas, which is digitized and web accessible at: www.nationalatlas.gov. Users have approximately 225 data layers to choose from when creating their own maps, including: congressional districts, population distribution, precipitation, crime patterns, dam, and nuclear site locations.

An international example is the United Nations PREVIEW project. PREVIEW stands for Project of Risk Evaluation, Vulnerability and Early Warning. The tool was developed under the U.N. Environment Programme, Division of Early Warning and Assessment (DEWA), Europe, and with the Global Resource Information Database (GRID), Geneva. The tool allows visualization of data on natural disasters around the globe. Vulnerability parameters can be evaluated on the system such as population density, Human Development Index, or the Gross Domestic Product. The factors can then be mapped using the IMS functionality of the site. An example is shown in Figure 1 below.

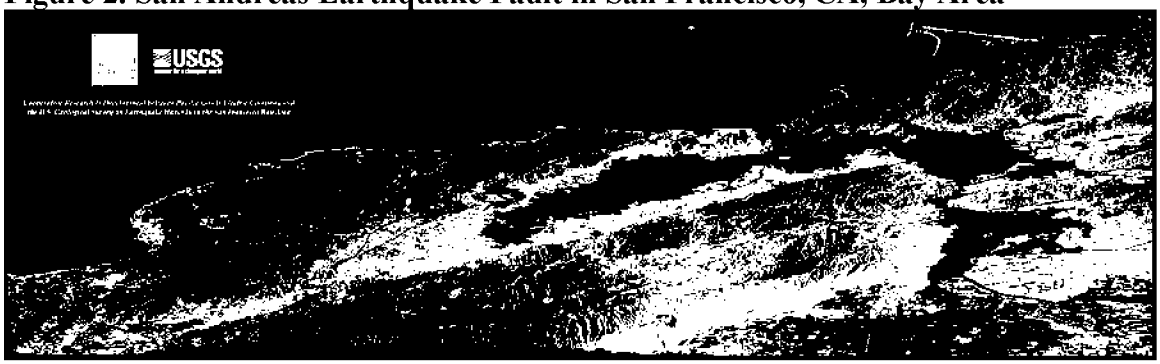
Figure 1. United Nations PREVIEW Project. Screenshot of IMS functionality



Source: United Nations: URL- http://www.grid.unep.ch/activities/earlywarning/preview/

There are two more examples that show the earthquake faulting system in a 3D relief map for the San Francisco Bay Area. Those two examples are shown in figures 2 and 3 here.

Figure 2. San Andreas Earthquake Fault in San Francisco, CA, Bay Area



Source: USGS

Figure 3: Hayward Fault System in the Berkeley, San Francisco, CA Area.

Source: USGS

In Oklahoma City, the IMS approach has been used to track tornado shelters. This example is described in the sidebar.

What does it take to deliver an IMS?

In order to be a provider of IMS content, one must have several up-to-date and even state-of-the-art hardware and software capabilities to ensure rapid access. In terms of hardware, the host of the data needs to have fast hard drives and processors on the server to ensure users get quick turnaround on their mapping requests.

On the software side, implementation of an IMS system requires a centralized server running an Apache, Oracle, Sun, or Linux server operating software system (ESRI 2004). Also needed is a JavaVM (such as Java Runtime Environment, JRE) to be the application programming interface, a servlet engine to support servlet API needs, and the IMS software itself (such as ArcIMS). If the IMS package is from ESRI, then the server needs to have an ArcGIS site license, and a license for the ArcIMS module.

Practitioner Issues

There are two sets of issues when considering the use of IMS in the practitioner setting. The first is the user, or the consumers of the data. To be successful, the IMS must be accessible, and their equipment must have sufficient speed and capability to handle the incoming data stream. Higher speed access is almost certainly a de facto requirement, given the length of time is takes to download an intensive graphic via dial-up services. The advantages of this technology from the user end are that the any web-capable browser will be able to access the information.

The second set of issues concerns the provider's perspective. The hiring, training, and payroll required for staff to create, maintain and monitor datasets is a large issue. For those organizations responsible for a limited scope of work, or are partners in a data sharing network of organizations, staffing requirements might be small. Organizations responsible for large amounts of data spanning many aspects of natural hazards, the built environment, and response and recovery efforts will need larger staffs and, possibly, entirely new departments. New departments require more computer hardware, office space, and management needs.

Many IMS systems are designed with the assumption that there is a sophisticated information Technology (IT) infrastructure in place in the agency already. For many agencies this is not true. Even if the agency sees a product they believe will be useful, it may be that the overall IT infrastructure needs to be upgraded to support the additional capability (Simpson and Freibert, 2003).

When an agency/department sets out to create a geospatial warehouse of shared GIS information; the organization of that information becomes critical. Metadata must be developed that is both informative to the end user and easy to update on the provider's end. Metadata must be maintained to provide reliable support and accurate knowledge to decisions based upon maps created from the provider's geospatial database. It is time consuming to create metadata; thus, adding to labor costs and possibly creating a need for more staff.

As with any software or hardware system, obsolescence is a key concern for public officials who decide to invest in a large-scale system. Before investing, community leaders will want to know how long the system will serve the community, how reliable is the vendor, and how much updating will be required along the way. Many cities experienced the problems of migrating from mainframe to desktop and that memory is still fresh in many administrators' minds (Simpson and Freibert, 2003).

To offset cost and implementation issues, while providing the best possible warehouse of geospatial data, local and regional partnerships should be created. The data maintenance and the hosting of the IMS server therefore, needs to be at a regional level. The accuracy of the local data, and the ability to shape a system that meets local needs, on the other hand, should be addressed locally. If cost sharing approaches are used, there can be a greater likelihood of success.

Other issues to be negotiated between the providers and users of IMS include high speed internet capabilities. Currently high speed wireless internet access is not always available in the field. When information is most needed, in its most current form, personnel in the field might not be able to access it in a timely manner. One stop-gap solution is compression of images at the host site, to speed up delivery in the field.

Also, data maintenance should be provided by an agency having well-maintained information channels; including face-to-face and via electronic links to all local, state, and federal offices. Creating an open channel of communication between the local EOC and private stakeholders could become a valuable conduit of geospatial data not readily available from public agencies. Private stakeholders, such as utility companies, are guarded as to what information becomes public record. Establishing a partnership early in the data gathering process can allow for an agreement regarding what information can become public domain and what needs to be secured.

Password protected access to the IMS system is another issue. Security can be two fold: first, a general public website can be created for education and dissemination of information; and second, a more secured, password-protected and limited access site can be developed for use by emergency personnel and decision makers during planning for and responding to emergency situations.

Conclusion

IMS offers a powerful means of delivering data and mapping capabilities at significant savings, provided that data sharing and maintenance issues can be worked out among stakeholders. Optimal delivery channels and configurations need additional field testing and research, but appear to have real time response and planning benefits. The key to success will be partnerships among private and public agencies that need rapid access and, most important, accurate and up-to-date data.

Links to IMS websites:

USGS; The National Map Viewer: http://nmviewogc.cr.usgs.gov/viewer.htm
ESRI; Make Online Hazard Map: http://www.esri.com/hazards/makemap.html
The Multi-Hazard Mapping Initiative: www.hazardmaps.gov
NOAA, National Weather Service: http://www.nws.noaa.gov/
Virginia Department of Forestry; Virginia Forest Resource Information Mapper: http://www.forestrim.org/
Greenwood County, South Carolina: http://165.166.39.5/giswebsite/default.htm
United Nations. http://www.grid.unep.ch/activities/earlywarning/preview/

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Emergency Management and Coordinated Emergency Response as Simple and Achievable Processes

Raymond M. Peña

"…the only elements in the construction of black holes are our basic concepts of space and time. They are thus, almost by definition, the most perfect macroscopic objects there are in the universe. And since the general theory of relativity provides a single unique two-parameter family of solutions for their description, they are the simplest object as well…
Simple is the seal of the true…
Beauty is the splendor of truth."
Subrahamyan Chandrasekhar
On Stars, their Evolution and their Stability
Nobel Lecture, 8 December, 1983
1983 Nobel Prize in Physics

"Theories should be as simple as possible, *but no simpler*."
Albert Einstein

Emergency management is a continuous process by which all individuals, all groups and all communities manage hazards and the effects of disaster. The process involves mitigation and preparedness (pre-event/event) and response and recovery (event/post-event). Actions taken depend in part on perceptions of risk and event-generated need(s); effectiveness depends in part on how well activities are integrated. Activities at each level (individual, group, community) affect the other levels.

