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Business Office
517 Benfield Road, Suite 303
Severna Park, MD 21146 USA
www.DomesticPreparedness.com
(410) 518-6900

Staff
Martin Masiuk
Publisher
mmasiuk@domprep.com

James D. Hessman
Editor in Chief
JamesD@domprep.com

John Morton
Strategic Advisor
jmorton@domprep.com

Susan Collins
Creative Director
scollins@domprep.com

Catherine Feinman
Customer Service Representative
cfeinman@domprep.com

Carole Parker
Database Manager
cparker@domprep.com

Advertisers in This Issue:

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Editor's Notes

By James D. Hessman, Editor in Chief

Biologicals and biotoxins, the CBRNE monopsony, inclusion of public works agencies in disaster planning, great expectations for AHIMTA, and a possible Libyan uptick in arms sales – those are some of the more timely topics covered in this month's printable issue of the DomPrep Journal. But the 14 authors included in the issue discuss several other important subjects – e.g., the need for a pen-and-paper backup plan, the best-practices value of a common operating picture (COP), and a personal guided tour of the hospital ship USNS Comfort.

Heading the list of national-level issues covered are two White Papers by: (a) Dr. Craig Vanderwagen, whose five-part plan on "Implementing the National Health Security Strategy" outlines a practical, and affordable, strategy for the federal government to get "from here to there"; and (b) John M. Contestabile, who discusses the urgent need for more effective information sharing in the aftermath of "chemical incidents" anywhere in the country.

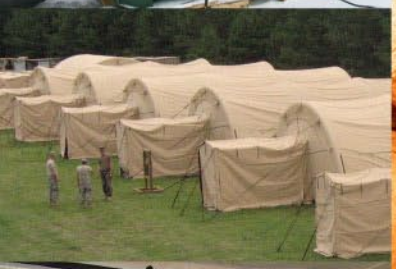
First, though, Richard Schoeberl – a counterterrorism expert frequently consulted by foreign governments as well as U.S. agencies – kicks off the issue with a perceptive analysis of the increasing dangers posed by terrorist possession of CBRNE (chemical, biological, radiological, nuclear, explosives) weapons and devices. At least one of those weapons, according to the CIA, may well be used against the United States or one of its allies within the next two years or so. The current conflict in Libya – a notorious arms supplier, Schoeberl points out – could result in the looting of Libya's weapons depots and hasten the current Doomsday scenario.

Diana Hopkins ups the CBRNE ante by providing a helpful "shopping list" of various biologicals, easily obtainable by terrorists and scientists alike, that could be used to start a biological pandemic. She also points out that recent advances in biocatalysis, metabolic engineering, and biopharming make the mass production of biotoxins not only easier but also less costly. Stephen V. Reeves adds a persuasive analysis of the need to maintain the CBRNE "industrial base" – a difficult task in a tight economy, and even more so when the government is the only (i.e., monopsony) major customer.

Elsewhere in the issue: (a) Steven Grainer reports on the need for improved all-hazards planning – followed by frequent and effective training – at all levels of government, and points out that establishment of the All-Hazards Incident Management Team Association (AHIMTA) is a giant step forward in that area. (b) Raphael Barishansky discusses the "anatomy" of an Emergency Operations Plan and the many intricacies involved in "planning the plan" (by ensuring, among other things, that all stakeholders are invited to the planning sessions – and, it is hoped, actively participate). (c) Michael E. Forgey reviews the lessons learned from previous chemical incidents and the many value-added benefits derived from early and comprehensive development of a common operating picture available to all responding agencies involved in a specific incident. (d) Joseph Cahill draws on his decades of operational experience to remind those same agencies to always have a backup plan available for the rare but inevitable situations when communications fail or other unforeseen mishaps occur. (e) David Geary and Tracy Fessler make a strong case for ensuring that public-works agencies are represented in the supposedly "all-inclusive" emergency-response planning meetings – which in some U.S. jurisdictions are still restricted to senior political officials and other favored "insiders."

Catherine Feinman rounds out the issue on an upbeat note with a heartwarming report on the extremely important but much under-publicized diplomatic and humanitarian role played by the aforementioned USNS *Comfort*, and Adam McLaughlin provides an informative quartet of recent newsworthy events in the great states of Alaska, Georgia, New Jersey, and Ohio.

About the Cover: Susan Collins' arrangement, for this CBRNE issue, of an emergency responder wearing, as an essential component of his personal protective equipment, an AVON Protection C50 mask fitted with a CBRN F12 filter (chemical barrels in background from istock photo).



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CBRNE: Warnings Heard, But Not Heeded!

By Richard Schoeberl, Law Enforcement

The realities of ever-changing threats are becoming an increasingly more important factor for the United States and its allies to consider in updating their contingency plans. One example: During the last fiscal year alone, the U.S. Army's EOD (Explosive Ordnance Disposal) teams responded to almost 250 U.S.-based CBRNE (chemical, biological, radiological, nuclear, and/or high-yield explosive) incidents. Recognizing the increased gravity of the CBRNE problem, the Office of Inspector General (OIG) recently addressed a report related to the Department of Homeland Security's (DHS) efforts to firm up critical incident-management plans associated with CBRNE incidents (as well as those caused by natural disasters). Somewhat alarmingly, the OIG report indicated that DHS is "making progress" – even though a seamless plan is not yet in place or even close to completion.

Today, the United States is still not well prepared to deal with a large-scale CBRNE terrorist attack – even though the Commission on the Prevention of Weapons of Mass Destruction (WMD) Proliferation and Terrorism issued a failing report over a year ago concluding, among other things, that the nation was at that time "not fully prepared to provide a coordinated response to a WMD incident." More recently, Commission members issued another strong warning, as follows: "Unless the world community acts decisively and with great urgency, it is more likely than not that *a weapon of mass destruction will be used in a terrorist attack somewhere in the world by the end of 2013 [emphasis added]*."

The counterterrorism community continues to be concerned about CBRNE attacks and is still not sure how to defend against them. The possibility of another catastrophic scenario similar to the actual release, on 20 March 1995, of a sarin nerve-agent gas in a crowded Tokyo Subway – which killed 12 people and injured several thousand more – is becoming more likely. The Tokyo attack was relatively simple in nature – Aum Shinrikyo, the organization responsible, merely filled a number of plastic bags with toxic gas and left the bags on subway trains.

Mass transit systems in major cities such as Washington, London, New York, Chicago, and Madrid are highly susceptible to the same type of synchronized attack, and there are few or no countermeasures currently in place – in those cities and most others – to protect those systems. Moreover, although sarin gas itself is not easy to produce, there are other toxic chemicals readily available that might also be used.

"Little or No Training" Needed by Terrorist Volunteers

A mounting concern related to the possibility of such an attack continues to escalate. Not too long ago, the Federal Bureau of Investigation (FBI) warned U.S. law-enforcement agencies, in one of its weekly intelligence bulletins, about the threat of a chemical attack by groups, or even individual terrorists, trying to make improvised chemical weapons. According to the FBI, "recently obtained information" reinforces the fact that "a chemical weapon made with easily available items … could produce toxic gas

such as hydrogen cyanide or chlorine gas." In addition, the agency pointed out, "little or no training" would be "required to deploy such a device, due to its simplicity." The FBI statement substantiates previous warnings that al Qaeda is, and has been, plotting new attacks against the United States that could and probably would be launched against such "soft targets" as malls and hotels, and in enclosed areas such as U.S. subway systems.

International counterterrorism agencies also can no longer overlook the worst-case scenario or "small-percentage" threat posed by a CBRNE attack; al Qaeda leaders already have made it known, in fact, that they are attempting to acquire CBRNE weapons and devices. Significantly, a major immediate concern for U.S. officials that escalated to a much higher level within the past several days – i.e., since the imposition of the No Fly Zone policy against Libya – is how far Moammar Qaddafi is willing to go to defeat the rapidly increased threat to his regime. According to U.S. and allied intelligence sources, Libya is believed to possess an estimated 9.5 metric tons of mustard gas and various quantities of other chemical weapons.

Whether Qaddafi expands the current violence by bombing Libyan cities and/or using chemical weapons, the international community should be prepared to deal with the consequences of such actions – which might even include the weapons falling into the hands of terrorists. In that context, it should be remembered that, for about two decades (during the 1970s and 1980s), Libya was a major arms supplier for many terrorist organizations. The ongoing conflict in Libya can still not only provide terrorist organizations a safe haven but also lead to increased transfers, to terrorists from Libya's arms depots, of CBRNE systems and devices as well as other weapons.

Libya has publicly admitted to producing tons of mustard gas in the past, and Libya's military arsenals are known to contain ammunition capable of delivering chemical agents. Mustard gas, first used in combat by the German Army in World War I, is an odorless gas that can take up to 12 hours to take effect – and can remain in the soil for weeks thereafter. Even small amounts of mustard gas, combined with high-yield explosive devices – also quickly available in Libya's warehouses – could cause truly catastrophic damage, including both internal and external bleeding. The immediate effects are not only long lasting but also very painful – it usually takes four or five weeks for anyone exposed to mustard gas to die from the poisoning effects.

Chaos in Libya: The Fallout Effects and Other Dangers

Of particularly grave concern is the large quantity of Libyan weapons that have already entered circulation, particularly in countries where there has been little government control. Because of their relatively low cost and ease of manufacture, chemical weapons have long been considered "the poor man's atomic bomb." The international community may therefore soon see al Qaeda's WMD threats become a grim new reality, particularly if chemical weapons looted from Libya's arsenals end up in the hands of terrorists and/or on the international black market in such weapons.

There are several other disturbing factors substantiating the need for improved preparations in dealing with terrorist attacks, specifically when CBRNE weapons are or might be involved. Incident management planning is one of the more important of those factors. The United States realized shortly after Hurricane Katrina made landfall in Louisiana in late August 2005 that a need for greater integration and synchronized preparedness in the coordination of efforts was urgently needed – not only at all levels of government (federal, state, and local) but also in the private sector and in NGOs (non-government organizations). The concept of a truly national counterterrorism plan was then in its infancy stages, of course – but more than six years later such a plan has still not been implemented. Moreover, unlike a number of other nations, the United States does relatively little to integrate its own counterterrorism plans with those of its closest neighbors, Canada and Mexico.

Meanwhile, the member states of the European Union (EU) have been urged for years to include the risk of CBRNE in their own emergency response plans. Presidents and prime ministers have called on all EU states to incorporate the CBRNE risks into plans, integrate the different elements, carry out multinational simulation exercises, improve the exchange of information, and raise the public awareness in general about the possibility of a CBRNE attack. In response, the EU has made efforts since 2002 to respond to CBRNE attacks, and in 2008 established a database on CBRNE terrorism-related events and on materials that might possibly be used in a future attack.

Today, U.S. and allied defense experts usually agree that there is an increasing likelihood that multiple incidents, if planned by al Qaeda, may well occur simultaneously – e.g., simultaneous attacks on several different stations in public transit systems.

When allocating resources, therefore, governments would be well advised to consider and plan to respond to multiple incidents of the same type, particularly if coupled with terrorist incidents of different types, at either the same or different geographic locations – e.g., several subway stations within the same city. Coordination and training are not only the cornerstones of both deterrence and response in such situations, but are now paramount. Multiple incidents would invariably require the coordination and cooperation of various government response agencies, whose efforts would be coupled with multiple regional, state, and local jurisdictions – a further necessity in incident management planning.

NIPP Plus HSPD-7, but No Bullets

To address the lack of incident management planning, the National Infrastructure Protection Plan (NIPP) was established to create a comprehensive nationwide framework that provides structure to the integration of national response resources. NIPP was created by then President George W. Bush in reaction to the attacks of 11 September 2001 with the signing of Homeland Security Presidential Directive 7 (HSPD-7), which ordered the development of such a plan. In 2003, Bush ordered DHS to complete the plan within a year – the department missed that deadline, but in 2005 then-DHS Secretary Michael Chertoff announced the completion of an Interim NIPP that was not "a comprehensive plan" for protecting critical infrastructure and was often criticized for that deficiency (and for a number of other reasons).

In 2006, DHS completed the NIPP, claiming that it was the most comprehensive risk-management system ever available defining critical infrastructure protection roles and responsibilities for all levels of government, private industry, nongovernmental agencies, and tribal partners. Nonetheless, and even though the NIPP continues to be updated, many requirements are still not being met effectively.

Although lacking in certain other respects, NIPP does however provide a consistent plan for agencies (federal, state, local, and private-sector) to work toward a safer, more secure nation based on cooperative efforts in preventing, deterring, neutralizing, and mitigating the effects of a terrorist attack or similar emergency, including a natural disaster. Protecting the U.S. infrastructure necessarily starts with preparedness – a goal that encompasses several factors including planning, organizing, training, equipping, exercising, evaluation, and the taking of corrective action if, as, and when needed. However, when one component of the preparedness circle is not effective, the entire process is crippled. Agencies that are able to effectively plan and organize, for example, but are not provided the funds needed to properly equip and train their personnel, can handicap the entire progression.

