The 1993 World Trade Center bombing, the 1995 Oklahoma City bombing, and the attacks of September 11, 2001, have each emphasized the fact that the United States is vulnerable internally to terrorist attacks—even of catastrophic proportions. Through these very different incidents, local citizens, the media, academics, and policymakers have realized that terrorism, whether identified as domestic or international, is at once a responsibility and challenge to the local “first responder” community. Much of the public debate in recent years has centered on two important issues: (1) how local first responders are situated to respond to terrorism and (2) the dimensions of the threat from terrorists’ use of chemical, biological, radiological, and nuclear weapons (CBRN), generally considered to be part of a worst-case scenario.

In this edition of MIPT Quarterly Bulletin, we address these two important issues, not only identifying the threats but also making policy suggestions for improved capability and terrorism prevention. First, four leading commentators on the subject of the first responder community give an insightful look into local emergency response. The authors suggest that not only is the threat real, but that the primary effective response must be provided at the local level and that our preparedness can be increased and improved by providing more-effective training. Second, John Parachini, a leading scholar and researcher working in the field of the terrorist use of CBRN, addresses the threat of “dirty bombs” and makes suggestions for countering the threat.

In addition to these articles, this third edition of MIPT Quarterly Bulletin concludes with an overview of terrorist attacks worldwide during the period of October through December 2002. In the previous edition, the data we provided in the bulletin were directly related to the topics covered in the feature article, notably suicide bombings and religiously motivated terrorist groups. Yet because the feature article in this edition discusses various aspects of domestic civil preparedness, we simply provide readers with a snapshot of recent terrorist attack trends in the section “Terrorism Update.”

This snapshot reveals some interesting trends in the terrorist threat. For example, the three-month period witnessed 598 domestic terrorist attacks—attacks in which the terrorist groups hit local targets within their own area of operations—and 68 international terrorist attacks. In other words, terrorists attacked eight local targets for every one international target. Indeed, this 8:1 ratio holds true for terrorist attacks over the past three years. Similarly, private citizens and property continue to be the most frequently attacked targets (180 attacks), with government targets being the second most frequently attacked targets (153 attacks). Notably, even though this issue of MIPT Quarterly Bulletin focuses on the danger posed by CBRN, it appears that terrorists still resort to the tried-and-true explosives and firearms in most of their attacks. Indeed, while the threat of a terrorist CBRN attack is of concern because of the potential for high casualties, it is important to note that traditional terrorist tactics continue to kill effectively.

The Oklahoma City National Memorial Institute for the Prevention of Terrorism (MIPT) is a nonprofit organization whose mission is to prevent and deter terrorism or mitigate its effects. MIPT was founded as a living memorial to those who lived, those who died and those who were changed forever by the April 19, 1995 bombing of the Murrah Federal Building in Oklahoma City.

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Introduction
For some time now, national security experts and academics have been projecting another large-scale, high-impact terrorist attack within U.S. borders. Some attribute the source of this threat to nation-state sponsors feeding rogue operators technology and intelligence while concurrently supporting access to weapons and materiel; others predict the threat to be terrorist organizations within the United States; while still others point to religious fundamentalists with their global reach and desire to rid the world of those who do not agree with their theological interpretations. In all instances, the events of the past decade have altered the global security landscape forever. As a consequence, the threat of terrorism against the United States and its interests has continued to increase at an unprecedented rate. There is no clearer indication of this threat to the United States than the events of September 11, 2001, and the subsequent anthrax attacks.

Speculation continues regarding the capabilities and vagaries of terrorists, and their various methodologies. The issues become further clouded when considering the debates involving what, if any, access to specific weapon types and delivery platforms are selected. The posturing has resulted in an assumption that a terrorist attempt involving "weapons of mass effect" (further explained below) is inevitable and will not likely be prevented in the United States. While interdiction of an event is preferable, preparing and equipping America’s "first line of defense"—local emergency medical service (EMS), fire and police departments—to respond effectively to this threat has become the critical step to ensuring the protection of our nation.

