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A Spiral of Hope for the First Responder Community

By James D. Hessman
Editor in Chief and
Coast Guard Channel Master

A tsunami in the Indian Ocean. An earthquake in Turkey, and a monsoon in Southeast Asia. Hurricanes in Florida and the Caribbean. The almost simultaneous bombings of the U.S. embassies in Kenya and Tanzania
In addition, the nightclub fires in Indonesia and Argentina, and the terrorist attacks of 11 September 2001 against three of the most easily recognized buildings in the world: the Pentagon, and New York City's World Trade Towers.

Some of these were what are called "natural" disasters. The others were manmade, and at least a few of the latter, perhaps, might have been prevented. All had much in common, though, beginning with the horrendous cost, not only in lives and human suffering but also in the national fortunes spent in rescues and recovery, rehabilitation, and reconstruction.

The two most important of the numerous lessons that can be learned from each of these cataclysmic events are: First, it could have been worse—and almost assuredly would have been were it not for the heroic efforts and professional skills of the firemen, policemen, medical and military personnel, and other first responders who rushed to the scene and worked countless hours to save those who were still living, recover the bodies of the dead, and mitigate the collateral damage and lingering aftereffects of whatever happened.

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DHS Seeks to Create Higher Standards of Readiness

By Ashley Paul Moore
Standards Channel Master

The human being always looks down when he is examining another person's standard; he never finds one that he has to examine by looking up. ~ Mark Twain

For more than a year the Department of Homeland Security (DHS) has been working on what is described as "an accelerated plan" to implement Homeland Security Presidential Directive 8 (HSPD-8), titled National Preparedness. The primary HSPD-8 objective is to establish and implement the short- and long-term policies needed to strengthen the nation's entire first-responder community.

In the development of a unified, national, all-hazards preparedness strategy, it seems obvious, one of the first goals, in theory, should be to establish workable methods for improving and accelerating the release of federal assistance to local, state, federal, and tribal governments.

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The second lesson is the diametric opposite of the first: There would not have been as many deaths, as much suffering, and/or as much physical and structural damage if there had been, *beforehand*: better planning and communications; more, and more frequent, training; and more and better equipment of all types.

When the United States was a small child it was much like any other nation in the world at the same stage of development: a somewhat ragtag aggregation of small towns and villages punctuated here and there by a larger urban area and, every hundred miles or so, a small or medium-sized city. The local police chief, in most if not quite all of the towns and villages, was the only man on the force. He sometimes doubled his duties and responsibilities, but not his salary, by also serving as the local fire chief.

As time passed and towns grew into cities—and the cities grew in size, population, and complexity—the police and fire departments became bigger and more professional. Also better equipped. Even a relatively small city would have several fire stations and several police precincts. Ideally, each and all would be manned, preferably by career professionals, around the clock. Ideally, each and all would be provided the best, latest, and most effective equipment. City budgets being what they are, the ideal was the rare exception.

Complex and Hazardous Reality

Urban disasters, particularly of the manmade variety, also grew in both size and complexity, especially if there were political factors involved, which was increasingly the case. Policemen and firemen knew from the start that they would have to work together, and they did—particularly in fighting fires. The policemen would keep the area clear, and keep traffic moving, while the firemen would put out the fire. Also on the scene, and ready to help, if needed, were an ambulance and one or more doctors, nurses, and/or other medical people. Collectively, all of these people were the original first responders.

Today's world is much more complex, and the stakes are much higher—by an almost incalculable order of magnitude. There are hundreds of thousands, sometimes millions, of people who live and/or work in the modern American city. They come to work by train, plane, bus, subway, or private car. They depend, and the nation's economy depends, on the free flow of traffic not only on the open highway but also through tunnels and over bridges.

They—and, again, the nation's economy—also depend and usually can count on reliable communications (telephones, Faxes, the Internet) as well as heat, light, water, electric power, trash removal, and all of the other necessities provided by and through the modern urban infrastructure.

None of these can any longer be taken for granted, because all have become targets for terrorists. So have banks, power plants, football and baseball stadiums, passenger aircraft, railroad terminals, cruise ships, and even schools and churches.