Mitigation activities eliminate hazards, reduce the probability of their occurrence or reduce the effects of unavoidable disasters. Examples

1. Individual: A parent stops smoking.
2. Group: A family wears seatbelts while driving.
3. Community: A city implements building codes, zoning and land use management, building use regulation, preventative health care, public education, etc.

Preparedness activities are necessary to the extent that mitigation activities have not or cannot prevent disasters. Examples:

1. Individual: A meteorologist carries an umbrella.
2. Group: A business develops tornado safety procedures.

3. Community: A county plans, trains and exercises; deploys warning systems; identifies shelters; enters into mutual aid agreements; obtains resources; educates, etc.

Response activities follow notice of an impending or potential emergency or after its occurrence. Examples:

1. Individual: A "first responder" goes to the scene.
2. Group: A TV station covers the event.
3. Community: A state assesses damage, mobilizes personnel and equipment, grieves, keeps records, declares an emergency, etc.

Recovery activities begin immediately after the effects of the emergency are known and may continue for a number of years after a disaster. Examples include:

1. Individual: A victim rebuilds.
2. Group: A family rebuilds.
3. Community: A country rebuilds.

Communities commit considerable resources to the process. Police and fire departments are expensive and 100% committed, 24/7. Other government agencies, hospitals, non-governmental organizations, businesses, media outlets and citizens are somewhat less committed before an event, and perhaps as committed during and after. The emergency management agency (EMA), cheap but 100% committed, exists to maximize commitment by creating an Integrated Emergency Management System (IEMS). EMA activities include:

1. Mitigation: The EMA educates the community about mitigation; participates in mitigation planning; identifies mitigation opportunities, etc.
2. Preparedness: The EMA develops or assists in the development of emergency plans; develops/implements training for response agencies and citizen outreach; develops/maintains an Emergency Operations Center (EOC) for coordinated response; develops/implements an exercise program to test emergency procedures, etc.
3. Response: The EMA coordinates emergency response activities through the EOC.
4. Recovery: The EMA coordinates recovery activities.

IEMS is based on organized knowledge and common ground. Community knowledge includes information about grocery stores, schools, public health departments, etc. It includes demographics and geography. It includes hazards and vulnerabilities. The EMA compiles information and transforms it into knowledge (plans, training, exercises, etc).
Common ground – shared goals, beliefs, experiences, views, values, etc. – is the basis for communities. Citizens share benefits and responsibilities of community life. Disasters share common characteristics; communities can capitalize on common ground to improve response.

Common ground element #1: disasters, though chaotic, follow a general pattern:

1. After prediction and warning, an event occurs.
2. Police, fire, emergency medical, public works, utilities, media, passers-by, etc. converge on emergency site(s), assess effects, provide services (care for victims, prevent further injury or damage, restore or maintain basic services, maintain public order, inform the public, etc.) and assert control (establish command post(s), staging areas, access/egress control points, etc.)
3. Agency representatives gather at the focal point(s) of government (EOCs), compile information and support emergency operations.
4. Agency representatives access or activate facilities to obtain and/or make available resources and services.
5. Communication by all available means. Media recording and broadcasting. An unstable information environment.

Common ground element #2: response always includes five basic functions:

- Making decisions (management/command)
- Doing the work (operations)
- Planning for the near term/long term future (planning)
- Getting who and what you need (logistics)
- Keeping track (finance/administration)

Common ground element #3: disaster responders generally share common priorities:

- Saving lives
- Reducing harm
- Meeting basic human needs
- Protecting property

Common ground element #4: generally people in crisis:

- Are rational, creative and resourceful, will experiment to find what works
- Learn and respond quickly – more good information leads to smarter responses
- Are unified by shared purpose and meaning
- Want to help others – individual agendas fade
- Become leaders – leadership behaviors, not roles, appear as needed

Communities can achieve coordinated disaster response by adopting emergency plans that capitalize on common ground. They can establish the policy framework for emergency response and emergency preparedness (training, exercising, public education, resource development, communications, etc.). The simple procedure below is based on common ground elements and can be incorporated into a community emergency plan.

Direction and Control/Incident Management

During routine events, agencies will use established procedures to manage incidents. For events requiring coordinated incident site management, agencies will jointly establish a Command Post (CP), supported by established structures.

During disaster events, agencies will respond according to their own standing operating procedures (SOP) and the provisions contained herein. **If a conflict arises between the two, the provisions set forth herein will govern:**

1. The Community will activate the Emergency Operations Center (EOC). Agencies with emergency responsibilities will send a representative to the EOC. Other local, mutual aid and support agencies may be asked to send a representative to the EOC. The EOC will be organized to support basic functions (management/command, operations, planning, logistics and finance/ administration).
2. CPs may be established at or near emergency site(s), depending upon the nature of the event. All agencies responding to the site will be represented at the CP. There will be only one CP established per site.
3. Communications will be established between the EOC and CP(s) in accordance with the provisions previously established. Communications will also be established with other facilities (e.g. 9-1-1) as appropriate.
4. CP and EOC personnel will jointly manage the incident. CP(s) will direct site operations with EOC support. Certain functions [coordination of multiple CPs, prioritizing of needs presented by multiple sites, support of shelter operations, joint public information activities, coordination with other EOCs, etc.] will be managed by the EOC.

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Bio

Ray Peña has worked with Dane County (Wisconsin) Emergency Management since 1988. For three years he worked with the Dane County Red Cross chapter as Director of Disaster Services. He is a co-founder of the Business Recovery Planners Association of Wisconsin. He has taught at the University of Wisconsin - Madison Disaster Management Center. He has had several articles on emergency management published. He has presented at local, state, federal and international conferences. He has a Bachelors degree in Social Sciences and a Masters degree in Information and Library Sciences.

La Plata, Maryland Tornado: Lessons Learned from Charles County

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Introduction

An F4 tornado had a 64-mile path across Charles County, Maryland (Figure 1) during the early evening on April 28, 2002. Maryland is not known for tornadoes as compared to many states and is ranked 35th in the country for the number of events with an average of four tornadoes per year from 1953-1995. Additionally, Maryland is ranked 29th for killer tornadoes with two per year and ranked 32nd in tornado deaths (Grazulis, 1997). There were three fatalities and 122 injuries resulting from the storm in Maryland along with over $100 million in property damage (NOAA, 2002).

This study examined the preparedness, response, and recovery from Charles County which included the Department of Emergency Services and law enforcement. Since it is a longitudinal study, the study period examines issues after the 2002 tornado and continues into 2004. Previous research studied these issues from the perspective of the Town of La Plata, Charles County, and the National Weather Service (NWS) (Schwartz, 2003).

Methods

Information for this research was accomplished by three main methods. This involved archival data, field observations, and interviews.

Archival data was compiled from the *Maryland Independent*, the local newspaper for Charles County. Other archives were the online version of the *Washington Post* and the Service Assessment (NOAA, 2002) from the National Weather Service. A copy of the Citizen's Guide to Emergency Preparedness: Preparing a plan for emergency events (Charles County Local Emergency Planning Committee, 2002) and the Charles County Sheriff's Office Emergency Management Standard Operating Procedures Manual (2001) were also examined. Another valuable source was the Charles County Tornado After-Action Report (Department of Emergency Services, 2003). Finally, the web site from the Sterling, Virginia office of the NWS was utilized (Watson, 2002).

Field Observations were also utilized with direct observations. The author has been involved in damage assessment from severe storms such as tornadoes, hurricanes, floods, and severe thunderstorms with over 20 years experience as a licensed contractor in the State of Florida.

Finally, interviews were conducted with residents, law enforcement officers, the Sheriff of Charles County, the Mayor of La Plata, the Director of Charles County Department of Emergency Services, and the Team Leader of the NWS Service Assessment Team.

