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Editor's Notes

By James D. Hessman

The end of any calendar year often incites reflection on past events and decisions that led to either desirable or negative outcomes. For emergency planners, responders, and receivers, the right decisions can save lives, thwart crimes, and even create heroes. As the year 2013 ends, many new opportunities and critical decisions await in 2014. Understanding the "Choices" and making the best decisions can change lives.

The professionals featured in this month's printable issue of DPJ focus special attention on: (a) understanding various security and detection technologies; (b) developing capabilities through ongoing training and education; and (c) building resilient communities, even when it means making difficult decisions.

Jay Hauhn leads the issue by identifying five key technology trends that could help protect industry and government employees, as well as secure critical data and vulnerable facilities. By combining new technologies and response equipment with social media and mobile applications – drones, facial recognition, and instant data access and analysis – Rodrigo (Roddy) Moscoso shows how law enforcement agencies are better protecting themselves and their communities. After choosing the right technology, Chris Weber points out that new technology and equipment – particularly for first responders and hazardous materials teams – require additional training and multi-technology support.

Such training comes in various forms to meet different learning styles. Craig Crume describes how training should continue to evolve in order to meet the users' individual needs as new, and sometimes underused, equipment emerges. In addition to equipment and training, the roles of emergency service leaders also change over time. Anthony Mangeri cites an example of a New York high school that is training the next generation to provide calm and structure in the midst of crisis.

In the emergency medical services, Joseph Cahill outlines an opportunity to increase the life-saving interventions at the lower level and introduce new technologies, thus expanding the individual and collective capabilities of the entire system. However, Robert C. Hutchinson adds the caveat that training not only is essential for an effective incident response, but it also may be necessary to decrease vulnerability to potential liabilities.

The unifying thread that brings technology, equipment, resources, training, and education together is resilience. The devastating impacts of past disasters stress the importance of improving disaster-response planning, risk mapping, and information sharing. Sherri Goodman and Gretchen Hund illustrate how everyone can play a role in reducing risk and creating more-resilient communities. Everyone, Marko Bourne emphasizes, includes persons with disabilities and functional needs. If more-inclusive planning efforts continue to expand, communities will be able to better meet the needs of all of its citizens.

As another year ends and a new one begins, Thad Allen reminds emergency planners, responders, and receivers that: "This complex environment [where nature and technology collide] will force every level of government to make hard choices about what to preserve, what to protect, and potentially what to let go." Reaching across jurisdictions and sectors will help communities understand the needs that exist, identify the resources that are available, and close the gaps that hinder resilience.

About the Cover: As the door to the future opens, many questions will require planners, responders, and receivers to make difficult choices and decisions to protect the communities they serve (iStock photo).

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Security Technology Trends to Watch in 2014

By Jay Hauhn, Cyber & IT

In the past decade, innovations in technology have changed the way business managers think about security. In addition to protecting employees, assets, facilities, and operations, security systems now offer much more than just physical protection.

An increasing number of companies are leveraging their existing security systems to gain key insights for improving business and operational efficiencies. Not long ago, employees could only access facilities with metal keys and key cards; and video surveillance and monitoring could only occur on site. Now, solutions like mobile security management offer information technology managers the ability to access and monitor multiple locations – anywhere and at any time.

In 2014 and beyond, such innovations in security technologies will continue to evolve. Following are five key security trends to watch in 2014.

The Cloud – Tangible Applications of Cloud Services

The "cloud" is a buzzword that has continued to receive tremendous hype over the years, and for good reason. Cloud services offer organizations in both the government and commercial sectors the ability to access and share resources over a large network, while at the same time reduce the total cost of ownership.

Although there historically have been security concerns about cloud services, hosted services actually have the ability to improve physical security by providing a comprehensive system across multiple buildings and locations, rather than integrating individual solutions that would require additional resources to manage. Cloud-based security services – hosted video, for example – also allow multiple users at various locations to simultaneously view and monitor one particular site. The cost-saving benefits alone have a significant impact on the bottom line for businesses, which is why more organizations with large, global footprints are likely to integrate cloud-based services into their operations in 2014.

Wireless Technology – The Evolution of Mobility

Over the past decade, wireless use has increased significantly. Mobile phones today can do much more than simply place phone calls. Innovations in mobile technology offer instant access to people, information, and video – all with a device that can fit in the palm of the hand. Some of the ways many organizations are using mobile technology include: (a) for integrating of security systems; (b) as emergency response tools to notify local responders about incidents; and (c) to instantly push mass notifications to a large network of targeted people. In the upcoming year, organizations without a current mobile operations plan will likely begin laying the foundation for one.

Having a mobile security management system also can: (a) provide anytime, anywhere control over access to a location; (b) help prevent unauthorized visitors from entering a facility; or (c) restrict access to sensitive areas of operations.

Such systems have the capability to store data on the identity of who enters a facility, the time of day or night people enter and exit the facility, and the duration of each visitor's stay. In addition, these tools help to better monitor departmental and other critical activities related to the security and operations of an organization.

Standards – Internet Protocol (IP) Video

Proprietary protocols used to be the norm in the security industry, and manufacturers focused on setting up rules and regulations specific to their security systems, rather than focusing on the industry's needs. Driven by end users, the demand for device interoperability has placed a greater emphasis on companies working together to align with industry standards. By having systems and devices that can communicate with each other, the end users are not limited to purchasing from a single vendor.

The Physical Security Interoperability Alliance (PSIA) and the Open Network Video Interface Forum (ONVIF) are just two examples of groups working to improve the interoperability of devices across the board. PSIA heavily focuses on promoting interoperability of IP-enabled security devices and systems across the physical security ecosystem, and ONVIF is dedicated to creating a standard for how IP products within video surveillance and other physical security areas can communicate with each other. Although this shift away from the "every man for himself" (or in this case manufacturer for itself) mentality has certainly taken some time, there is an increasing number of organizations that continue to push for industry excellence through new standards.

Distance Biometrics – New Way to Deploy Biometrics

Biometrics provides identity authentication based on physical characteristics such as fingerprints, hand geometry, and face or iris recognition. With biometrics technology, once the system scans a specific part of the body, it can quickly authenticate that person's identity to allow or restrict access to facilities or sensitive areas of operation.

Despite its "cool factor," biometrics technology also raises some concern about the risk of transmitting disease. For example, fingerprint readers require that a person touch them, as does everyone who needs access to a room, laptop, or device. To address this concern, companies are beginning to implement "biometrics at a distance."

For instance, there are now high-definition cameras that scan for facial recognition as a person approaches from 15 feet away, which eliminates any concern about spreading disease or germs. This segment of biometrics certainly will continue to expand.

Business Intelligence – A Security Benefit

Companies are starting to realize the larger benefit of having an integrated security system: business intelligence. The same technology that companies already use for physical security offers business owners powerful insights into their operations, performance, and customer behavior. For example, well-designed video systems let business owners capture, save, and export video segments that offer key insights into concerns such as: whether employees are complying with corporate policies; the busiest times of day and whether more staff is requires; and the time of day when thefts most often occur. Email and text alerts paired with mobile access to live video offer awareness of after-hours access, entry into sensitive areas, and activation of video sensors.

These five security trends are important for improving the overall operations in critical areas like loss prevention, workplace violence, and the physical security of facilities. In 2014, it will be exciting to see how these trends continue to evolve, and what other security innovations lie ahead.

Jay Hauhn is the chief technology officer and vice president of industry relations at Tyco Integrated Security, where he is responsible for: product technology and innovation; industry and government relations; interaction with industry associations, regulatory agencies, and local, state, and federal governments; product and service solution development and engineering; as well as development and implementation of product strategy. He is the current president of the Central Station Alarm Association. His recent honors include being: inducted into the Security Industry Hall of Fame in April 2011; recognized as one of the "Security Industry's Most Influential People" in 2012; and named one of the 40 "Most Influential People in Security & Fire" by IFSEC (International Fire and Security Exhibition and Conference) in 2013.