This grim reality of the 21st century makes the already difficult job of first responders much more complex and, at the same time, immensely more hazardous. The firemen and policemen who were first on the scene at the World Trade Center faced a disaster of unprecedented dimensions:

thousands of people already dead or dying; hundreds of others seriously injured; Literally hundreds of thousands of citizens trying to flee the city by one escape route or another. But almost all of the city's bridges and tunnels were closed. And so were the ferries. To most New Yorkers, and the tens of millions of their horrified countrymen looking on through television, there seemed to be absolutely No Way Out.

Dunkirk in the Port of New York

As it has so many times before, the United States Coast Guard came to the rescue and quickly improvised an almost perfect plan of attack by using the city ferries and scores of yachts, sailing vessels, and other small craft to carry out an evacuation larger even than the legendary Dunkirk evacuation carried out by the British in the early years of World War II. It is worth recalling that much of the success of that evacuation, which resulted in the safe return to England of almost 350,000 troops–who thus would live to fight another day--was due to the efforts of the yacht owners, weekend sailors, and other private citizens who risked their own lives to cross the English Channel time after time to rescue the troops who had been left stranded on the Dunkirk beachhead. Before the global war on terrorism is ended, the private citizens of the United States may have to face similar or even greater challenges.

The Coast Guard had been the premier federal first-responder agency long before 9/ll, of course, and, with FEMA (the Federal Emergency Management Agency), had considerable experience in working with local police and fire departments. This time it received a huge helping hand from the U.S. Navy. Within minutes after the word had flashed through Washington about the attacks on New York City, Chief of Naval Operations Admiral Vern Clark called Admiral James M. Loy, the commandant of the Coast Guard (and now the Under Secretary of the Department of Homeland Security), and asked, "How can we help?" The two leaders quickly agreed on a plan through which the Navy would put its East Coast ships and personnel to work helping out the Coast Guard not only with the evacuation but also with the USCG's everyday duties and responsibilities up and down the coast.

What has happened since 9/11, of course, is that all of the nation's armed services, and many other federal offices and agencies, have joined the first-responder community. In the mid-1990s, the U.S. Marine Corps, which for many years has been probably the most forward-looking of all the services in planning for tomorrow's unforeseen attack, formed an inelegantly named emergency team called CBIRF (Chemical/ Biological Incident Response Force)—not to fill a perceived Marine Corps need but as a national asset that could be used by the commander in chief to cope with any disaster, civil or military, that might develop in the future. As it turned out, the CBIRF was needed, and was used to good effect, to cope with the anthrax-by-mail incidents that cleared out Capitol Hill a few weeks after 9/11.

The Air Force, which patrolled the nation's skies during and for several weeks after 9/ll—and was prepared, if necessary, to shoot down unidentified aircraft that did not quickly and accurately identify themselves—also is on the first-responder team. So are the U.S. Army, the nation's Guard and Reserve components, the Coast Guard Auxiliary, the American Red Cross (a charter member of the team, it should be noted), and scores of other private-sector organizations and associations.

DHS, Congress and the Private Sector

All of which helps, but is only the beginning. There is still considerable work to be done. The Department of Homeland Security has been well and truly launched, but still has a host of organizational issues to resolve—which was foreseen when the controversial but absolutely necessary decision was made to form a major new federal department from 22 previously scattered offices and agencies.

Congress also has some extraordinarily complex legislative, jurisdictional, and budgetary problems to cope with—and not much time to do it, because the entire federal government is now on a fast-moving train. The first responder community is no longer restricted to firemen, policemen, nurses and doctors, and other local agencies. It is now citywide, countywide, statewide, and federal. And, as the tsunami relief effort demonstrates, rapidly becoming international.

In some areas, the private sector has taken the lead—for example, in the development, testing, and production of detection equipment, communications systems, and armored vests and other personal-protection gear. Some colleges and universities now offer undergraduate courses and even degrees in domestic preparedness, terrorism and counterterrorism, and building, business, and cyberspace security. War games of ever-increasing complexity are now being fought both at the highest levels of government—some of them requiring the personal participation of the president—and at all of the nation's senior service schools. Almost all of Washington's think tanks now have preparedness professionals on their staffs, and many of them double as faculty members at

Georgetown, The George Washington University, and other colleges and universities.

The terrorists behind 9/11 and other international crimes, and the ill-advised nations that support terrorism in various ways, are counting on the so-called "spiral of fear" to win their unending war against the free nations of the world. The continued growth, professionalism, and diversity of the U.S. and allied first-responder community is, in contrast, a spiral of hope - - and the most important and effective tool available to the leaders of the Free World today. And tomorrow, and far into the future.