This is following similar methods employed by Drabek (2003)in his studies of disaster response.

Background

Preparedness

In regard to law enforcement, The Charles County Sheriff's Office has a manual setting forth the rules, policies, procedures for personnel. This manual is utilized in coordination and subordinate to the Charles County Emergency Operations Plan (EOP) (Charles County Sheriff's Office Emergency Management, 2001). Responsibilities are detailed for county, agency, and the Sheriff's Department in regard to alerts, warnings, search and rescue, along with evacuations related to disasters originating from either natural or anthropogenic sources.

According to the manual, Charles County is vulnerable to meteorological events such as hurricanes, blizzards, ice storms, flooding, dam failures, tornadoes, wind storms, and drought. The manual calls for planning to mitigate the effects of these hazards along with duties associated with these types of incidents. These include law enforcement, traffic control, security, evacuations, and search and rescue (Charles County Sheriff's Office Emergency Management, 2001, Davis, 2002.).

The Department of Emergency Services oversees 911 communications, false alarms, Emergency Medical Services, animal control, and Emergency Management (McGuire, 2002). Preparation and response of the EOP is guided by the Local Emergency Planning Committee (LEPC). This plan meets state and federal guidelines and is coordinated with the appropriate agencies. One LEPC document, the *Citizens's guide to emergency preparedness: Preparing a plan for emergency events* (Charles County Local Emergency Planning Committee, 2003), contains a section on tornadoes.

Most of the sirens (what few are remaining) in Charles County date back to the Cold War era of the 1960s and were used primarily for files and did not function for severe weather. When the fire station relocated from downtown La Plata, the siren was removed (McGuire, 2002).

Response

The Sheriff's Department was involved in a normal disaster response as it was securing the scenes for emergency crews along with providing security for commercial structures such as a pharmacy and a grocery store. Law enforcement was also involved in search and rescue, traffic control, establishing a command post, and looting prevention (Davis, 2002). During the evening shift, 18 officers were on duty and within one hour, over sixty off-duty officers responded.

Besides the Charles County Sheriff's Department, the Town of La Plata Police and the Maryland State Police were involved in affected areas. Other law enforcement agencies

in Maryland and surrounding jurisdictions also provided assistance (Davis, 2002; Department of Emergency Services, 2003; Eckman, 2002; McGuire, 2002).

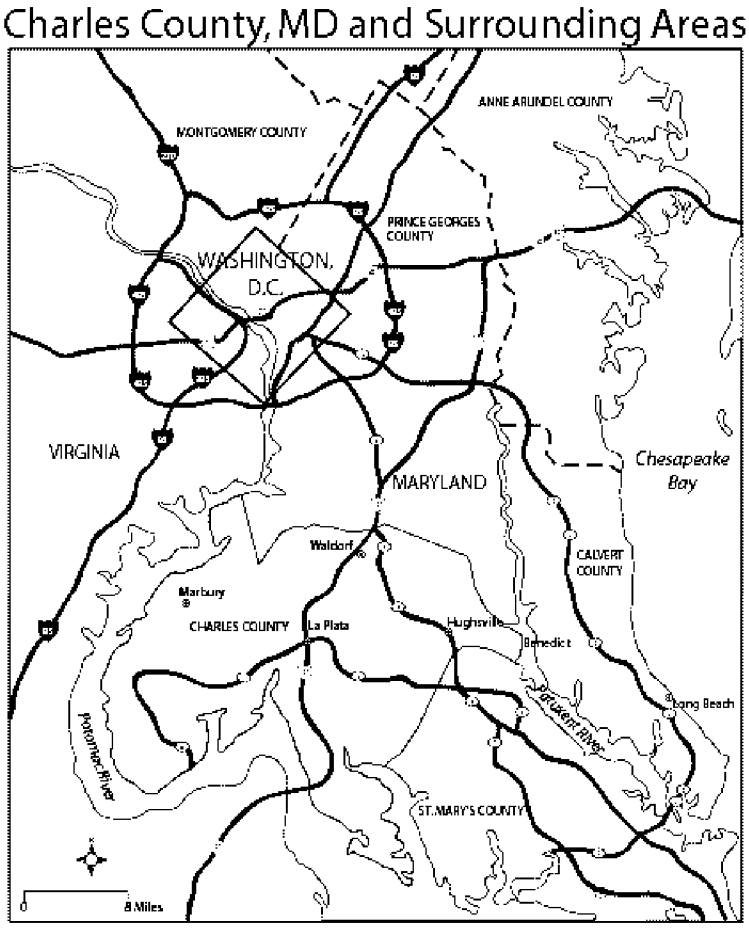

Figure 1. Charles County, Maryland and Surrounding Areas

Emergency Management personnel were aware of the potential for severe weather on Sunday afternoon and spoke with a forecaster from the NWS regarding the imminent storm between 6:10 p.m. and 6:20 p.m. When the tornado warning was issued by the NWS at 7:02 p.m., which was six minutes after touchdown in western Charles County, the forecaster called Charles County Emergency Management personnel to warn them of the radar-indicated tornado. However, the only means of communication was a hard telephone line which was busy with citizens calling in damage and tornado reports. By the time the forecaster reached someone in Charles County, the tornado was halfway through the county (NOAA, 2002; Ogren, 2003).

Additionally, there were problems with the Emergency Activation System (EAS). The EAS is used by television and radio stations to broadcast emergency alerts to the public

once activated by the NWS. Television stations received the messages but radio stations had problems. WTOP in Washington, D.C. is the primary EAS station with WJFK in Manassas, VA as the backup. An engineer at WTOP said that they had received flash flood watches earlier in the day but no watches or warnings in the afternoon. More than half the stations in the La Plata area had similar problems and many stations are run remotely on the weekends (McGuire, 2002; NOAA, 2002; Ogren, 2003).

There was no dedicated Emergency Operations Center (EOC) for Charles County and the EOC was set up in the County Building lunchroom. It took several hours along with the assistance of Montgomery County Fire/Rescue Department to establish the communications infrastructure. Although there were political issues (town versus county authority), the major problems involved communication along with the elected officials' lack of understanding of the Incident Command System (McGuire, 2002).

Recovery

Law enforcement personnel were able to do their jobs and had much assistance from over 25 different jurisdictions. Some of these included 18 counties in Maryland, the Maryland State Police, eight counties in Virginia, and Washington, D.C.

Even with the issues between the Town and the County, these entities did communicate and work together. Both realized it was critical to maintain continuity, and the District of Columbia personnel were of great assistance (while local sanitation workers were removing debris, workers from Washington, D.C. were assisting with normal trash collection) (Eckman, 2002).

A one-stop shop called "Peoples' Place" was established in the County Complex parking lot to offer assistance for clothing, food, and shelter. Participants included the Federal Emergency Management Agency (FEMA), Small Business Administration (SBA), insurance representatives, and building inspectors. The American Red Cross had a small presence, although Red Cross officials established a larger facility in the neighboring town of Waldorf.

According to disaster plans at the state and federal levels, the American Red Cross was to manage donations. However, the Red Cross only manages its own donations. Other organizations were on their own and this led to some confusion with the influx of donated items (it should be noted that Catholic Charities did an exceptional job) (McGuire, 2002).

Outside assistance was received from the Maryland Highway Department, Department of Health, and Department of Labor. This was particularly valuable with debris removal (especially when the FEMA system broke down). Ocean City and Baltimore were also helpful by sending both equipment, personnel, and expertise.

Another positive aspect in the recovery effort was aid from the community. The damaged Safeway grocery store donated food for the volunteers, as did local pizza restaurants and Outback Steakhouse. One volunteer said he had never been fed so well

during a disaster. Fuel, generators, and golf carts (which made traveling around the debris much easier than larger vehicles) were also donated (McGuire, 2002).

Lessons Learned

Three major subsections were discussed in the Charles County Tornado After-Action Report. These included Notification, Direction and Control Structure, and Emergency Service Functions (Department of Emergency Services, 2003).