The Future of Training: Integrated, Intuitive & Interactive

By Craig Crume, Exercises

New equipment holds plenty of promise, from streamlining operations to enhancing connectivity. Advances in instrumentation for chemical, biological, radiological, nuclear, and high-yield explosive (CBRNE) responders continue to allow for quicker and more effective responses. However, what was once a box of shiny new equipment eventually may simply gather dust in the corner. The key for preventing that from happening is to empower the end users from the moment they acquire the equipment.

Training – Past & Future

From the moment a CBRNE responder receives a new instrument, it is essential to ensure that he or she knows how to use and care for it properly, as well as how to immediately resolve any issues – from operating protocols to ongoing maintenance. That is where integrated training plays a critical role.

In the past, training meant scheduling classroom time followed by take-home binders of information to study. Rather than empowering the user, though, this model often simply resulted in heavy, outdated training materials that would collect on sagging backroom bookshelves, never to be opened again.

Online training models offer a whole new world of "show-don't-tell" instruction, which helps users to better learn, experience, and digest the information. With e-training, users have the ability to learn in a multitude of self-directed, interactive ways – from video demonstrations to webinars to downloadable resources. Tailoring instruction to each user is possible with an extensive and searchable knowledge base hub accessible whenever and wherever the user is ready to learn.

User-Paced Learning

Self-paced, real-world learning helps users retain the information they acquire and gain knowledge in meaningful ways – for example, immediately getting answers to questions or testing techniques in real time. Engaged learners become more proficient and confident in operating equipment and using instrumentation, which results in increased readiness and more efficient response times. With access to an ever-expanding library of living documents, responders are able to fluidly learn in a constantly shifting environment.

When CBRNE responders, for example, attend a once-and-done prescribed training class, they may not fully digest the overwhelming amount of information. However, when responders initially receive new equipment accompanied by e-training, a username and password give them access to learn how to use that equipment at their own pace with the help of online tools. With this electronic learning experience, the users then may scroll past what they already know and receive real-time, searchable answers to their own specific questions. For example, there are: (a) video demonstrations for visual learners; (b) follow-along steps in slide presentations or webinars for tactile learners; and (c) extensive manuals and procedures for learners who prefer research.

> *The classroom of the future integrates learning and solutions within an interactive setting that makes equipment easier to use and information easier to understand.*

That same database of training information also could include tools to help users maintain and repair their equipment – even a piece of equipment that may have once seemed to be too much trouble to fix. This "one-stop, self-service" platform would not simply support users in training or provide technical support for equipment, but support an entire system of response, allowing instruments and training resources to work in concert within the context of a mission environment. The tools and technology to realize this vision are already materializing, paving the way for a future of more streamlined, capable, and clear responses.

Industry Game Changer

By integrating training and equipment maintenance knowledge in the same interactive platform, it is possible

to create a holistic customer service experience that would revolutionize CBRNE readiness. Vendor-neutral, single-point systems would enable responders to seamlessly integrate instruction and technical support. This integration not only ends frustration with equipment but also encourages end users as well as offices of emergency management and maintenance service providers to all contribute as well. In this way, users can offer their own real-world experiences and solutions to collaboratively expand the knowledge base for the benefit of everyone.

When operators are able to personalize their online experiences to track specific equipment maintenance schedules as well as their own learning progression through training certifications and refresher courses, they become empowered users and models of readiness. Additionally, when they are able to offer their own troubleshooting suggestions to others, they become part of a larger community of innovative thinkers.

With the help of a searchable database of common questions, technical information, and user experience, it may even be possible to restore devices that have been banished to an "equipment graveyard." As efficient, cost-effective training and maintenance knowledge now resides in a highly searchable form in the cloud, dusty obsolete binders and unused equipment are relics of the past. Integrated, intuitive, and interactive learning is the wave of the future.

Craig Crume is vice president and co-owner of KD Analytical Consulting Inc. He has more than 25 years of analytical experience training and supporting analytical equipment around the world and has published or presented more than 30 papers on field analysis. Since 2003, KD Analytical has provided training, instrument maintenance, and support to the CBRNE responder community through use of a web-based maintenance management system, ReadiTrak™, and 24-hour support center.

Community Resilience & Functional Needs

By Marko Bourne, Private Sector

On 7 November 2013, U.S. District Judge Jesse Furman ruled that: (a) New York City's emergency planning inadequately accommodates people with disabilities; and (b) the city is in violation of local and federal laws, including the Americans with Disabilities Act. In his ruling, Furman said that the city's current plans do not ensure the evacuation of people with disabilities, do not provide sufficiently accessible shelters, and do not do enough in general to inform all citizens about the emergency services available. He issued the ruling in response to a class-action lawsuit initiated by disability advocacy groups following Tropical Storm Irene in 2011 – nearly two years before the devastation that Superstorm Sandy inflicted on the city and its residents in 2012.

Severe-Weather Data & Population Statistics

Furman's ruling is likely to spur new emergency management and planning efforts in major cities and other communities nationwide. Effective disaster preparedness requires a whole-community effort that covers the entire population. Last year alone, the United States experienced 11 weather and climate disaster events that cumulatively caused 377 deaths, and more than $110 billion in damages, which makes it the second-costliest year on record for extreme weather and climate events, according to the National Oceanic and Atmospheric Administration's National Climatic Data Center.

The essential goal of emergency management is to minimize the impact of such disasters and help all survivors and communities recover as quickly as possible following a natural or human-caused disaster. During the past decade, many of these efforts have focused special attention on improving the preparedness capabilities of people with disabilities, the elderly, and others who have access and functional needs. In 2010, to address these and other issues involved, the Federal Emergency Management Agency (FEMA) established the Office of Disability Integration and Coordination (ODIC) to coordinate emergency management efforts and ensure universal access for all U.S. residents. Through that office,

FEMA works closely with disability groups and state emergency managers to promote their inclusion in local emergency planning processes – from the beginning.

In 2012, according to ODIC officials, more than 56 million people in the United States, or approximately 20 percent of the population, have some type of disability. Included in that total are more than: 30 million with a hearing disability; 14 million with a physical disability; 3 million using wheelchairs; and 16 million with a cognitive, intellectual, or mental health disability. In addition: (a) more than 48 percent of the U.S. population are now taking prescription medications, many of which are for long-term illnesses or conditions (about one-third of the U.S. population take prescription medications for that purpose); and (b) approximately 40 million U.S. citizens are now age 65 or older – and many of them are suffering from various types of disability and/or have difficulty coping with an emergency. For people with disabilities, a disaster disrupts their daily routines and/or inhibits their access to critical social and technological networks, leaving them particularly vulnerable when electrical power, communications, health, transportation, or other common services are not readily available.

In the past decade, many U.S. communities throughout the nation have developed detailed plans to address the concerns of the nation's "access and functional needs" population. Those efforts have been extensive in some communities, but somewhat less so in others. Nonetheless, Judge Furman's ruling should serve as a much-needed wakeup call for all branches and levels of the nation's overall emergency response community to address the unique needs of this important segment of the population.

Education, Medication & Special Needs

This issue has long been a priority for the leadership teams of the Special Olympics and Booz Allen Hamilton. Even before Judge Furman's ruling, both organizations, working in close collaboration with senior FEMA officials, conducted a "National Preparedness and Resiliency Design Thinking Workshop" on 22 October 2013 in Washington, D.C.

The workshop was the first in a cooperative effort to help the nation's access and functional needs citizens, and their caretakers, strengthen their own preparedness and resilience capabilities; plans for follow-up activities

are in discussion. The workshop used design-thinking methodology (which incorporates empathy in its approach to problem-solving), to draw lessons from the personal experiences of citizens in the vulnerable and at-risk population who have survived disasters. This approach gave the workshop participants – who represented a broad spectrum of nationally known preparedness and first-responder organizations – new insights into the unique challenges and special needs of the disabled in extreme circumstances. Together, the workshop participants developed several recommendations for potential solutions, including the next steps needed to:

- *Expand educational and preparedness activities* – The access and functional needs population and their caretakers can personally help in a variety of ways, including the development and implementation of preparedness plans, participation in disaster drills, and working more closely with emergency responders before disaster strikes to consider potential changes to shelter design and management;

- *Address medication needs both before and during an emergency* – Many members of the access and functional needs population are taking multiple prescription medications and must be able to renew their prescriptions on short or no notice if a hurricane, tornado, or other disaster destroys their supplies; and

- *Use the Special Olympics organization as a preparedness partner* – With its deep reach into a large community of people of all ages who are suffering from various types of intellectual disabilities, the Special Olympics organization can play an essential role in preparedness education and a host of other activities, including the coordination of private-sector efforts with government agencies.

