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DomPrep Journal

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Three C's of Preparedness

Command, Control, Communications

Both Come First

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Editor's Notes

By James D. Hessman, Editor in Chief

Like the nation's best teachers and most successful political leaders, Joseph Cahill has a unique gift not only for spotting potential problems and explaining them in terms understandable to his audience, but also for suggesting workable solutions to those problems – as he demonstrates again with not one but two insightful articles in this month's printable edition of *DomPrep Journal*. His first article focuses on how the state of Louisiana and the City of New Orleans joined forces in evacuating the Crescent City just prior to (and during) Hurricane Gustav. That hugely successful effort in "imposing order on chaos" depended primarily on advance planning and an uncommon amount of cooperation and coordination between and among all of the political and jurisdictional entities involved.

Cahill's second article, "Hybridizing the Power Supply," describes how counties, cities, and states throughout the nation can guard themselves, and the citizens they govern (and are supposed to protect), against future losses of electrical power during future natural disasters and other major emergencies through the use of dual-purpose heating systems that – during their "off-duty" time, so to speak – can be used to generate power. The end result is not only improved security but also, unlike many other technological advances, lower costs for local taxpayers.

Two other writers, and professional experts, in this issue also focus on the continuing need for improved command, control, and communications – the mandatory three "C's" of planning and preparation – at all levels of government ranging from frontline first responders to senior decision makers. Steven Grainer, for example, discusses the National Incident Management System, with special focus on "Resource Management," and points out that much of the success achieved in recent years stems from "knocking down ... the barriers between disciplines." His article is nicely complemented by a warning from Adam Montella that the so-called "Dopplerian Effect" – which gradually erodes the sense of urgency almost universally felt immediately after a major disaster – can be offset only by adopting a policy of "Continual Preparedness."

Three other *DPJ* authors look at specific dangers threatening not only U.S. armed forces overseas but also everyday American citizens at home – and, like Cahill, offer some workable solutions. Dr. Neil Livingstone discusses parking security – which in most cities and states should perhaps be referred to as parking *insecurity* – and points out that underground parking lots, particularly, are an open invitation to would-be terrorists. Glen Rudner takes a close look at improvised explosive devices, which already have killed or injured thousands of American military personnel overseas, and points out that IEDs may soon be the new terrorist weapon of choice on the U.S. homeland as well. Finally, Dr. Doreen Robinson examines the "Anatomy of a Biodetector" and explains, in layman's terms, not only their capabilities but also some of their current deficiencies. (Fortunately, she also notes, better and more sophisticated bioweapon detection devices are now in the RDT&E pipeline.)

Rounding out the issue are: (a) A "Good News" report, by Ruth Marrero, on how American Samoa used DHS (the Department of Homeland Security) and CDC (the Centers for Disease Control and Prevention) guidelines and expertise to guard against possible terrorist incidents at this year's quadrennial Festival of Pacific Arts in Samoa; and (b) Adam McLaughlin's latest reports on recent preparedness and security advances in the great states of Louisiana, Massachusetts, New Jersey, and Texas.

The St. Agnes service center in Houston, Texas, run by the American Red Cross (ARC), helped in numerous ways – including the distribution of financial assistance to evacuees from Louisiana – during and in the aftermath of Hurricane Gustav. See article by Joseph Cahill on page 8 for additional information about the evacuation effort itself. (ARC photo by Michael Seamans)

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NIMS Preparedness And Resource Management

By Steven Grainer, Fire/HazMat

One of the core components of the National Incident Management System (NIMS) is Resource Management. Preparedness is another. The other principal components are: Communications and Information Management; Command and Management; and On-Going Management and Maintenance. Because both Resource Management and Preparedness affect and are affected by the other NIMS components the question is sometimes asked, "Which comes first?" The answer is, "They both do."

Preparedness includes, among other things, the compilation of a comprehensive resource inventory that encompasses not only resource capabilities but also the availability of those resources. Preparedness planning will identify where resources can be obtained and the procedures necessary for their acquisition in a number of different situations. Situational planning, as well as pre-incident planning, provides the incident commander (or event manager) with the opportunity both to identify where initial as well as supporting resources can be acquired and the steps needed to make those resources part of an ongoing effort.

Planning (as a function of Preparedness) also provides emergency-management organizations and officials – on both the requesting and receiving ends of the system – with the procedures that must be followed in requesting, deploying, tracking, and returning resources. These procedures are typically stated in SOP (standard operating procedures) language. Of particular importance is the fact that preparedness planning should cover the measures needed to identify the capabilities of *all* resources that may be requested (or offered in a mutual-aid situation). These are, in fact, the basic elements of the Emergency Management Assistance Compact (EMAC) program.

From Policy to Planning To Tactical Operations

Under NIMS, command and management – i.e., Incident Command – cover the effective utilization of resources. In order to use resources most effectively, the managers of an event or incident must know the capabilities of all of their resources and assign those resources judiciously. For most local and many regional incidents, the incident commander probably would have at least some familiarity with the capabilities of the resources at his or her disposal. However, for "expanding" or "major" incidents that require the importation of resources from more distant or unfamiliar sources, standard processes for resource management – "resource typing," for example – will help significantly in identifying, requesting, and assigning such resources.

For practical purposes this means that, when logistics-section personnel meet with planning-section personnel before or during an incident-command Tactics Meeting to identify the resources already on hand vs. those that will be needed for various situations, it is very important that the personnel from both sections have a common understanding of the resources discussed, and their capabilities. In addition, the logistics section of an incident management team (IMT) must know how to identify and request resources likely to be needed but are not necessarily on hand. NIMS decision makers are now developing national standards both for

resource typing and for credentialing. Detailed information on the progress and products of this national "typing" initiative will be available later from the Incident Management Systems Integration Division (IMSID) at the National Integration Center (NIC). (The web link for this information is http://www.fema.gov/emergency/nims/index.shtm.)

There also are a number of diverse initiatives underway to enhance Resource-Management capabilities. Many of these initiatives will be "works-in-progress" for some time to come, but it should be remembered that, prior to promulgation of the initial NIMS policy guidelines, rules to ensure the continuity and cohesion of large-scale, or national, efforts for comprehensive resource identification, classification, and typing were almost non-existent. Prior to the promulgation of NIMS, in fact, most if not all of these efforts were independent, autonomous, and usually unknown outside of the individual disciplines involved. For that and other reasons, the ability to coordinate wide-ranging resource needs, and/or the acquisition of the resources identified, was inhibited by the barriers between disciplines that had existed for many years.

As previously noted, however, significant progress has been made since the NIMS policy guidelines were instituted in 2004. Although much remains to be done before the nation enjoys the benefits of a truly comprehensive resource inventory and management system, significant progress has in fact been made. To cite but one example: the National Wildfire Coordinating Group (NWCG) has had in place for almost 40 years a national resource typing system for wildfire resources. The standards used by the NWCG to determine the "kinds" and "types" of firefighting resources required provided the basis, in fact, for developing a similar national fire-response resource database as well as the typing standards postulated for the organization and operations of Incident Management Teams. There are other "intra-disciplinary" resource-management systems that also are being used as building blocks for what is expected to be a truly comprehensive overall resource-management system.