Notification

As stated earlier, the only contact with Charles County Emergency Management and the NWS was with a hard line telephone. Many citizens were aware of the tornado before the warning was issued by the NWS. Many off-duty first responders self-dispatched which put them on the scene quickly, but there was no direction or control at the beginning. It could not be confirmed if local law enforcement agencies were notified. As outside agencies volunteered assistance, there were problems tracking their expertise along with the specific needs of Charles County. Additionally, due to the addition of more telephone calls, it was adding more confusion to the disaster (Department of Emergency Services, 2003).

It would be useful for 911 Staff to receive training from the NWS. Also, Standard Operating Procedures (SOP) need to be updated and/or developed in order to notify supporting agencies. Staging areas are also required for assisting agencies and command staff needs to know not only their requirements, but what expertise is responding. Procedure for call down of Emergency Services Staff needs reviewing and/or updating. Finally, a central information receiving point should be established along with a resource database that includes Mutual Aid agreements (Department of Emergency Services, 2003).

Direction and Control Structure

There was no formal call down and key personnel responded without notification. Due to the lack of a dedicated EOC, it was difficult following response protocols. Also without a EOC, other logistical problems arose such as the lack of a command staff the first few hours. There were also multiple disaster areas in the county which led to more confusion. It was very hard to track the various agencies and their responses. Another major problem was the unconnected volunteers and other self-deployed people. Problems included where to place them and utilizing their true abilities. Several days after the tornado, it was determined that some "misrepresented their credentials" which meant they were not associated with emergency response organizations (Department of Emergency Services, 2003).

A checklist should be developed to officially activate the EOC. Additional training for staff on the Incident Command System will increase efficiency. However, due to limited power, structural damage to the building, and working in a lunchroom added to the

problem. Portable generators and Montgomery County's "EOC in a Box" provided necessary expertise and equipment. There is now a Emergency Services Center Building that will serve as the response focal point. Also, a backup "EOC in a Box" will be kept at the District 1 Station if necessary (Department of Emergency Services, 2003).

Other comments included that State officials could have been more helpful at State EOC instead of the local EOC in the lunchroom. The rationale is for better coordination of assets and tracking. Staging areas need to be predetermined for personnel such as Community Emergency Response Teams as outside volunteers were overwhelming. The business community should have more involvement so their needs can be accounted for. It was also determined that there should be "a multi-agency command/control/coordination for all departments and agencies." Establishing a single contact for command and control minimizes the burden on the affected party/parties (Department of Emergency Services, 2003).

Emergency Service Functions

Transportation was affected by traffic access and law enforcement had to deal with access to damaged areas. Problems included road blockages due to debris, missing signage, and detour routes that would not accommodate some commercial vehicles. Possible solutions include portable electric signs, additional law enforcement officers, and consider detour routes that will allow passage of large vehicles. Law enforcement providing security could examine identification from responders to allow access. This could be in the form of full-time personnel or those issued after the event from the Incident Command Center (Department of Emergency Services, 2003).

One of the major problems involved Communications. Issues with communications ranged from interoperability among agencies, equipment problems, lack of unified command, and Radio Amateur Communications Emergency Service. State and local agencies solved the problem of interoperability with 800 trunked systems. Due to spotty sell service, Nextel provided additional phones and cell sites to correct the short-term problems. Again, the command post needs to be established with problems sent up the command chain for solving. Amateur radio operators were of great assistance (Department of Emergency Services, 2003).

Firefighters had several issues ranging from deployment of tactical rescue teams to coordination between the EOC and the Incident Command. First responders need training on USAR markings and law enforcement personnel as team members. Other suggestions include working without tunnel vision so people can see the "big picture" which is best attained from an aerial perspective. Additional radios and batteries along with printers at other stations utilized as staging areas would be helpful. Triage tags and explanation to law enforcement would be more efficient. Logistics showed more supplies and equipment such as washbasins, toilets, showers, ATVs, tools, and medical supplies were needed (Department of Emergency Services, 2003).

It was also noted that documentation is especially helpful dealing with FEMA.

Information and planning works on many levels such as the county, town, and other responders. If none of the Incident Command personnel has a knowledge of weather and forecasting, it is useful to have a NWS official present to interpret weather data. Another suggestion would be providing information when requested regarding weather or other questions such as if power has been restored to a specific area (Department of Emergency Services, 2003).

Issues regarding Mass Care and Sheltering involved staging individuals displaced by the event, nursing, hotel vouchers from Volunteer Organization Active in Disaster (VOAD), victim accountability and security, establishing or reestablishing a shelter, and the authority and procedures regarding shelter openings. Planning would determine how to process individuals to shelters and placing them before the shelters opened. Nursing issues involved the transition from the local Health Department with the "take over" by the American Red Cross personnel. A better and more efficient method that encourages team work needs to be established rather than the "attitude" of the American Red Cross. Issues with VOAD involved the hotel vouchers as short-term solutions when it was necessary to duplicate efforts to reopen longer-term sheltering of victims. It was determined that VOAD needs an in-depth review as the state and national representative did not provided anticipated support (Department of Emergency Services, 2003).

A database would assist with tracking of victims in shelters along with a check-in and check-out procedure. This would help locating victims for friends and families along with officials' knowledge of capacity. A shelter had to be relocated as the school was reopened. Questions also arose over who has both the responsibility and authority to open shelters along with who pays the costs. Specific agencies involved were Health Department, Social Services, Communications, Public Information Office, Security, Board of Education, Staff, Animal Control, and the American Red Cross. It was determined that representatives from all of these agencies be present in order to open a shelter (Department of Emergency Services, 2003).

Some of the most requested items were generators, telephones, signs, and tetanus vaccine. Maintaining a database for supplies kept on hand along with a Resource Coordinator would alleviate tracking and ordering of the resources (Department of Emergency Services, 2003).

Health and Medical issues related to mental health, placement of nurses in shelters, food and water, and general victim assistance. Coordination between the Charles County Health Department and the American Red Cross was eventually established to cover medical needs. Professionals working at shelters could cover many of the concerns stated above (Department of Emergency Services, 2003).

There were a few concerns relating to Search and Rescue. First it is important to know what assets are available to assist and have better coordination among teams. The other issue related to Self-deployment and eliminating the confusion as different teams begin helping in affected areas. It is best if no teams self-deploy and assignments should come from the Incident Command Center (Department of Emergency Services, 2003).

Cleanup of hazardous materials was also a problem as dealing with fuel oil tanks took time away from other situations. Responders need to be aware of who can assist with these issues from an established database to save time (Department of Emergency Services, 2003).

There was a large quantity of donated food for workers, in fact there was so much, a lot was thrown away. It should be established where the needs are and see that the food is sent to the desired location. Additionally, a coordinator would solve this problem along with seeing that food safety regulations are being followed (Department of Emergency Services, 2003).

Since there was power outages throughout the 24 mile path, many businesses and residences were without power on Sunday evening. Other crucial entities without power were the hospital, water pumping stations, and lift stations. Emergency generators should be designed to handle a larger load for longer temporal periods (Department of Emergency Services, 2003).

A number of outside agencies were assisting with law enforcement. Major problems included local authorities helping these individuals become more familiar with the area. Local law enforcement should handle the areas where local geographical knowledge is essential and outside agencies should handle major traffic areas. More Memorandum of Understandings should be established regarding these outside agencies (Department of Emergency Services, 2003).

One of the major expenses in recovery was debris management. The Maryland Department of Transportation (MDOT), Natural Resources, the Department of Environment, and private contractors worked together to establish a plan to remove debris (Department of Emergency Services, 2003). Some of the solutions included the elimination of tipping fees and a transfer station to separate debris bound for the landfill and burnable debris such as trees (Eckman, 2002; McGuire, 2002).

There was also a problem dealing with the volume of donated materials. The LEPC plan called for the American Red Cross to manage donations (Charles County Local Emergency Planning Committee, 2003). However, the response of the American Red Cross was "we will manage our own donations." The National Red Cross set up a center in nearby Waldorf while the Local Chapter worked out of People's Place. The general public was very confused by the two locations (McGuire, 2002). "Donations management is an area that needs serious attention at the local and state levels." Charles County and the Town of La Plata worked together and established a donations fund which helped people with such items as stump removal. This was a great example of the two political entities working together for the victims (Department of Emergency Services, 2003).