The half-day workshop conducted by the Special Olympics and Booz Allen brought together 35 federal officials, state and local responders, representatives of various organizations that support the aging population, and individual citizens with intellectual disabilities and their caretakers to examine three related questions: (a) How can the nation as a whole help the access and functional needs population, and their caretakers, in preparing for natural disasters? (b) How can the nation as

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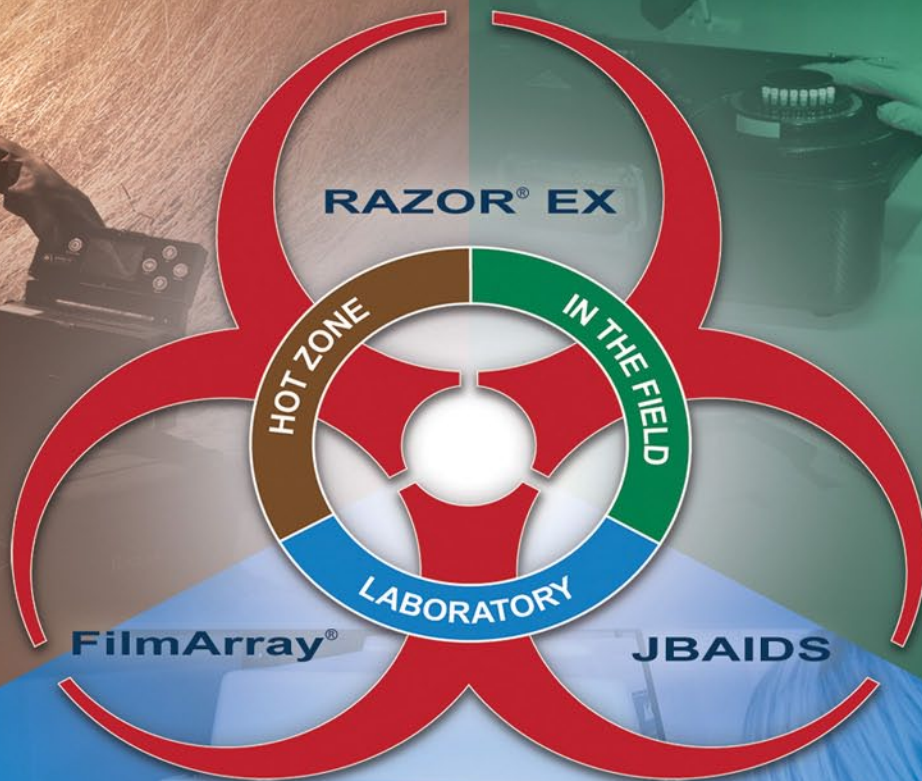
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a whole improve the response efforts needed to help that population become more resilient? (c) How can members of that population work as community catalysts to help others, serve personally as essential resources, and not be viewed as a liability?

Booz Allen's design-thinking experts helped guide the workshop, which used design-thinking methodology to: (a) stimulate creativity and new ways of looking at problems; and (b) help participants objectively analyze their ideas to find practical solutions to the various challenges identified. This methodology relies on storytelling to help participants understand and gain insights into the issues involved in any complex problem. The workshop participants, in groups of six to eight, began by listening to the experiences of attendees representing the access and functional needs population, and their caretakers, who had survived a hurricane, tornado, or other disaster. Their stories offered an emotional and intellectual window into the challenges they face, and provided the foundation for developing solutions to help them improve their own preparedness capabilities and, by doing so, become more resilient. The workshop generated many creative ideas and potential solutions for improving preparedness among the access and functional needs population.

Possible Solutions

A great deal of the anxiety and stress caused by a disaster can be dissipated by educating the access and functional needs population about not only what to expect but also what they personally can and should do during a disaster. For example, by getting to know the role of law enforcement and other emergency responders and making themselves known to local emergency management personnel, they will become more comfortable with the interactions required during a disaster. They also can help create emergency plans with their families and practice the responses recommended. In addition, people who have trouble communicating can use flashcards – particularly if separated from their caretakers – with pictures to communicate their needs. "Many people think a disaster won't hit us – until it does," said one participant. "We have to help people understand what can and does happen."

Some workshop participants explained their reluctance to proceed to a shelter during a disaster. They prefer

FEMA Region II Disability
Community Stakeholders Meeting

staying home instead, several of them said – even when electric power and other resources are not available – because large, open shelters can seem impersonal and frightening. Consequently, one suggestion was to re-brand shelters by using local community centers as evacuation facilities and making them as much like a home as possible.

Many workshop participants commented on the difficulty of obtaining prescription refills for medications that were lost in a disaster. Tight controls on prescription drugs prevent many pharmacies from dispensing extra dosages in advance of routine refills. Consequently, there is a need for new rules to set aside small stockpiles of medications for emergency use and/or to allow pharmacies to dispense small dosages of medication following a disaster. In addition, given the difficulty of having to travel any distance within a disaster area, another suggestion was to serve survivors by using mobile pharmacy trucks. Finally, participants suggested creating a mobile application that provides access to electronic medical records, making them readily available to medical responders.

"I will never look at Special Olympics the same way again," said one federal official at the end of the workshop. "The Special Olympics isn't just events. It's a community asset for resiliency." Other workshop participants – from various government preparedness agencies and first-responder organizations – echoed that key insight. The Special Olympics creates communities of support for member athletes and their families, providing year-round leadership and mentoring in addition to physical training.

The Special Olympics also serves as a hub for education and resources, not only for those afflicted with intellectual disabilities but also for their caretakers.

Participation, Insights & Action

The workshop surfaced a number of other good ideas. For example, creating a mobile disaster support system that would use trucks, vans, and other vehicles to deliver – directly into a disaster-stricken area – food, water, and other essential supplies, and perhaps serve as charging stations for wheelchairs, mobile devices, and other types of electronic equipment. As with many of the other suggestions, implementation of this recommendation as soon as possible after a disaster would help not only the access and functional needs population, but also the entire community.

To briefly summarize, the 22 October 2013 workshop highlighted the fact that truly effective resilience requires participation by the whole community. The integration between and among the various participants helped the preparedness community begin to understand the challenges and address the many problems faced by the nation's access and functional needs population. Use of the design-thinking approach gave voice to special concerns, sparked insights based on real-life experiences, and made the functional needs attendees full participants, along with representatives from preparedness organizations, in shaping recommendations for future action. In this way, the workshop fostered improved relationships and generated several new ideas to support FEMA's long-term goal of preparing individual citizens more effectively and strengthening community preparedness at the same time.

Marko Bourne is a principal at Booz Allen Hamilton and a DomPrep40 advisor. He is leader of both the company's FEMA market team and its Emergency Management and Response practice, and has more than 27 years of experience in: emergency services; emergency management; policy, governmental, and legislative affairs; and public affairs. Before joining Booz Allen Hamilton he was FEMA's director of policy and program analysis (2006-2009) – and, earlier, director of business development for homeland security (2004-2006) at Earth Tech Inc./Tyco International. He also served as acting director of the DHS National Incident Management System Integration Center and as deputy director of FEMA's Preparedness Division (2003-2004).

Reducing Risk, Building Resilience

By Sherri Goodman & Gretchen Hund, CIP-R

A year after Hurricane Sandy battered the northeast United States, Typhoon Haiyan cut a deadly swath through the Philippines in November 2013. In between, wildfires ravaged the western United States; cyclones, typhoons, and earthquakes struck India, the Philippines, and other parts of Asia; floods swamped the east coast of Australia; a storm packing hurricane-force winds lashed Europe; and the list goes on. These events are reminders of the devastating impact that extreme weather and natural disasters has on lives, properties, societies, and governments around the world. As countries rebuild, it is critical for governments to improve disaster-response planning. Lessons learned to reduce risk and build resilience, whether acquired domestically or internationally, have clear national security, economic, and development benefits.