Signs of Progress & the CDC/NACCHO NPHPSP

Eventually, many if not all of the initiatives already implemented, or currently being developed, probably will be incorporated into the NIMS organizational framework either directly or by reference. For example, the Federal Highway Administration (FHA) administers the "Manual for Uniform Traffic Control Devices" (MUTCD). That manual is the product of a collaboration between the FHA and the National Committee on Uniform Traffic Control Devices (and its more

than 200 voluntary members). The stated goal of the MUTCD is to provide guidance related to "signs, signals, markings or other devices used to regulate, warn, or guide traffic placed on, over, or adjacent to a street, highway, pedestrian facility, or bikeway by authority of a public agency having jurisdiction." Today, it is readily apparent to anyone traveling from state to state on public highways that traffic signage has become much more consistent throughout the entire country and is more readily understandable as well. The MUTCD is a relatively unheralded effort to standardize resource management for highway traffic control. In other words, the intent is to promote both safety and efficiency in traffic management and in that context it is worth emphasizing that safety and efficiency are among the cornerstone goals postulated for the NIMS.

A recent and logical extension of the MUTCD has been the use of standardized temporary traffic-control devices both to ensure motorist comprehension and to improve compliance with safety measures during highway emergencies. Numerous states and regional emergency-preparedness organizations have been and are incorporating the MUTCD guidelines into regional and state emergency-management protocols. In Virginia, for example, the Hampton Roads Highway Incident Management (HRHIM) consortium – an ad hoc organization of police, fire, EMS, emergency management, and transportation officials – has adopted the MUTCD as its "golden standard" for integrating transportation-department responses with other emergency disciplines with jurisdiction over various aspects of highway incidents in the Hampton Roads area. A number of other jurisdictions also have incorporated the MUTCD guidelines into their own planning, preparedness, and response initiatives. (Additional information about the MUTCD is available at http://mutcd.fhwa.dot.gov.)

Another example, at the national level, of a successful standardization initiative is the joint effort between the U.S. Centers for Disease Control and Prevention (CDC) and the National Association of County and City Health Officials (NACCHO) to develop and promulgate information about the National Public Health Performance Standards Program (NPHPSP). In 2002 the CDC developed its own guidelines for "Bioterrorism & Emergency Readiness: Competencies for All Public Health Workers." Since then, the CDC and NACCHO have coordinated their efforts to promote core competencies for all public health workers. Certain parts of this initiative had been adopted in April 2001, but after the terrorist attacks of 11 September 2001 they became obviously higher priorities, and received much greater attention from the CDC and NACCHO.

It is important that the personnel from both sections have a common understanding of the resources discussed and their capabilities

The CDC/NACCHO efforts were reflected in the NIMS Core Competencies Standards for Public Health Teams published earlier this year, and further promulgated by numerous state public-health agencies. (Further information on the CDC and NACCHO programs is available at www.cdc.gov and www.naccho.org, respectively. The NIMS resource typing guidelines can be viewed at http://www.fema.gov/emergency/nims/rm/credentialing.shtm; also available at that site are the core competencies and resource-typing standards currently compiled by the Department of Homeland Security for other emergency-response disciplines.)

Parallel to these efforts, the NIC has developed draft "NIMS Standards for Credentialing and Typing of Personnel," which was published in May of this year. The overview of that publication is both positive and emphatic: "[T]he standard will help ensure that, when called upon for mutual aid, emergency response officials from multiple jurisdictions and sectors will have interoperable processes and technology. This will enable emergency response officials to spend less time processing and being processed and more time responding to the incident."

Once again, it is abundantly clear, resource management – identification, classification, typing, and inventorying – is an integral component of emergency preparedness and a prerequisite to overall operational success in future emergencies. In short, Preparedness and Resource Management work side-by-side in the NIMS continuum – not independently, but along with Communications and Information Management; Command and Management; and On-going Management and Maintenance. The next challenge for state and local emergency responders will be to incorporate the standards and processes postulated for NIMS Preparedness and Resource Management into their own efforts to enhance similar capabilities at the local, state, and tribal levels of government.

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.

Planning for a Mass Evacuation: Contraflow, Katrina, and Gustav

By Joseph Cahill, EMS

Noted EMS (emergency medical services) leader W. Michelle Spencer has described all emergency responses as efforts to "impose order on chaos." That blanket statement holds true for everyone involved in those responses from the front-line first responder to the most senior national emergency-management official. There are, of course, varying degrees of chaos – but there are very few events or incidents quite as chaotic as the evacuation of an entire city only a day or two before a looming natural disaster – such as this year's Hurricane Gustav, which, although almost comparable in strength to Hurricane Katrina in 2005, was not nearly as destructive.

In that context, it is important to remember that hurricanes and other natural disasters actually start with chaos (and sometimes, if the disaster is an earthquake or a tsunami, with little or no warning). No matter what type of disaster it is, though, the evacuation of a major city is no small thing and by its nature can lead to additional chaos. It is easy to look at bumper-to-bumper traffic on an interstate where the speed limit is 65 mph and see a failure – of either emergency management or of the response effort – but an evacuation is not a day trip out of the city.

The most important component of the television picture viewed by the American people during Hurricane Gustav was not the many miles of bumper-to-bumper traffic on the road but that the traffic was moving. Louisiana state police took many steps to keep it moving, slowly perhaps but also surely, and almost without incident.

For anyone who has ever wanted to drive down a highway "the wrong way," contraflow provides a golden opportunity. Simply put, contraflow refers to the use of all travel lanes of a highway, regardless of their normally posted direction of travel, to speed up traffic. During Hurricane Gustav, this meant that evacuees from New Orleans and the surrounding area not only would travel north from the hurricane, in the highway's usual northbound lanes, but also north in the southbound lanes as well, effectively doubling the evacuation capacity of the highway.

It Might Look Simple, But It Isn't

The contraflow plan sounds and looks simple; however, it was no small feat to put it in place. One of the major difficulties in the implementation of a contraflow plan is that there will still be people who want to go south and, therefore, may try to use the highway as marked. Just as the person who drives the wrong way on the highway during a normal day is a hazard to the other drivers on that highway, the driver getting on the highway "the right way" becomes a hazard during a contraflow evacuation.

Controlling access to the highway is therefore a critical part of an effective, and safe, contraflow plan. According to Doug Cain of the Louisiana State Police, the state had two plans in place, before Gustav made landfall, involving the possible contraflow use of the state's highways to evacuate specific sections of the Louisiana coastline: a Southeast plan, which includes New Orleans; and a Southwest plan.

To implement those plans, however, it was calculated beforehand, would take 900 law-enforcement officers for the Southeast plan and 300 officers for the Southwest plan. Those officers would be and are drawn from the state police, county/parish sheriffs' offices, local agencies, and Louisiana's Department of Transportation and Development. Not incidentally, Hurricane Gustav was the first time that both plans have been used simultaneously.