There is light on the horizon. Whether it is the twilight of civilization, or the dawn of a new day for all peoples of the world, has yet to be determined.

Readiness, *from page 1*

Another high-priority goal should be to develop an overall plan of action to strengthen the preparedness capabilities throughout this entire community of interest. In practice, however, it seems that DHS is focusing—initially, at least—on expanding the margins and redefining how national preparedness training programs should and will be developed, and implemented, through a meaningful and balanced investment of taxpayer dollars.

The question arises, therefore: How does one connect HSPD-8 and the *standards* developed for a first-responders training program to achieve a useful measure of readiness?

Some of the complexities involved in the creation of useful, and workable, standards have their origin in the Nunn-Lugar-Domenici Domestic Preparedness Program, which was created in accordance with the provisions of Public Law 104-201 (the National Defense Authorization Act). A major goal of that program was to improve domestic preparedness by providing selected cities the training and equipment they would need to more effectively manage the consequences of possible terrorist attacks involving weapons of mass destruction (WMDs).

The authorizing legislation designated the Department of Defense (DOD) as the lead agency in what obviously would have to be a major collective effort, and identified the other federal government offices and agencies that would be participating. The U.S. Army's Chemical and Biological Defense Command was the first agency tasked to design a "train-the-trainer" program that could build on the existing knowledge and capabilities of the local first responders—fire, law enforcement, medical personnel, and hazardous materials technicians—who would have to deal with a WMD incident during the first hours.

A Fast Clock, and a Short Calendar

Since then, each service has attempted to develop its own unique training program, rather than rely on a standardized approach. This has led to the growth of a bumper crop of training issues, problems, and complications. One result is that today, more than three years after the terrorist attacks of 11 September 2001, the United States is still unable to accurately measure either the overall level of national preparedness or the probable level of local and national response capabilities when—not *if*, it is always emphasized—there is another terrorist attack.

A reasonably thorough examination of the 9/11 Commission report www.9-11commission.gov/ and Arlington County After-Action Report: www.co.arlington.va.us/ fire/edu/about/pdf/after_report.pdf validates the concerns many officials, at all levels of government, have voiced about the lack of standardization. The bottom line is that DHS now has an even more difficult job to complete—but only a short period of time within which to improve on, consolidate, and reconcile the programs already created by a number of other agencies.

One of the principal focal points as the agency seeks to fully implement HSPD-8 is to establish readiness metrics and other tools that can be used to support the national preparedness goal. This encompasses, among other things, the development of standards for preparedness assessments and strategies, and the creation of a workable system to support the assessment of the overall U.S. ability to respond to major events and incidents, especially those involving acts of terrorism. Success can be demonstrated, at least in part, when readiness equates to effective and efficient plans, training, and exercises.

For first-responder offices and agencies that developed, purchased, or received homegrown train-the-trainer programs and/or independent-contractor packages, the solutions they now possess can soon become outdated. HSPD-8 dictates that these types of first-responder training programs, when fully executed, must be in alignment both with the standardization guidelines set forth in the directive and with the national preparedness goals also set forth in that document. Governmental and nongovernmental standards-making bodies will therefore have to consult closely with one another in order to apply or develop nationally accepted standards.

Customizing the Matrix

One of the many objectives set for American National Standards Institute (ANSI) workshops that have been developed is to identify existing standards. Those include, but are not limited to: standards under development; gaps in the standardization of training programs for first responders that will be dealing with WMD events; and any existing or required conformity-assessment programs.

ANSI's first-responders training workshops will seek to capture this information in a matrix structure and classify the standards in accordance with DHS Office of Domestic Preparedness (ODP) guidelines, and will include the following sectors in the matrix:

- Private sector
- Law enforcement
- Fire service
- Public works
- Public health
- Emergency medical services (pre-hospital)
- Hazardous materials
- Public information
- Health care
- State and local emergency management

Customizing the standards appropriate to each of these sectors should ensure that the relevant content and accepted methods of delivery comply with the training standards necessary for the first responders in each sector to perform their assigned missions. The standards also will have to be embedded, by service designation, in the tasks associated with the Universal Task List (UTL),

In a perfect world, the HSPD-8 readiness metrics system should be able to support the assessment of the nation's overall preparedness to respond to major events, especially those involving acts of terrorism. However, herein lies the Gordian's knot created by HSPD-8. It is almost paradoxical that, although many questions raised when the umbrella term "achieving readiness" is discussed are simple to state and easy to understand, the *answers* to those questions require a deeper and more intricate understanding of the assessment "platforms" used and the politics behind them.