To date, hundreds of millions of dollars have been allocated and spent on efforts to identify threat mediums, determine threat sources, and develop a national response capability. However, because federal government response is significantly time-distance delayed to most areas of the United States, a version of the "Maginot Line" has emerged, lending a false sense of security to those most responsible for the nation’s welfare—the emergency responders.

The American public safety system provides services of both high reliability and trust to its constituency. A key point here is that, in the public safety sector (EMS, fire, police), distribution of the workload is not characterized solely by volume or type, and it is not configuration dependent. For the public safety system to maintain its robust capability, it vertically integrates multiple competencies, and each individual resource is configured for multitasking. However, just how prepared the United States is in this area has not been clearly defined.

The collective effect of these activities has been the spontaneous proliferation of terrorism experts, a deluge of new training seminars, military units to support civilian missions, and studies that allegedly solve the problems emergency responders and agencies face as a result of this threat. Has all of this attention produced solutions for the threat, vulnerability, and requisite response—or only more confusion? We suggest that it is the latter.

Understanding the Threat
With the emerging realization of the terrorist threat, confusion about what exactly a terrorist act is has materialized. This confusion is further exacerbated by the numerous definitions being thrust upon the emergency service community from a myriad of sources. Although these definitions all share a somewhat common theme, the diversity of many messages contributes to an already complex problem when attempting to educate managers and responders on what an "act of terrorism" is.

One needs to remember that by and large most emergency response managers are not "social scientists," but rather they are trained consequence experts, and as such they can be easily misled by the minutia that often emerges from this debate. The goal for these managers is constant and is based on community needs and other mandates to:

- develop an appreciation for the impact of a terrorist event
- articulate the threat and examine community vulnerability
- develop appropriate response algorithms to effectively manage the aftermath of an event
- train and equip existing resources to confront the threat in a sustainable fashion
- exercise the response plan and incorporate mutual aid assets in an exercise to foster familiarity and interoperability
- keep an already strained budget balanced to maintain staffing and operations for the inevitable "garden variety" emergencies that require responses daily.
With the introduction of the broad term “weapons of mass destruction,” this problem has been elevated to a new level. (The notional concept of the term “weapon” within the public safety triad is a knife, gun, or conventional explosive device, not a jar of bacilli.) What is the implication of “destruction”—death? Is destruction ensured when a weapon is employed? The answer to both of these questions is most likely “no.” Perhaps consideration should be given to utilizing the term “weapon of mass effect (WME),” which sufficiently conjures the image of an event that can be not only destructive but, moreover, disruptive. This term emerged from a spirited discussion with colleagues on how to define this matter in a way that demystifies the event so that it is more easily understood by the public safety response community.

Response

Local first responders are the only assets capable of meeting the critical interval to intervention time necessary to minimize the impact of a terrorist attack. While the federal government, in one form or another, has developed and made available certain training and limited funding to the consequence management community, the effort has been fragmented. With the commencement of operations by the new Department of Homeland Security, this fragmentation will most likely be resolved, resulting in a more cohesive and coherent approach. The net result will engender an environment whereby aggressive local consequence management capacity building will finally be realized.

Today, American public safety system consequence management assets are precision forces that encompass the dominant body of knowledge regarding disaster response, intervention, mitigation, insight, and acumen. Disaster Medical Assistance Teams (DMATs) and Urban Search and Rescue (USAR) systems, both developed by EMS and fire services, represent examples of this. These units are effectively utilized domestically and globally because of their experience, capabilities, and knowledge of managing the consequences of disasters.

An appraisal of past disasters would demonstrate that local first responder consequence assets provide immediate directed interventions, reducing mortality and morbidity while concurrently minimizing economic and infrastructure impact. The responses to the World Trade Center bombing (1993), the bombing of the Murrah Federal Building (1995), the Tokyo subway sarin incident (1995), and the attacks of September 11 are clear examples of this. They illustrate that convergent and first responder consequence assets provide the majority of rescue, extrication, and emergency medical services to those affected, prior to the arrival of any specialized teams or federal assets.