Whether contraflow is used or not, keeping the traffic moving is still the key to operational success. There are numerous reasons why traffic has to stop, even on a normal day. Once stopped, though, an at least partial blockage starts – and spreads quickly to adjacent lanes of travel because of people either slowing down to look at the cause of the delay or attempting to change lanes.

In Louisiana, fixed- and rotor-wing aircraft were used to spot trouble as early as possible during the Gustav evacuation. Once identified, such traffic-slowing difficulties as a disabled vehicle were quickly dealt with, both to keep traffic moving and to provide for those evacuees who were stranded because of the disabled vehicle. In addition, extra road patrols were used to keep traffic moving and clear trouble spots.

Two final points to remember about mass-evacuation situations: (1) Anyone and everyone who can evacuate under their own power should do so, but it is the responsibility of the emergency manager to ensure that they can do so both safely and quickly; (2) Although it takes fewer resources for a person to self-evacuate than to be moved by the emergency-management system, it still requires at least some expenditure of resources to make it possible.

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.

The Dopplerian Resonance Effect on Continual Preparedness

By Adam Montella, Health Systems

There are several events in recent memory of such national significance that they have caused a lasting as well as dynamic change from "business as usual" in the disaster-response arena. Hurricane Andrew spawned the Stafford Act in 1988, for example, forever changing how the Federal Emergency Management Agency (FEMA) and other agencies respond to disasters. In 1996, the Nunn-Lugar-Domenici Act, based on the heightened threat of terrorism in the United States, gave birth to the Domestic Preparedness Program and the Office for Domestic Preparedness. However, the Stafford Act did not foresee the massive breakdowns that occurred between the states, the federal government, and local communities in response to Hurricane Katrina, and the Nunn-Lugar-Domenici Act did nothing to prepare for the massive resource coordination effort needed to respond to the 11 September 2001 terrorist attacks and to the release of anthrax at several offices on Capitol Hill and the testing of thousands of suspected packages with "white powdery substances" that followed shortly thereafter,

It seems, unfortunately, that the further the American people get from events like September 11, the more complacent and unguarded they become – and vigilance seems to be on pause in personal and corporate as well as government planning. Even the threat of a pandemic influenza, a frightening topic only a year ago, barely gets a mention today outside of planning circles, showing up, if at all, as a distant blip on the nation's collective radar screen. This is a far cry from the period immediately after the 9/11 attacks, when there was a surge of family-created disaster plans, businesses hosted workshops to educate their employees on what to do in an emergency, and there was more coordination between and among all levels of government, private industry, and individual citizens.

Today, there are several initiatives focused on public-health and healthcare-response planning, the penultimate area of critical-infrastructure focus for ensuring population-based safety and survivability under conditions of severe environmental duress. The Joint Task Force National Capital Region - Medical (JTF-CapMed) initiative represents an effort to assist the nation's civilian and military public-health and healthcare infrastructure to join forces in a network-centric, collaborative architecture for incident management and response. This effort might well serve as a national template for private industry to enter into an even greater cooperative and collaborative preparedness and response framework. If successful, JTF-CapMed would certainly represent a highly repeatable approach to regional-preparedness and response-planning efforts.

> ***If successful, JTF-CapMed would represent a highly repeatable approach to regional-preparedness and response-planning efforts.***

Money Well Spent; Capabilities Well Achieved

It seems clear that all of the hundreds of millions of dollars that have been spent on equipment and interoperability initiatives in recent years have significantly improved the day-to-day readiness capabilities of local communities throughout the United States. However, those capabilities have never been consolidated in a true regional or nationally coordinated response plan fully based on accepted NIMS (National Incident Management System) principles. There are large stores of emergency equipment now in place throughout the country, to cite one example of increased capabilities, but one could challenge most jurisdictions to specifically identify where that equipment is stored, and whether it is operational or not.

Corporate business planning, moreover, is now seen as a luxury in today's unstable economy. In addition, many if not all families and individual citizens seem to be motivated only by the most recent disaster affecting them personally. Anyone asking a New Yorker if his city has a hurricane plan in place, and then asking the same question of a resident of New Orleans would almost certainly receive two different answers.

Which brings up a reasonable but absolutely necessary question: Why are the American people not better prepared today? One at least partial answer is what might be called the "Dopplerian Resonance of Disasters" – a term coined by the former chief medical planner for the U.S. Department of Defense, Pietro (Peter) Marghella. As he explains it, "Much like a train speeding toward a station, early warning systems, intelligence resources, and detection and surveillance assets allow us to feel the vibrational resonance

of an approaching disaster. We, of course, can choose to take actions to improve our posture of preparedness once the vibration is felt.

"Or we can choose to ignore it," he continues, "and hope that we won't be standing on the track when the 'train' explodes by us. Unless [we ourselves] … have been hit by the disaster … we tend to remember the event only to the extent that we feel that vibration; the longer the disaster moves away from us in time and space, the more likely we are to drop our guards and give less effort to preparing for the inevitable next disaster."

A Paradigm Shift To True Interoperability

The best and perhaps only way to be better prepared, though, is to be always prepared. It is not sufficient simply to write a comprehensive emergency-management plan, or a medical-response plan, publish it, and then file it away. The plan starts to become outdated the second it is printed. It is time, therefore, to embrace the idea of "Continual Preparedness."

But Continual Preparedness takes planning, a lot of planning, and the integrated response that follows it, to an entirely new level. It also assumes the involvement of all stakeholders ranging from government agencies and non-profit organizations to private industry and individual citizens. Finally, for the plan to be truly effective and ready for use in an actual emergency, it must be kept as current as possible – or it will be forgotten just as quickly as the disaster that gave birth to the plan in the first place.

William (Bill) Josko, Vice President of Previstar Inc. and a public-safety and homeland-security software expert, commented as follows on the current U.S. state of interoperability: "Technologies exist today that effectively bridge the chasm of collaboration and true interoperability in both communications and data environments." Josko further explained that having such standards in place as the National Information Exchange Model (NIEM), the Common Alerting Protocol (CAP), and the Information Sharing Environment (ISE), coupled with enabling technologies such as XML, Web Services, and other types of middleware – all operating within a systems-oriented architecture – allows true interoperability to finally become reality.

From a technical as well as technological perspective, therefore, there probably has never been a better time for stakeholders at all levels of society to truly interoperate and collaborate. However, in Josko's opinion, technology is not the real issue but, rather, the existing "siloization" of those multiple stakeholders -- in both the public and private sectors -- that inhibits collaboration toward unified planning and response that presents the greatest challenge.

Combining what Marghella and Josko have to say lends itself perfectly to the concept of Continual Preparedness. The United States must align people, processes, policy, and technology to, as Marghella often says, "Marry the planner's art with the planner's science." In short, to truly achieve a state of Continual Preparedness the United States must achieve a major paradigm shift characterized by meta-leadership among all of the stakeholders involved.