In that context, a theoretically balanced investment means standardization within, and taking cognizance of, the following:

- The development of a standardized national WMD exercise assessment methodology (covering joint jurisdictional responses—i.e., local, state, federal, and tribal, as well as joint civil-military);
- A standardized extent of play that encompasses the UTL taxonomy;
- Taxonomy that connects UTL tasks with the organizations participating in each task; and
- A supporting standardized corrective-action process in which each of the discrepancies noted will address deficiencies—of policy, organization, training, materials/ equipment, leadership, personnel, and facilities—in the response programs of the local, state, federal, and tribal governments participating.

To achieve a standard level of readiness, participants must have the analytical tools necessary both to streamline the time it takes to produce requirements and to ensure the accuracy of the information needed to connect the dots.

As DHS looks downward in its efforts to develop appropriate standards for national use, it must recognize that the first-responder organizations at lower levels of government are looking *upward* for guidance, while at the same time collaboratively developing their own standards for national preparedness.

Technology Alert

By Rob Schnepp
Fire HAZMAT Channel Master

Performance Standards Introduced For Rapid Biological Field Tests, AOAC International Approves RAMP Following US Department of Homeland Security Sponsored Evaluation

The anthrax incidents in the fall of 2001 served as a wake-up call to the nation's emergency-response community. The onslaught of suspicious powder calls, following so closely on the 9/11 terrorist attacks, revealed how unprepared the United States was at that time to handle any sort of suspected biological agent. There were some agencies that had their act together back then, but for the most part, the nation's fire departments were collectively learning-on the job, in real time–how to deal with anthrax. It was a baptism by fire–or, more correctly, perhaps, a baptism by talcum powder, sheet rock dust, sugar, flour, and cornstarch. The upside was that first responders learned a lot of valuable lessons-including the fact that the field-level biological-detection technology then in place was woefully inadequate.

At the height of the anthrax hysteria, the White House Office of Science and Technology Policy (OSTP) issued a formal statement recommending against the use of hand held immunoassay (HHA) devices for detecting biological agents. Quite an untimely statement, considering that police and fire agencies were swamped with suspicious powder calls, and many already were using HHAs. Needless to say, that and a similar statement by the Department of Health and Human Services created quite a stir.

What to do? The government was saying not to rely on the technology available--but there wasn't anything else available, and something, almost anything, was needed. In response, the bio detector marketplace exploded. Vendors of all kinds rushed products to market in an effort to capture a piece of the biological detection pie and, although many of them would not't say it publicly, the fact is that some of the detectors were sketchy at best. There were, and still are, some poorly made and poorly performing biological detectors. Until recently, there really was no way to verify that a particular biological detector would perform as promised. Worse yet, there were no repercussions for those vendors selling devices that did not live up to their claims.

Testing Validating, Verifying

Fast forward to the present day and the new world of biological detection. Recently, a coalition of U.S. government agencies funded by the Department of Homeland Security–i.e., the CIA, the FBI, the U.S. Postal Service, and the Food and Drug Administration–joined forces with the vendor market and the American Association of Analytical Chemistry (AOAC) to develop reasonable performance standards for HHAs. A task force formed by the coalition looked specifically at anthrax detection and spent 16 months testing an array of detectors. At the end, only one detector, the RAMP System built by the Response Biomedical Corporation of Vancouver, Canada, met the testing criteria for anthrax detection. The RAMP Anthrax Test is now laboratory-tested and has been approved by AOAC in accordance with the organization's Performance Tested Methods and Official Methods of Analysis.

That is quite an accomplishment, considering the demanding nature of the process and the prestige of the AOAC. The process was so rigorous in fact, that an AOAC representative said the organization had never participated in such a comprehensive test. That is a remarkable statement from a world-renowned nonprofit scientific organization with a 120-year history of evaluating analytical methodology.

Joanne Stephenson, vice president of business development for the Response Biomedical Corporation, commented on the new performance standards as follows: "The whole process was really driven by the first-responder community. After the anthrax attacks, a lot of products came out and not all of them were good. Unfortunately, the first responders had no way of knowing whether or not a particular detector could do what it said it could do."