Hurricane Sandy provides one example. In December 2012, just a month after the storm, President Barack Obama convened a Rebuilding Task Force led by the Secretary of Housing and Urban Development, with Shaun Donovan as chair. The Task Force's report, released in August 2013, emphasized that reducing disaster risk and building resilience are paramount to protecting communities across the nation. Though no single disaster is attributable to climate change, managing the risks is critical for mitigating the threats from a constantly changing climate. The report's important recommendations include: incorporating science-based projections of future risk into urban planning, coordinating infrastructure investment regionally, and better harnessing the power of the insurance sector. These insights from Hurricane Sandy provide critical information that emergency managers, city planners, politicians, and citizens could use to reduce disaster risk around the world.

National Security Implications

Technical prediction capabilities can improve warnings for events like tsunamis in Indonesia; regionally coordinating infrastructure investment can better protect – at a lower cost – places like Caribbean basin states; and leveraging insurance can reduce the risk of economic burdens to taxpayers everywhere. Learning the disaster risk reduction lessons from Hurricane Sandy and other global events will help make the nation more resilient while supporting U.S. national security, economic, and development goals.

The national security implications of climate change and extreme weather are clear: Climate change acts as a threat multiplier for instability at home and abroad. More than 24 senior retired military leaders of the CNA Military Advisory Board have warned of this threat since 2007. As the U.S. Department of Defense noted in its 2010 Quadrennial Defense Review, "While climate change alone does not cause conflict, it may act as an accelerant of instability or conflict." Some of the potential impacts are already clear: (a) Extreme-weather events increase demand for U.S. forces to provide disaster relief and humanitarian assistance; (b) Droughts and floods are globally altering crop cycles and disrupting food supplies; and (c) A changing Arctic is opening a new area of the planet to increased human traffic, from shipping to energy exploration to a potential accident at sea in remote and risky areas.

These changes have global implications. For example, a 2012 intelligence assessment on "Global Water Security" from the U.S. Office of the Director of National Intelligence concluded, "During the next 10 years, water problems will contribute to instability in states important to U.S. national security interests." These, of course, are only the challenges that analysts can expect today; even more challenging tasks are identifying and understanding the unexpected. A 2013 National Academies report, entitled "Climate and Social Stress: Implications for Security Analysis," observed that, "It is prudent for security analysts to expect

> *Both good and bad responses to recent disasters in any country serve as learning experiences for governments worldwide. Action based on those lessons, though, must occur before the next catastrophe.*

climate surprises in the coming decade." Therefore, reducing the risk of disasters will lower the impact to national security.

Economic Benefits & Development Goals

The economic benefits of reducing disaster risk also are significant. Several studies have found that investment in risk reduction pays dividends in avoided response and recovery costs. A 2005 study by the Multihazard Mitigation Council found, "On average, a dollar spent by the Federal Emergency Management Agency (FEMA) on hazard mitigation (actions to reduce future losses) provides the nation about $4 in future benefits." Of the $3.3 trillion that the international community invested in international aid from 1991 to 2010, only 3.5 percent went to natural disasters, and just 12.7 percent of that small sum, or $13.5 billion, went to disaster prevention and preparedness. U.S. programs allocate their funding similarly: disaster readiness represents only 3.0 percent of the humanitarian assistance request in the president's FY2014 request, and 0.4 percent of the total aid budget.

What is good for U.S. national security and financial responsibility has clear international development benefits as well: protecting lives is fundamental, especially given that natural disasters killed 3.3 million people worldwide between 1970 and 2010, according to the World Bank. Diplomats met at the United Nations on 25 September 2013 to review the progress of the Millennium Development Goals and agreed to hold a summit in September 2015 to adopt a new development agenda. With the memories of the 2004 Indian Ocean earthquake and tsunami, the 2008 Cyclone Nargis, the 2010 Haiti earthquake, and the 2011 Great Tohoku Earthquake and tsunami fresh in mind, protecting citizens worldwide from the effects of these hazards has taken center stage. Incorporating disaster risk reduction into post-2015 development plans would provide a strong foundation to organize the next decade's worth of efforts.

Equally important, the development benefits that many countries seek, the national security efforts that the United States requires, and the economic benefits that support all are mutually inclusive. A hospital system that can triage mudslide victims effectively has many of the same skills needed to respond to, for example, a chemical or biological weapons attack. Consequence

management training to cope with weapons of mass destruction and to mitigate the effects of natural disasters provide complementary resilience. Both reduce the risk of destabilization of the United States, its allies, and the international system.

No single country has a monopoly on good – or bad – responses to disasters. Governments can learn from the experiences of others and better protect their citizens by doing so. Particularly critical will be the role of scientists, who stabilized relationships after the Cold War and could play a similar role among states through disaster risk reduction. With the recent results of the Hurricane Sandy Recovery Task Force, the time for action is now.

Sherri Goodman (pictured) is an executive at CNA, a nonprofit research organization, and a former Deputy Undersecretary of Defense. She is the executive director of the CNA Military Advisory Board. Her leadership with a range of organizations in the private, nonprofit, and public sectors spans national security, homeland security, energy, water, and environmental security.

Gretchen Hund, a senior scientist, is the director of the Center for Global Security's Global Risk Initiative at the Pacific Northwest National Laboratory. She has over 30 years of experience addressing topics that combine science, technology, and public policy issues. Her current research focuses on nuclear nonproliferation, global trends, and associated risks influencing national security, as well as carbon dioxide sequestration. From 1985 to 1990, she was a senior analyst at the U.S. Congressional Office of Technology Assessment, directing and participating in studies on environmental issues including radioactive waste management and wastes in the marine environment.

Resilience 2013 – Survey & Report

By Thad Allen, DP40

Over the past few decades, the United States has developed an increasingly complex relationship with both nature and technology. This relationship has created challenges for protecting the nation's communities, addressing terrorist threats, understanding certain risks, and applying resources to protect or mitigate against those risks. This complex environment will force every level of government to make hard choices about what to preserve, what to protect, and potentially what to let go.

Resiliency, for all its varied definitions, is at its core about understanding the value of what we have and what we wish to preserve and improve. Recent disasters such as Superstorm Sandy have shown how a dense urban/suburban environment, with significant and vulnerable public and private infrastructure, can be heavily damaged by a hurricane and how the effects can ripple not only across the affected region but across the nation. There has already been a climate of change in the thinking of many policymakers at the state and local level. These policymakers ask questions every day about what to rebuild and how to make it stronger – and whether or not to rebuild at all.

The survey outlined in this report is the second of a series that Booz Allen Hamilton has partnered on with *DomPrep Journal*. The survey drills down into policy challenges for federal programs and understanding impacts at the state and local levels, where the majority of the resilience effort is realized.

One of the things that the nation collectively needs to understand is that the event that occurs does not create the pre-conditions or status of the community, the people, and the country. For instance, Hurricane Katrina did not invent low-income, high-density housing, childhood malnutrition, and educational problems. The same is true about the pre-conditions in the region hit by Sandy (density, population, at-risk infrastructure). An event like Sandy is exacerbated and by those conditions.

Actions to address national resilience require a unity of effort to affect change. This is difficult. There are horizontal issues related to other governmental and private sector entities that have either a stake or equity in the response. The goal is trying to bring those sectors together with an understanding that the best thing to do is work together to solve the problem. It is a leadership challenge, it is a legal challenge, it is a policy challenge, and it is a resource challenge. This report as well as others contribute to that unity of effort.

Thad Allen, executive vice president at Booz Allen Hamilton, is a leader in the firm's Departments of Justice and Homeland Security business in the civil market. He leads the development of thought leadership and client engagement regarding the future direction of law enforcement and homeland security. His expertise includes bringing together government and nongovernment entities to address major challenges in a "whole government" approach designed to achieve a unity of effort. In 2010, following the Deepwater Horizon oil spill in the Gulf of Mexico, President Barack Obama selected him as the national incident commander for the unified response. He completed his distinguished career in the U.S. Coast Guard as its 23rd commandant. Before his assignment as commandant, he served as Coast Guard chief of staff. During his tenure in that position, in 2005, he was designated principal federal official for the U.S. government's response and recovery operations in the aftermath of Hurricanes Katrina and Rita throughout the Gulf Coast region.