Adam Montella is Vice President of Homeland Security and Emergency Management Services for Previstar Inc. and a nationally known emergency-management and homeland-security professional with more than 23 years direct experience in both government and the private sector. He served as the first general manager of emergency management for the Port Authority of New York and New Jersey in the period following the 11 September 2001 terrorist attacks and has served in many other emergency-management positions at all levels of government. A former member of the House Operations Recovery Team of the U.S. House of Representatives and of numerous local, state, national, and international emergency management associations, he also is a well known public speaker in his chosen field and a former recipient of Harvard University's prestigious Innovations in American Government Award.

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Parking Security: A Lot to Think About

By Neil C. Livingstone, Building Security

A Level Three sex offender, armed with a knife and handcuffs, pled guilty earlier this year to hiding in a woman's car in a Costco parking lot with the intent of kidnapping and sexually assaulting her. A Murfreesboro, Tennessee, student was attacked with a knife after a dispute over a parking space. According to Gary R. Cook, a well-known security specialist, "roughly 80 percent of the criminal acts at shopping centers, strip malls, and business offices occur in the parking lot."

Even more serious is the threat posed by terrorists. In 1995 in Rijeka, Croatia, Islamic terrorists drove a car with a bomb into a building where a police station was located, injuring 29 people. The terrorists had accessed the building via a surface parking lot. The most significant parking garage incident, however, occurred in 1993 when Islamic terrorists detonated a massive bomb in the underground parking garage beneath the World Trade Center, killing six people and injuring 1,042. Their goal had been to drop both towers, but the terrorists fell far short of that goal – until 11 September 2001.

It is easy to see that all parking facilities pose difficult challenges for security planners, whether those facilities are beneath buildings, are stand-alone lots, or are adjacent to buildings. In many instances, the parking area represents the building's greatest source of vulnerability, and for this reason it is almost inconceivable that the designers of so many U.S. office buildings, universities, shopping malls, and venues view parking security so casually – often only as an afterthought, if at all.

The failure to provide adequate parking security has led to both out-of-court and jury awards in many states around the country. In the wake of the 1993 attack, for example, a Manhattan jury found the Port Authority of New York/New Jersey negligent for permitting public parking under the World Trade Center. The 400 plaintiffs in that case were seeking $1.8 billion in damages. The Port Authority appealed the decision, but it was upheld this April by a New York State Appeals Court. The judgment fell back on long-established legal precedents relating to the duties of landlords to keep their premises safe.

The Appeals Court said in its ruling that, "… it is fair to say that no reasonably prudent landlord, aware as defendant was of the value of his or her structure as a terrorist target and of a specifically identified condition upon the property rendering it vulnerable to terrorist penetration, would await a terrorist attack, particularly one directed at basic structural elements, before undertaking, to the extent reasonably possible, to minimize the risk."

Which brings up a reasonable question: What are the most important factors that landlords – and their architects and security advisors – should consider when it comes to protecting their structures from crime and terrorism? The first and foremost of those considerations is the simple fact that a parking area adjacent to the structure – or, even better, remote from the structure – will always be safer than one underneath the structure. If underground parking is unavoidable, however, it may be prudent to restrict parking to tenants of the building or, possibly, to monthly pass holders who have been pre-screened and possess verifiable IDs, windshield stickers, and/or smartcards.

Gate Barriers, Mirrors, Passenger Cars Only

The worst option is to make public parking available to anyone and everyone paying a fee at the entrance to the parking facility. In that situation, which is sometimes unavoidable, consideration should be given to at least restricting parking to passenger cars only -- and prohibiting vans, trucks, and other large vehicles capable of transporting a large amount of explosives. Gate barriers also should be part of the design, and parking attendants should be trained to eyeball vehicles to identify those sagging on their springs (suggesting a heavy load) or driven by persons who are "suspicious-looking" – a difficult term to define -- or behaving in a bizarre manner.

In extreme cases and/or in areas where tightened security is the daily norm – as in Northern Ireland during the "troubles" or in contemporary Iraq – parking attendants should and do make drivers step out of their vehicles and open the trunk (boot) for inspection, while security personnel run pole-mounted mirrors underneath the vehicle to search for explosives.

It is not recommended that parking areas have tenants' name listed on or in front of his or her parking space. This writer was performing a security assessment of a well-known synagogue when he came across the chief Rabbi's name emblazoned in large letters on the wall abutting the parking space. He raised the issue with the Rabbi – who complained, despite having received a number of serious threats, that if he did not indicate his title to the space others would park there (even though there was other signage to indicate that the space was reserved). The Rabbi was told that, if he did not remove his name from the

space, any malefactor would know precisely what car to tamper with – a point with which the Rabbi only reluctantly agreed.

All parking areas, whether on the surface or underground, should be brightly illuminated with maximum coverage to reduce shadows and blind spots. The lighting not only will be helpful in itself but also will assist those monitoring CCTV (closed-circuit television) surveillance systems and serve as a deterrent to thieves and attackers who attempt to hide someplace and wait for a victim. Studies show that better lighting also makes customers feel safer and – in shopping malls and similar areas – helps, therefore, to generate more revenue. Easily identified call stations and panic buttons also are recommended so that anyone seeing suspicious activity in a parking area can report it immediately and summon help in an emergency.

For parking areas adjacent to properties, setbacks are recommended. If setbacks are impossible, consideration should then be given to incorporating blast walls or other forms of structural hardening into the design of the building or facility. Restrictions also should be established to prevent vehicles from double-parking in front of or next to entrances, along curb lanes, and in other critical areas. Here it should be remembered that the operations room (and security hub) of the World Trade Center was located adjacent to the underground parking area where the bomb was detonated in 1993, and was destroyed in the attack.

Finally, all parking facilities must establish some kind of response system in the event that a panic button is pushed or that CCTV coverage identifies a suspicious activity or criminal situation. All of the security enhancements and procedures discussed above are of little value, though, unless there is a valid response mechanism in place. Landlords also should remember that a facility's financial liability could arguably increase by instituting halfway measures that the public grows to depend on without some kind of follow-through in the event of a problem.

Dr. Neil C. Livingstone, chairman and CEO of Executive Action LLC and an internationally respected expert in terrorism and counterterrorism, homeland defense, foreign policy, and national security, has written nine books and more than 200 articles in those fields. A gifted speaker as well as writer, he has made more than 1300 television appearances, delivered over 500 speeches both in the United States and overseas, and testified before Congress on numerous occasions. He holds three Masters Degrees as well as a Ph.D. from the Fletcher School of Law and Diplomacy. He was the founder and, prior to assuming his present post, CEO of GlobalOptions Inc., which went public in 2005 and currently has sales of more than $80 million.

IEDs and the First Responder

By Glen Rudner, Fire/HazMat

Today's first responder has had to adapt to an ever-changing threat that affects all U.S. citizens. The individual responder himself has to some extent become a human "tool box" that must be able to operate in many different venues. From apprehending a criminal to fighting a fire, to transporting sick or injured victims, first responders today must be able to carry out a multitude of tasks – at times, more or less simultaneously.

Many if not all of those tasks are inherently dangerous in themselves, and they may become much more dangerous within the foreseeable future. As American troops in Iraq have found out, there is an invisible enemy that, without warning, has already killed or wounded literally thousands of U.S. military personnel. That enemy is the improvised explosive device, better known as an IED.