Stephenson accurately summarized a long-standing deficiency in the field of biological detection: obtaining, and/or validating, reliable information about the performance of a detector. "It's all about being an informed buyer," she said. "Independent validation by a reputable third party goes a long way to provide the end user with peace of mind."

Anyone needing additional assurance will take comfort from the fact that the new performance standards have plenty of independent evaluation and subsequent validation. The AOAC organized 12 laboratories across the United States to assess the performance of the RAMP system and other candidate detectors.

"This is only the beginning," Stephenson said. "Performance standards for other biological agents are in the works." The performance standards will have a significant

impact on the marketplace, she also said. "I think we'll see a shake-up across the board in biological detection. Primarily, I can see future grant moneys tied to approved products. I also see buyers having more concrete and reliable information at their disposal. If you have faith in the performance standards, then you should have faith in the machines that gain approval."

Performance standards are important, but there are other factors to consider when purchasing a biological detector. Among those factors is adaptability. Buyers should also consider how quickly the technology could be adapted to address an emerging threat. "That's absolutely critical," Stephenson says. "You want technology that is versatile. If the threats change, the machine should be able to adapt."

The RAMP System is a good example of adaptable technology. The system's small hand-held reader provides results in 15 minutes and is simple to use: A swab sample is placed in a cartridge and inserted into the reader, and the machine does the rest.

For anthrax, 4,000 spores is the threshold for a positive result. That amount of anthrax, Stephenson says, would fit on the head of a pin. Test cartridges for ricin, smallpox, and botulinum toxin also are available for the RAMP system. All the user has to do is match the suspected agent with the appropriate test cartridge.

Bill Radvak, president and CEO of Response Biomedical, said in a recent news release focused on the importance of the new performance standards that the company "applauds" the Department of Homeland Security "for commissioning a definitive evaluation and facilitating the introduction of prescribed performance standards to enable first responders to make informed purchasing decisions."

Radvak is obviously correct about the importance of making informed purchasing decisions. Never before have the nation's fire services been in such need of credible information about specialized equipment. New products are coming to market at a head-spinning pace, and it has become increasingly difficult to separate the wheat from the chaff.

The trend toward government-driven validation seems to be a positive step forward that will help government agencies-local, state, and national–spend the taxpayer's precious dollars on proven technology.

The Synergy of Security: Protecting Global Trade

By Bonni Tischler
Customs & Borders Channel

The typical American customer may start his or her shopping day with a specific list but will soon be cruising the aisles looking at all of the diverse merchandise available today in a million stores throughout the nation—and until a decade or so ago never available to anyone (kings, peasants, or paupers) anywhere in the world.

The difference is today's truly global trade environment. From foodstuffs and paper goods to wines, electronics, crystal, jewelry, tires, tools, household goods, books, clothes, decorator and garden items, and hundreds of other items ranging from the commonplace to the exotic, thousands and thousands of containers–from Asia, Africa, Central and South America, and the Pacific—filled with such merchandise come into America's seaports every day of the year.

Which is good news for consumers—but could be a major security problem as well. In today's world, any major disruption of international trade would have a huge economic impact on consumers and producers alike.

The war on terrorism has placed a much stronger focus on the nation's, and world's, economic supply chains. According to 2002 statistics, U.S. Customs and Border Protection (CBP) processed almost 21 million trucks and sea containers crossing the nation's borders that year. The fact is, not just corporate profitability but the whole American economy is dependent on the smooth, secure, and timely delivery of goods to consumers in America.

A Profitable and Patriotic Partnership

Corporations can play, and are playing, an integral role in helping to mitigate the potential for WMDs (weapons of mass destruction) and/or other potentially harmful contraband from entering the United States by sea. Fortunately, helping to improve security is not only the right and patriotic thing to do, it also helps business. Some companies have chalked up major savings in their bottom line, in fact, by participating in several DHS (Department of Homeland Security) initiatives that have been implemented in recent years. Security has definitely migrated into the realm of best practices.

The most important of the DHS initiatives are CTPAT (Customs and Trade Partnership Against Terrorism), CSI (the Container Security Initiative), OSC (Operation Safe Commerce), and several separate but

interrelated programs related to, and improving, maritime port security.

CTPAT was formed as a joint government-business partnership to offer businesses an opportunity to play an active role in the war against terrorism and to help push U.S. borders back to an import's point of origin.