Resilience 2013
Full Report

On 18 November 2013, DomPrep hosted an executive briefing at The National Press Club to present the Resilience 2013 - Survey & Report. The survey outlined in this report is the second of a series that Booz Allen Hamilton has partnered on with *DomPrep Journal*. The survey drills down into policy challenges for federal programs and understanding impacts at the state and local levels, where the majority of the resilience effort is realized.

Click **Resilience 2013** to download full report.

Preparedness Training & Potential Liabilities

By Robert C. Hutchinson, Exercises

Significant incidents are constant reminders of the need to adequately prepare responders and their communities for any type of disaster. Beyond the more apparent political and financial consequences of such incidents, there also are possible legal liabilities looming for failure to adequately prepare and train personnel to respond to expected as well as unexpected threats. Unfortunately, this legal liability concern may be difficult to mitigate due to diminished financial resources. As an organizational fact, training budgets are often cut first when funding decreases. Even more challenging for leaders, the number of emergency and disaster declarations will likely continue to increase in the next decade, requiring expanded preparedness efforts as training and overall budgets likely diminish.

Legal terms such as "failure to train" and "deliberate indifference" could be relevant in future tort claims regarding the failure to adequately prepare and train personnel for these incidents or events. Many after-action reports for disasters and other incidents of national significance routinely confirm the importance of preparedness – especially regarding planning and training – as well as the political and financial consequences for failure to do so.

Failure-to-Train Liability

The foundation of preparedness begins with training personnel to a basic level or standard, with subsequent higher levels of training over time. Some relevant legal cases have identified tort claims against agencies for not meeting the necessary level of training, or preparedness, to execute the agencies' expressed or expected duties and responsibilities. These court cases include, but are not limited to:

- *Popow v. City of Margate*, 476 F. Supp. 1237 (D.N.J. 1979) – In one of the earliest failure-to-train cases, the court held that the agency was liable for the failure to train its law enforcement officers in the use of deadly force. Discounting the city's defense that additional use-of-force training was too expensive, the trial court imposed a six-figure judgment for damages against the city.

- *Fronk v. Meager*, 417 N.W. 2d 807 (N.D. 1987) – The court held that if a law enforcement agency provides a tool to an officer, it also must provide sufficient training for the specific equipment. That ruling may be relevant for any agency that provides equipment or supplies, without proper training, to its employees for an immediate incident response.

- *Anderson v. Creighton*, 483 U.S. 635 (1987) – The Supreme Court held that the agency should furnish the kind of training for its law enforcement officers that would entirely eliminate the necessity for the court to distinguish between the conduct that a competent officer considers reasonable and the conduct that the U.S. Constitution deems reasonable.

- *City of Canton, Ohio v. Harris*, 489 U.S. 378 (1989) – In this frequently cited decision, the Supreme Court held that a municipal government may, in certain circumstances, be held liable under 42 U.S.C. § 1983 ("Civil action for deprivation of rights") for constitutional violations resulting from failure to train its employees. Although this decision related to training for a local police department regarding the rendering of medical assistance, it created a frequently referenced foundation for the more serious claim of deliberate indifference to constitutional rights within case law.

- *Robinson v. City of St. Charles, Missouri*, 972 F. 2d 974 (8th Cir. 1992) – The court held that, in order to prevail on a policy or training claim, the plaintiff must show that the government agency had notice that its training was inadequate and deliberately chose not to remedy the situation. That decision may be a basis for future litigation regarding preparedness and anticipated incident response.

- *Atchinson v. District of Columbia,* 73 F. 3d 418 (D.C.C. 1996) – The District of Columbia court of appeals held that even a single incident was sufficient to support the complaint of inadequate training and supervision. The court further held that alleging an additional instance of misconduct would not necessarily improve the notice to the agency.

- *Buttram v. United States*, No. 96-0324-S-BLW (D. Idaho 1999) – The trial court found a federal agency and local fire department negligent and the proximate cause of the death of two firefighters in 1995. According to the court ruling, the fire department had failed to ensure the safety of the firefighters, provide adequate equipment, properly train them, and advise the federal agency of the limited training and experience of the firefighters.

- *Sanders-Burns v. City of Plano*, 594 F. 3d 366 (5th Cir. 2010) – The court found that, for an alleged failure to train claim to succeed, the plaintiff must demonstrate that: (a) The agency's training policy procedures were inadequate; (b) The agency was deliberately indifferent in adopting its training policy; and (c) The inadequate training policy directly caused the violation that was the basis for the 42 U.S.C. § 1983 action. Although this claim failed, the ruling addressed the issue of training personnel and the more serious allegation of deliberate indifference by an agency.

Deliberate-Indifference Liability

Beyond the accusation of failure to train, a finding of deliberate indifference may be more serious in that it can result in stronger consequences for any agency that receives notice of a training issue and chooses to ignore the need or requirement. According to the "USLegal Dictionary," "deliberate indifference" means "the conscious or reckless disregard of the consequences of one's acts or omissions." These court cases include, but are not limited to:

- *Estelle v. Gamble*, 429 U.S. 97 (1976) – The Supreme Court found that deliberate indifference can result in an agency's liability under 42 U.S.C. § 1983. The court held that: "Deliberate indifference by prison personnel to a prisoner's serious illness or injury constitutes cruel and unusual punishment contravening the Eighth Amendment."

- *Monnell v. Department of Social Services*, 436 U.S. 658 (1978) – The Supreme Court found that municipalities and other governmental bodies are persons within the meaning of 42 U.S.C. § 1983 for civil rights violations and liability of their personnel under certain circumstances. Many subsequent court decisions regarding failure to train and deliberate indifference claims against law enforcement agencies have referenced this case.

- *Bordanaro v. McLeod*, 871 F. 2d 1151 (1st Cir. 1989) – The deliberate indifference standard was expanded when the court identified numerous training deficiencies and issues indicative of deliberate indifference. Even though the case involved significant use-of-force issues, it further established case law regarding failure to train and deliberate indifference.

- *Doe v. Borough of Barrington*, 729 F. Supp. 376 (D.N.J. 1990) – The court found that the absence of training was a deliberate and conscious choice by the agency. The court also found that agencies must abide by the Constitution regardless of what other agencies do or fail to do. The court's decision may be relevant for a claim against a specific agency since being part of a larger noncompliant group would not provide legal justification or coverage to evade liability.

- *Zuchel v. City and County of Denver, Colorado*, 997 F.2d 730 (10th Cir. 1993) – The court found the city was deliberately indifferent as a result of its inadequate training regarding the use of deadly force. In the ruling, the court referenced evidence from an outside source that should have placed the city on notice for this training inadequacy.

- *Huffman v. City of Prairie Village, Kansas*, 980 F. Supp. 1192 (D. Ks.1997) – The court found that: In order to prevail under 42 U.S.C. § 1983 based on failure to train, a plaintiff must show that a municipality's failure to train rose to the level of deliberate indifference.

- *Johnson v. City of Cincinnati*, 39 F. Supp. 1013 (S.D. Ohio 1999) – The court found that the city was deliberately indifferent in failing to adequately train the police.

- *Garcia v. County of Bucks, Pennsylvania*, 155 F. Supp. 2d 259 (E.D. Pa. 2001) – The court found that an agency may be found liable for the failure to train subordinate officers when such failures reflect a policy of deliberate indifference to the constitutional rights of citizens.

- *Estate of Owensby v. City of Cincinnati*, 385 F. Supp. 2d 626 (S.D. Ohio 2004) – The court found that the failure to train individual police officers on the proper meaning and application of policies regarding medical care rose to the level of deliberate indifference.

A 2000 study by Darrell L. Ross, professor and head of the Department of Sociology, Anthropology, and Criminal Justice at Valdosta State University, revealed that deliberate indifference regarding training can be difficult to prove in court with only one-third of the cases being successful, but the average award for successful claims was $450,000 as of 2000. It is likely that the average award value has increased since that year.