Other victims of the tornado were animals. A licensed veterinarian was located at the County Complex to treat injured animals. Additionally, the veterinarian treated animals found in collapsed buildings. Animal Control Division made sure pets associated with sheltered families were accommodated with crates and cages. Finally, county animal

control personnel fed livestock until owners had access to their animals which occurred within 24 hours (Department of Emergency Services, 2003).

The value of a Public Information Officer (PIO) was realized during this disaster. The PIO disseminated information to the Press through regular press conferences and handled rumor control. Another source of information was the Charles County Government's website. Some press members received access to the EOC which caused some problems with members hearing sensitive information and broadcasting live from the EOC. A designated space to hold news conferences and working area for the press would work much better than having them in the EOC. The press would be allowed in the EOC on an escorted basis for photos (Department of Emergency Services, 2003).

Discussion

Many of the previous issues discussed problems and solutions. Some of these problems have been resolved with the operational EOC and the backup radio system supplementing hard-line telephones. Charles County received a grant to establish a Mitigation Plan. The draft is presently at the Maryland Emergency Management Agency awaiting approval (McGuire, 2004). Adopting the Maryland Emergency Compact Agreement helps ensure the coordination of resources along with qualifying for reimbursement from the Federal Government (Department of Emergency Services, 2003).

Other suggestions would be training and exercises offered on an annual basis for responders. Volunteer management needs to be worked out and avoid them problem experienced with VOAD.

As of June, 2004, only one new siren has been installed. It became operational in August, 2002 (Schwartz, 2003). Three additional sirens are waiting for installation in the Town of La Plata. However, there has been no action on sirens in Charles County (McGuire, 2004).

Charles County has adopted a stricter building code since the tornado but the Town of La Plata has yet to adopt the stricter standards of the Uniform Building Code (McGuire, 2004). Several of the structures damaged during the tornado were from poor construction methods. There were various methods of tie-downs utilized and many of the rebuilt structures added basements for increased protection (Schwartz, 2003).

Two main issues that should be noted are communications and planning. In fact, the last part of the Charles County Report is titled "Planning-Planning-Planning" (Department of Emergency Services, 2003). Many of the problems encountered were due to communications. The Department of Emergency Services has identified these problems and worked on viable solutions.

Summary

This research has been examining issues associated with the F4 tornado from April 28, 2002 on a longitudinal basis. By examining aspects of preparedness, response, and

recovery from different perspectives, most of the problems were due to communications issues. As noted in previous research, organizational and infrastructure relationships need to be established with various bodies before a disaster. The lessons learned by Charles County has helped them to avoid similar problems in a future disaster. Hopefully, these lessons can assist before another disaster strikes another community.

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Second Annual ASPEP Student Writing Contest

Times they are a changing. Terrorism, weapons of mass destruction, and homeland security are now part of the everyday life of the emergency manager. While these new threats demand attention, the threats facing communities still continue to include fire, earthquake and HAZMAT spills. Changes in political support and the increasing professional nature of emergency management ensure that students in emergency management related programs will continue to contribute to add to the professional discussion. The students are the future of the profession.

The American Society of Professional Emergency Planners is dedicated to the advancement of the profession of emergency management. Among the elements that define a profession is the need for a body of knowledge relating to the subject and practitioners continuing to add to that body of knowledge. To further that goal, ASPEP now sponsors an annual student writing contest to encourage students to publish new and innovative ideas.

This year a number of students from around the world submitted papers. Many were outstanding and we commend each student author for their participation and effort. Each of the submissions was read and evaluated by a subcommittee of the ASPEP Journal Committee.

The 2004 winners are as follows:

First Place ($150): "Backlash Mitigation Plan: Protecting Ethnic and Religious Minorities Following a Terrorist Attack" Lori A. Peek

Second Place ($100): "How The Expansion of Community Emergency Response Team (CERT) Programs Changes How Future Disasters Will be Prepared For and Managed." Rob Gresser

We congratulate all of the students who wrote and submitted articles. We hope that they will continue to write and publish.

Backlash Mitigation Plan: Protecting Ethnic and Religious Minorities Following a Terrorist Attack

Lori A. Peek

Backlash Mitigation Plan: Protecting Ethnic and Religious Minorities Following a Terrorist Attack[33]

Not all disasters provoke the same social responses. Social science research has shown that the type of disaster – natural, technological, or human-initiated – may directly affect whether community consensus or conflict follows the event (Quarantelli 1993). Specifically, crises that involve actual or perceived human culpability are more likely to lead to a lack of post-disaster social solidarity (Bucher 1957; Couch and Kroll-Smith 1991; Cuthbertson and Nigg 1987). For example, civil disturbances, technological disasters, and terrorist attacks may result in conflict, blame attribution, and other forms of socially disruptive behavior. Of specific interest here are terrorist attacks and their resultant impacts on individuals, communities, and society as a whole.

Terrorist acts are human-conceived, violent, and purposely designed to create widespread fear, psychological and social trauma, and physical destruction. Terrorism elicits feelings of revulsion in most that experience or witness it, and the ensuing shock and anger may take many forms, as happened following the events of September 11, 2001. While there was a tremendous increase in volunteerism, charitable giving, and other forms of altruistic behavior immediately following the September 11 attacks (Lowe and Fothergill 2003; Turkel 2002; Webb 2002), a general need to focus blame also emerged. The call to find those who were responsible was understandable, given the intentional, violent, and criminal nature of the attacks. However, the attribution of blame and subsequent scapegoating that followed the disaster has resulted in some ethnic and religious minority groups in the United States feeling isolated and fearful as members of their community have suffered from acts of discrimination and violence (Peek 2003).

The United States has a long history of intolerance toward racial, ethnic, national, and religious minorities during times of war, crisis, and national insecurity. Indeed, those individuals and groups perceived as different or foreign have all too often been characterized as the enemy or as a threat to national security (Dower 1986; Gray 1959; Grossman 1995). For example, Native Americans from over 100 different cultures were collectively labeled as a menace and barrier to Western civilization, and were almost completely exterminated by colonizers of the Western Hemisphere (Deloria 1999). German Americans were harassed and discriminated against during World War I, and over 110,000 Japanese Americans were incarcerated in internment camps during World War II (Saunders and Daniels 2000). This trend to blame and stigmatize minority groups during times of social, economic, and political crisis has been an enduring feature of

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[33] This paper is part of a larger, longitudinal study of the impact of the events and aftermath of September 11 on a group of young Muslim Americans living in New York City and Colorado. Ninety-one in-depth interviews and focus groups were conducted with 127 Muslim Americans (including first and second-generation Muslim Americans, Muslim immigrants, and converts to Islam), from September 2001 through October 2003

United States – and world – history. The intent of this document is to encourage readers to consider what individuals, communities, and government officials can do to better prepare for and respond to the possibility of hate-related violence in the aftermath of another terrorist attack.

Post-September 11 Backlash

In the days, weeks, and months after September 11, thousands of Muslims, Arabs, South Asians, Sikhs, and others who appeared to be of Middle Eastern descent were victims of harassment, racial and religious profiling, workplace discrimination, verbal and physical assault, and even murder (Federal Bureau of Investigation 2002; U.S. Department of Justice 2002). Overall, anti-Arab and anti-Muslim violence in the United States increased by 1700 percent in 2001. Additionally, minority advocacy groups documented numerous instances of illegal and discriminatory removal of passengers from aircraft based on the passenger's perceived ethnicity, denial of service, discriminatory service, and housing discrimination against Arab Americans and Muslims (American-Arab Anti-Discrimination Committee 2003; Arab American Institute 2002; Council on American Islamic Relations 2002a, 2002b).

It should be noted that even though these statistics are alarming, given the drastic increase in hate crimes against Arabs and Muslims following September 11, the numbers do not tell the entire story. Hate crime statistics only document: a) acts defined as criminal under hate crimes legislation, which varies from state to state; b) acts that have actually been reported and recorded as such; and c) in most cases, the most heinous of crimes. Hate crime statistics obviously do not reflect the true number of incidents committed against any given minority population; nor do these numbers capture the full psychological and social impact of more common forms of harassment and discrimination. For a more complete understanding of this problem, we must scrutinize victim advocacy reports, employment records, racial profiling reports, and hate crimes statistics. Only after documenting and analyzing this data, can we fully comprehend how to prevent, ameliorate, and respond to post-event acts of intolerance and violence.