Corporations whose businesses (and profits) require efficient and secure importing operations have made joining CTPAT a top priority because CBP immediately rewards its private-sector partners financially by, among other things, giving them "fast lane" border processing and other important incentives.

CSI was designed to interdict terrorist imports (of WMD components, for example) in non-U.S. ports. It does this by targeting and inspecting suspect containers prior to their departure from foreign ports. Because over 200 million containers move internationally, it is important to the world economy to validate their security as close as possible to their points of origin. Despite some initial concerns about international cooperation, the CSI program has enjoyed an enthusiastic reception from America's major trading partners throughout the world.

A Unique Opportunity for Progress

OSC is a separate but closely related DHS program designed to explore commercially viable options to increase security in international supply chains from the point of origin to the point of destination. It also serves as an operational test-bed to define and determine "best practices"—particularly in policies and procedures, as well as in the effectiveness of enabling technology designed to increase the security of container shipments. OSC projects are currently underway in the ports of Seattle, Tacoma, New York, New Jersey, and Los Angeles and Long Beach.

Recent maritime/port security legislation, driven by homeland-security concerns, requires various sectors of the U.S. maritime industry to implement a broad spectrum of measures designed to protect the nation's ports and waterways from terrorist attack.

Those measures include but are not limited to security assessments, the development of security plans and designation of security personnel, and training and drills as well as the drafting and implementation of appropriate preventive contingency plans.

Collectively, the initiatives already taken represent a synergistic and proactive approach to providing security in a highly sophisticated and truly global trade-based economy. The international community is dependent on free flowing and quick moving goods and services, delivered in a timely manner.

Companies involved in international trade today have a rare—indeed, almost unique--opportunity to join forces with the United States and other nations in protecting the world's supply chains and the oceanic trade lanes that benefit the whole global economy.

Tokyo, Graniteville & Innocent Children

By Joe Cahill
Emergency Medicine Channel Master

Regardless of what they are called–WMDs (weapons of mass destruction) or CBRNEs (chemical, biological, radiological, nuclear, or explosive weapons)–the killing tools available today are extremely lethal, and, are not limited to the military forces of nation states but also available to an increasingly large number of terrorist groups. This is troubling enough, but, in the case of chemical weapons equivalent agents can be purchased from materials available at the local hardware or farming-supplies store or in local industry. Chemical warfare agents have been in the forefront of community as well as national disaster planning since the 1995 Sarin attack by Aum Shinrikyo, the doomsday cult that released Sarin into a crowded Tokyo subway at rush hour. This real-life terrorist incident quickly became the model scenario for cities (and nations) around the world developing plans to cope with a chemical attack. These scenario begin with the use of chemical weapons against a large group of civilians present in an everyday "mass gathering"–e.g., at a movie theater, attending a sports event, in church–or using a subway, train, or other means of mass transportation.

Planning, Practicing, and Training

To be effective, the preparations to cope with such an attack must necessarily begin long before the attack itself. The first responders assigned responsibility for dealing with the attack must have participated, at a minimum, in an awareness-level class focused on WMD and/or CBRNE scenarios. (Information on such classes is available online from the National Fire Academy). That is only the start, though. Plans also have to be in place for the mass decontamination of victims. Stocks of antidotes to a broad range of chemical agents have to be purchased, stored, checked periodically, and made quickly available on short or no notice. A communications, coordination, command, and control plan involving all elements and layers of the

local first-responder community--the EMS, fire and police departments, for example, nearby hospitals and clinics, the mayor's office, even the media--has to be developed, discussed, and distributed. And it has to be taken seriously. This means that on-hands training sessions--several of them, ongoing--also will be required, and attendance/participation must be made mandatory. All of the preceding is now standard operating procedure in a number of communities heeding the federal government's warnings about the possibility of a terrorist attack involving WMDs or CBRNEs. But those preparedness plans focused on the use of chemical weapons address only part of the problem--the assumption that chemical weapons would be used. Probably only a few of those plans focus on the equal or perhaps greater possibility that nonmilitary--i.e., industrial--chemicals might instead be the terrorists' weapon of choice. Chlorine gas is used every day for water treatment, cyanide is used for metal plating, and a host of other deadly poisons are used in or transported through the average community every day. In fact, according to EPICURE (the Emergency Planning and Community Right-to-Know Act) and section112(r) of the Clean Air Act there are almost 1,800 chemicals routinely used in the United States that are classified as hazardous, extremely hazardous, or toxic. Each of these classified chemicals must be reported if released. These industrial chemicals, which pose a real and present danger to the public, are a major temptation to terrorists. As noted above, most if not all of them are readily available for purchase by any legitimate business--or they can be stolen from their legitimate users. By comparison, chemical-warfare agents are tightly controlled and either have to be purchased, manufactured--an expensive and complex process, usually--or smuggled into the country and to their intended target.