IED bombings are one of the most challenging types of terrorist attack to prevent. Terrorist groups reap several advantages from such attacks, which require relatively little in material resources and training, provide flexibility in both timing and targeting, and, as proven, have a high rate of success. In addition, al Qaeda and other terrorist groups have become rather adept at adjusting their tactics to defeat new defenses against IEDs. There already have been several under-publicized incidents in the United States itself involving IEDs – but those attacks have caused only minimal damage so far. However, the psychological impact is starting to show, and a growing number of experts in the fields of terrorism and counterterrorism predict that more, and more destructive, IED attacks on U.S. soil may be just over the horizon. Whether that prediction becomes a reality or not, it seems clear that the nation's response community must be much better prepared than it now is to protect their communities and fellow citizen from such attacks.

Needed: Clear Thinking, And Decisive Action

Because of the inherent complexity of an IED attack, the individual responder is faced with the need to make several decisions – immediately in many cases, and sometimes simultaneously. The most complex decision involves the identification of potential hazards, a complex task that involves, among other factors, the recognition and assessment of various "indicators" that may (or may not) provide helpful clues that indicate the possible presence of an IED. Among those indicators are the receipt of a written or oral threat and the presence of unidentified and/or seemingly non-threatening packages. The responder also must be aware of unidentified people in a potential target area who seem out of place, and ensure that the appropriate law-enforcement agencies have been notified.

When arriving at the scene of a potential IED attack, responders should first establish a staging area at a safe distance from the reported address. They also should keep a close and continuing surveillance of the surrounding area, noting potential points of both egress and access, and keeping a particularly close lookout for suspicious-looking packages as well as people. They also must set up a protective perimeter to protect themselves as well as others in the area.

If in fact one or more strong indicators is found – e.g., an unidentified package or suspicious-looking device – the responders' exit strategy is simple: They should stop whatever else they are doing, mark the area clearly, and retreat to a safe distance until trained EOD (explosive ordnance disposal) personnel have arrived and are ready to take over. EOD personnel are better trained today than ever before, fortunately, to handle suspicious packages.

To summarize: The IED threat is already causing increased concern to the nation's first-responder community, and for good reason. When emergency commanders receive a call for assistance, they should gather as much information as possible before sending a response unit to the scene of a suspected IED. In addition, first-responder agencies and emergency-management officials should already be carefully reviewing their plans for responding to suspicious incidents, and should ensure that those plans include the eventuality of an IED incident. These same agencies need to train *all* of their personnel, not just the response units, but anyone who may become involved in any way with an IED incident. In short, not only the federal government but the individual states and cities must move much more quickly to prepare and plan to cope with what could become a wave of IED incidents before such incidents take place on a scale that today can only be imagined in a worst-case scenario.

Glen D. Rudner is the Hazardous Materials Response Officer for the Virginia Department of Emergency Management; he has been assigned to the Northern Virginia Region for the last nine years. During the past 25 years he has been closely involved in the development, management, and delivery of numerous local, state, federal, and international programs in his areas of expertise for several organizations and public agencies.

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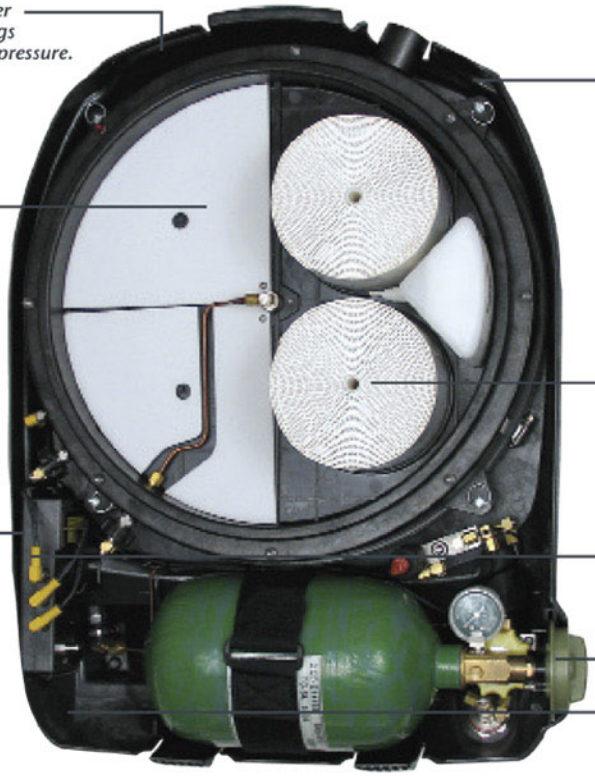

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Anatomy of a BioDetector

A Complicated Technology Explained for the Layman

By Doreen Robinson, Viewpoint

Biodetection and biosurveillance capabilities are widely considered to be a critical element of the U.S. national and local emergency-response capabilities. The anthrax incidents of 2001 that contaminated offices on Capitol Hill and elsewhere were an important illustration of the human and economic toll that can be exacted by the dissemination of biological agents. The threat is formidable. A key question is: "What are the capabilities that U.S. responders need to identify dangerous biological agents so that effective steps can be taken to avoid or mitigate the negative effects?" The answer is not simple.

Standard microbiological and biochemical techniques that are routinely used in medicine to diagnose infections take several days and are not appropriate for field detection. Moreover, the various "standoff" spectral techniques developed to date simply do not have the resolution needed to discriminate biological agents from other elements in the environment, especially naturally occurring microorganisms. The level of discrimination needed to distinguish a dangerous biological agent from clutter requires a direct detection element that actually "touches" the agent. This means that the sample must be presented to the detector in liquid form – making it a "wet" assay. There is a rapid and inexpensive test of this type being used in some communities, but it detects only the presence of proteins, biological structural elements, and provides no discrimination between "good" and "bad."

In recent years, immunoassays have been used for the field detection of a limited number of biological threats. These tests use antibodies – which the human body uses to identify and eliminate substances that are foreign to human systems – that recognize a physical feature on the surface of the "bug." The benefit of using this method of identifying a potential threat is that it is not only rapid and relatively inexpensive, but also requires little or no sample preparation to identify the target in a complex background. One important drawback, though, is that the surface features may not discriminate between a bug that is truly harmful and a near neighbor. In fact, the positive control for a popular anthrax test is the vaccine strain.

Recent, Reliable, And Relatively Rapid

More recently, molecular tests, such as PCRs (polymerase chain reactions), have been adopted by the U.S. Postal Service and other agencies and organizations for the screening of potential biological threats. These tests are based on recognition of one, or a few, genetic elements that are unique to a specific threat agent. The human DNA, or genetic code, determines every physical characteristic of a living organism and thus can provide excellent discriminating power.

These tests also are relatively rapid – taking about 30 minutes or so to obtain reliable results. On the downside, current devices look at only one, or a few, genetic elements – which usually are not enough to definitively distinguish a true threat from closely related organisms. In addition, enzymes – i.e., catalytic proteins – are critical, but often finicky, elements of these systems that require fastidious front-end sample preparation. Add this complication to the need for detection elements that can "see" fluorescent tags, and the result is usually a somewhat complex and expensive device as well as reagents that are not ideal for field use.