To keep this within the intended context, we need to develop an understanding that if a terrorist event is successfully executed, it becomes a local event. As public safety consequence managers, we consistently operate in environments characterized by extensive damage, human injury, and limited resources. Our knowledge of a given incident is always partial and approximate at best. Our actions are shaped by contingent, unpredictable circumstances. The local emergency responders cannot rely on the federal government to arrive immediately and “make everything all better.” It is the responsibility of the local emergency responders to ensure that their existing response capacity and mutual aid agreements with surrounding communities, counties, and states are updated, functional, and exercised in order to initiate an effective and sustainable response.

The perceived threat of a domestic chemical or biological incident poses serious concerns regarding the selection process used to determine which communities receive federally sponsored consequence management training. While the federal government made the choice in the 1990s to first train the nation’s largest cities, the threat was and is today no less significant to smaller communities. It is common knowledge that the larger cities, when compared with smaller communities, have more capability, equipment, training, and experience, and are likely capable of absorbing the impact and managing the outcome of a moderate-impact terrorist incident with a modicum of assistance from the federal government, especially when factoring in the capacity to access additional resources through mutual aid agreements.

What surely has not been adequately addressed is the threat of additional coordinated, geographically compressed events and what their outcomes will be. This matter is further amplified when considering the role that mutual aid responses play. Mutual aid is a critical strategic tool heavily relied on to mount a response during surge events. Failure to acknowledge the role that mutual aid plays and failure to prepare these smaller communities to fulfill their response function safely could result in higher mortality and morbidity of the emergency responders from the responding mutual aid community.

The mission of the public safety triad (EMS, fire, and police) is to save lives, protect property, and conserve the environment, in that order. This construct has proven historically to be capable of effectively and successfully operating in an uncontrolled, all-hazards environment. This mission is accomplished daily with our assets generally arriving on the scene within five minutes of event notification. The sense of urgency associated with catastrophic events and the concern that problems will

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1 Those members of the community in the immediate vicinity of an event who render assistance and aid to those affected by the incident.

2 This reflects actual lives saved and life-saving activities, and is not to be confused with the recovery of deceased.
worsen in the absence of appropriate action create an air of uncertainty concerning what has happened or is likely to happen, coupled with a strong urge to take some action before it is too late. We will employ the National Incident Management System, a dynamic operational management tool, to bring “order out of chaos” and attempt to minimize collateral risks to the rescuers. The widespread adoption and use of the Incident Management System will become mandatory in FY 2005 under Homeland Security Presidential Directive–5 (HSPD-5). This directive provides for creating even greater response effectiveness and accountability on the incident ground.

These events are usually “make it or break it” situations in the first 30 minutes, with an understanding that, even with large-scale conventional emergencies, emergency responders will be on their own for at least 24 to 72 hours. It is safe to project that even with the hyperbole that is presently surrounding the topic of terrorist acts, a WME event will be a one-of-a-kind incident for these responders, which may contribute to the delay in actual event recognition. Regardless of whether New York City or Cozad, Neb., is attacked, the effect on the American psyche will be the same. Whether the population is 10 million or 30,000, first responders will answer the call in five minutes or less. The difference is whether the first responders manage or suffer the consequences of a terrorist event, or whether they add themselves to the list of victims or provide effective intervention. The pressing question for us still remains: How do we keep the members sharp when the possibility of an attack exists but (thankfully) the frequency of events is low?

While the projected weapon of choice for these events may involve a hazardous material, the resultant effect would most likely be that of a high-impact/high-yield medical disaster. Indeed, it may be prudent to make the following assumptions regarding the likelihood and impact of these disasters:

1. Container and delivery mechanism size and concealment limit the quantity of a chemical agent to be deployed at a terrorist incident to a finite amount.

2. Because of technological problems experienced by even the most wealthy and sophisticated nations, biological weapon deployment—in most instances—presently remains a distant goal of terrorist organizations.