In the October 2005 "FBI Law Enforcement Bulletin," Martin J. King, special agent and legal instructor at the FBI Academy, stated that: "If a training program does not prevent constitutional violations and a pattern of injuries develops, officials … may be put on notice that a new program is needed and a failure to address the problem may constitute deliberate indifference." However, King also stated: "Although deliberate indifference is most often found in cases that involve inaction in the face of a pattern of prior similar constitutional violations, a failure to act that results in a single unprecedented incident can support a finding of deliberate indifference where the constitutional violation was a highly predictable consequence of failure to train."

Failure to train and deliberate indifference are two ways in which agencies may open themselves to liabilities if they do not take the proper actions to fully train their employees, even in difficult fiscal times.

Budget Constraints & Potential Liability

As documented in Popow and other court rulings, a limited budget for training does not alleviate an agency from training requirements and standards. In McClelland v. Facteau, 610 F.2d 693 (10th Cir. 1979), the court found that budgetary constraints that limit training are not a valid defense. The budgetary-limitations-for-training argument was also encountered in Brown v. Bryan County, Oklahoma, 219 F.3d 450 (2000) with negative results for the agency when the court upheld the lower court ruling and jury finding that the training policy of the agency was so inadequate that it amounted to deliberate indifference. Although it may have been a painful budgetary and fiscal reality, the lack of

funding for training did not relieve an agency of liability.

Of course, there have been other cases for which arguments and claims of deliberate indifference regarding training were unsuccessful, but the case law above provides a foundation of rulings that could be used against agencies or organizations regarding preparedness or resilience training. Even though few of the cases listed above are directly on point for emergency preparedness and incident response, they could serve as a foundation to establish new case law in the future for alleged constitutional and civil rights violations.

Strong leadership within organizations is crucial to enhance the level of preparedness within those agencies and to reduce future legal liability. As stated in a 2003 book by William C. Nicholson, assistant professor of Department of Criminal Justice at North Carolina Central University: "When individual agencies within a unit of government refuse to fulfill their legal duties, whether in preparedness or in response, the responsibility for fixing the situation lies squarely on the shoulders of the unit of government's leader."

As history has demonstrated over the past 30 years, the federal, state, local, and tribal agencies will continue to respond to an increasing number of man-made and natural incidents in the future. The costs of preparedness training would likely be minor compared to the possible financial, political, and legal consequences of a successful lawsuit against an agency or organization. The benefits of preparedness training would likely be larger than the investment when a tort claim is lost.

Lessons Learned & Future Action

The importance of preparedness did not begin with the 9/11 or the Hurricane Katrina responses, but such significant incidents function as important drivers for change and identify lessons learned for federal, state, local, and tribal governments. It is uncertain, though,

whether lessons will in fact be learned and implemented following an incident and its subsequent after-action report. As stated in a 2006 book by Thomas A. Birkland, William T. Kretzer professor of public policy in the School of Public and International Affairs at North Carolina State University: "Time will tell whether the 'lessons' of Katrina being bandied about in the popular and technical media and in the federal, state, and local governments are actually learned and translated into policy, or are simply observed and filed away until the next disaster causes policymakers and reporters to rediscover these original 'lessons'."

For the nation to improve its preparedness or resilience capabilities, all levels of government must learn from the experiences and accomplishments of other organizations by: (a) recognizing the relevance as it relates to their own responsibilities and operations; and (b) prioritizing the new lessons along with the daily problems that an agency confronts within its own jurisdiction.

The challenge for leadership is to understand and appreciate the costs and benefits of preparedness training, including the limitation of exposure to legal liability for the organization and its employees and establishment of negative case law. Beyond being prepared and ready, there are possible legal ramifications of policy decisions to consider. If the law requires planning and preparedness steps, failure to fulfill the statutory mandate may be the basis for liability. Even if current legislation, policy, or case law do not explicitly require planning and preparedness, future tort claims may establish the expectation and create the requirement, which would only compound the political and financial ramifications for agencies and their leaders.

Michael McGuire, associate publisher of public and environmental affairs at Indiana University-Bloomington, addressed the need for professionalism in emergency management in a 2009 book: "The increasing size and scope of disasters and emergencies suggest that no longer can a community rely on untrained nonprofessionals to prepare for, mitigate against, respond to, and recover from disasters." This need or requirement for trained emergency management professionals includes all partners at the federal, state, local, and tribal levels. All

incidents may begin and end locally, but successful responses that truly serve the public also may require broader resources from various levels of government.

Jurisdictions' limited resources may be more effective if invested in preparedness and training, rather than spent on defending accusations of a failure to train or deliberate indifference. The nature of future incidents may be uncertain, but those incidents will likely continue to require collaborative efforts by trained and prepared personnel from many levels of government as well as the private sector to be successful. The current challenging financial times do not alleviate responsibility, and possible liability, to adequately train agency personnel – even with reduced training budgets.

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The opinions expressed herein are solely those of the author in his individual capacity, and do not necessarily represent the views of his agency, department or the United States government.

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Raising the Capabilities Bar for Future Medical Teams

By Joseph Cahill, EMS

Predicting the future of emergency medical services (EMS) is often a frustrating task; but it also can be extremely rewarding. For many years, EMS leaders have been predicting a day when paramedics will be able to treat patients on-site – without having to transport them to a hospital or other healthcare facility. In fact, the so-called "Community Paramedic" has been just over the horizon since the mid-1980s.

That wait may soon be rewarded. Already, according to the National Association of State EMS Officials (NASEMSO) and the National Organization of State Offices of Rural Health's (NOSORH) Joint Committee on Rural Emergency Care (JCREC), community paramedicine has not only significantly expanded the role of EMS and increased patient access to primary and preventive care, but also "provides wellness interventions within the medical home model, decreases emergency department utilization, saves healthcare dollars, and improves patient outcomes."

From Wartime Necessity To Peacetime Progress

In the United States, there is a long history of EMS organizations bor-rowing from the nation's armed ser-vices. In fact, there have been several great leaps forward – in medications, in emergency medicine, and in overall medical capabilities – after each major conflict in which U.S. forces were directly involved. The military developed many innovations for emergencies on the battlefield that are now in common use by modern civilian EMS agencies and organizations.

One of the more recent military innovations has been the development of field-ready portable imaging devices, which represent a spectacular step forward for the civilian EMS community. It has always been the hope that emergency medical technicians (EMTs) and paramedics would eventually be able to accurately and quickly sort,

Raising the number and types of capabilities authorized and achievable through basic medical care will almost automatically push all current levels of emergency medical services to a higher plane.

at the scene of an incident, the "actually injured" from the "possibly injured."

To understand why this seemingly routine task is so important, one might consider the case of a patient found at the bottom of a staircase. A standard physical exam often cannot determine whether that patient is bleeding inside his or her head. However, a device that can actually "look" inside a patient's head has been used for decades at hospitals and other healthcare facilities, where a computed tomography (CT) scan allows a physician to determine if the patient is in fact suffering from a life-threatening internal bleed.

Thanks to the development and use of digital imaging, traditional X-ray technology also has become much closer to being truly portable. Today, medical X-ray devices similar to portable dental X-ray machines are currently under development.

The information that paramedics could gather from such technology would not necessarily determine whether to transport a patient – but would help, by using information based on the actual injury, to determine the best destination for that specific patient. This seem-ingly minor change would be another major advance for the EMT community. Historically, many EMS agencies have required that paramedics and EMTs transport injured patients to high-cost trauma centers – a determination based primarily on the mechanism of injury and other trauma-scale factors.

The mechanism of injury, though, remains a controversial indicator. Although there are cases when an EMS team transports a patient to the trauma center based on the "mechanism of the injury" and the patient does in fact require critical care, many other trauma-center patients do not have life-threatening injuries. Being able to decide between a high-cost trauma center and a lower cost – and often closer – community hospital helps control costs

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while at the same time reserves limited precious resources for those who actually need them.

Access to Medications & Other Steps Forward

Aspirin for heart attacks and albuterol for asthma were two of the first medications that many EMTs could administer under the protocols of their individual jurisdictions. These medications share three key features: (a) they treat truly life-threatening emergencies; (b) they already are on many ambulances at the paramedic level; and (c) they are not invasive in nature. Nonetheless, although the authorization for their use by EMTs may seem logical, it was a huge shift for the EMS world because, initially, the protocols authorized only paramedics to administer medications on the ambulance or in the pre-hospital arena.