Developing Proactive Community Response Strategies

Arabs and Muslims living in the United States have endured stereotyping, discrimination, and backlash violence for several decades, largely triggered by conflict in the Middle East and acts of terrorism associated with Arabs or Muslims (Human Rights Watch 2002; Said 1997; Shaheen 2002). However, the magnitude and severity of the backlash following September 11 was unique. The rise in anti-Muslim and anti-Arab hate crimes after September 11 was the most dramatic to date, and many advocates for minority communities strongly fear that if another terrorist attack occurs, the backlash will be even worse (American-Arab Anti-Discrimination Committee 2003; Arab American Institute 2002; Council on American-Islamic Relations 2002a, 2002b; Human Rights Watch 2002).

Given the possibility of future terrorist attacks on U.S. soil, and the historical legacy of backlash violence against ethnic and religious minority groups following such events,

local communities must be prepared to respond effectively and proactively to the likelihood of a hostile post-disaster response directed toward vulnerable populations. Initiating and following through on backlash violence planning is a challenge. It does not easily fit within the traditional organizational structures of many agencies, and entails a significant allocation of time and staff resources, that, to be effective, must be drawn from the grassroots, planning, law enforcement, victims advocate, and disaster response communities. In addition, its benefits are not always readily apparent. However, it can be crucial to stemming the tide of ethnically and religiously motivated post-disaster discrimination and violence. In communities such as Dearborn, Michigan, where well established good-faith relationships exist between various ethnic groups, government representatives were able to quickly join Arab Americans and Muslims in preparing and acting in a coordinated way that spanned emergency response, law enforcement deployment, and message dissemination (Human Rights Watch 2002). The sustained efforts of community stakeholders significantly deterred the backlash that occurred in Dearborn – the largest community of Arab Americans in the United States – following the events of September 11.

Recommendations

Similar to emergency management planning, building and fostering good-faith community relationships prior to a crisis is crucial to creating an environment of post-disaster social solidarity. Included below is a set of recommendations to help communities prepare for and mitigate backlash violence. Taking these actions in advance of potential outbreaks of bias-motivated crimes can help diminish potential harm to individuals and property.

Identify Vulnerable Populations

Law enforcement officials, emergency managers, and local leaders should work together to identify segments of the community that might be at risk to backlash violence. Arabs, South Asians, Muslims, and Sikhs were targeted in the aftermath of the September 11 terrorist attacks, and hence particular attention should be given to these groups. However, it also should be recognized that other events might endanger different populations.

Grassroots organizations and advocacy groups for minority communities are useful starting points to identify those most at-risk of discrimination and hate crimes. Within the local community, minority groups often sponsor associations, businesses, student groups, and places of worship, educational centers, and other organizations. The mission of these organizations typically includes outreach to the broader community through conferences and seminars, public education, and media relations efforts.

Conduct Pre-Disaster Outreach to At-Risk Communities

Local law enforcement officials and community leaders must forge strong ties and trusting relationships with members of at-risk minority communities before disaster strikes. Building a disaster resistant community from the social and human relations

viewpoint necessitates an enduring commitment and personalized approach, given the central role that relationship building and mutual trust plays in this effort.

Becoming acquainted with leaders from vulnerable communities, collaborating on projects of mutual concern, and holding public meetings are proactive ways to establish open channels of communication. Law enforcement agencies and political leaders must also institute programs to reach out to minority community members. Just as minority advocacy groups undertake efforts to inform the more general public about their cultural, ethnic, and religious backgrounds, law enforcement officers must also attempt to educate the community about the rationale for their programs and the efforts that they are undertaking to protect all individuals and groups. Indeed, initiatives between grassroots organizations, advocacy groups, law enforcement agencies, and political leaders must be reciprocal and multidirectional. This will increase the commitment of stakeholders from various groups within the community.

Improve Cultural Sensitivity

Emergency managers, police officers, public health officials, and others who may respond to disasters need to be educated regarding the beliefs, traditions, cultural norms (including acceptable and unacceptable behaviors), religious concerns, and other perspectives of vulnerable populations. This sort of information will help disaster response professionals work more effectively in cross-cultural situations. Moreover, increased knowledge and sensitivity will help increase trust and further build community.

Develop a Backlash Mitigation Plan

Communities with vulnerable populations should consider the importance of developing a Backlash Mitigation Plan. Such a plan, in conjunction with existing emergency management planning, provides a framework for meeting specific community needs as well as documents efforts that have been taken to build relationships and engage various groups within the community. Integrating a Backlash Mitigation Plan with existing emergency response efforts directs responders to be aware and mindful of relevant cultural issues as well as provides situationally appropriate actions, messages, and a roster of trained and specific contacts. Local officials, first responders, and law enforcement authorities should work in cooperation with at-risk groups to develop a Backlash Mitigation Plan in advance of another act of terrorism. Planning ahead to have a coordinated message of tolerance that can be espoused by community members, government officials, public information officers, and religious community leaders alike is essential to diffusing tensions and presenting a coordinated front in the face of discrimination and violence.

Educational Materials

Local leaders and members from vulnerable communities should be prepared to inform the general public and to promote tolerance. Comprehensive educational materials – from printed brochures, to media feature articles, to web sites – should be developed in collaboration with members of at-risk communities. These materials may be designed and adapted for different segments of the population, including, for example, children,

teenagers, and adults. Educational materials may be distributed as a means of educating the general public and used to create a climate of increased religious, ethnic, and cultural awareness. In addition to general educational materials, pre-recorded public service announcements calling for tolerance may be developed in anticipation of the possibility of an event that could provoke bias-motivated crimes.

Law Enforcement

Following September 11, the rapid deployment of law enforcement officials to minority communities proved vital in protecting those populations and their property (homes, automobiles, businesses, mosques, community centers, and schools). Police officers should be trained to handle the possibility of backlash violence and be ready to patrol vulnerable areas in case of an emergency. Police officers also need to be educated in the proper ways to identify, classify, and report hate crimes.

The heightened presence of police officers in at-risk communities may be necessary for days, weeks, or even months after a terrorist attack. Law enforcement officials must be willing and able to commit the time and resources – both human and financial – to efforts to stop backlash violence. Conversely, those communities must be aware that law enforcement is there to protect their welfare. In short, again, a sense of trust must be built between law enforcement and at-risk groups.

Translation Services

Not surprisingly, given the considerable cultural and ethnic diversity of the U.S. population, language barriers can present serious issues during the emergency response phase of a disaster. Hence, volunteers should be identified well before disaster strikes and be available to offer translation services for various social service agencies that respond in times of crisis.

Post-Disaster Public Outreach

Following any event that might trigger backlash violence, police officials and community leaders (political, religious, educational, and business) should make explicit statements that any type of bias-motivated crime will not be tolerated. Pre-recorded public service announcements calling for tolerance may also be broadcast at this time. This is also an important time for members of various community stakeholder groups to be seen together in public – standing in solidarity – discussing the issues faced in the aftermath of the disaster. Physical proximity and open communication will help demonstrate trust and promote tolerance among community members.

Post-Disaster Outreach to At-Risk Communities

Local leaders and law enforcement officials should work with members of at-risk populations to inform individuals of various agencies that combat hate crimes and other available resources. Members of the community should be aware of whom to contact in case they are the victim of a bias-motivated incident or hate crime.

Implementation of the Backlash Mitigation Plan

Community leaders must be prepared to implement the Backlash Mitigation Plan immediately following any future disaster event that might trigger bias-motivated violence. This means that the plan must be clearly defined, and those responsible for carrying out the plan should be well trained. The plan should be included in all disaster response scenario training and updated hard-copy versions should be sent to all relevant responders, including religious and community institutions. Representatives of vulnerable communities should be invited to participate in Emergency Operations Centers (EOCs) and, similar to the Red Cross and private voluntary organizations such as the Salvation Army or faith-based organizations, function as liaisons between the EOC and their communities.