3. The functional area that will most likely have the greatest demand for services in the event of a successful attack will be the medical community (prehospital EMS and in-hospital services).

4. Whereas public safety organizations have the ability to draw on rapid response mobile resources from surrounding communities, hospitals are fixed assets with limited reserve capability.

However, if one takes the time to objectively assess the level of readiness for pre-hospital EMS and hospital facilities, we believe that one would find is that they are the weakest links. This by and large ties directly into lack of funding. Non–fire department based EMS organizations have no external funding opportunities. While Congress has created vital programs to support other public safety functions, EMS is left trying to figure out how to prepare the local EMS responder. This situation has created an undue fiscal burden at the local level resulting in many EMS systems just not doing anything because of the prevailing economic constraints. Unlike other public safety functions that have a number of funding opportunities that can be relied upon, it is widely known that, since the termination of the EMS grants in the early 1980s, no federal assistance targeted at EMS pre-hospital care systems has been made available by Congress.

Concurrently there exists a widespread lack of personal protective equipment for emergency medical technicians (EMTs) and paramedics, as well as a high opportunity cost associated with training. This is clearly evident where career EMS and fire organizations must absorb the costs of salary not only for the student attending the class but also for the overtime paid to staff who cover that vacant position for 911 responses back home. Volunteer responders are being confronted with having to use vacation time or time off without paying to attend training programs because many are conducted away from their communities and/or during the workweek. Hospitals continue to lack sufficient antidote stockpiles, have questionable availability of hospital beds and ancillary hardware such as ventilators, and have limited mass decontamination facilities. All these factors will contribute to the lethality of chemical, biological, and radiological incidents. However, these are not insurmountable problems. They require Congress to fund coherent programs that will assist the local community with the fiscal burdens associated with capacity building for this threat.

Education

While no one contests the value of the initial domestic preparedness training offered to some communities by the U.S. government, its overall impact falls somewhat short of providing for broad national readiness, due to the congressional direction of program implementation. Limited by the legislative mandate, fewer than 300 cities directly benefited from this program. Even though this has been a good starting point, in order to achieve a minimum level of global

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1 With the expectation of local mutual aid pacts for assistance. Federal Response plan assets will take an extended amount of time (24–72 hours) to arrive on the scene, depending on the location of the incident. A further undetermined amount of time until they are fully operational cannot be factored.
readiness, expansion of the training process is still required and innovative educational delivery mechanisms must be explored.

For example, most current training applies to coordinated multiagency response, identification, intervention, attribution, and prosecution. It does not address concepts such as the management and appropriate disposition of human remains (mass-fatality management) other than citing a vague, notional concept dealing with temporary body storage for later criminal investigative purposes.

Additionally, there are ways to institutionalize this educational module within existing training curricula for EMS, fire, and police. For instance, the paramedic training curriculum is standardized through the National Highway Traffic Safety Administration’s Office of Emergency Medical Services. This office is the “keeper” of the recommended training standards that are drawn upon by the individual states. Having a mandatory training module that addresses the EMS-specific issues for terrorism response institutionalized within this curriculum, as well as the fire and police training programs, makes good sense. It ensures that all members receive this training at the entry level and then sets the stage for revisiting the topical area at regular intervals through existing refresher training/continuing education requirements. But this has yet to happen.

According to various professional organizations that represent EMS, fire, and police, there are approximately 3.2 million responders in this country who require some level of training access, yet we have only directly funded fewer than 300 cities to have access to federal training programs. Also, many boutique programs that fail to provide for the institutionalization of these lessons have developed as a result of an uncoordinated effort in the executive and legislative branches. If this threat is as real as experts claim, then failure to have widespread access to adequate training for emergency responders is inappropriate.

Are Emergency Service Organizations Really First Responders?

There are common threads in all disasters—regardless of etiology or attributes—that have the potential to enhance the survivability of victims. One such commonality is the convergent responder phenomenon. Trained and equipped emergency responders have never beaten the convergent responders to the scene. The term “convergent” is inclusive of all members of the public, from the homeless man in San Francisco who rescued people from the Nimitz Freeway in the 1989 earthquake to employees who stayed to assist colleagues trapped in the World Trade Center and Pentagon on September 11.