The transition of some life-saving treatments traditionally reserved for paramedics to the EMT or basic life-support level has enabled some paramedics to adopt a more advanced role within their own communities. In effect, by raising the bar at the most basic level, the bar will rise for all medical responders. Perhaps the "Community Paramedics" model will continue to spread to more communities throughout the nation in the upcoming year.

Note: An article published in the [February 2012](#) DomPrep Journal addressed the fact that EMTs, law enforcement officers, and firefighters were beginning to administer another life-saving medication called Narcan – the antidote for overdoses of heroin, Oxycodone, and other opiates. A device that aerosolizes the medication so it can be absorbed through the mucous membrane of the nose makes Narcan relatively easy to administer. The aerosolizing of other life-saving medications also could be possible, but this would require testing for each medication to prove its effectiveness – and also would mean waiting for approval by the U.S. Food and Drug Administration as well as the individual states that are willing and able to expand their own capabilities in this area.

Joseph Cahill is the Director of Medicolegal Investigations for the Massachusetts Office of the Chief Medical Examiner. He previously served as exercise and training coordinator for the Massachusetts Department of Public Health and as emergency planner in the Westchester County (N.Y.) Office of Emergency Management. He also served for five years as citywide advanced life support (ALS) coordinator for the FDNY – Bureau of EMS. Before that, he was the department's Division 6 ALS coordinator, covering the South Bronx and Harlem. He also served on the faculty of the Westchester County Community College's Paramedic Program and has been a frequent guest lecturer for the U.S. Secret Service, the FDNY EMS Academy, and Montefiore Hospital.

Preparing the Next Generation Of Emergency Service Leaders

By Anthony S. Mangeri, Emergency Management

Emergency management is a constantly evolving profession. Anyone wishing to become an emergency manager or work in emergency services should be able to adjust to an ever changing environment and bring calm and structure to a crisis response. Emergency management studies teach students how to develop critical thinking skills and a thorough understanding of the emergency management cycle and incident management process.

Developing Critical Skills

Education plays a critical role in building these skills and preparing students for a career in emergency management, which typically requires at least a bachelor's degree. However, some professionals go a step further and earn a master's degree as well. Writing and presenting ideas in a structured and concise way are skills that emergency management students acquire over time. As these students transition from the academic to the real-world environment, speaking and presenting ideas to a variety of audiences becomes very important.

At the core of the profession is the development of plans, policies, and procedures to support, protect, and strengthen the community against threats and hazards. To demonstrate a commitment to community and service, many successful students gain practical experience by volunteering in local emergency management, fire services, emergency medical services, Red Cross, The Salvation Army, or one of the many other volunteer organizations that have emergency service components. Other notable skills for the successful emergency manager include the ability to: think critically; communicate and present skills effectively; and discuss community planning and preparedness efforts in a clear and concise manner. He or she also must be able to: hold workshops and provide briefings to inform the public in times of crisis; understand the tools, systems, and standards commonly used in public safety, such as the National Incident Management System; and continue training, as well as sharing and discussing best practices.

The role of crisis management continues to expand into many private sector areas to include healthcare facilities, utilities, financial institutions, as well as colleges and universities. Because emergency preparedness professionals are now working in many areas outside the public sector, those seeking to work in these areas must understand the details of operations in these sectors as well as in emergency management.

The emergency manager of the future also may transition from other professions to emergency management. In the private sector, for example, emergency preparedness may be a collateral duty, leading many to seek a master's degree in emergency management or choose to enter certificate programs that provide education that complements their existing education.

Younger Training & Greater Opportunities

A trend that will likely continue to grow in 2014 is incorporating emergency management and responder education into high school curriculums. In New York City, for example, a first of its kind high school dedicated to emergency management studies is midway through its first year. The Urban Assembly School for Emergency Management (UASEM) is a Career and Technical Education program and is part of the New York City Public School system. The focus of the program is to integrate emergency management and response curriculum into the core high school experience. Students receive their core high school education through 10th grade, after which they choose from one of three tracks: Response and Recovery, Emergency Communications and Technology, or Emergency Management.

One major success of the program has been the school's ability to collaborate with local emergency management and disaster relief organizations to provide students with real-world interaction and community readiness.

Students graduating from the UASEM program will be well on their way to meeting the training and experience requirements for the International Association of Emergency Managers, Certified Emergency Manager designation. In fact, the students may earn up to 14 college credits upon completing this high school program.

The growing threat of terrorism has changed the role of emergency managers; planning for the consequences of terrorist actions has changed the face of emergency management. However, the mission remains the same. The emphasis continues to be on developing an all-hazard, integrated strategy to protect communities in times of crisis. Emergency management students of the future will need to develop risk assessment and operational planning skills to address community wide preparedness.

Emergency managers must continue to develop strategies to effectively respond to and recover from all known threats, including terrorism. Emergency planners are working to develop effective operational plans that foster integration of federal, state, and local disaster preparedness, response, recovery, and risk-reduction initiatives.

Anthony S. Mangeri, MPA, CPM, CEM, is the manager of strategic relations for fire services and emergency management and is on the faculty of the American Public University System. He has more than 30 years of experience in emergency management and public safety. For more than 10 of those years, he served as the New Jersey State hazard mitigation officer. During the terrorist attacks of 11 September 2001, he served as operations chief at the New Jersey Emergency Operations Center, coordinating that state's response to the passenger-aircraft crashes into the World Trade Center.

Detection Technology – Decisions & Support

By Chris Weber, Fire/HazMat

Detection and identification of hazardous materials and CBRNE agents is one of the most difficult and technically challenging job functions that emergency responders perform. The job function requires that responders: (a) choose the applicable instrument(s); (b) use the instrument(s) correctly according to the manufacturer's directions; (c) use the instrument(s) at the appropriate location(s); (d) interpret the instrument readings accurately and within the limitations of the technology; and (e) place the results in the context of the emergency – assuming the correct equipment is actually available to the emergency responder. In effect, such responders must be experts in multiple fields, not just in the hazardous materials themselves.

The emergency response community is poised to experience a renaissance in detection and identification due to the state-of-the-art equipment now available on the market, the advent of multi-technology technical support services, and a focus on multi-technology training designed for optimal use of the equipment.

Detection & Identification Technology

Manufacturers have begun to achieve the technology trinity – accuracy, ease of use, and small size – in the majority of detection and identification equipment they produce. New advances in Raman spectroscopy – technology capable of identifying solid and liquid chemical samples – have significantly reduced the probability of ignition or detonation of explosives, thus increasing the safety levels for explosive ordinance disposal technicians. Software improvements including mixture analysis and levels of detection are making the instrumentation easier and more accurate to use. These improvements will continue in the near future.

Even gas chromatography-mass spectrometry (GC-MS) – two technologies that together are capable of separating

Responders at the scene of a hazardous material incident face many decisions and challenges. The safety of the entire team depends on accurate detection, identification, and interpretation.

complex chemical mixtures and identifying the individual components at extremely low concentrations – has become comparatively small, easy to use and maintain, and very accurate in the field. GC-MS technology is uniquely able – among man-portable technologies – to separate complex mixtures of up to hundreds of individual components and identify each of these components at the parts-per-million and even parts-per-billion level in air and water. This ability will lead to wider adoption of the technology by a host of disciplines – including the fire service, law enforcement, and emergency medical services – that have either not recognized the feasibility of GC-MS technology in the field or have not realized that this capability was even available.

The Next Level of Technical Support Services

The introduction of new technologies, however, has the potential to overwhelm emergency responders with additional training burdens. One solution to the overwhelming task of data interpretation is the use of technical support experts offered by equipment manufacturers. Unfortunately, only a select few manufacturers sell a broad enough suite of technology – and hence possess the technological expertise – to support emergency responders in the field on a technologically complete basis. Increasingly, technical support services must be able to not only interpret one piece of data from a single instrument, but also place these results in context with other instrument readings and determine what they mean for the response as a whole. Responders need multi-technology technical support.