Improved molecular tests are on the horizon, however. One major improvement is the ability to multiplex – i.e., to identify numerous distinguishing features of a threat agent. Several formats are being used to do this, including the use of bead-based assays and/or microarrays. The multiplexing capabilities of bead-based assays are still somewhat limited, though, and the instrumentation is still too complex and cumbersome for field use.

Microarrays are somewhat like chessboards, with particular genetic elements located in each square. The physical separation of these individual elements permits the simultaneous high-fidelity discrimination of literally thousands of genetic elements. This means that tests can be developed for high-confidence identification and numerous biological threats simultaneously. The same tests can also look both for virulence indicators (how the bugs might be harmful to humans) and for antibiotic sensitivity (how humans can hurt the bug), thus improving the response capabilities available.

Multiplexed assays already are being routinely used in the laboratory, and the science is now rapidly moving toward fieldable systems. The challenge facing first responders and laboratory researchers, therefore, is to find an optimum technology mix that is not only both rapid and simple, but also inexpensive enough to serve the first-responder and first-receiver communities at all levels of government.

Dr. Doreen A. Robinson is a founder and Chief Operations Officer for GenArraytion Inc., a biotechnology company headquartered in Rockville, Maryland. She is the co-inventor of a broad-spectrum approach to biological agent identification and was a technical consultant to the EPA (Environmental Protection Agency) on-scene coordinator and the incident commander in the aftermath of the 2001 anthrax incidents on Capitol Hill.

Hybridizing the Power Supply

By Joseph Cahill, EMS

With much of coastal Texas without power for so long a time in recent weeks and the approach of the winter storm season in the northern part of the country, it seems evident that alternate sources of electricity that are not dependent on the grid should be examined.

The Climate Energy Corporation has introduced a simple concept to help offset future power outages almost anywhere in the country – a "hybrid" heating system that pairs building heating systems with the generation of electrical power. This concept is far from new, it should be emphasized – much of downtown Manhattan already is heated with steam provided by electric-generation plants.

The Climate Energy system – called the Micro-Combined Heat and Power, or Micro-CHP – uses excess heat from a natural gas heater to generate electricity. The sales pitch to the homeowner (or *any* other customer) is obvious: The Micro-CHP not only reduces the cost of electricity but also, by using the castoff heat in an innovative way, decreases the system's carbon footprint.

The connection to emergency preparedness is relatively simple: As long as a building's natural gas flow continues without interruption, it also will have electricity available. Because the Micro-CHP uses forced hot air, a bypass could be set up to vent the heat during the summer, thereby providing year-around electricity. This option would be better than the use of an emergency generator because the Micro-CHP would defer at least some of its own costs throughout the heating season and, because it would be in use throughout the year, would keep the entire system exercised.

To put this option in perspective, it is worth considering the effect on a first-responder agency planning its own new building: By factoring in the additional cost of a Micro-CHP system the agency would at the same time be ensuring that its own emergency electric power supply would be available. Because most emergency facilities – those already built as well as those planned for future construction – are likely to have already approved the purchase of a generator, the capital cost involved probably would be a wash. However, because the Micro-CHP system would be providing electricity throughout the year – without using additional fuel – relatively large savings could be achieved over a relatively short period of time.

The Real Principle Involved: Maintaining Self-Sufficiency

The bottom line is that this is exactly the type of thinking that is needed in system design. The point of the preceding is not to persuade emergency-responder agencies that acquisition of a Micro-CHP system might be a good idea, but to demonstrate that maintaining self-sufficiency during a crisis does not always and/or necessarily translate into extra cost for the agency – or, of greater importance, for local taxpayers.

This "integration" thought process may well dominate the next generation of planning in the field of emergency preparedness. As used here, that term is not meant to denote that the hybrid heating/power-generation system itself is integrated but, rather, that the *planning* for everyday functionality should be integrated as closely as possible with the planning for disaster functionality.

With the cost of anything related to the use of fuel still rapidly escalating, the Micro-CHP or any similar device also would provide a much-needed hedge against future increases in fuel costs. The fact that the system has a day-to-day function that can be pressed into service during a crisis does not make it unique. What makes it *important*, though, is that the day-to-day function can quickly, and at reasonable cost, be expanded to meet emergency requirements – thereby eliminating the need for an additional piece of infrastructure designed and built primarily if not exclusively for emergency use.

With the flexibility of a new equipment item considered essential, how that equipment will be used – both routinely, for the purpose for which it was purchased, and, on the other hand, when it is pressed into service during a crisis – must be foremost in the thoughts of emergency responders as individuals, and in the collective thoughts of emergency-response agencies or private companies on the local, state, and national levels as well.

A field training unit – more specifically, an ambulance where paramedic students worked with two senior paramedics to gain experience – of the Philadelphia Fire Department used to preach the need to "failure proof" equipment by ensuring that a backup plan is already in place if the "standard" or "routine" plan does not work each and every time a specific equipment item is used. The U.S. city/state/national emergency infrastructure should be "failure proofed" in much the same way, from the day the specifications of a specific system are written to the day that piece of equipment wears out.

For additional information, click on: http://www.climate-energy.com/

The DuoDote™ Auto-Injector (atropine 2.1 mg/0.7 mL and pralidoxime chloride 600 mg/2 mL) is indicated for the treatment of poisoning by organophosphorus nerve agents as well as organophosphorus insecticides.

Important Safety Information

The 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. 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.

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 organophosphorus nerve agents or insecticides, there are no absolute contraindications to the use of the 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.

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

References: 1. DuoDote™ (atropine and pralidoxime chloride injection) Auto-Injector [package insert]. Columbia, MD: Meridian Medical Technologies™, Inc.; 2007. **2.** Agency for Toxic Substances and Disease Registry. Medical Management Guidelines (MMGs) for nerve agents: tabun (GA); sarin (GB); soman (GD); and VX. Available at: http://www.atsdr.cdc.gov/MHMI/mmg166.html. Accessed February 21, 2007. **3.** Holstege CP, Dobmeier SG. Nerve agent toxicity and treatment. *Curr Treat Options Neurol.* 2005;7:91-98. **4.** Data on file. Columbia, MD: Meridian Medical Technologies™, Inc.

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

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 scarletiniform 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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A Jubilant Festival of Preparedness

By Ruth Marrero, Public Health

Earlier this year, July 30th – August 2nd, American Samoa hosted the 10th quadrennial Festival of Pacific Arts, which attracted a record number of attendees. Since 1972, delegations from 27 Pacific Island countries and territories have come together every four years to share and exchange their diverse cultures at the festival. Throughout the festival these Polynesian and Micronesian countries, territories, and other ethnic-cultural entities showcase a rich variety of cultural expressions ranging from clothing, music, dancing, and foods to traditional tattoos and works of art.