When properly trained and organized, convergent responders can be effective adjuncts to professional responders and have the potential to enhance victim survivability by providing timely rescue and appropriate emergent care.

The Community Emergency Response Team training concept, or CERT, which prepares citizens to provide ad hoc, improvised emergency services in a disaster, is an invaluable asset when a community is confronted with a catastrophic event such as a terrorist attack. Better coordination of these resources with local emergency responders can and should be achieved. With the emergence of “Citizen Corps” and other initiatives, the opportunity to create this collaborative environment is now.

Summary

All things being equal and allegedly accurate, the information presented to the emergency response community indicates that this threat is very real. With a greater understanding that local emergency response assets within the United States are in “combat” on a daily basis (in excess of 20 million times per year), a more comprehensive and cohesive strategy for effective preparation and deployment of these local resources is required if the United States is to be truly prepared for these events. The emerging strategy must appreciate the fact that preparedness is a process and not an event. It is a continuum characterized by equipping, training, and reinforcing through practice and drills until both individual and system performance is consistent, automatic, and effective. It must also consider the role that civilian convergent responders will have on the initial response post-event, as well as acknowledge the limitations of federal resources to react quickly.

We appreciate the initial actions taken to remedy the underprepared emergency response apparatus for terrorist acts in the United States, but we are also cognizant of the long and challenging road ahead that confronts the local response organization prior to proclaiming true readiness. If the threat is as real as we are led to believe, then appropriate and defined actions based on actual threat potential are in order to remedy the prevailing deficiencies. Defining readiness levels for all communities, institutionalization of readiness principles, training requirements and operational doctrine into every organization, providing affordable and effective member protection technologies, developing efficient and affordable threat detection equipment, and congressional provision of sustainable federal funding mechanisms reflective of the true fiscal burden to the state and local response organizations, especially targeting EMS, are the immediate prevailing needs to be fulfilled. Anything less will yield a fragmented system that will struggle to survive the rhetoric in a time of crisis.
In May 2002, U.S. officials detained two suspected al Qaeda operatives—Jose Padilla, also known as Abdullah al Huhajir, and a Pakistani coconspirator—who allegedly planned to use a bomb salted with radioactive material, often referred to as a “dirty bomb”—or, more technically, a radioactive dispersion device (RDD). Revelations about the alleged Padilla plot are a frightening reminder of al Qaeda’s determination to conduct spectacular attacks against the United States.

Throughout the 1990s, there were a number of allegations of Osama bin Laden–sponsored attempts to acquire nuclear weapons and nuclear material. U.S. forces uncovered many documents in al Qaeda safe houses in Afghanistan revealing the organization’s interest in acquiring nuclear weapons or using dirty bombs. The Padilla plot suggests that al Qaeda sought to use one of the unconventional weapons described in the open and publicly available source materials it collected. Since the arrests in spring 2002, U.S. authorities have warned several times about the danger of al Qaeda–sponsored attacks involving dirty bombs.

While there are a number of historical incidents where people have poisoned others with radioactive materials or threatened to do so, the dirty bomb is a fairly new means of terrorism. One of the few cases occurred in 1995, when Chechen rebels threatened to attack Russia with nuclear weapons. To prove their capabilities, the rebels notified a Russian media outlet to announce that they had planted radioactive material in a popular Russian park. Despite the drama of Russian television reporters discovering a small quantity of cesium-137 in the park, Russian authorities ruled the danger to public safety inconsequential. Thus, while there are no historical examples of terrorists actually combining explosives and radioactive material to make a bomb, the Chechen case and the alleged Padilla plot serve as early indications of a disturbing terrorist innovation.