Not incidentally, the claim sometimes made that chemical weapons would be difficult for terrorist organizations to manufacture has been rejected by the Central Intelligence Agency, which points out that the clandestine production of chemical and biological weapons for multiple attacks should and would be no more difficult for terrorists than the production of narcotics would be for drug cartels. A worsening of the current conflict in Libya (or any other nation with chemical weapon caches) might quickly, and easily, put chemical weapons within the reach of terrorist groups. A continuous progression of planning, organizing, training, equipping, exercising, evaluating, and, when and as necessary, the taking of corrective action is required to maintain readiness for preparedness. Only through a consistent application of the NIPP guidelines by all of the public and private entities involved can this be accomplished effectively.

In short, governments should be prepared not only to prevent CBRNE attacks and protect their cities, and their citizens, against such attacks, but also to train first responders how to deal with a reactive or tactical situation – without becoming casualties of the attack. Far too often in the past, unfortunately, U.S. emergency agencies have not been adequately supplied and trained to deal with chemical attacks, especially on a large scale. Even today, agencies that have been organized in accordance with the NIPP guidelines – but have not been adequately funded to implement the NIPP model – will be in the position of a policeman carrying a gun with no bullets.

Richard Schoeberl has over 15 years of counterintelligence, terrorism, and security management experience, most of it developed during his career with the Federal Bureau of Investigation (FBI), where his duties ranged from service as a field agent to leadership responsibilities in executive positions both at FBI Headquarters and at the National Counterterrorism Center. During most of his FBI career he served in the Bureau's Counterterrorism Division, providing oversight to the FBI's international counterterrorism effort. Schoeberl also was assigned a number of collateral duties – serving, for example, as an FBI Certified Instructor and as a member of the FBI SWAT program. He also has extensive lecture experience worldwide and is currently a terrorism and law-enforcement media contributor to Fox News, Sky News, al-Jazeera Television, and al-Arabiya.

The Complex Biology of Chemical Threats

By Diana Hopkins, Standards

The 1925 Geneva Protocol banned the use of toxic chemicals and bacterial agents in war. However, 46 years later at the United Nations Disarmament Conference – in Geneva in 1971 – after it was determined that biological threats and chemical threats were different enough that they should be managed separately, the Protocol was amended. One result was that biologicals would thereafter be managed by the Biological and Toxic Weapons Convention (BWC) treaty, and chemicals would be managed by the Chemical Weapons Convention (CWC) treaty. Since the divergence of the two efforts, though, biological and chemical threats have been found to have somewhat more in common than was understood back in 1971.

The U.S. Centers for Disease Control and Prevention (CDC) currently recognize 10 *chemical* threat agents that straddle both the biological and the chemical categorizations because they are derived from *biologicals* – i.e., plants or animals. These chemical agents, which are called *biotoxins*, are:

- *Ricin* – a poison found in castor beans that disables cells from producing proteins, thereby causing death;
- *Abrin* – a ricin-like toxic plant protein found in "lucky bean" seeds that inhibits protein synthesis and causes severe cytotoxic effects intestinally (the "lucky" nickname derives from the fact that the seeds are sometimes used as lucky charms);
- *Brevetoxin* – compounds produced by a dinoflagellate called *Karenia brevis* (aka neurotoxic shellfish poisoning) that disrupts the body's neurological processes when ingested;
- *Strychnine* – a toxin found in the seeds of the *Strychnos nux vomica* tree that causes death by paralyzing breathing mechanisms;
- *Saxitoxin* – a shellfish toxin (aka paralytic shellfish poisoning) that paralyzes the body;
- *Colchicine* – an extract from plants of the genus *Colchicum* that causes death similar to deaths caused by arsenic poisoning;
- *Digitalis* – a plant that is extremely poisonous (ingestion of only a small amount can cause death) but interestingly, in a modified form, it can be used as a life-saving drug);
- *Nicotine* – can cause respiratory paralysis at toxic levels;
- *Tetrodotoxin* – toxin produced by symbiotic bacteria that inhabit certain fish, shellfish, and amphibians; and
- *Trichothecene* – a poison, produced by fungi, that decreases protein production, often resulting in death.

The Efficient Production Of Additional Complications

These 10 chemicals are usually produced by plants and animals, but can also be produced by other biological means. Using such technologies as biocatalysis, metabolic engineering, and biopharming, the chemicals can be altered in various ways, and produced on a larger scale. Biocatalysts are derived from living organisms and the enzymes are used to catalyze chemical transformations that can, for one thing, develop altered or enhanced functions in chemicals. Metabolic engineering allows the introduction of genetic material into plants/bacteria – which can then mass-produce the chemicals desired. Biopharming technology is similar to metabolic engineering, but the plants/bacteria produce therapeutic proteins.

Technological advances allow for the mass production of toxic chemicals by using certain supplies that are currently not tracked. Additionally, toxic chemicals can also be enhanced and altered in ways that render them more difficult to detect and track. So on the one hand, technological advances have led to the more efficient production of chemicals, and on the other that particular advance has greatly complicated the efforts of the CWC to control, track, and/or detect chemical threats on a global basis.

BWC and CWC officials are aware that there is a certain degree of overlap in their missions, and that this overlap creates a gap in chemical tracking due to the confusion in missions. Moreover, technological advances in biological production of chemicals has made the tracking of biotoxins increasingly more complex for the BWC and CWC as they work on improving their efforts in the areas of control, tracking, and detection of chemical threats.

Diana Hopkins is the creator of the consulting firm "Solutions for Standards" (www.solutionsforstandards.com). She is a 12-year veteran of AOAC INTERNATIONAL and former senior director of AOAC Standards Development. Most of her work since the 2001 terrorist attacks has focused on standards development in the fields of homeland security and emergency management. In addition to being an advocate of ethics and quality in standards development, Hopkins is also a certified first responder and a recognized expert in technical administration, governance, and process development and improvement.

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U.S. National Security: Does the Industrial Base Still Matter?

By Stephen V. Reeves, Viewpoint

As a nation, the United States is at a strategic inflection point. There are many difficult decisions ahead on dealing simultaneously with the U.S. economy, a national debt running into trillions of dollars, and both federal and state budgets. In that context, it is relevant to ask whether – with a myriad of such competing national priorities, does a specialized Chemical, Biological, Radiological, Nuclear, Explosives (CBRNE) industrial base still matter?

National security is traditionally an area in which there is general bipartisan agreement. During and since World War II, the U.S. industrial base has been a remarkable and unfailing source of innovation, development, production, and field support. However, the American people usually have relied on market forces to create and sustain the technological and industrial capabilities required to meet national-security needs – including such specialized technological needs as those involved in CBRNE operations. For the most part, and in most circumstances, this approach has worked well. However, today's circumstances are far from the "traditional" norm.

Today, what for more than seven decades was a major U.S. advantage in industrial capacity has largely evaporated. According to a December 2010 report by the U.S. Bureau of Labor Statistics, 99 of America's 100 biggest markets today have fewer manufacturing jobs than they did 10 years ago. During the same time frame, over 42,000 factories, large and small, closed. Adding to the difficulties of this situation are a fragile economy and an increasing interdependence between government policy, spending, and both large and very difficult economic consequences.

Capability by Design or Default?

The U.S. industrial base – particularly the sector that provides specialized CBRNE equipment and systems to everyone from first responders to both special and general-purpose military forces – is unique on several levels, especially in light of the following:

(a) Beyond its basic value in manufacturing capabilities, the industrial base is the primary source of the inventiveness, creativity, and technological innovation needed to maintain the U.S. competitive advantage against current and future threats. It is also the source of most of the specialized scientific and engineering talent distinctively focused on CBRNE capabilities and challenges.

(b) The CBRNE industrial base itself has never been particularly robust, with typically no more than two or three companies competing in any one area, frequently supported by only one second-tier supplier.

(c) The still relatively small CBRNE industrial base itself is largely the creation of the government as a monopsony buyer. Consequently, the government, as the only major buyer, virtually dictates the characteristics of the market.

It is the last characteristic – the government as monopsony buyer – that gives the government special responsibilities in the otherwise free marketplace. It is this same characteristic that keeps the nation's private-sector CEOs (chief executive officers) awake at night worrying about what, as the Defense Science Board has repeatedly reported over the last 20 years, is "a highly unstable, complex business environment characterized by high risk, restricted cash flow, and low returns."

In 1993, the U.S. Department of Defense (DOD) hosted a landmark meeting with senior executives from private industry. During that meeting, which later came to be known as "The Last Supper," then-Defense Secretary William Perry gave fair warning to the companies represented that, in order to survive, they would have to both consolidate and restructure. Although that warning was extremely painful to industry, it did help maintain a still highly capable U.S. defense industrial base and resulted in what might fairly be described as controlled shrinkage rather than an outright collapse.

Implications & Difficulties, But One Clear Thing

The Pentagon's current acquisition chief, Ashton Carter (Under Secretary of Defense for Acquisition, Technology, and Logistics), was among those who attended the famous Last Supper. In a September 2009 *Defense News* interview, he commented that senior Pentagon officials "must weigh the industrial implications of major program decisions and may have to protect key niche areas." However, Carter also noted that he had experienced considerable difficulty in "getting good analysis" from certain

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DOD agencies when he asked about "what to do to discharge the government's responsibility to make sure it has a good industrial and technology base going forward."

One thing is clear, though: There is certainly a major national-security interest in sustaining an adequate CBRNE industrial base over the long term. A weak or nonexistent CBRNE industry constrains almost all U.S. national security decisions, options, and actions. The government obviously should invest where the consequences of *not* investing could result in a specific loss of capability. In addition, the selection of capabilities itself should consider if and where there would be severe consequences of *not* investing – and/or underinvesting – particularly in preserving as much capacity and flexibility as possible. Of course, there remains a virtual "canyon" of expert opinion regarding what the government "should" do and what it probably "will" do.

Here it is important to understand that the preceding is not a clarion call for government corporate welfare. It is, rather, a call to recognize CBRNE as a "key niche area." It is a call to stop the government's policy of benign neglect, of leaving the industrial base to make whatever adjustments it might make on its own – and, therefore, of leaving future decision makers either constrained or, worse, with no viable options at all. It is a call to retain the technology and the creativity demonstrated so long and so well by the defense industrial base – and, of course, the people who make things happen.

"Necessary Interdependence" And a Consistent Long-Term Strategy

It also is a call for recognition of the necessary interdependence between government spending and the resulting CBRNE industrial base – as well as the significant implications for the future. It is a call, moreover, for a candid, consistent, long-term strategy that government must share with industry in a timely fashion. In short, it is a call for the government to obtain what it needs by design, rather than by default.

In turn, industry officials must be candid with senior government officials about their businesses and how they personally – and collectively – foresee the future. Moreover, if such candor is to have any substantive effect, government officials must be able and willing to listen. As policy decisions and budgets shape and impact business decisions, industry leaders must be clear about their intent to invest, divest, or reduce their activities.

In short, the CBRNE industrial base clearly does matter to national security – and will continue to do so for the foreseeable future. What is at issue, therefore, is whether the future industrial base will be the result of unintended consequences and neglect, or the result of thoughtful planning and of meaningful government-industry collaboration in full recognition that the era of interdependence that started just prior to World War II and continued through the Cold War must continue for many years, and probably decades, to come.

Major General Stephen Reeves, USA (Ret.), is a highly accomplished senior executive and an internationally recognized expert on both Chemical and Biological Defense and Defense Acquisition. He has testified as an expert witness on multiple occasions before the U.S. Congress and has been interviewed numerous times by the national and international print and broadcast media. He also is a frequent speaker at both national and international defense and homeland security conferences. Experienced in leading and managing large, diverse, global, multi-billion dollar organizations, he established, and for seven years led, the first Department of Defense Joint Program Executive Office for Chemical and Biological Defense.

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CBRNE Preparedness – The Necessary Prerequisites

By Steven Grainer, Fire/HazMat

The adage, "All incidents begin locally," is certainly applicable to scenarios involving Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) threats. In many if not all cases, CBRNE incidents sooner or later involve the federal government, particularly if terrorism is suspected. However, local and state involvement can never be waived or discounted. As is true of almost any emergency, the initial response to an actual or potential CBRNE incident almost always comes from local resources. In addition, after the situation is stabilized or concluded, it is the local resources that are most often expected to continue, and complete, the recovery and restoration operations. For that reason alone, individual and team training – particularly the training needed to respond to and manage all types of incidents – continues to be a necessity.

That has not always been true, though. In fact, it was not until the anthrax attacks in 2001 – just after the terrorist aircraft crashes into the Pentagon and the World Trade Towers – that much attention had been directed, at the local or state levels of government, toward the creation and growth of the technological capabilities and training needed to detect, define, and deal with potential "Chem-Bio" incidents. Since then, of course, the general objectives, strategies, and tactics required for the initial response to CBRNE incidents have been developed, assessed, reviewed, and revisited – numerous times. One result is that the training needed to establish safe and secure incident scenes is now commonplace at all levels of government.

Moreover, the procedures now in place are routinely practiced by many emergency-response agencies throughout the nation. In addition, most current local- and state-level policies and procedures include the establishment of a functional incident command system (ICS) that conforms to the federal government's own NIMS (National Incident Management System) guidelines.