American Samoa is a U.S. territory encompassing six not-quite-contiguous islands in the South Pacific. Barely larger in geographic area than Washington, D.C., it has a population of not quite 58,000 citizens. Because the Festival of Pacific Arts was one of the largest "special events" ever to take place on American Samoa, the territorial government decided to follow the principles set forth in the U.S. National Incident Management System (NIMS) and Incident Command System (ICS) in managing the operations for this year's festival.

The American Samoa Department of Health had already been training its employees and volunteers in accordance with NIMS/ICS guidelines for several years, thanks to a Department of Homeland Security (DHS) Public Health Emergency Preparedness grant administered through the U.S. Centers for Disease Control and Prevention (CDC), headquartered in Atlanta, Georgia. In addition, American Samoa had used the "direct-assistance" component of the grant as a funding mechanism to have Lieutenant Commander (USPHS) Joseph Roth assigned to work with the festival organizers as a CDC Career Epidemiology Field Officer (CEFO) during the past two years.

In the months leading up to the festival, the American Samoa Department of Health conducted various internal-training exercises developed under the ICS guidelines, and in the months and weeks leading up to the festival worked successfully with a number of other agencies, and private-sector stakeholders, to address the numerous aspects of public-health preparedness planning associated with the event. Alternative-care sites were established throughout the island, for example, to ensure that anyone needing medical assistance would be treated not only professionally but also in a timely manner.

In addition, field medical tents were manned by carefully trained medical personnel, and ambulances were stationed in close proximity to the sites of the main outdoor events. Roth himself took special care to ensure that surveillance for mosquito-borne infectious diseases – e.g., malaria and dengue fever – and other acute illnesses would be carried out on a daily basis during the festival. Thus, any suspected case of infectious disease could be assessed quickly by public health officials at the festival's command center.

NIMS/ICS proved to be a useful tool not only for planning prior to the festival, the Health Department officials said, but also for organizing agency operations and inter-agency communications during the festival. Their only personal regrets, in fact, these officials said, were that they were too busy themselves, working an average of 12-14 hours per day, to see and perhaps even participate in some of the colorful ceremonies and dances.

For additional information about the festival, click on: http://pacartsas.com/index.htm

Ruth Marrero is an HACU (Hispanic Association of Colleges and Universities) fellow assigned with the Career Epidemiology Field Officer (CEFO) program at the U.S. Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia. She attained her BS in Business Management from Norwich University, Vermont, and is studying for a Master's in Public Health Education at California State University Northridge, California. Her focus of study has been in Epidemiology, and she is enrolled in an Emergency Management certificate program. She is a per-diem Health and Safety Services instructor and a volunteer Disaster Action Team (DAT) member with the American Red Cross of Ventura County, California. She also has completed CERT (Community Emergency Response Team) training and has been a CERT volunteer at many events.

Louisiana, Texas, New Jersey, and Massachusetts

By Adam McLaughlin, State Homeland News

Louisiana Communications Upgrades Worked During Gustav and Ike Hurricanes

When Hurricanes Gustav and Ike swamped numerous communities along the U.S. Gulf Coast and knocked out power to more than one million homes and businesses, most of the phone and radio lines of first responders along the coast continued to operate effectively in the first true test of the communications grid developed after Hurricane Katrina.

That is a far cry from 2005, when Hurricanes Katrina and Rita leveled most of the communications systems in the same area. Portable radios and phones also failed, isolating some communities for several days – thereby creating a situation in which many first responders were unaware of the full scope of the devastation.

The 2005 collapse prompted a $95 million upgrade of the region's communications infrastructure. The new system was not without disruptions – including the failure of two radio towers during both Gustav and Ike. But backup systems were quickly dropped into the affected areas. Louisiana officials said they never lost total communication with any of the state's parishes.

"It was nothing like Katrina. During Katrina, in Washington Parish, the state literally had no communication … for three days," said Brant Mitchell, assistant deputy director for "interoperability" – i.e., essentially, ensuring that communications systems work – for the Louisiana governor's Office of Homeland Security and Emergency Preparedness. "In every parish, we had communication during Gustav and Ike," he said.

Louisiana poured millions of state and federal dollars into building a more rugged radio system, built to a 700-megahertz design, and with greater bandwidth to handle more calls and radio traffic than the previous system that was so overloaded during Katrina and Rita. Each parish was provided at least 28 radios tied into the new system.

The department hopes to complete 670 miles of fencing by the end of this year; about 340 miles of fence already has been built, and Congress has approved a total of $2.6 billion for construction

That made the difference before, during, and in the wake of Hurricane Ike, said Clifton Hebert, emergency operations director for Cameron Parish in southwest Louisiana, which was hit hard by the hurricane's 14-foot storm surge.

Two radio towers were temporarily knocked out by Ike, Hebert said, but a mobile tower was quickly set up as a replacement, and State Police brought in more radios so local officials could communicate. "That equipment was able to get back up and running pretty quickly," Hebert said. "We never lost complete communications with the state."

By comparison, during Rita, low-lying Cameron Parish was almost totally isolated. "During Rita, we lost all of our communications, all of them. We could not communicate outside of the parish for several days," Hebert said.

Nearly five dozen radio towers dot the Louisiana landscape, most of them in the southern part of the state, and approximately 30,000 radios are now hooked into the system, Mitchell said. The state is still expanding the system, though, adding more towers in northern Louisiana – most of the latter, Mitchell said, will be in place by early November.

In addition to the 28 radios per parish already distributed, the state emergency preparedness office keeps a cache of loaner radios on hand – and a backup of 60 satellite phones, in case all else fails, Mitchell said. Hundreds of radios were loaned to local first responders, in fact, for Gustav and Ike. Perhaps the best indication of how well the state's communications systems worked during this year's hurricane season, as Mitchell pointed out, is that the only satellite phone checked out by one parish official did not have to be used.

Texas
Cost of El Paso Sector of Fence With Mexico Almost $230 Million

Nearly all of the 110 miles of border fencing planned for West Texas and New Mexico have now been contracted out at a cost of not quite $230 million, a Department of Homeland Security

(DHS) official said last week. Angela de Rocha, a DHS spokesperson, announced last Thursday that the department has awarded 11 contracts for fencing in the U.S. Border Patrol's "El Paso sector," which includes Hudspeth and El Paso counties in Texas and all of New Mexico.

The department hopes to complete 670 miles of fencing along the U.S.-Mexico border by the end of this year. About 340 miles of fence already have been built, and Congress has approved a total of $2.6 billion for construction of the fence. But DHS officials told Congress earlier this year that the project may not be finished on time – and also asked for an additional $400 million for construction.

The cost of the El Paso sector contracts, which cover all but one mile of the fencing planned for the region, is now expected to be about $228 million, de Rocha said. However, "Until … [the] final contract is awarded," she said in an e-mail, "the completion date" for the El Paso sector cannot be determined.

Douglas Mosier, a spokesman for the El Paso Border Patrol sector, said that slightly over three miles of pedestrian fencing (wire-mesh barriers 15-18 feet high) have been completed in Doña Ana County. Three other stretches of fence are now under construction. One section of the project is in Luna County, N.M.