With a dirty bomb, the greatest immediate danger would most likely result from the explosion and not necessarily from the radioactive material. The level of contamination from a dirty bomb varies considerably depending on the quantity and quality of radioactive material. Uncertainty of the extent of contamination and fear of invisible toxic material may cause significant panic and disruption, whether justified or imagined. Prompt detection and effective communication to the public will be important in restoring public calm.

Dirty bombs can be made with several different types of radioactive material—one truly deadly and others considerably less so. A dirty bomb is a combination of radioactive material and explosives that disperse the toxic materials. First, the least likely but most dangerous situation would be if terrorists acquired some highly enriched uranium (HEU) or plutonium similar to that used in nuclear weapons in order to scatter it with explosives. While this would not trigger a nuclear explosion, the toxicity of plutonium is extremely high and HEU is less so. Generally, national authorities make great efforts to secure these materials. Another radioactive source is fuel and waste from nuclear power and research reactors. However, in most cases, these materials will be hard to use for a dirty bomb because they are often hot and difficult to handle.

The most widely available radioactive materials for a dirty bomb, which are also the least secure, originate from commercially available radioactive sources and are used in medical devices to treat cancer and to produce medical x-rays, to irradiate food to kill bacteria, and to examine metal or geological structures. Common types of commercially available radioactive isotopes include americium-241, californium-252, iridium-192, cesium-137, strontium-90, and cobalt-60.

After the breakup of the Soviet Union, many experts and policy-
makers worried about the danger of loose nuclear weapons and the smuggling of poorly guarded nuclear material. They feared that the dire economic conditions would lead to stealing and selling of nuclear materials to rogue states or terrorists. To address this danger, former Senator Sam Nunn and Senator Richard Lugar launched a multiyear effort to control and secure the former Soviet nuclear arsenal, weapons production complex, and research activities. This initiative aimed to safeguard the materials and weapon scientists at their source and prevent them from leaking into the hands of rogue states or terrorists.

In May 2002, the United States and Russia announced a joint effort to collaborate on improving the security and accountability of lower-level radioactive materials. In March 2003, at the urging of the United States, the International Atomic Energy Agency (IAEA) convened an international meeting to promote information exchange, raise governmental awareness, and explore new initiatives to improve security on common radioactive isotopes and recover orphan sources of these materials.

While the details of the Padilla case still remain sketchy, the threat of a dirty bomb remains a priority challenge for governmental authorities to address. The bilateral cooperation between the United States and Russia and the international effort of the IAEA are a good start. The U.S. Nuclear Regulatory Commission has recently reported that there are approximately 300 cases of lost or “orphaned” radioactive material each year in the United States. Sustained focus on the problem remains vital to ensuring that promising initiatives are actually implemented as opposed to merely proposed.

Enhancing technical capabilities may also prove valuable in preventing smugglers from bringing these materials into the United States. Shortly after September 11, the U.S. government rushed handheld detectors to border control officials to detect any smuggling of radioactive materials or weapons into the country. New procedures for inspecting cargo and transportation vessels at foreign ports also help to reduce the possibility of smuggling this material into the United States. Additionally, placing detection capabilities in some key cities may prove valuable for effective emergency response in the event of a dirty bomb attack.

Finally, conducting training exercises focused on a possible dirty bomb attack is important to familiarize decisionmakers and emergency responders with the complexities of this type of attack. In recent years, many of the planning exercises have focused on catastrophic biological attacks. Increasingly, however, authorities recognize that not only does the threat of a dirty bomb attack pose new challenges, but that these challenges are potentially manageable if the appropriate capabilities are put in place. Communities near nuclear power plants are the exception, because they have lived with the possibility of responding to nuclear accidents for many years.

(Figures contain data for October 2002 through December 2002)
Incidents by Target

Incidents by Weapon

Event Type

For questions or comments, please contact:
Brian Houghton, Director of Research, National Memorial Institute for the Prevention of Terrorism
P.O. Box 889, Oklahoma City, OK 73101  (Phone) 405.232.5121

National Memorial Institute for the Prevention of Terrorism
P.O. Box 889
Oklahoma City, OK 73101