This is a major step forward, because establishing an identifiable and functional local incident command organization to deal with CBRNE incidents (actual or suspected) is critical for the successful containment and control of such incidents. Of perhaps even greater importance, the transition from a local response to the follow-on response influx from state and federal agencies will be facilitated significantly by the establishment of a strong, yet flexible, local ICS policy. An undefined – and/or poorly organized – initial incident management system can lead very quickly to confusion and ineffective response management; it also can and almost assuredly would compromise the safety of those responding. In addition, it can cause various disconnects of all types and even procedural conflicts between the initial local responders and the incoming state and federal response and incident-management personnel.

Training, Experience & Other Specifics

It is primarily for these reasons that the training for CBRNE incidents must include specific training in ICS processes and procedures. Moreover, because CBRNE incidents are inherently multi-disciplinary, and frequently multi-jurisdictional as well, preparedness plans and policies should include, among other things, the identification of incident-management staff who are not only trained in ICS doctrine but also experienced in the management of complex, multi-disciplinary incidents in general.

Here it should be noted that effective ICS training programs and guidelines must and should continue to evolve, principally to remain in lockstep with changes and improvements in Federal Emergency Management Agency (FEMA) policies and guidelines. One example: The U.S. Fire Administration's All-Hazards Incident Management Team Course – which is periodically reviewed and, if necessary, revised and refined – has found renewed value for many developing incident management teams (IMTs). Another USFA course, "Command and General Staff Functions in the Local Incident Management Team," has also become a particularly valuable training program for developing IMTs.

In 2009, FEMA began the expansion of ICS training with the release of several "position-specific" training courses for all command and general staff in the management of ICS activities and operations. Last year, the 2009 expansion was followed by publication of unit-level position-specific training courses. However, the completion of training classes will not – indeed cannot – provide the essential experiential base needed by incident management personnel. The development of individual capabilities for incident command situations should and must come primarily from the

practical application of training principles under realistic if not totally real-life conditions. Therein lies what may be the greatest challenge for developing incident management capacity, whether for CBRNE situations or for other incidents of similar magnitude.

Lesson One: Management Is Still Management

Fortunately, as training programs have evolved and become more advanced, a key principle of ICS has become clearer – namely, that the ICS is nothing more or less than, in a generic sense, simply a management system. By connotation, of course, *Incident* Command (or management) promotes the notion that ICS differs from routine management – and it does, in several ways. However, as well-practiced IMTs have frequently demonstrated, management is still management, regardless of the situation.

In fact, command staff and general staff who understand that their functions remain substantially the same for all incidents can and should, therefore, perform effectively regardless of the nature of their assignments. For that reason, the training for and, of greater importance, management of a CBRNE incident will be contingent primarily on: (a) establishing a fully functional incident command organization as soon as possible; and (b) using an incident management "team" to coordinate and manage all aspects of the incident response above the strategic and tactical levels. (Obviously, technically qualified personnel should supervise at the operational level.)

Because of the quick and almost universal perception that each and every locality or agency should have its own IMT, a number of local and state jurisdictions (or agencies) attempted to form their own IMTs. That understandable impulse was similar to what happened in the 1980s and 1990s when "hazmat" was suddenly the hot issue and many communities sought to form their own local hazmat teams on the reasonable supposition that the community *might*, in fact, someday have to deal with a major hazmat incident. An important common-sense lesson learned at that time was that the cumulative cost for developing, equipping, and maintaining a hazmat team exceeded not only the budgets but also the resource capacity, and capabilities, of most jurisdictions.

Lesson Two:
Teamwork First, Last, and Always

Over the past five years, the initial compulsion of many localities to develop their own IMTs has been tempered by the more realistic acceptance that regional collaboration can be a more viable – more affordable as well – means for developing and sustaining incident management capabilities. Although some UASI (Urban Area Security Initiative) teams rely primarily on local (city/county) resources, the vast majority of the nation's current IMTs have been developed through multi-jurisdictional, multi-disciplinary cooperation using the best qualified personnel available within a relatively large geographical area to build a regional team.

A good example of this understanding is the formation of the All-Hazards Incident Management (Type 3) Team to protect the National Capitol Region (NCR), which uses personnel from more than seven local jurisdictions in two states – Maryland and Virginia – and the District of Columbia. The "NCR Team" drew from the best management and operational talent available from all jurisdictions within the greater Washington, D.C., area to create an aggregate team that possesses the superior competencies required to protect the nation's capital and carry out all incident-management functions at the very highest levels of government.

The adage, "All incidents begin locally," is certainly applicable to scenarios involving [CBRNE] threats ... For that reason alone; individual and team training – particularly the training needed to respond to and manage all types of incidents – continues to be a necessity.

Similarly, several local jurisdictions in the Denver, Colorado, metropolitan region have formed an aggregate team. Perhaps one of the best examples of regional team development, though, is a specially configured model formed in Texas – where more than nine regional state (Type 3) teams have been developed, under the Texas Forestry Service, to provide in-state regional incident management capabilities throughout the entire state.

AHIMTA: A Major New National Asset

Colorado and Texas are only two examples, though, of many initiatives currently being pursued throughout the United States. These initiatives are consistent with the basic NIMS tenets, and the regional teams already formed are becoming the core of a national movement to provide the incident-management capacity needed to cope with any and all hazard situations. In general, it is safe to say, the IMTs involved in this effort are being developed to serve, as and when needed, in any type of mass-casualty situation, and without regard to parochial (i.e., local) tactical considerations.

In December 2010, the *All-Hazards* incident management initiative gained even greater momentum when the All-Hazards Incident Management Teams Association (AHIMTA) was incorporated at, and in conjunction with, the third annual All-Hazards Incident Management Teams Training & Education Conference (in Denver). The new association is already active in coping with the many challenges of setting national consensus standards for "All-Hazards IMTs" – as well as, not incidentally, coordinating with and among the many teams formed, at all levels of government, to foster improved communications, increased collaboration, and greater cooperation between and among existing and future teams, and individuals, engaged in and committed to carrying out the command and management functions spelled out in NIMS policy guidelines.

The mission and goals of AHIMTA will be guided by an 11-member board of directors representing all regions of the country. Any incident involving actual or potential CBRNE threats poses significant challenges. Tactical skills training is essential to ensure safety and effectiveness in operations. Closely coupled with tactical competence, however, is the importance of effective management. A truly comprehensive response capability to deal with CBRNE incidents must necessarily include provisions for the effective and efficient management of tactical resources.

Additional information about AHIMTA is available on the association's website: http://www.ahimta.org.

Steven Grainer is the Chief of IMS programs for the Virginia Department of Fire Programs. He has served Virginia fire and emergency services and emergency management coordination since 1972 in assignments ranging from firefighter to chief officer. As a curriculum developer, content evaluator, and instructor, he currently is developing and managing VDFP programs to enable emergency responders and others to achieve NIMS compliance requirements for incident management.

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Indication

DuoDote® Auto-Injector (atropine and pralidoxime chloride injection) is indicated for the treatment of poisoning by organophosphorous nerve agents as well as organophosphorous insecticides.

DuoDote® Auto-Injector should be administered by emergency medical services personnel who have had adequate training in the recognition and treatment of nerve agent or insecticide intoxication. DuoDote® Auto-Injector is intended as an initial treatment of the symptoms of organophosphorous insecticide or nerve agent poisoning; definitive medical care should be sought immediately.

Important Safety Information

Individuals should not rely solely upon agents such as atropine and pralidoxime to provide complete protection from chemical nerve agents and insecticide poisoning. Primary protection against exposure to chemical nerve agents and insecticide poisoning is the wearing of protective garments including masks designed specifically for this use. Evacuation and decontamination procedures should be undertaken as soon as possible. Medical personnel assisting evacuated victims of nerve agent poisoning should avoid contaminating themselves by exposure to the victim's clothing.

In the presence of life-threatening poisoning by organophosphorous nerve agents or insecticides, there are no absolute contraindications to the use of DuoDote® Auto-Injector. When symptoms of poisoning are not severe, DuoDote® Auto-Injector should be used with extreme caution in people with heart disease, arrhythmias, recent myocardial infarction, severe narrow angle glaucoma, pyloric stenosis, prostatic hypertrophy, significant renal insufficiency, chronic pulmonary disease, or hypersensitivity to any component of the product. Elderly people and children may be more susceptible to the effects of atropine. DuoDote® Auto-Injector is Pregnancy Category C and should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus. Safety and effectiveness in children have not been established.

Muscle tightness and sometimes pain may occur at the injection site.
The most common side effects of atropine can be attributed to its antimuscarinic action. Pralidoxime chloride can cause changes in vision, dizziness, headache, drowsiness, nausea, tachycardia, increased blood pressure, muscular weakness, dry mouth, emesis, rash, dry skin, hyperventilation, decreased renal function, excitement, manic behavior, and transient elevation of liver enzymes and creatine phosphokinase. When atropine and pralidoxime are used together, the signs of atropinization may occur earlier than might be expected when atropine is used alone.

DuoDote® AUTO-INJECTOR
(atropine and pralidoxime chloride injection)

READY TO RESPOND

Please see brief summary of full Prescribing Information on adjacent page.

References: 1. Agency for Toxic Substances and Disease Registry. Medical Management Guidelines (MMGs) for nerve agents: tabun (GA); sarin (GB); soman (GD); and VX. http://www.atsdr.cdc.gov/MHMI/mmg166.html. Updated August 22, 2008. Accessed May 20, 2010. **2.** DuoDote Auto-Injector [package insert]. Columbia, MD: Meridian Medical Technologies, Inc.; 2007. **3.** Rebmann T, Clements BW, Bailey JA, Evans RG. Organophosphate antidote auto-injectors vs. traditional administration: a time motion study. *J Emerg Med*. 2009;37(2):139-143.

MERIDIAN MEDICAL TECHNOLOGIES™

DuoDote® AUTO-INJECTOR
(atropine and pralidoxime chloride injection)

BRIEF SUMMARY OF FULL PRESCRIBING INFORMATION

Rx Only
Atropine 2.1 mg/0.7 mL
Pralidoxime Chloride 600 mg/2 mL

Sterile solutions for intramuscular use only

FOR USE IN NERVE AGENT AND INSECTICIDE POISONING ONLY

THE DUODOTE™ AUTO-INJECTOR SHOULD BE ADMINISTERED BY EMERGENCY MEDICAL SERVICES PERSONNEL WHO HAVE HAD ADEQUATE TRAINING IN THE RECOGNITION AND TREATMENT OF NERVE AGENT OR INSECTICIDE INTOXICATION.

INDICATIONS AND USAGE

DuoDote™ Auto-Injector is indicated for the treatment of poisoning by organophosphorus nerve agents as well as organophosphorus insecticides.

DuoDote™ Auto-Injector should be administered by emergency medical services personnel who have had adequate training in the recognition and treatment of nerve agent or insecticide intoxication.

DuoDote™ Auto-Injector is intended as an initial treatment of the symptoms of organophosphorus insecticide or nerve agent poisonings; definitive medical care should be sought immediately.

DuoDote™ Auto-Injector should be administered as soon as symptoms of organophosphorus poisoning appear (eg, usually tearing, excessive oral secretions, sneezing, muscle fasciculations).

CONTRAINDICATIONS

In the presence of life-threatening poisoning by organophosphorus nerve agents or insecticides, there are no absolute contraindications to the use of DuoDote™ Auto-Injector.

WARNINGS

CAUTION! INDIVIDUALS SHOULD NOT RELY SOLELY UPON ATROPINE AND PRALIDOXIME TO PROVIDE COMPLETE PROTECTION FROM CHEMICAL NERVE AGENTS AND INSECTICIDE POISONING.

PRIMARY PROTECTION AGAINST EXPOSURE TO CHEMICAL NERVE AGENTS AND INSECTICIDE POISONING IS THE WEARING OF PROTECTIVE GARMENTS INCLUDING MASKS DESIGNED SPECIFICALLY FOR THIS USE.

EVACUATION AND DECONTAMINATION PROCEDURES SHOULD BE UNDERTAKEN AS SOON AS POSSIBLE. MEDICAL PERSONNEL ASSISTING EVACUATED VICTIMS OF NERVE AGENT POISONING SHOULD AVOID CONTAMINATING THEMSELVES BY EXPOSURE TO THE VICTIM'S CLOTHING.

When symptoms of poisoning are not severe, DuoDote™ Auto-Injector should be used with extreme caution in people with heart disease, arrhythmias, recent myocardial infarction, severe narrow angle glaucoma, pyloric stenosis, prostatic hypertrophy, significant renal insufficiency, chronic pulmonary disease, or hypersensitivity to any component of the product. Organophosphorus nerve agent poisoning often causes bradycardia but can be associated with a heart rate in the low, high, or normal range. Atropine increases heart rate and alleviates the bradycardia. In patients with a recent myocardial infarction and/or severe coronary artery disease, there is a possibility that atropine-induced tachycardia may cause ischemia, extend or initiate myocardial infarcts, and stimulate ventricular ectopy and fibrillation. In patients without cardiac disease, atropine administration is associated with the rare occurrence of ventricular ectopy or ventricular tachycardia. Conventional systemic doses may precipitate acute glaucoma in susceptible individuals, convert partial pyloric stenosis into complete pyloric obstruction, precipitate urinary retention in individuals with prostatic hypertrophy, or cause inspiration of bronchial secretions and formation of dangerous viscid plugs in individuals with chronic lung disease.