One recent technical support call that Smiths Detection received illustrates this point clearly. Fire department personnel responded to a residential home for a large "bubble" forming under the linoleum kitchen floor. The initial responders found transient readings of a flammable gas near the bubble. Once the hazardous materials response team arrived, those team members

used a photoionization detector (PID) – technology capable of detecting the presence of many, but not all, gases and vapors at low concentrations – and a GC-MS instrument and found only low-level contaminants. This raised further questions, so the team called the manufacturer's technical support to sort out the readings and determine the type of detection equipment that would work best.

Due to the wide variety of instrumentation that the support personnel were responsible for and therefore familiar with, they could quickly determine that the gas had a low molecular weight (GC-MS did not see it), was flammable (combustible gas indicator), and had an ionization potential above 10.6 eV (minimal PID readings). They, therefore, suggested using the agency's gas-phase infrared spectrometer – technology capable of identifying solids, liquids, and gases – to identify the material, which turned out to be methane seeping through the slab foundation.

Training on Multiple Instruments & Equipment

Detection of airborne hazards – also known as air monitoring – is a complex task that involves choosing and using multiple pieces of equipment correctly and in the appropriate sequence. Instruments such as radiation detectors, multi-gas meters, and comparatively simple tools such as pH paper must be used correctly and at the appropriate place and time in order to detect hazardous material threats. This creates a training problem because maintaining proficiency on more than a dozen different instruments and technologies is a daunting task. When training is inadequate to maintain proficiency, accuracy and safety suffer.

Manufacturers are placing a greater emphasis on ease of use and intuitive user interfaces with the technology. Select manufacturers also are creating instrument-training programs that integrate the new technology with other existing agency technology. This type of training places the new technology in context with existing technology and allows first responders to interpret the new instrument readings synergistically with traditional multi-gas meters, infrared and Raman identification equipment, and other technology.

Emergency responders are becoming more knowledgeable about their detection and identification technology purchases. They expect intuitive and easy-to-use instrumentation that functions properly as well as excellent training and technical support. The industry leaders are indeed moving in this direction.

Chris Weber is an applications specialist with Smiths Detection, specializing in technologies such as gas chromatography-mass spectrometry, infrared spectroscopy, and Raman spectroscopy. He is also a subject matter expert with the Longmont (Colorado) Fire Department's Hazardous Materials Response Team. His past experience includes serving on the Washtenaw County (Michigan) Hazardous Materials Response Team for more than a decade in positions that include hazmat technician, training officer, and deputy director. He has been a firefighter for more than 20 years and has extensive experience involving hazardous materials chemistry, including a Ph.D. in cellular and molecular biology and biological chemistry from the University of Michigan, Ann Arbor. He has authored several books – "Pocket Reference for Hazardous Materials Response," "Hazardous Materials Operations," and "Hazardous Materials Technician" – and can be reached at chris.weber@smithsdetection.com.

Reshaping Law Enforcement in the 21st Century

By Rodrigo (Roddy) Moscoso, Law Enforcement

Technology improvements continue to reshape the law enforcement sector in new and exciting ways. Beyond the smartphone "app" revolution of the past five years, which has brought robust, enterprise-level computing capabilities and a wealth of data out of the police station and directly into the hands of mobile officers, other technological solutions are further expanding the capabilities of police officers when conducting day-to-day operations. These solutions not only improve officer performance, but also help to ensure the safety of both the officers and their communities.

One of these new technologies, body-warn video cameras, is becoming increasingly popular as "standard equipment" for the mobile officer. Capturing up to an entire eight-hour shift, these relatively inexpensive cameras (significantly less than an in-car, dash-camera system) have quickly demonstrated their value at agencies testing this technology. The popularity and affordability of such cameras are garnishing attention at high-profile agencies – including the Alexandria, Virginia, Police Department (APD) just outside the nation's capital.

Body-worn cameras, facial recognition, drones, and other technological advances are bringing response agencies a step closer toward the "Robocop" of the future.

New Technologies in Action

Deputy Chief Eddie Reyes with the APD stated in a phone call with this writer on 3 December 2013 that he is a proponent of the new body-worn cameras. With its small form factor, eight hours of recording time, and "one-button" operation, officers are able to download and manage their own videos using a simple USB dongle, thereby eliminating the need for a team of information technology professionals to support them. Building on the recent experiences at other police departments, Alexandria and other jurisdiction's use of body-worn cameras can reduce the number of incidents where officers use force, decrease the number of complaints against the police department, and

increase trust between the officers and the public. In a 25 October 2013 press release, the American Civil Liberties Union even recommended the use of body-worn cameras for all Customs and Border Patrol officers as part of a policy framework, which includes strong privacy protections.

In addition to the use of new hardware, APD is also expanding its use of existing technology, notably the use of social media as a means to more *proactively* communicate with and inform the public, as well as to engage their support, when necessary. Reyes noted a recent incident: A robbery suspect fired a gunshot in a grocery store, resulting in a large police response, which included a helicopter. The scene prompted a large influx of calls – many inquiring about the incident and asking what, if anything, they needed to do. After posting multiple social media updates, the APD noticed a rapid drop in the call volume. Social media quickly reached a large percentage of the population, in many different places. "This is community-oriented policing in the 21st century," Reyes said.

New & Emerging Technologies In Other Jurisdictions

Following the 2013 Boston Marathon bombings, the use of social media – specifically Twitter – became an invaluable tool for the Boston Police Department (BPD) to communicate with the public and the media. In fact, BPD's Twitter followers jumped from about 50,000 to nearly 300,000 in the week following the bombing. Twitter also served as a "lifeline" for many people to communicate with BPD as cellphone networks became unusable due to high call volume. As traditional "land-line" use continues to decline, cellphones have become for some people the only means of voice communications. Fortunately, internet-enabled social media channels, like Twitter and Facebook, provide a more resilient communication platform.

Another new field recording technology includes the use of relatively inexpensive (less than $1,000) "throwable" camera sensors. Companies such as Bounce Imaging are developing small, ruggedized cameras packed with sensors that first responders can literally throw into an emergency setting and immediately receive live audio, video, and other sensor data – for example, temperature, oxygen levels, methane, carbon dioxide, and even mapping capabilities – directly on their connected smartphone. Applications for this type of technology are many, and can support a variety of incidents, including: a hostage situation, fire and hazardous material, and disaster recovery efforts involving small or difficult terrain, such as a collapsed building following an earthquake.

New applications for mobile devices continue to increase the amount of data and capabilities available to the mobile officer. For example, there are applications that provide access to comprehensive Criminal Justice Information Services (CJIS) data, including the Federal Bureau of Investigation's National Crime Information Center (NCIC). Due to the strict security requirements for accessing CJIS/NCIC data – federal encryption standards, two-factor authentication, and mobile device management – these solutions have been slow to emerge. However, a growing number of security-compliant third-party virtual private networking software solutions are making these data available to mobile officers via off-the-shelf smartphones and tablets.

In addition, other software solutions take full advantage of the capabilities of mobile devices by integrating near-instant facial recognition capabilities. The San Diego County, California, Tactical Facial Recognition solution developed by the Automated Regional Justice Information System uses tablets to photograph suspects in the field and receive facial recognition results from a database of more than a million booking records within seconds. The value of this capability is significant, particularly in a field environment where suspects intentionally do not carry any form of identification and who may not have fingerprints on file that would result in a response from a mobile fingerprint reader.

Body-worn video camera, capturing up to an entire eight-hour shift.

Photo compliments of www.geekwire.com

The Future "Robocop"

Other new technologies to support the mobile officer are on the horizon, including the use of drones, which continue to grow in popularity as evidenced by Amazon's proposed "delivery drones." Though fraught with technical, policy, and cost challenges, drones in the domestic public safety environment are likely here to stay.

By combining the new and emerging technologies described above, it may soon be possible to have a palm-sized drone capable of self-navigating into any environment, conducting facial recognition on the people it finds, running NCIC queries on all facial matches, and then streaming the results, including live audio and video, back to a mobile officer. In effect, the "Robocop" of the future may be available for duty in the near future.

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