Long-Term Support and Resource Allocation

Bias-motivated crimes, such as those that occurred in the aftermath of September 11, are socially disruptive to the larger community and may be emotionally devastating to minority communities (Cogan 2002). Hence, long-term social support should be part of any Backlash Mitigation Plan and made available for victimized populations. Mental health practitioners and spiritual care providers need to be accessible and aware of the enduring impacts to a community that has suffered hate related violence.

Conclusion

The backlash that followed the September 11 attacks was severe and may have been even worse had it not been for the quick response of community leaders and the deployment of law enforcement officers to at-risk communities across the United States. However, most towns and cities are still not prepared for another terrorist attack and the potential backlash. The prevention of bias-motivated incidents and hate crimes must begin well before disaster strikes and will require the ongoing and unwavering commitment of various stakeholders in communities across the United States. The long-term benefits of pre-event planning and community alliance building will result in less diversion of political, law enforcement, and emergency management agency efforts in the immediate aftermath of a disaster, and hence a better outcome for all involved.

Strong communities have agreed at many levels to accept and honor cultural and ethnic diversity, and hence these communities have the opportunity to become truly disaster resistant. We can build stronger buildings, create new warning systems, and develop better security systems, but these technological efforts will not make a community truly disaster resistant. Local leaders must consider the importance of social integration and community collaboration as they are planning for the next disaster. The events of September 11 have had a profound impact on U.S. citizens, as well as the world. During this time of reflection and consideration of policies and programs that do and do not work, we must seize this opportunity to develop initiatives that will further protect and integrate our society as a whole.

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Suggested Resources

1. American-Arab Anti-Discrimination Committee. URL: http://www.adc.org/.
2. American Red Cross. *Facing Fear: Helping Young People Deal With Terrorism and Tragic Events.* URL: http://www.redcross.org/disaster/masters/facingfear/.
3. Arab American Institute. URL: http://www.arabamericaninstitute.org/.
4. Center for Muslim-Christian Understanding. URL: http://cmcu.georgetown.edu/
5. Collaborating Agencies Responding to Disasters. URL: http://www.firstvictims.org/.
6. Council on American-Islamic Relations. URL: http://www.cair-net.org/.
7. Federal Bureau of Investigation. *Uniform Crime Reports: Hate Crime Statistics.* URL: http://www.fbi.gov/ucr/ucr.htm.
8. Human Rights Watch. URL: http://www.hrw.org/.
9. Islamic Society of North America. URL: http://www.isna.net/.
10. National Council of Pakistani Americans. URL: http://www.ncpa.info/.
11. Sikh Media watch and Resource Task Force. URL: http://www.sikhmediawatch.org/.
12. Southern Poverty Law Center. *Teaching Tolerance: Pioneering Anti-Bias Education.* URL: http://www.splcenter.org/center/tt/teach.jsp.

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How The Expansion of Community Emergency Response Team (CERT) Programs Changes How Future Disasters Will be Prepared For and Managed.

Rob Gresser

Introduction

Since the horrific events of September 11, 2001, millions of Americans have felt compelled to volunteer in their communities and/or seek training to prepare themselves for any future disaster that may occur. In fact, the response has been so large that many government agencies and organizations have had trouble finding enough tasks for the volunteers or holding enough classes to meet the demand. Chandler, AZ has been no different.

The Community Emergency Response Team (CERT) Program was started in 1985 in Los Angeles CA, specifically to prepare volunteers in the event of a large, catastrophic earthquake. However, the program soon evolved into a means of preparing citizens for any type of disaster, where extra personnel resources may be needed. Today, the LA CERT Program stands at almost 47,000 trained volunteer responders.

Chandler, AZ Cert

The Chandler, AZ CERT Program was the first viable program in the state. Furthermore, the program has grown to over 400 trained volunteers in its first two years. The demand for classes has been strong and citizens are being forced to wait for class space to open. The City of Chandler has been eager to prepare citizens as part of its focus on customer service and public education and the pride it maintains in having both its police and fire departments internationally accredited.

Initially, the Chandler CERT Program began small and has continued to grow. In the first year, members of CERT and the Fire Department Administration realized that in order to grow further, a governing board needed to be formed. This group would be charged with helping administrate the program, help in promoting events and aid in training and continuing education. From this was born the Chandler CERT Council. Council members meet monthly to discuss the program achievements, what needs to be done and what can be done better. All of his is done in conjunction with the Fire Department Administration.

In the last year, the Council has expanded the program's purpose to aid the fire department with outreach programs, such as car seat safety and drowning prevention. Furthermore, with the huge growth experienced by our program, the Council elected to divide volunteers into three different groups, based upon feedback from participants. A large number of people completing the training had noted that they would simply like to

be a part of the CERT Program for their own knowledge, rather than responding to large events. From this feedback came our Three Tier System.

The Three Tier System was designed to allow people to choose the level at which they would like to be involved and the level of training they would undertake. Historically, each trainee would receive six nights of training and participate as part of a response team to a simulated disaster on night seven. The Tier System changes how we now operate.

Tier One is for those people who choose to take the classes for their own edification. This Tier is known as the Personal Awareness Tier. These participants are trained to help their family survive in event of a disaster where services may be unavailable for up to three days. Those people selecting this Tier receive six nights of training, just like everyone else in the program. However, when responders are needed, these trainees manage their families. These volunteers do not receive a vest or helmet upon program completion.

Tier Two, also known as Neighborhood Responder, are people who will respond to help their neighbors, but do not get called for larger events that may occur in other parts of the city. These volunteers receive the six nights of training, participate in a simulated disaster on night seven and receive a helmet and vest upon completion. Furthermore, these volunteers undergo a background investigation as a city volunteer, since they may be needed to help others outside their family. Additionally, Neighborhood Responders must complete one Continuing Education (CE) Class each year and complete an annual disaster drill, where they participate in a disaster simulation on any night seven drill or the annual drill held by the Chandler Fire Department. The volunteers are issued new identification cards each year to ensure that each volunteer is current on their education requirements.

Tier Three is the Community Responder Level. These volunteers undergo the same training and scrutiny of the Neighborhood Responder in the beginning. However, the CE Class requirements are more involved. The annual disaster drill requirement is the same, but the Community Responders must complete 3 CE Classes annually. Additionally, any person wishing to be on the CERT Council must be a Community responder in good standing. Like the Neighborhood Responders, identification cards are issued each year.

As previously mentioned, those volunteers responding to help others when activated by the fire department undergo a background check. This is a means by which to protect the city and its citizens. Furthermore, in an effort to protect the volunteers, workman's compensation insurance covers these volunteers when they are activated by the fire department. However, it must be stressed that the volunteers are ONLY covered when activated by the fire department. This helps to ensure that volunteers are accounted for during activation and to prevent false claims.

The Chandler CERT Program is a perfect example of how a fast-growing program can be managed effectively to find places for everyone wishing to volunteer, protect the city's interests through background checks and insurance provisions, and provide the city's fire

department with extra manpower when circumstances may necessitate. However, the long-term key in maintaining an effective program lie within its training and CE program.

Chandler's Training and CE Program

Like most CERT Programs, the training is fairly standardized. However, an understanding of the concepts behind the training setup are critical to making the initial training and subsequent use of the training into a working machine. As a part of the understanding, each person must understand the role that they play, as well as the roles of the other people involved in a response. We will examine the role of the professional responder and the volunteer responder in both initial training and CE training. From this, an analysis of the CE program has been undertaken and several recommendations made in order to better both initial and CE training programs. These recommendations will strengthen the team spirit and the cooperation between both professional and volunteer responders.

Professional Responders

This category includes the fire fighters and Emergency Medical System (EMS) workers that deal with emergencies everyday. They are called professional responders because they have the training and repetitive actions of emergencies to react to the same without hesitation.

One of the keys to the initial CERT Training is to have professional responders complete a "Train the Trainer" course. This course provides them with key skills to deliver the skills needed for basic disaster response to people who have little or no experience in this field. The course is designed to guide them through delivering the topics of CERT training without becoming too technical or using jargon that will lose and/or frustrate the trainees.