More than 1 dose of DuoDote™ Auto-Injector, to a maximum of 3 doses, may be necessary initially when symptoms are severe. **No more than 3 doses should be administered unless definitive medical care (eg, hospitalization, respiratory support) is available.**

Severe difficulty in breathing after organophosphorus poisoning requires artificial respiration in addition to the use of DuoDote™ Auto-Injector.

A potential hazardous effect of atropine is inhibition of sweating, which in a warm environment or with exercise, can lead to hyperthermia and heat injury.

The elderly and children may be more susceptible to the effects of atropine.

PRECAUTIONS

General: The desperate condition of the organophosphorus-poisoned individual will generally mask such minor signs and symptoms of atropine and pralidoxime treatment as have been noted in normal subjects.

Because pralidoxime is excreted in the urine, a decrease in renal function will result in increased blood levels of the drug.

DuoDote™ Auto-Injector temporarily increases blood pressure, a known effect of pralidoxime. In a study of 24 healthy young adults administered a single dose of atropine and pralidoxime auto-injector intramuscularly (approximately 9 mg/kg pralidoxime chloride), diastolic blood pressure increased from baseline by 11 ± 14 mmHg (mean ± SD), and systolic blood pressure increased by 16 ± 19 mmHg, at 15 minutes post-dose. Blood pressures remained elevated at these approximate levels through 1 hour post-dose, began to decrease at 2 hours post-dose and were near pre-dose baseline at 4 hours post-dose. Intravenous pralidoxime doses of 30–45 mg/kg can produce moderate to marked increases in diastolic and systolic blood pressure.

Laboratory Tests: If organophosphorus poisoning is known or suspected, treatment should be instituted without waiting for confirmation of the diagnosis by laboratory tests. Red blood cell and plasma cholinesterase, and urinary paranitrophenol measurements (in the case of parathion exposure) may be helpful in confirming the diagnosis and following the course of the illness. However, miosis, rhinorrhea, and/or airway symptoms due to nerve agent vapor exposure may occur with normal cholinesterase levels. Also, normal red blood cell and plasma cholinesterase values vary widely by ethnic group, age, and whether the person is pregnant. A reduction in red blood cell cholinesterase concentration to below 50% of normal is strongly suggestive of organophosphorus ester poisoning.

Drug Interactions: When atropine and pralidoxime are used together, pralidoxime may potentiate the effect of atropine. When used in combination, signs of atropinization (flushing, mydriasis, tachycardia, dryness of the mouth and nose) may occur earlier than might be expected when atropine is used alone.

The following precautions should be kept in mind in the treatment of anticholinesterase poisoning, although they do not bear directly on the use of atropine and pralidoxime.

- Barbiturates are potentiated by the anticholinesterases; therefore, barbiturates should be used cautiously in the treatment of convulsions.
- Morphine, theophylline, aminophylline, succinylcholine, reserpine, and phenothiazine-type tranquilizers should be avoided in treating personnel with organophosphorus poisoning.
- Succinylcholine and mivacurium are metabolized by cholinesterases. Since pralidoxime reactivates cholinesterases, use of pralidoxime in organophosphorus poisoning may accelerate reversal of the neuromuscular blocking effects of succinylcholine and mivacurium.

Drug-drug interaction potential involving cytochrome P450 isozymes has not been studied.

Carcinogenesis, Mutagenesis, Impairment of Fertility: DuoDote™ Auto-Injector is indicated for short-term emergency use only, and no adequate studies regarding the potential of atropine or pralidoxime chloride for carcinogenesis or mutagenesis have been conducted.

Impairment of Fertility: In studies in which male rats were orally administered atropine (62.5 to 125 mg/kg) for one week prior to mating and throughout a 5-day mating period with untreated females, a dose-related decrease in fertility was observed. A no-effect dose for male reproductive toxicity was not established. The low-effect dose was 290 times (on a mg/m^2 basis) the dose of atropine in a single application of DuoDote™ Auto-Injector (2.1 mg).

Fertility studies of atropine in females or of pralidoxime in males or females have not been conducted.

Pregnancy:

Pregnancy Category C: Adequate animal reproduction studies have not been conducted with atropine, pralidoxime, or the combination. It is not known whether pralidoxime or atropine can cause fetal harm when administered to a pregnant woman or if they can affect reproductive capacity. Atropine readily crosses the placental barrier and enters the fetal circulation.

DuoDote™ Auto-Injector should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers: Atropine has been reported to be excreted in human milk. It is not known whether pralidoxime is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when DuoDote™ Auto-Injector is administered to a nursing woman.

Pediatric Use: Safety and effectiveness of DuoDote™ Auto-Injector in pediatric patients have not been established.

ADVERSE REACTIONS

Muscle tightness and sometimes pain may occur at the injection site.

Atropine

The most common side effects of atropine can be attributed to its antimuscarinic action. These include dryness of the mouth, blurred vision, dry eyes, photophobia, confusion, headache, dizziness, tachycardia, palpitations, flushing, urinary hesitancy or retention, constipation, abdominal pain, abdominal distention, nausea and vomiting, loss of libido, and impotence. Anhidrosis may produce heat intolerance and impairment of temperature regulation in a hot environment. Dysphagia, paralytic ileus, and acute angle closure glaucoma, maculopapular rash, petechial rash, and scarlatiniform rash have also been reported.

Larger or toxic doses may produce such central effects as restlessness, tremor, fatigue, locomotor difficulties, delirium followed by hallucinations, depression, and, ultimately medullary paralysis and death. Large doses can also lead to circulatory collapse. In such cases, blood pressure declines and death due to respiratory failure may ensue following paralysis and coma.

Cardiovascular adverse events reported in the literature for atropine include, but are not limited to, sinus tachycardia, palpitations, premature ventricular contractions, atrial flutter, atrial fibrillation, ventricular flutter, ventricular fibrillation, cardiac syncope, asystole, and myocardial infarction. (See **PRECAUTIONS**.)

Hypersensitivity reactions will occasionally occur, are usually seen as skin rashes, and may progress to exfoliation. Anaphylactic reaction and laryngospasm are rare.

Pralidoxime Chloride

Pralidoxime can cause blurred vision, diplopia and impaired accommodation, dizziness, headache, drowsiness, nausea, tachycardia, increased systolic and diastolic blood pressure, muscular weakness, dry mouth, emesis, rash, dry skin, hyperventilation, decreased renal function, and decreased sweating when given parenterally to normal volunteers who have not been exposed to anticholinesterase poisons.

In several cases of organophosphorus poisoning, excitement and manic behavior have occurred immediately following recovery of consciousness, in either the presence or absence of pralidoxime administration. However, similar behavior has not been reported in subjects given pralidoxime in the absence of organophosphorus poisoning.

Elevations in SGOT and/or SGPT enzyme levels were observed in 1 of 6 normal volunteers given 1200 mg of pralidoxime intramuscularly, and in 4 of 6 volunteers given 1800 mg intramuscularly. Levels returned to normal in about 2 weeks. Transient elevations in creatine kinase were observed in all normal volunteers given the drug.

Atropine and Pralidoxime Chloride

When atropine and pralidoxime are used together, the signs of atropinization may occur earlier than might be expected when atropine is used alone.

OVERDOSAGE

Symptoms:

Atropine

Manifestations of atropine overdose are dose-related and include flushing, dry skin and mucous membranes, tachycardia, widely dilated pupils that are poorly responsive to light, blurred vision, and fever (which can sometimes be dangerously elevated). Locomotor difficulties, disorientation, hallucinations, delirium, confusion, agitation, coma, and central depression can occur and may last 48 hours or longer. In instances of severe atropine intoxication, respiratory depression, coma, circulatory collapse, and death may occur.

The fatal dose of atropine is unknown. In the treatment of organophosphorus poisoning, doses as high as 1000 mg have been given. The few deaths in adults reported in the literature were generally seen using typical clinical doses of atropine often in the setting of bradycardia associated with an acute myocardial infarction, or with larger doses, due to overheating in a setting of vigorous physical activity in a hot environment.

Pralidoxime

It may be difficult to differentiate some of the side effects due to pralidoxime from those due to organophosphorus poisoning. Symptoms of pralidoxime overdose may include: dizziness, blurred vision, diplopia, headache, impaired accommodation, nausea, and slight tachycardia. Transient hypertension due to pralidoxime may last several hours.

Treatment: For atropine overdose, supportive treatment should be administered. If respiration is depressed, artificial respiration with oxygen is necessary. Ice bags, a hypothermia blanket, or other methods of cooling may be required to reduce atropine-induced fever, especially in children. Catheterization may be necessary if urinary retention occurs. Since atropine elimination takes place through the kidney, urinary output must be maintained and increased if possible; intravenous fluids may be indicated. Because of atropine-induced photophobia, the room should be darkened.

A short-acting barbiturate or diazepam may be needed to control marked excitement and convulsions. However, large doses for sedation should be avoided because central depressant action may coincide with the depression occurring late in severe atropine poisoning. Central stimulants are not recommended.

Physostigmine, given as an atropine antidote by slow intravenous injection of 1 to 4 mg (0.5 to 1.0 mg in children) rapidly abolishes delirium and coma caused by large doses of atropine. Since physostigmine has a short duration of action, the patient may again lapse into coma after 1 or 2 hours, and require repeated doses. Neostigmine, pilocarpine, and methacholine are of little benefit, since they do not penetrate the blood-brain barrier.

Pralidoxime-induced hypertension has been treated by administering phentolamine 5 mg intravenously, repeated if necessary due to phentolamine's short duration of action. In the absence of substantial clinical data regarding use of phentolamine to treat pralidoxime-induced hypertension, consider slow infusion to avoid precipitous corrections in blood pressure.

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When High-Tech Fails: Back to Plan B

By Joseph Cahill, EMS

Cars are equipped with two types of brake systems: (a) the main brake system required for normal use; and (b) an emergency brake system, which serves as a backup if or when the main system fails. Use of the main system involves pressing a set of pads against a metal disc that provides the hydraulic action needed to stop the car when a brake pedal is depressed. The emergency system uses a completely different set of pads – usually pulled by cables when a hand lever is triggered.

Because two completely separate systems are installed, the reason for a failure of the main system would not affect the second system's performance. A complete second brake system is required because, if a second system were not available, failure of the main brake would disable the entire vehicle. For that reason alone, the installation of a backup brake system that admittedly may be redundant nonetheless serves a very important purpose.

The same level of redundancy for other types of systems is uncommon in the modern automobile because very few of the modern car's other systems have the same level of importance as the braking system – the failure of which might possibly lead to destruction of the entire vehicle as well as its occupants.

Needed: An Emergency Brake for EMS

In the overall U.S. Emergency Medical Service (EMS) network, few systems have the same level of importance as a car's brake system – and very few are so integrated and interconnected that their failure might well cause a complete shutdown of the EMS network as a whole. However, there is one system that meets both of the criteria – importance and integration – that make a car's brake system uniquely essential. That EMS system is dispatch and communications.

EMS communications systems typically have three major purposes: (a) system entry; (b) dispatch capability; and (c) ability to update. System entry is the point at which the request for help is received into the system, usually by telephone. The dispatch and update functions provide clear and continuous communications between central control and the units in the field.

Danger of System Failure

Many EMS systems use relatively complicated phone and computer systems to control the flow of information and facilitate the operation in other ways. When working properly, these complicated systems are a valuable asset. Unfortunately, though, they are not immune to failure – caused, perhaps, either by outside forces such as a cyber attack or the loss of outside electrical power and/or by internal problems such as faulty equipment or a software failure.

When the high-tech tracking systems fail, dispatch centers are forced to go "old school." The centers then revert to methods that were in use prior to installation of the modern high-tech systems. Pen and paper are among the most common, and most reliable, of the old tried-and-true backup "systems" available.

An Old Solution for a New Problem

Even when an agency replaces the old-school pen and paper, there still must be a backup plan available for continuing operations during a technology failure. Not completely discarding the old forms can provide the basis for starting an effective continuity plan.

Similarly, units in the field can fall back to their previous low-tech modes of operation. Prior to wide distribution of radios to emergency responders, dispatching was carried out, very successfully most of the time, by use of a telephone or teletype system. A return to that mode of operations would be a rather cumbersome task and the operational essentials might be unfamiliar to many staff members, of course. However, those inconveniences pale in comparison to a complete loss of dispatching capacity. During a system failure, the movements of the unit and their changes in status could still be reported as the unit arrives at various locations.

Over the long term, obviously, technology will continue to advance – and so will EMS dispatch and communication systems. However, within the currently foreseeable future, although the "old school" systems may not be ideal (which is why they have been replaced by higher-tech systems), they can still serve a useful EMS purpose by ensuring the continuity of operations. Improvements in technology are wonderful, but they also have a nasty habit of failing at the most inopportune times – and when they do it pays to have a plan B on the backup shelf.

Joseph Cahill, a medicolegal investigator for the Massachusetts Office of the Chief Medical Examiner, previously served as exercise and training coordinator for the Massachusetts Department of Public Health, and prior to that was an emergency planner in the Westchester County (N.Y.) Office of Emergency Management. He also served for five years as the citywide advanced life support (ALS) coordinator for the FDNY - Bureau of EMS, and prior to that was the department's Division 6 ALS coordinator, covering the South Bronx and Harlem.