The Ingenious Use of Everyday Artifacts

As horrific as the Tokyo subway incident was, the number of dead (12) or critically ill victims was relatively low--primarily because of the almost ludicrously ineffective "delivery system" used by Aum Shinrikyo, which carried out its attack by popping a balloon filled with Sarin. Effective dispersal is not just a simple matter of pouring the chemical on the ground, or throwing it into the air; it takes technology.

More recently, the crash of a Norfolk Southern freight train in Graniteville, South Carolina, released chlorine gas into a modestly populated area, killing eight people. Consider the difference in population of these two communities, Tokyo had a population of 11,500,000 in 1995 and Graniteville, SC had a population of 7,000 in 2000 (The most recent year the census was taken). When the numbers of dead and injured are compared in this context, the magnitude of the Graniteville crash pulls into clearer focus.

While the amount of chemicals involved in the South Carolina crash was dramatically greater than the amount of Sarin used by Aum Shinrikyo, it was not an unusual amount of chlorine to be transported by rail. Which means it is a volume of chlorine that would be available to terrorists should they get control of this portion of the chemical-transportation infrastructure. Although still being investigated, the Graniteville incident appears to have been purely accidental, and is mentioned here only to illustrate the magnitude of an incident that could be generated by an attack on the nation's chemical infrastructure.

One of the principal lessons learned from the 9/11 terrorist attacks is that terrorists can be ingenious in using normal components and artifacts in the everyday world to achieve horrendous results. Only Tom Clancy, some specialists in the national intelligence community (i.e., the FBI and the CIA), and a few world-class counter-terrorist experts in the private sector-- Neil Livingstone, for example, in a late-1990s article in the Navy League's Sea Power Magazine--ever envisioned that a commercial airliner could be used as a weapon. A fallout benefit of preparing for a terrorist attack using industrial chemicals is that it also helps first responders prepare to deal with the accidental or unintentional spill or release of those same chemicals. Any discussion of terrorists' use of chemical weapons starts an inevitable spiral of fear. The images of dead Kurdish children, killed by Saddam Hussein's troops in March of 1988, have made the specter of chemical warfare one that looms over the American consciousness--and for that very reason makes chemical weapons an even more attractive option for terrorists. But the fear of chemical weapons also can be used to divert attention, and funds, from other types of terrorist attacks.

Preparation: The Most Effective Antidote

For reasons not fully explained by DHS, the preparation of defenses against industrial hazardous materials has been specifically excluded from the list of authorized expenses for many of the department's major domestic-preparedness grants. This preparation is invaluable to the protection of the average American community.

Pre-identification of potential chemical hazards is one of the keys to reducing risks, because in this case forewarned truly is forearmed. From a medical emergency planning perspective, the knowledge that a local business or

laboratory possesses specific toxic chemicals for legitimate use facilitates the preparation of defenses against accidental (or intentional) release.

Such preparation can take that many forms, including staff in-service training--for which the owner of the business using the chemical might be willing, if only as a helpful exercise in public relations, to provide and/or pay for the technical experts carrying out the training. There are well-known antidotes for some chemicals that can be purchased if the threat is high enough--e.g., cyanide, for which there are even commercially available antidote kits. Plans also have to be in place for the mass decontamination of victims. A communications, coordination, command, and control plan involving all elements and layers of the local first-responder community--the fire and police departments, for example, nearby hospitals and clinics, the mayor's office, even the media--has to be developed, discussed, and distributed. And it has to be taken seriously. This means that on-hands training sessions--several of them, probably--also will be required, and attendance/participation must be made mandatory.

These are the same steps listed above as the recommendations for preparation for a chemical weapons attack. One of the most important lesson to be learned is not that there are deadly chemicals innocently available in any of the nation's communities, or that chemical weapons could be in the hands of America's enemies, but that the steps for preparation to deal with one are not significantly different from the preparations for the other.

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