In Santa Teresa, a one-mile stretch is being built that begins at the port of entry and runs east. In El Paso County, a 9.6-mile section of the fence is being built, starting one mile east of the Bridge of the Americas port of entry and extending to one mile east of the Ysleta port of entry. That section is one part of a 60-mile stretch of fencing that will extend east to Fort Hancock.

Mosier said the Border Patrol's goal is to complete all fencing in the El Paso sector by the end of this year. "The overall goal," he said, "is to be able to impede illegal immigrants and the smuggling activity that comes with that at times." Completion of the fencing project, he said, is also expected to reduce the number of attacks on Border Patrol agents.

New Jersey Seeks to Impose Tighter Rules To Reduce Chemical Risks

Despite efforts by the state to make New Jersey safer from toxic chemical disasters, Governor Jon Corzine should push for even more regulations to further reduce the risks, according to a report issued on 7 October by the New Jersey Work Environment Council, an alliance of 70 labor and environmental groups.

New Jersey has 97 facilities that use or manufacture highly hazardous chemicals and therefore pose a "potential catastrophic safety and health risk" to workers and the public,

according to the report issued last week. Those facilities include seven in Bergen and Passaic counties, four of them water-treatment plants that use chlorine, ammonia, or ozone.

In recent years, New Jersey has adopted several policies to improve safety and security at such plants. Those policies include a requirement that industries evaluate whether they could use safer alternative technologies or chemicals.

The U.S. Department of Environmental Protection (DEP), however, does not require plants to switch to the safer technologies or chemicals. The 7 October report urges the DEP to make it a requirement. "We do not necessarily agree that is the best approach," said Paul Baldauf, DEP assistant director for radiation protection and release prevention. "There might be multiple options for a site, so you need some discretion. Our approach allows flexibility to find the best choice for the site and the community."

The Kuehne Chemical plant in South Kearny, which uses large quantities of both chlorine and bleach, is still the most potentially hazardous site in the state. The company's own risk-assessment estimates indicate that a chlorine release from the facility could affect up to 12 million people within a 14-mile radius around the plant – an area that includes Manhattan, Brooklyn, and the North Jersey counties of Bergen, Passaic, Hudson, Essex, and Union. A real toxic release at Kuehne probably would affect far fewer than 12 million people, however, according to some experts, because prevailing winds would direct the release into what those experts describe as a "keyhole" area about a quarter of the full radius around the site.

Kuehne's management has requested an allocation of $50 million in public funds to purchase the equipment needed to manufacture chlorine on-site. That would eliminate the need for railcar delivery of chlorine and thereby reduce the risk of a toxic release.

In 2007, more than 1.5 billion pounds of hazardous substances were imported into or manufactured in New Jersey, the report says. New Jersey is the nation's most densely populated state and, according to the report, has one of the highest ratios of toxic facilities per square mile in the nation.

Massachusetts
Rapid-Response Vehicle Provides Risk Assessment During Emergencies

It can predict the weather, measure wind speed, and test both the air and ground water. In early October the Massachusetts Department of Environmental Protection rolled out its new rapid-response vehicle – officially nicknamed the Field Assessment and Support Team, or FAST, truck.

The agency decided to buy the vehicle after reviewing its own inadequate response to the devastating chemical explosion in Danversport almost two years ago. That explosion, the worst industrial accident in state history, destroyed or damaged more than 100 homes and businesses. The cost of the damages was well into the millions of dollars. State and federal investigators concluded earlier this year that the blast had been caused by chemical vapors that built up inside the plant and were ignited from an unknown source. State and federal grant money was used to cover the $180,000 price tag of the FAST truck.

The vehicle, which is based in Wilmington but may be kept at other locations in the state, responds to explosions, floods, oil spills, and other environmental emergencies. The department has responded to 1,385 emergencies this year. It responded to 1,727 emergencies last year, including a gasoline tanker rollover in Everett and a fatal fire in downtown Gloucester in December.

Staff members responding to emergencies previously had to collect samples of air, water, and other substances, and then drive them to a lab at a regional office or to the main laboratory in Boston, officials said. They now will be able to test samples carried onboard the FAST truck, officials said, and to obtain accurate results in a matter of minutes.

The truck is loaded with a diverse mix of environmental technological equipment. Gas chromatographs allow for the speedy testing of air, water, and soil. Radiation detectors spot hot zones. A spectroscopy unit analyzes a broad spectrum of chemicals detected at the scene of an accident. An onboard weather station provides up-to-the-minute forecasts on laptop computers. In many if not all operations the truck will be able to respond with only two people aboard, with additional staff deployed to an emergency scene as needed.

Despite the number of systems it carries, the truck, a GMC TC 4500 model, is eco-friendly. It is equipped with a diesel filter that removes particulate matter from emissions. An oxidation catalyst reduces the amount of nitrogen oxide from emissions (that compound is a key contributor to ozone depletion). The truck's own exhaust-gas cooler reduces the temperature of emissions, including nitrogen oxide – which, officials pointed out, forms at higher temperatures.

When not being used at an emergency, the truck will serve as a support laboratory. "This [the truck] is not going to sit around and not move," asserted John Fitzgerald, a department engineer. The department "will be able to better protect public health," he said, by keeping the truck in constant use.

Adam McLaughlin is with the Port Authority of NY & NJ, and is the Preparedness Manager of Training and Exercises, Operations & Emergency Management, where he develops and implements agency-wide emergency response and recovery plans, business continuity plans, and training and exercise programs.

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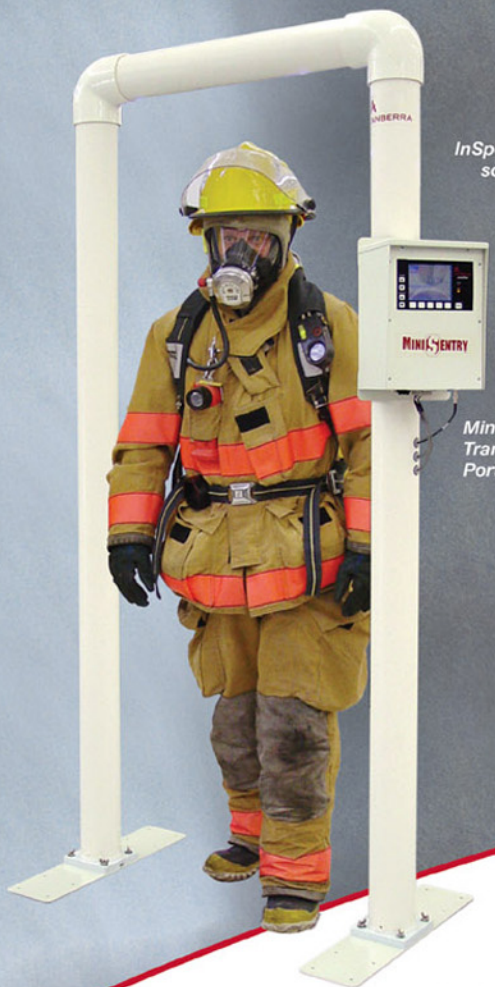

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