Tailoring an Emergency Operations Plan

By Raphael Barishansky & Audrey Masurek, Health Systems

Health Departments – local, county, regional, and state – are an essential component of public-health as well as public-safety systems. As such, well-researched all-hazards Emergency Operations Plans (EOPs) that detail various overarching emergency preparedness and response issues are an operational necessity. At a minimum, an effective and well articulated EOP will include not only a base plan but also a number of functional annexes and hazard-specific appendixes.

It is important to note, though, that there is no one-size-fits-all approach to developing an effective EOP, primarily because jurisdictional needs and operations vary so significantly across the United States. However, there are certain fundamental components that should form the foundation of every EOP.

Two Definitions & Some Pointed Reminders

Prior to delving into specifics, it is important to understand what might be considered the generic definition of an EOP. In its Comprehensive Preparedness Guide, *CPG 101: Developing and Maintaining EOPs*, the Federal Emergency Management Agency (FEMA) defines an EOP as "the ongoing plan maintained by various jurisdictional levels for responding to a wide variety of potential hazards. It describes how people and property will be protected; details who is responsible for carrying out specific actions; identifies the personnel, equipment, facilities, supplies, and other resources available; and outlines how all actions will be coordinated."

Another definition – from Project Public Health Ready, a National Association of County and City Health Officials (NACCHO) initiative – defines an EOP as "an all-hazards plan developed to describe the system of operations that will be used in an emergency event. It defines who, when, with what resources, and by whose authority individuals and groups will act before, during, and immediately after an emergency. An EOP should be tailored to each community's own potential hazards and resource base."

There are a few key points, and helpful suggestions, to keep in mind before writing an EOP. The first and arguably most important point is that, except in very unusual circumstances, planning should not start from scratch. It should begin, rather, with existing plans already in the organization's department or jurisdictional files (even if they are outdated). It also should focus on (and possibly incorporate) nationwide best practices – such as those provided by FEMA, NACCHO, the Association of State and Territorial Health Officials (ASTHO), and the Centers for Disease Control and Prevention (CDC). Last but not necessarily least on the list are the EOPs of neighboring jurisdictions as well as memorandums of understanding (MOUs), mutual-aid agreements (MAAs), and legislation that might directly affect the new EOP being drafted.

Implementing the National Health Security Strategy

A Five-Part White Paper Series by Craig Vanderwagen, M.D., RADM, USPHS (Retired)

Dr. Craig Vanderwagen, former Assistant Secretary for Preparedness and Response, wrote a five-part white paper series entitled "Implementing the National Health Security Strategy." In this series, he explores issues that affect the success of public health practitioners in meeting the public's health needs and, by doing so, increases the resilience of communities and the United States as a whole. The guiding framework for this series is the National Health Security Strategy (NHSS), which was developed and released in December 2009 by the U.S. Department of Health and Human Services (HHS).

This series broadly examines the importance of managing the movement of supplies, personnel, and patients in execution of various public health interventions. While utilizing lessons learned primarily in disaster events, this series also suggests the need for effective logistical skill in completing the more routine tasks associated with public health. The importance of planning, acquisition of the right tools and people, and necessary attention to the intervention details and its requirements are all addressed. Without these principles fully engaged, the success of the desired intervention is likely to falter.

This white paper can easily be downloaded at http://www.upp.com/whitepaper-registration.cfm

Planning the Plan – Plus a Few Relevant Questions

Planning should not be done in a silo – an EOP that is written in a vacuum with no community or stakeholder involvement will seldom if ever be accurate, useful, or operationally effective. Jurisdictional needs and resource availability necessarily dictate how planning should begin and progress, as well as which stakeholders should and will be involved. Some jurisdictions decide to put together a planning committee that is directly involved in research, writing, and/or reviewing the plan. Others rely on a primary public health planner who at least begins the writing process and then strategically uses any number of partners, particularly those with special expertise, throughout its development and review.

A project management and implementation plan also should be developed – this plan should follow the essentials of the generic "Preparedness Cycle": plan, organize/equip, train, exercise, and evaluate/improve. Among the numerous questions that should be asked are the following:

- What are the plan's goals and objectives?
- What and how many stakeholders and partners are involved?
- What population groups are represented and what are their needs? (Here it is particularly important to ask what groups are not represented –and why not?)
- What resources (time, people, technology, access to previous and/or current plans) are available to devote to the process?
- How will the EOP be integrated with other departmental or jurisdictional plans?
- Finally, how is the plan likely to be received by leadership, partners, and staff?

The Basic Anatomy of an EOP

The first section of an effective EOP provides a synopsis of the Mission, Purpose, Scope, Planning Assumptions, and Organization of the plan. The *mission* can be a simple restating of the local Health Department's mission statement. The *purpose* should articulate the rationale behind writing the plan, including a list of relevant emergencies that the plan will cover – e.g., terrorist acts or threats, health facility emergencies, nuclear power plant or radioactive material incidents, infectious disease emergencies, contaminated drugs or medical devices, food or waterborne disease outbreaks, the contamination of a public water supply.

The *scope* section should explain the department's general responsibilities during response and recovery efforts, how they tie in with other agencies in the jurisdiction, and the geographic areas to which the plan applies. The *planning assumptions* section should provide the facts taken into consideration when writing the plan and in executing the EOP. Finally, the *organization* section will spell out the EOP's operational specifics and advise the reader of any functional or hazard-specific annexes and appendixes that are included.

The next step in writing the plan is to carry out a Situation and Hazards Analysis – which examines not only various geographic and political specifics but also: (a) a Hazard Identification and Threat Analysis; and (b) a listing of the health and medical assets existing to meet those threats. Here it should be noted that, in many cases, hazard and threat analyses have already been conducted by the local or state Office of Emergency Management, a regional FEMA office, one or more state homeland-security agencies, and sometimes by local universities that already serve the region and/or have been designated as a Homeland Security Center of Excellence or CDC Center for Public Health Preparedness. (If any of the preceding departments, agencies, or other entities have *not* conducted an assessment – and/or if that assessment is outdated – the writing of the new plan would be an ideal way to form or leverage existing partnerships to ensure that the new EOP is collaborative, comprehensive, and totally accurate.)

Special Needs & Special Circumstances Deserve Special Care

It is particularly important, of course, that traditional hazards, such as those listed in the Target Capabilities List, are not the only focus of the hazards identification and threat analysis – which should also incorporate jurisdiction-specific hazards and threats such as major tourist attractions, the proximity of government research facilities as well as international or coastal borders, and a list of vulnerable populations. Included under the last heading should be the members of at-risk groups living within the plan's jurisdiction who may have additional needs involving communications, medical care, independent living, supervision, and/or transportation.

The overall organization and various responsibilities of both the lead agency – e.g., the local health department – as well

as associated agencies such as hospitals, law enforcement, fire/EMS, and emergency management provide the basis ingredients for the Organization and Assignment of Responsibilities section – which also can be organized by Emergency Support Functions. This section leads into the Concept of Operations, which follows the traditional emergency management paradigm of mitigation, preparedness, response, and recovery.

Although most health departments focus more attention on the preparedness and response phases of a situation, all phases should be addressed in the Concept of Operations section – which in most if not all health-specific emergencies may and should focus on: early detection, plan activation triggers, the deployment and use of rapid response teams, ICS (Incident Command System) activation schemata, the declaration of an emergency, and as much useful information as possible about the location and responsibilities of the Emergency Operations Center. Also included in this section should be such "household" information as the availability of interoperable communication methods and systems, administration – e.g., MOUs, record keeping, financial records – and plan development and maintenance (specifically including a sincere and public commitment to continuous process improvement).

There also must be a section – preferably placed at the beginning or end of the EOP – outlining the relevant local, state, and federal legal documents that give the department the various authorities referenced in the EOP: the state laws, statutes, and executive orders relevant to emergencies, for example; the Robert T. Stafford Disaster Relief and Emergency Assistance Act; and the National Emergencies Act.

The EOP attachments also should include, at a minimum, the following: the department organization chart and contact list; a list of local, state, and regional partners; an acronyms list and glossary; and applicable supplementary documents such as hazard and threat assessments and the specifics of shelter and evacuation operations.

Finalizing and Reviewing the Plan

After developing an acceptable working draft of the EOP, the authors and other participants should: (a) revisit the project management and implementation plan; and (b) forward the plan to a review committee – which should include both internal and external reviewers – to verify the accuracy of the content and determine the feasibility of its implementation during an emergency. The committee also should decide if the revised plan is consistent with existing governing plans and laws.

After these internal review processes have been completed, the EOP must go through the more formal (as well as legally more complicated) approval processes needed and then, finally, receive an official "buy-in" from all levels of leadership involved. History has shown, not incidentally, that common sense and common courtesy prove that it is particularly helpful, when disseminating the plan "in final," to ask all of the departments and agencies involved to officially sign off that they received, reviewed, and approved the plan.

The final steps of implementation involve ensuring that staff members become operationally familiar with the plan's contents through training programs and numerous exercises and drills. The training should be mandatory for current staff and required as part of the new employees' orientation processes. The exercises and training needed can vary in complexity from impromptu drills on sections of the plan ranging from the use of a call-down list, which can happen anytime, to short tabletop exercises, to larger-scale departmental and/or jurisdictional-wide exercises. A combination of training and exercise methodologies will not only help all staff members understand all aspects of the plan but also have the potential to lead to regular reviews and/or revisions.

To briefly summarize: All of the nation's health departments, whatever their size, should have a well-researched all-hazard plan that can and should be used when preparing for emergency situations. With detailed planning, review, and training, an effective EOP doctrine can be developed and tailored to the particular needs and operations of any given jurisdiction. Finally: Understanding the definition, and being familiar with the many sections of a well articulated EOP, is the first but by no means the last step toward reaching the goal of all-hazard emergency preparedness.

Raphael M. Barishansky, MPH, (pictured) is currently the Program Chief for Public Health Emergency Preparedness for the Prince George's County (Maryland) Department of Health. Prior to establishing himself in this position, he served as Executive Director of the Hudson Valley Regional EMS (Emergency Medical Services) Council, based in Newburgh, N.Y. A regular contributor to various journals, he can be reached at rbarishansky@gmail.com

Audrey Masurek is a Senior Associate at ICF International and a Public Health Preparedness Planner for the Prince George's County (Maryland) Health Department. Prior to assuming her current position, she was an analyst at the Homeland Security Studies and Analysis Institute, and program manager at the National Association of County and City Health Officials.

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Future Chemical Challenges

Common Operating Picture Needed to Manage Common Problems

By Michael E. Forgey, Emergency Management

Insufficient funding, changes in technology, and inadequate staffing are challenges that chemical incident management must address many times – occasionally one at a time, but more often simultaneously. Today more than ever before, though, it seems that a common operating picture (COP) is necessary not only to deal with on-scene hazards but also to ensure that required emergency support functions (ESFs) are requested early and used efficiently. Fortunately, exercises based on the Homeland Security Exercise and Evaluation Program (HSEEP) will identify the principal areas of improvement needed to foster a better understanding of responsibilities and tasks and thereby provide a number of opportunities to update response plans.

The National Incident Management System (NIMS), available on *Lessons Learned Information Sharing (LLIS.gov)*, describes a COP as basically "An overview of an incident created by collecting and gathering information, such as traffic, weather, actual damage, resource availability, of any type from agencies/organizations in order to support decision making." In addition, NIMS confirms that the aforesaid incident overview must be made available to both on-scene and off-scene personnel. Emergency operations centers (EOCs), hospitals, and other off-scene stakeholders in a chemical incident should be told specifically, for example, what contaminants have been detected and what their effects might be.

Collaboration between leaders and information gatherers will provide a COP that enables ESF personnel to fully understand the nature of the primary and secondary hazards associated with a specific task within an overall incident scenario. *Chemical Incident Management: Coordinating Onsite Response to Primary and Secondary Hazards* – a lesson learned available exclusively on LLIS.gov – explains clearly how command personnel should coordinate their efforts, as soon as possible after arrival at an incident site, to address all of the hazards detected.

One example: The Oakland venue for the 2010 California Statewide Golden Guardian full-scale exercise hazmat scenario simulated an IED (improvised explosive device) attack against a merchant ship tied up in port. The ruptured vessel released a chemical that was both flammable and a respiratory hazard. The hazmat units based at fire departments in the area were able to initiate on-scene hazmat response operations – but were *not* able to carry out waterside fire-suppression operations. The fire suppression was in fact carried out – by using a mutual-aid agreement already in place with a fire department from a neighboring jurisdiction – but that phase of the exercise was not carried out in conjunction with the earlier hazmat efforts.

The ruptured vessel released a chemical that was both flammable and a respiratory hazard. The hazmat units based at fire departments in the area were able to initiate on-scene hazmat response operations – but were not able to carry out waterside fire-suppression operations.