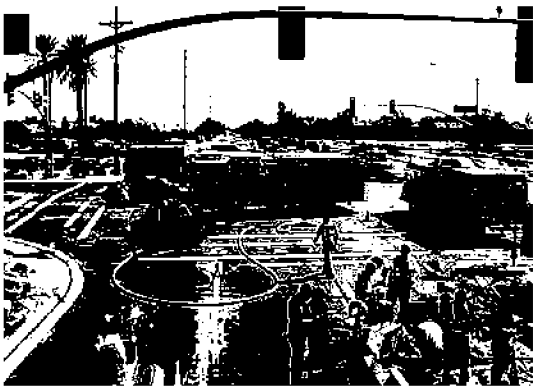
Professional Responders are then assigned to teach a class or specific topics from the program. This enables trainees to meet several different members of the fire department and recognize different members. Furthermore, teaching the classes give the professionals a chance to recognize the skills of the trainees and see what they can expect each volunteer to be able to do when activated. The professionals also assist with the night seven disaster simulations and can view firsthand how the volunteers perform and where their deficiencies may lie.

The professionals are also integral to the CE Training Program. It is an excellent idea to hold drills that include both professional and volunteer responders. The volunteers are trained to provide support for an area of the city for up to three days without city services. However, in some cases, the volunteers will be working in conjunction with the professional responders. In these scenarios, the fire department maintains control of the situation and the command structure. However, this command structure may seem

foreign to volunteers and the command of volunteers may be new to the professional responders.

By holding drills in concert, the professional responders, especially officers, receive experience in managing volunteer responders. This enables the professionals to view the volunteers in action, recognize their strengths and weaknesses, and know their physical and mental weaknesses. Perhaps the greatest concern is recognizing fatigue, mental and physical, in volunteers. Professionals are used to working with other professionals and are keen to their limits (see Figure 1). However, volunteers may fatigue faster or may need rehabilitation or counseling services more frequently or faster than professional responders. These drills help professionals to recognize the signs in volunteers and have those vital services ready when needed.

Figure 1: This is the type of scene to which most professional responders are accustomed, only professional responders to manage. (Courtesy: Chandler CERT Council, Chandler, AZ)



Volunteer Responders

Obviously, Volunteer Responders are the core of the CERT Program. Without these volunteers, the only resources available in a disaster would be those of the professionals. However, volunteers must be carefully managed in order to protect the community and to maintain both a customer service focus and a unified command structure. Without both of these, volunteers can quickly become a part of the problem and hinder execution of the solution to aid the community. The CERT Program provides a means to be trained for aiding the community and a uniform manner in which these services are delivered.

Volunteer Responders are often people who are compelled to prepare to aid their community in the event of a disaster. However, they rarely have experience in this field. The training can be intimidating to these people and discourage them from offering their time. As a result, the education and CE programs must be focused on providing the trainees with a chance to go through repetition of basic skills so that these skills become second nature when a disaster may occur. Volunteers need to feel confident when they enter the field. Annually drilling and CE classes provide exactly this (see figure 2). Confidence and a thorough knowledge and practice of the command structure enable volunteers to complete their jobs and report back to the command area for effective

deployment of resources. The repetition of completing tasks helps to prevent a practice known as "freelancing." Freelancers are those people who become absorbed in helping every person that they forget to report to command. Often, people who have received minor injuries are helped before patients that are critically injured. Confidence in your skills and an ability to focus are critical to ensuring that a disaster response runs smoothly.

Figure 2: CERT Members going through a training drill under the watchful eyes of Fire Dept. Trainers (Courtesy: Chandler CERT Council, Chandler, AZ)

Another component of effective training is that of assertiveness. Volunteers often lose focus when they have little or no experience. Volunteers must be trained to be assertive, but professional, when rendering care to injured people. Quite often, family or friends of an injured person will attempt to distract rescuers, when the fact is that the patient is simply a minor injury. However, the distraction can completely disrupt a volunteer and help to create chaos.

Incident Command is one of the most difficult jobs to perform, as well as one of the loneliest positions. Communication, key to effective management in any situation, is the first thing that will breakdown. The incident commander will be looking for information to be able to deploy resources, but reports will either not come or they do not come quick enough. In some cases, resources may be deployed, only find that another sector needs immediate help, but the information was delayed too long. The Chandler CERT has implemented a CE Class to train volunteers in effective incident command leadership, mainly with small teams. However, these skills can easily be used by an incident commander for any scenario.

The final key component is critical incident stress debriefing (CISD). Volunteers must return home to their families eventually. However, they have an abnormal level of adrenaline pumping through their bodies and may need counseling to effectively process the ordeal under which they have been operating. Professional and Volunteer Responders must both be trained in CISD methods in order to provide one another with the chance to speak their minds and what they have experienced. Without this component of training, many volunteers would return to their families and have poor mental health for quite some time. Furthermore, volunteers must maintain their well

being. When they need a break, they need to take one. If they need a counselor, they must ask for one. The most important person to the volunteer should be the volunteer!

Recommendations/Results

Several recommendations have been made regarding the Initial and CE Training Program for the Chandler CERT Program. They are:

- CE must include classes on assertiveness/conflict resolution to help the volunteers gain better confidence. This will lessen the time to identify critical patients, avoid the problems of freelancing and help the volunteer control the scene.
- Professional responders need to be included in all aspects of initial and annual CE training in order to give them a better understanding of the abilities of the volunteers, as well give them an opportunity to become familiar with commanding volunteers.
- Critical Incident Stress Debriefing (CISD) is an integral part of disaster response and volunteers need to be trained in this area.
- The well-being of volunteers is extremely important. Volunteers need to realize their limits and know when to take a break or ask for help, either in rehabilitation or counseling.
- Professional and Volunteer Responders need to be able to work side-by-side and recognize their roles, as well as the command structure for any incident. Collaboration will make the response work smoothly.
- In performing your duties during a response, remember the CERT motto: To do the greatest good for the greatest number!

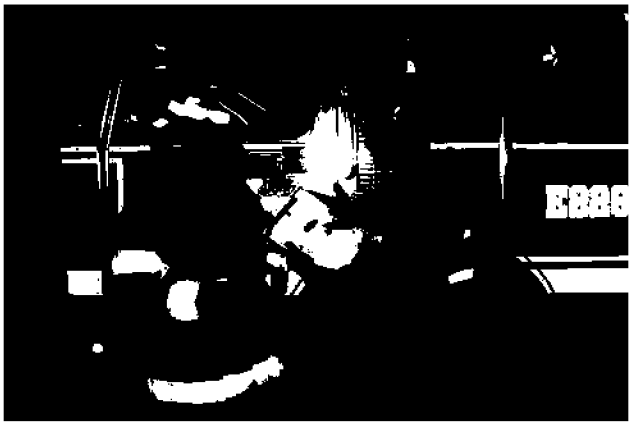
Conclusions

CERT Programs are here to stay. The large demand for this training has been welcome in all fifty states, especially since municipal government budgets continue to decline in funds for adding additional personnel. The number of volunteers continues to increase and provide more help should a large disaster occur and the fire departments need help.

While the addition of volunteers to help is welcome, effective management of any CERT program must be a goal. A Tiered System helps to provide that effective management, especially since most volunteers will undergo a background check. Additionally, the Tiered System will enable volunteers to attend training based upon their own interests and learning ability.

Both classes of responders, professional and volunteer, must work alongside one another as often as possible. This cooperation will lead to better incident command and communication, since both are familiar with one another (see figure 3). Both groups are here to help the community and cooperation is the key.

Figure 3: How It **Should** Work: Fire and CERT Working Side-By-Side Cooperatively ***(Courtesy: Chandler CERT Council, Chandler, AZ)***



Any CERT Program must have a CE program to continue to educate the volunteers and to brush-up on skills needed in case of a disaster. Without an effective CE program, volunteers become rusty with certain skills and less likely to help when a disaster occurs. The CE program must be easily adapted to incorporating new skills to teach, as well as receiving feedback from participants about how the program can be made better and what topics the volunteers would like to see taught.

The CERT program is wonderful addition to the many tools of the fire department. However, like any other tool, it must be maintained and used. Otherwise, it will rust away and be forgotten.

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