Coping Not With One Incident, but Several

The summary of the Lesson Learned from that incident concluded, among other things, that a proper response to incidents involving more than one hazard requires that the assets needed *to address all hazards simultaneously* should be available from the start to ensure the safety of all personnel involved. The Lesson Learned (also available on *LLIS.gov*) from *Chemical Incident Management: Personal Protective Equipment for Primary Risk Environments within a Jurisdiction* clearly states that police and police marine units: (a) established a security zone; (b) assisted fire assets with rescue operations; and (c) provided on-scene first aid. However, those response units did not have individual protective equipment (IPE) available to protect them from the respiratory hazard. As a result, those personnel without IPE obviously might have been dangerously exposed during the incident, despite their collective best intentions to be a helpful asset in the exercise scenario.

In the event of a chemical release, a COP also would help hospitals prepare more adequately for patient intake and optimal decontamination operations. Here, unexpected reality rather than a planned exercise provides the Lesson Learned. On 7 July 2005, four suicide bombers detonated explosive devices

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on London's above-ground bus and underground train systems. One hospital in relatively close proximity to one of the underground train stations was unaware that a bombing had occurred until paramedics arrived asking for assistance and equipment. However, because that hospital did not have an emergency department, it was not on the incident notification list. Nonetheless, the hospital's clinical staff set up a field hospital to treat injured victims, and carried out their unexpected responsibilities extremely well – the details are discussed in the LLIS's *Incident Management: Alerting Hospitals in Close Proximity to a Mass Casualty Incident*. (London city officials later changed their emergency plans to require that all hospitals in the vicinity of such incidents be promptly notified.)

Another LLIS lesson learned – *Chemical Incident Response: Ensuring that Contaminated Victims Receive Timely Trauma Care* – points out that patients must be provided both timely decontamination and treatment to meet the established goal of getting the patient to an appropriate medical facility as soon as possible. In addition, the *Umatilla Community Chemical Stockpile Emergency Preparedness Program (CSEPP) Exercise 2007* after-action report concluded that a "delay in treatment beyond 60 minutes significantly increases mortality from trauma and agent exposure." A COP with properly designated treatment facilities would have established the need for rapid transport to a facility with advanced life support capabilities and equipment available.

To briefly summarize: Chemical-incident responses are complex in nature and require expertise, resources, and manpower. Whether during an incident or an exercise, therefore, all of the personnel involved must ensure that a COP facilitates the flow of information both up and down to every level of operation to ensure that all responders are thoroughly familiar with not only the mission goals but also their individual tasks. A COP helps to ensure not only the availability of the additional resources needed to augment local capabilities but also the requirement that all of the staff involved receive the information they must have to reach the level of optimal readiness required. Exercises carried out to upgrade the readiness required to cope with all-hazard incidents will enable jurisdictions to identify the specific areas where greater attention is needed and thereby ensure that the plans postulated provide an optimum outcome whenever actual incidents or disasters, natural or manmade, occur without warning in the future.

Michael E. Forgey is an outreach and operations analyst for Lessons Learned Information Sharing (LLIS.gov), the U.S. Department of Homeland Security/Federal Emergency Management Agency's national online network of lessons learned, best practices, and innovative ideas for the nation's homeland security and emergency management communities He has twenty years of mixed military service currently as a Maryland Army National Guard Chemical Officer and seventeen years experience as a firefighter, responder, and subject-matter expert. He also serves as an All-Hazards Safety Officer for the Baltimore Region Type III overhead team, and is a hazmat technician, specialist, supervisor, instructor, and evaluator. He received a bachelor's degree from Penn State University.

Concepts on Information Sharing and Interoperability

By John M. Contestabile

There are hundreds of thousands of "incidents" of various types that occur every day in the United States. Those incidents range from simple/frequent events – e.g., automobile accidents, train derailments, thefts, and various types of weather incidents – to catastrophic/infrequent events such as the 9/11 2001 terrorist attacks, Hurricane Katrina, the Minnesota I-35W bridge collapse, and the massive 2004 Indian Ocean tsunami. The number of participants and quantities of resources required to respond and recover from those incidents, and the complexity of the responders' roles and responsibilities, are significantly greater and much more difficult for what would be considered a catastrophic incident than they would be for a simpler and more common "everyday" incident.

Understanding the information needs between these different scales of incidents will provide valuable insights into how various agencies and jurisdictions can better design their information systems – primarily because how these systems are designed directly correlates to the ability to share information across agencies, political jurisdictions, and professional disciplines. Simply put, the design determines the systems' "level of interoperability."

In "Concepts on Information Sharing and Interoperability," John Contestabile, Assistant Program Manager for Homeland Protection for the Johns Hopkins University/Applied Physics Lab, addresses the all-hazards operational incident response and the implications for information sharing. He then proposes a conceptual framework, based on three layers of responsibility – data, integration, and presentation – to improve interoperability.

Click here to download the full white paper, http://bit.ly/e3asJx

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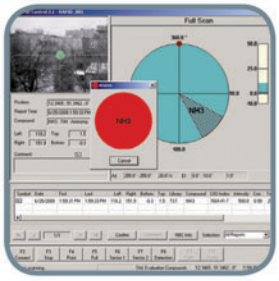

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Public Works Emergency Management – From Training to Reality

By Tracy Fessler & David Geary, Exercises

Although it may have taken a while to gain general acceptance, it is now usually understood that U.S. public works (PW) agencies play an important role before, during, and after most if not quite all emergency/disaster response operations. Much of the nation's current emergency planning, in fact – at all levels of government – focuses on preparing for major disasters such as Hurricane Katrina or the 11 September 2001 terrorist attacks. Fortunately, catastrophic events of that magnitude are few and far between.

Partly for that reason, the nation's PW departments would benefit from spending considerably more time preparing for events that are much more likely to occur, particularly emergencies – e.g., severe weather, flooding, or even a major equipment malfunction – in which neighboring communities may be called upon to help one another. Planning ahead for such emergent needs is something that most PW departments do not currently do very well – or very often.

The nation's [public works] departments would benefit from spending considerably more time preparing for events that are much more likely to occur, particularly emergencies – e.g., severe weather, flooding, or even a major equipment malfunction – in which neighboring communities may be called upon to help one another.

Without enough advance planning, and the follow-on training needed, PW agencies will usually be ill-equipped to deal with a major disaster when one does occur. Fortunately, though, most U.S. police, paramedic, and fire agencies have routinely planned, for many decades, to assist their neighboring communities. That planning has facilitated effective coordination, communications, and operational cooperation in countless times of sudden disaster.

PW agencies would be even better prepared for emergencies if they followed the model of these types of agencies. Being as effective and efficient as possible may also ease the burdens imposed by budget and/or service cuts recently imposed by many states and cities throughout the nation. In an era of ever-tightening budgets, it has become increasingly difficult for communities to obtain the funding and other resources needed to respond to major emergencies or other events above and beyond what might be considered normal expectations. By working more closely with their counterpart agencies in other communities – much like the fire service and police departments already do – PW departments not only can be better prepared to serve the community but also will save money that would otherwise have to be invested in back-up resources or additional equipment.

PW officials need to focus greater attention on planning and practicing together – not only to properly utilize, credential, dispatch, and track personnel and other resources, but also to better prepare the PW staff for a major disaster or other incident that would require them to call for assistance. Those issues, and more, were addressed during a Lake County (Illinois) Public Works Emergency Management training event on 16 September 2010.

Start With Tabletop Exercises

The training began with a tabletop exercise asking those in attendance some basic – and some challenging – questions about responding to an emergency. The tabletop training was based on a scenario in which a tornado had touched down in the local community. If that disaster had actually occurred, one or more neighboring PW agencies would have been requested to help open roadways for emergency access, clear debris, ensure the continuity of water and sewer operations, and help the local fire and police departments in a number of other ways.

During the discussion, participants worked in five small groups to focus on a specific aspect of the call-out, and to answer questions related to that subject. The group discussions focused on, among other duties and responsibilities: (a) monitoring the weather and issuing timely notifications; (b) carrying out damage assessments and setting priorities; (c) requesting assistance and

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receiving aid; (d) assigning numerous on-scene operational tasks and ensuring that work assignments were completed; and (e) carrying out and closely monitoring personnel rehabilitation and recovery operations.

By the end of the discussion, attendees were able to recognize a number of best practices in local communities and to identify certain areas needing improvement. Attendees were then encouraged to return to their respective communities and use the new knowledge they had acquired to suggest various ways to improve local planning.

Then Shift to Functional Exercises

After the tabletop exercise, the training transitioned to a functional exercise. When an agency is overwhelmed by demands for assistance and needs additional resources, many other departments are both ready and willing to provide whatever support they can. The requesting agency is then faced, though, with the task of managing up to 10 times the number of people and equipment items – or more – than it previously had been accustomed to dealing with on a day-to-day basis.

The functional exercise incorporated a Mutual-Aid Positioning and Deployment Plan "checklist" that had been developed to handle a relatively large deployment with minimal PW manpower. The lack of manpower could and would be offset, though, by calling on CERT (Community Emergency Response Team) volunteers. The CERT concept, which originated in the Los Angeles area many years ago, relies on the use of community volunteers who have gone through extensive emergency training. The CERT teams have in fact been successfully deployed for decades, in various communities throughout the nation, to provide invaluable assistance to emergency response units lacking the personnel needed to cope with major disasters.

Drill participants were asked to imagine that they had been notified that another local municipality had requested their assistance in responding to a severe storm. The "new" workers first reported to a staging area ready to answer the call to remove debris and to otherwise support local police and fire agencies as needed. The participants came to the disaster scene fully prepared for the exercise by bringing with them the vehicles and equipment that would be needed to cope with such an event.

In this neighbor-helping-neighbor exercise, the new arrivals and their vehicles were greeted at the requesting municipality as warmly as they would have been if arriving to assist at their own home agencies. The CERT members met the arriving crews and directed them to a staging area for check-in. During this part of the process, the resources available were reviewed, personnel credentials were documented, and identification cards were distributed.

After task-force leaders had been identified, work groups were assembled, radios and map books were assigned and distributed, and the work groups were made fully prepared to be dispatched into the surrounding community to carry out a simulated operational response. The task-force teams were directed to specific addresses or intersections and tracked along the way; when the teams reported that they had reached their assigned locations, they were asked to remain there for a short time and were then re-deployed to another location within the same community.

Throughout the exercise, the crews used maps provided by the local municipality to navigate their way through unfamiliar local streets. They also used radios that had been borrowed from a stockpile that, during an emergency, could be accessed by a number of local groups in need. Communications are critical during such operations, of course, but a number of PW agencies are not always adequately prepared to speak to one another – vehicle to vehicle – under emergency mutual-aid conditions. The functional exercise enabled the teams participating not only to familiarize themselves with the radio-usage requirements of emergency situations but also to gain some much-needed experience in communicating and working with team members from other agencies.

Critiques, Credentials, Commitments & Mutual-Aid Networks

At the conclusion of the exercise, observers and participants critiqued the training and offered suggestions on ways to improve. The importance of accurate and comprehensive documentation of all aspects of the event was emphasized. The tracking of radio frequencies, use of specific radio call numbers and cell phone numbers, and the logging of personnel time and equipment hours are all very important. Taking the time needed to credential participants and to provide basic information such as emergency contacts is also very important and should be done both efficiently and expeditiously.

Several agencies left the drill with a new commitment to building their own "deployment kits" for use when needed. These kits would include such obvious (but sometimes ignored) equipment items as road signage, personnel sign-in forms, identification badges, and office supplies. Other agency repre-

sentatives made plans to investigate the possibility of calling on community volunteer groups in their area – and to find out how to coordinate with them. The drill offered valuable insights into the opportunities and challenges that seeking assistance during a disaster can bring.

Several states already have formalized PW mutual-aid networks to develop and maintain a statewide network of PW-related agencies. The principal purpose of these networks is to provide mutual-aid response and recovery assistance to one another when confronted with a natural or manmade emergency or disaster. Participating agencies receive important and significant benefits, such as the protection of both the requesting and the responding agencies from liabilities that may be encountered in a disaster setting.

Following is a recommended PW Department emergency checklist of the initial steps required to determine the need for and use of teams from other jurisdictions. By following these steps, PW departments at all levels of government will be much better prepared if and when the time comes that they need to make the call – or to answer the call – for outside assistance:

- Find out if a local mutual-aid network is already available;
- Become familiar with the process of how county emergency management officials can assist local groups in times of need;
- Contact the County Emergency Management Agency Office to begin gathering resources to assist in handling a disaster of any size; and
- Participate in some type of emergency drill.

For additional information on any aspect of the training discussed above, call David Geary and/or Tracy Fessler at the Village of Wauconda Public Works Department (847-526-9610) or email them at either dgeary@wauconda-il.gov or tfessler@wauconda-il.gov

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David Geary is a certified emergency manager who for the past five years has served as director of public works for the Village of Wauconda, Illinois. He has over 30 years' experience in emergency response, safety, and disaster preparedness, and in previous positions served as assistant administrator for the Los Angeles County Office of Emergency Management and as director of emergency services at Universal Studios in California. Tracy Fessler (pictured) has been assistant to the Wauconda director of public works during the past four years and previously served as administrator for the Southern California Emergency Services Association and as a high-school health and science teacher.

Finding Comfort Around the World

By Catherine Feinman, Viewpoint

The Navy Hospital Ship USNS *Comfort* was pushed into the spotlight last year during its 60-day disaster-relief mission in Haiti following the massive 7.0 earthquake that struck that tortured island on 12 January 2010. Formerly the SS *Rose City*, an oil tanker, the *Comfort* has actually been carrying out a broad range of disaster-relief, humanitarian-assistance, and combat-casualty missions for more than two decades – ever since it was commissioned in 1987, in fact. For various political and chain-of-command missions, the 70,000-ton ship is "owned" and operated by the U.S. Military Sealift Command (MSC), but is primarily used for Navy missions.

In Haiti, the *Comfort* was categorized as a Level 1 trauma center and, according to HM1 Leslie Prasad, saw the "most neuro patients that Walter Reed [the Walter Reed Army Medical Center in Washington, D.C.] would rival, in six months, of the surgeries we saw in 45 days. … It [the mission] was a very intensive, very fast-paced environment." The effectiveness of that type of mission in a foreign nation, complicated by so many unknown variables, is determined primarily by the cooperative efforts, exceptional professionalism, and preparedness practices of all of the hundreds of crew members and medical staff involved.

Cooperation on the High Seas

The crew of the *Comfort* sets a good example for multi-discipline, multi-jurisdictional collaboration. There are three senior officers in charge of the ship – the ship's Commanding Officer (Captain David K. Weiss, USN), the MSC Commander (Civil Service Master Captain Randall Rockwood), and the Commodore (Captain Brian C. Nickerson, USN) for Continuing Promise 2011. The members of the ship's crew, and the medical and political/diplomatic personnel also involved, include U.S. Coast Guard, Navy, Army, Air Force, and Marine Corps personnel as well as U.S. State Department representatives, various U.S. Non-Government Organization (NGO) groups (directed through the U.S. Southern Command), some Canadian NGOs, and even a number of foreign military personnel.

The professions represented by these same personnel are equally impressive: surgeons, nurses, veterinarians, dentists, optometrists, physical therapists, pathologists, histologists, and information technology (IT) specialists, as well as security personnel, mechanics, pilots, translators, cooks, marine engineers,

and volunteers from other organizations such as the American Red Cross and Project Hope. When not deployed, many of the medical personnel continue to hone their special skills in various land-based hospitals.

In addition to the teamwork and medical acts of mercy provided by those aboard the *Comfort*, this floating hospital significantly improves U.S. international relations with host countries as well as numerous local communities. Setting up onshore clinics for chronic patients, participating in a broad spectrum of outreach programs, and establishing an educational exchange with local doctors are just a few ways in which the *Comfort* serves the United States as an ambassador to the world. The opportunity to work closely, for an extended period of time, with local government officials and medical professionals is a key to the ship's hugely successful mission of "providing a full hospital service asset for use by other government agencies involved in the support of relief and humanitarian operations worldwide."

Preparing for Rough Seas And Disaster-Stricken Shores

Valuable preparedness practices are routinely demonstrated aboard the *Comfort*. When not deployed on a mission, 55 to 60 crew members maintain the ship in a high state of readiness to ensure that it is able to get underway within three days of being assigned to yet another humanitarian mission – usually on short or no notice. Just before and during the deployment, the number of crew members grows exponentially, to a total of approximately 700 medical personnel and ship's company, plus 150 or so NGO members.

To prepare for onboard hazards, the crew carries out realistic abandon-ship drills before each deployment. While at sea, additional weekly drills are scheduled for all-hazards situations such as the flooding of interior spaces and various hazmat and fire simulations. The ship's incinerators are used to dispose of any bio-hazard trash. In addition, all of the ship's equipment is carefully calibrated, and re-checked periodically, to ensure the continuity of operations – ship operations as well as medical operations.

Ensuring the availability of safe and clean water – tons of it every day, literally – is a major concern of any modern ship deploying to underdeveloped countries. To meet that requirement, the *Comfort* is equipped (as are other U.S. Navy ships) with its own self-contained water source – namely, a three-stage filtration system that separates salt from the water scooped up from the ocean and produces enough pure water

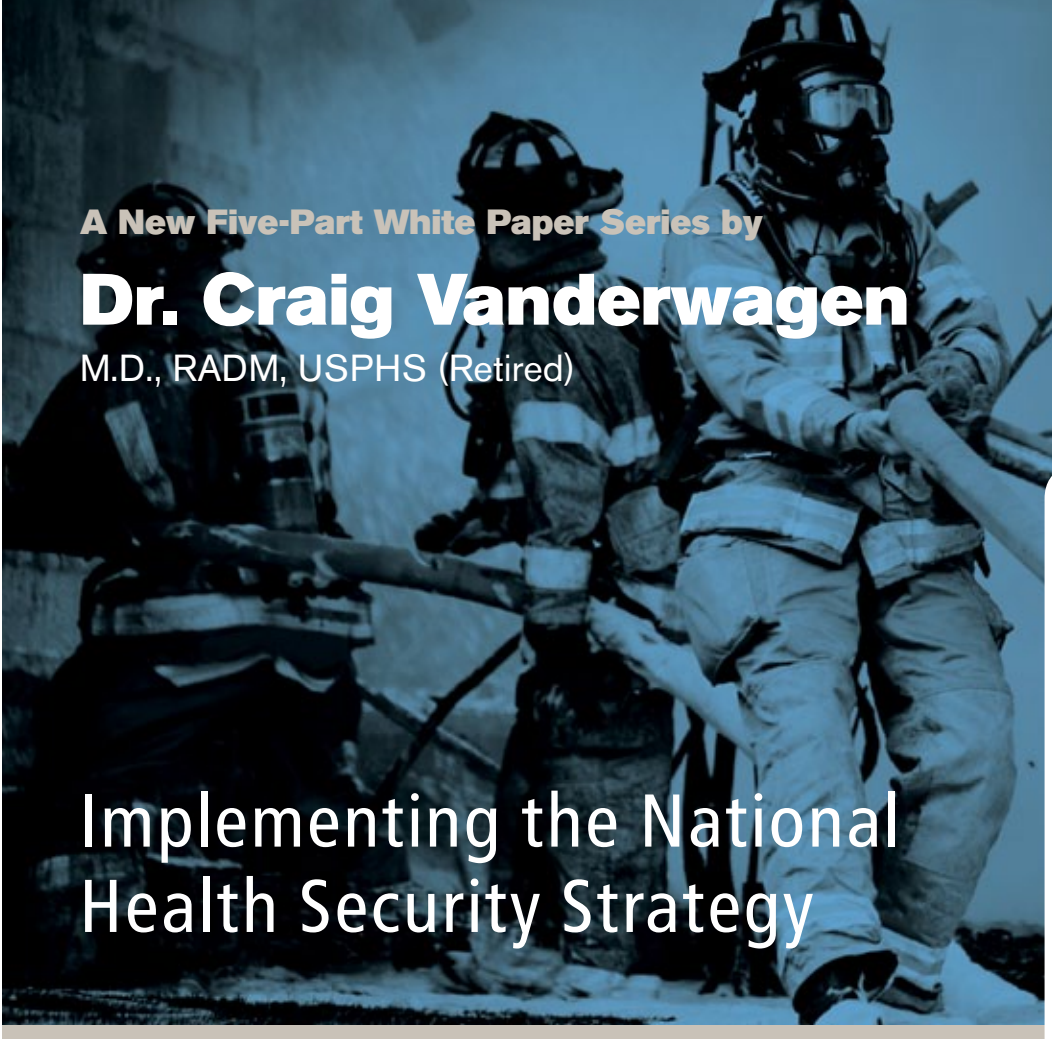
(300,000 gallons per day) for drinking, showering, cooking, cleaning, and running the steam cycle that powers the ship safely and at high speed through heavy seas and frequently turbulent weather.

Three 2,000-kw diesel generators provide the power needed for all of the ship's medical purposes. A separate 1,000-kw generator provides emergency back-up in case the main generators become inoperable. A battery back-up also is available if the emergency generators fail. The *Comfort* uses its self-sustaining abilities to prepare for uncertain environments.

Following the Patient Flow Route

A group of emergency preparedness professionals had the privilege of touring this 894-foot long, 135-foot wide floating hospital early last month in the port of Baltimore, Maryland, where the USNS *Comfort* is currently berthed. To provide a glimpse of the normal patient flow route during deployment, the civilian officer in charge of the ship (First Officer Chief Mate David Lieberman) began the tour on the flight deck. In Haiti, that deck received a helicopter every 6-8 minutes or so. According to Chief Hospital Corpsman (HMC) Amanda Doolittle, "It looked like a flock of helicopters."

When the ship is not actually tied up to a pier, but positioned just offshore, most patients are taken to the ship by helicopter or small boat. They are logged in twice: once on-shore and again as they debark from the helicopter after boarding the ship, where they are issued identification bracelets before being escorted (or sometimes carried) to the ship's medical spaces. From the flight deck or gangway, patients are led to one of the 50 beds in "casualty receiving" – i.e., emergency room (ER). If the ship's elevators are inoperable, medics are almost always able to transport patients by gurney to the triage area, within 2.5 minutes. New arrivals are assigned to one of the ship's three ER bays: (a) "expectant," for the unfortunate near-death cases; (b) "immediate," for urgent-care cases; and (c) "isolation," for those suffering from tuberculosis (TB) or other contagions.



A New Five-Part White Paper Series by

Dr. Craig Vanderwagen

M.D., RADM, USPHS (Retired)

Implementing the National Health Security Strategy

The *Implementing the National Health Security Strategy* white paper series, written by the first Assistant Secretary for Preparedness and Response, Dr. Craig Vanderwagen, explores issues that affect the success of the public health practitioner in meeting the needs of the public's health, and by doing so, increasing the resilience of communities and the Nation.

The series takes as its guiding framework, the National Health Security Strategy (NHSS) developed and released by the U.S. Department of Health and Human Services (HHS) in December 2009. The development and public release of this strategic document was directed by Congress as part of the Pandemic and All Hazards Preparedness Act of December 2006. The document is the product of a wide variety of stakeholder discussions and an examination of the real threat issues confronting the Nation. It is a national document, not just a federal document.

The NHSS has 10 stated strategic goals. This series explores the practical applications of tools that will be major elements in the successful achievement of at least four of them (Integrated/Scalable Health Care Systems; Effective Countermeasure Enterprise; Post Incident Recovery; and Situational Awareness) and add materially to the achievement of at least two others (Science, Evaluation, and Quality Assurance Improvements and Timely and Effective Communications). By bringing focus and effort to these practical considerations the public health practitioner can indeed contribute to the implementation and success of the NHSS which is a portion of our overall national security enterprise.

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From August 2006 until July 2009, **Dr. Vanderwagen** was the founding Assistant Secretary for Preparedness and Response (ASPR), U.S. Department of Health and Human Services.

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"Pods" positioned just above the beds are fitted with vacuums, electrical outlets, oxygen, and PROPAC machines to make it easier to record electrocardiograms and measure the blood pressure and temperature of new arrivals. Sturdy straps and D-rings positioned on the bulkheads (walls), overhead (ceiling), and deck (floor) are used to secure the lights, tables, and other medical equipment – plus the beds themselves – when the ship is encountering rough seas. During its stay in Haiti last year, roughly 1,000 patients passed through 10 of the ship's medical operating spaces – the other two ORs were used for those infected with TB (two additional ORs, located on a lower deck, are reserved for dental surgery). The *Comfort's* low infection rate is probably due in large part to the designation of some ORs as post-surgery "wash-out rooms," where dead tissue can be safely removed, isolated, and disposed of until a patient's healthy flesh has started to return.

Only a few yards down the passageway (hall) from the ORs, there is a CAT scan room, four X-ray rooms, an anesthesia space, a pre-op holding area with six bays, and an angio room fully equipped with the X-ray and diagnostic monitors needed for telemedicine. Portable X-ray units can be wheeled to various other spaces all over the ship and were, in fact, used in Haiti to screen all incoming patients, upon entry, for TB. When the results of any patient showed positive for TB, that patient was taken directly to an isolation space. With approximately 5,000 units of blood in stock, the *Comfort's* blood bank has a sufficient supply to meet most of the disaster situations that it encounters.

Somewhat farther down the main passageway is the ship's 20-bed Post-Anesthesia Care Unit (PACU). Under extreme circumstances, the PACU serves as backup for casualty receiving. Patients may expect to spend one to three hours in the PACU to ensure that the anesthesia wears off properly before they are taken to a lower space where most of the ship's hospital "wards" are located. Central monitoring capability throughout the various units allows the monitoring of all patient beds from a single location.

Four Intensive Care Units (ICUs), with 20 beds each, can serve as isolation rooms, or as burn units, if and when needed. Physical therapy rooms in the same area of the ship are equipped with treadmills, stationary bikes, step machines, and exercise balls to assist the recovery process. Litters (stretchers) are stacked, within easy reach, in the passageway and kept always ready. With a full-functioning laboratory and microbiology equipment also installed, the ship has all of the basic testing equipment it needs to screen patients for infectious diseases without requiring them to leave the vessel.

Most patients are moved to the ship's recovery wards, on a lower deck of the ship, after their condition is stabilized. Each of the wards has its own nursing station, pediatric racks for children, restrooms, showers, and kitchenette. Lower bunks are reserved for patient use, while upper bunks are often offered to family members of those patients. The eight recovery wards also can be partitioned to help respect the religious and/or gender concerns of the host country. Combining the PACU, ICUs, and recovery wards, there is a total inventory of about 1,000 patient beds aboard the ship.

Embarking on New Missions

The USNS *Comfort* is currently scheduled for yet another deployment, starting around the middle of March, on a humanitarian mission to nine countries in Central and South America. That mission will include a number of three- to four-day port stops to treat such conditions as cleft palates, hernias, and cataracts, as well as a large number of hysterectomies and numerous gynecological, orthopedic, laparoscopic, and endo-gastro procedures. The ship's onboard optometry clinic and lens laboratory are capable of caring for up to 500 patients in a single day, and will provide reading and prescription glasses to many who do not have access to these services in their local communities.

In providing the same treatment and standard of care to these "foreign guests" as they would in U.S. hospitals, the dedicated men and women of the *Comfort* supply the highest-quality medical care possible to new friends of the United States in many countries throughout the world. The ship's valuable disaster-relief and humanitarian, as well as wartime, missions will continue to help communities in need well into the future. Thousands of innocent "citizens of the world" facing sudden disaster in their own country, and/or who have been deprived of quality medical care in their home communities, may someday find *Comfort* close at hand.

Members of the DomPrep staff would like to extend their appreciation to the crew of the USNS Comfort and to the ship's Public Affairs staff who graciously welcomed them aboard: HMC Amanda Doolittle, Chief Mate David Lieberman, HM1 Joseph Perron, ET1 Darell Larocque, HM1 Leslie Prasad, ABF1 David Simkins, and HM2 Andrew Johnson.

Catherine Feinman is Associate Editor of the DomPrep Journal. She joined the DomPrep team in January 2010. With over 20 years of experience in publishing, she previously served as Journal Production Manager and Subscription Manager for Bellwether Publishing, Ltd. She received a bachelor's degree from the University of Maryland, College Park, in International Business/French.

New Jersey, Ohio, Alaska, and Georgia

By Adam McLaughlin, State Homeland News

New Jersey
Camden Feels the Effects Of Fire Department Layoffs

More than five weeks after Camden laid off a third of its firefighters, the shock waves are still reverberating outside city lines. Camden's fire department was cut to such a "bare bones" manning level, officials said, that a structural fire on any given day would require all of the city's seven companies to respond, leaving none to attend to any other fire or rescue emergencies that might develop.

The state's suburban fire companies – most of which are staffed by volunteers – are currently filling the void in the densely populated nine-square-mile city, and the extra workload involved has caused a number of problems. "We have seen a direct impact," said Robert Mortka, president of the Camden County Fire Chiefs Association.

Between 18 January and 15 February, fire companies throughout Camden County had been dispatched 84 times to help the city, Mortka said. Close to half of those calls were serious enough that three or four fire vehicles were sent to Camden.

Although mutual-aid agreements are not new to the Camden area, the increased dependency on such agreements in cash-strapped towns seems to be part of a national trend. "We are seeing an increased reliance on mutual aid. It is an ongoing topic of discussion in Massachusetts and across the country," said Kenneth Willette, manager of the fire protection division of the Massachusetts-based National Fire Protection Association (NFPA). However, Willette continued, it probably will take a few years of data to be able to determine, from a national perspective, how the reliance on suburban mutual-aid agreements affects cities such as Camden.

After 60 Camden firefighters were laid off on 18 January, the city's fire department required restructuring to continue functioning as close to normal as possible. The city already had "downsized" from 11 companies a few years ago to between seven and nine – the exact number depending on a so-called "brownout schedule" under which certain companies would be closed on each shift to save money. That arrangement lasted from May 2009 through the 18 January layoffs. After the layoffs, the department was reduced to seven companies operational each day – but with about one third less manpower on duty at any given time than had previously been available.

The department's equipment inventory and shift-supervisor roster also declined – from seven engine trucks, three ladder trucks, and one heavy rescue truck (plus a tour commander and two deputy chiefs on duty at all times) – to five engine trucks, two ladders, and one battalion chief per shift.

The consequences of the cutbacks include the assignment of a larger response area for each company and in some situations the lack of instant backup ... [but] one of the most dangerous effects, though, is a delay in response time.

The consequences of the cutbacks include the assignment of a larger response area for each company and in some situations the lack of instant backup. One of the most dangerous effects, though, is a delay in response time, Camden Fire Chief Michael Harper said in late February.

The NFPA has recommended that career fire departments, such as Camden's, be able, 90 percent of the time, to dispatch an engine within a period of six minutes. Any length of time greater than six minutes, the association said, means that the risks involved in saving lives and/or salvaging any part of a burning structure are likely to be increased significantly.

Ohio
Officials Work to Guard Against Agro-Terrorism

Decision-making officials at all levels of government work hard and well each and every day to protect the American people against threats of terrorism of any type. When it comes to the nation's agriculture, though, greater and faster action is needed at the local level. That was the principal lesson discussed at a presentation on agro-terrorism in Lisbon, Ohio, last Wednesday (23 February).

Government and health-industry officials attended the presentation to discuss various ways to protect animals and plants against agro-terrorism. Wesley Vins, Columbiana County Health Commissioner, said that protecting the food that goes from the field to the shelf is not only an obviously necessary precaution but so important that it requires a team effort involving several levels of government. "Agriculture to Ohio," he commented, "as well as to Columbiana County, is critical. It is, as someone referred to it, the center of our economic base."

Charles Perry, an agro-terrorism expert, discussed the "how to" aspects of the problem. "You have to bring people up to speed, educate everybody who may be involved, which is our agriculture community, emergency responders, and different government agencies." Perry has worked in the hazmat and chemical-safety fields for years. A military veteran as well as a retired firefighter, he now teaches counter-terrorism responses and WMD (weapons of mass destruction) situations and counter-operations. The nation's food systems, "like other operations," he pointed out, "are susceptible to terrorists."

There are a number of different pathogens "that can be introduced that can affect livestock, that affect plants, and it [the terrorists' intention] is basically to target a nation or region's economy," Perry continued. Those who heard Perry's comments learned a number of ways to spot unusual behavior around their farms or businesses, how to safeguard livestock and other food products, and how to respond to an attack. "Times have changed, and public health continues to evolve through time, and threats of terrorism [also] continue to evolve," Vins summarized.

Alaska
Anchorage Officials Feel, And Fear, a Sendai Aftershock

Geologists warn that Alaska's next big earthquake could be even larger than the Good Friday earthquake of 1964 – a 9.2-magnitude shocker, the second largest quake in recorded history – that caused massive ground failures, tsunamis, and landslides that wreaked havoc throughout much of the state and shattered numerous buildings, the urban infrastructure, and even large "chunks" of the landscape over a ground area of approximately 100,000 square miles. Amazingly, only 131 people were killed by the 27 March temblor.

Today, officials are particularly worried about the Port of Anchorage, which lies along a fault line that is highly susceptible to ground failure. The destruction of the port might well be a fatal blow to the entire surrounding area because it is a critical component of the local infrastructure, providing a lifeline to south central Alaska by connecting the remote state to its usual sources of food, oil, and other needed supplies.

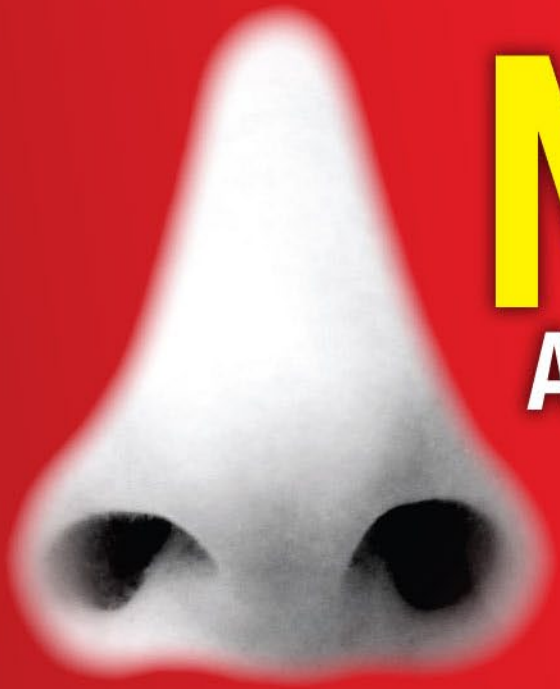
Dawn Brantley, the community preparedness manager at Municipal Emergency Management, said that, if the port goes down, there would be "other methods to get things into and out of Anchorage." However, the primary alternative to the port is air transportation, and that also would be greatly affected because the port supplies not only two-thirds of the fuel for Anchorage's international airport but also all of the fuel and most of the other supplies needed by the U.S. military at Elmendorf Air Force Base.

Because its construction had just been completed, the Port of Anchorage was able, fortunately, to survive the 1964 earthquake with only minor damage to the buildings in the port. But engineers warn that the forty years of wear and tear that have passed since then have left the port unfit to survive another massive quake – certainly not one on the scale of the 8.9 quake, followed in short order by an even more destructive tsunami, that devastated the Sendai area and many other smaller towns and communities along Japan's east coast last week.

"Over time," said Todd Cowles, an engineer at the Port of Anchorage, "the silt builds up under the dock and upland of the dock. If the soils beneath that were to liquefy, all of that weight from that material would come through the facility. Even if the piles were perfect, they are not driven deep enough through that failure plane … so it [another major quake] is likely to take the facility with it."

The facility's foundations also are badly in need of repair, leaving the port even more susceptible to collapse. It is estimated that at least 50 percent of the 2,000 piles that support the port are corroded, and only 20 percent of them have been bolstered with metal sleeves. "We generally repair about 20 pilings a year," Cowles said, "and it would take us another ten years to probably fix all of the ones that are suspect."

Large sections of Anchorage itself also are vulnerable, partly because building codes have not been strictly enforced –and, to make matters worse, much of the



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city is built on top of a unique type of soil that is prone to liquefaction in large earthquakes. More specifically: Many Anchorage warehouses, office complexes, and other commercial and residential buildings are supported primarily by several layers of bootlegger clay, a substance that makes beautiful pottery but can quickly lose much of its strength during earthquakes. In 1964, the ground literally collapsed because of gaping cracks in the streets of downtown Anchorage that sent most of the Turnagain neighborhood tumbling into Cook Inlet.

To prevent similar damage from future earthquakes, state officials amended building codes sixteen times after the 1964 earthquake. The newer buildings in the area are made of sturdier materials and were built to withstand a very large quake, and that should help – but many older buildings are still seismically unsafe because the same officials did not mandate that those buildings be retrofitted.

Ronald Wilde, a municipal structural plan reviewer, says that the older Anchorage structures are "absolutely not" up to current code. "We have a lot of buildings," he said, "especially downtown, that were built maybe before these newer requirements came into play."

Geologists warn that Alaska's next big earthquake could be even larger than the Good Friday earthquake of 1964 – a 9.2-magnitude shocker, the second largest quake in recorded history.

Georgia
Emergency Responders Train for Chemical Threat

At a well attended drill earlier this month at the U.S. Marine Corps' Logistics Base (MCLB) in Albany, Georgia, emergency responders participated vigorously in chemical warfare training despite the hopes of participants and spectators alike that the same responders will never have to use the several lessons learned.

The exercise simulated a Fourth of July setting with hundreds of South Georgians at the MCLB celebration. While enjoying the festivities, the participants were exposed, according to the scenario, to an aerosolized chemical sprayed from a low flying crop duster. "Crop dusters are not unusual around this area because of the farming industry," commented James Vaught, deputy director of the Dougherty County Emergency Management Agency.

A short time later in the exercise, Marine Base Police donned chemical suits and air masks as they shut down the Albany base. At about the same time, Georgia State Patrol troopers and local ambulances deployed to the base to support a possible mass-casualty situation.

Whether or not the potentially lethal spraying might have been an accident or a terrorism attack, Marine Corps officials said they wanted the training event to be as real as possible. "We practice doing the hard stuff. Then we will be prepared for the future, as far as getting all these casualties triaged," said MCLB Public Affairs Officer Lieutenant Kyle Thomas.

Georgia State Troopers escorted vans full of volunteer "victims" to the emergency rooms, where hospital officials were working on their various roles in the exercise. "A disaster is not the time to meet and make friends," Vaught observed. "You want to meet and make friends before an emergency, so that you work well together. The mid-March exercise provided an excellent opportunity for base officials and community first responders to learn how to work together."

"You have to be prepared for anything – and when it comes to the Marine Corps, we will never accept that we are not at one hundred percent," Thomas said. "We will always work to improve ourselves."

"Most people would say something like this [the simulated disaster] could never really happen in Albany," Vaught added. "But base and community first responders cannot think that way. They practice to be ready to work together if needed."

Adam McLaughlin, CEM, MS, MPA is the Operations Manager for Elizabethtown Gas, an AGL Resources Company that delivers service to approximately 273,000 residential, business and industrial natural gas customers in New Jersey. Previously, Adam served as the Manager of Emergency Readiness, Office of Emergency Management of the Port Authority of New York & New Jersey for over six years. His responsibilities included the development and coordination of Port Authorityinteragency all-hazard plans, and the design and development of emerency preparedness exercises. Prior to working for the Port Authority of NY & NJ, Adam served in the Army for 10 years as an Infantry and Military Intelligence Officer, and is a combat veteran of Afghanistan.

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