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**Joint Expeditionary Collective Protection**

The Joint Program Manager- Protection (JPM-P), one of nine JPM offices within DoD's Joint Program Executive Office for Chemical and Biological Defense (JPEO CBD), oversees Collective Protection (ColPro) against CB warfare agents.

By Kathryn Dawson

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Industry-leading tactical shelter providers offer integrated solutions for meeting today's challenges in first response and battlefield-ready shelter protection.

**Trace Explosives Detection: Real Success Measured in Real Time**

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By John Kenneweg

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JPEO-CBD: Setting the CBRN Countermeasures Standard

JPEO-CBD is DoD's single focal point for R&D, acquisition, fielding, and life-cycle support of CBRN defense equipment and medical countermeasures.

By Cicely R. Levingston

**Military Perspective**

Mr. Kenneth A. Myers

Director

U.S. Defense Threat Reduction Agency

STRATCOM Center for Combating Weapons of Mass Destruction (DTRA/SCC-WMD)

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In the Q2 2012 Issue of CST & CBRNE, we pay special attention to the work being done by DoD’s Joint Program Executive Office for Chemical and Biological Defense (JPEO-CBD). The command’s Joint Program Manager- Protection (JPM-P) office oversees the latest in Joint Expeditionary Collective Protection (ColPro), an evolutionary shelter-born deterrence strategy for threats posed by chem-bio agent CBRN attack.

Keeping the nation safe from those that would do us harm is at the heart of an insightful perspective from Mr. Kenneth Myers, Director of the U.S. Defense Threat Reduction Agency (DTRA) and STRATCOM Center for Combating Weapons of Mass Destruction (SCC-WMD). Mr. Myers discusses DTRA/SCC-WMD’s work to safeguard the U.S. from global security threats through the integration, synchronization and provision of expertise, technologies, and capabilities for reducing and eliminating these threats before they become imminent.

From enhancements in protective countermeasures to large scale WMD attack to advanced warning for CBRN attack scenarios, the challenge for many training programs across the nation lies in getting responders to believe in the necessity of perpetual preparation for what a grateful nation hopes it never have to face. One such training program is that of the U.S. Warriorschool which offers train-ups involving suitcase nukes focusing on public venues involving effects of massed crowds combined with near real time national and international media feeds. This type of training allows realistic and obtainable scenarios to help first responders focus on and respond to events in real time.

Moving from training to actual product application in dealing with situations from recon to rescue, recovery and decontamination, the right equipment such as proper respiration wear can be the difference in keeping first responders safe from undetected dangers. With most respirator mask systems only designed to provide breathable air for a designated period of time, a newly-developed system is capable of detecting contamination or oxygen deficiency, while also enabling the wearer to hydrate during the mission.

In a special to CST & CBRNE, a security efforts being examined and implemented to protect New York City’s underground subway system against large urban area rail network attack are uncovering obstacles to success. From identifying vulnerabilities in dealing with potential mass casualty scenarios to identifying potentially harmful chemicals at the site of attack, new technologies are expanding the core chemical analysis capability by bringing advanced testing and comms advances that allow scan results to be sent from downrange to incident command or technical reachback without the need to leave the hazard zone.

To round out Q2, this Issue’s Command Profile with JPEO-CBD showcases expertise in chem/bio defense pushing test and product enhancements across a broad-spectrum of capabilities designed to promote integration into a system-of-systems approach for countering evolving bio-terror, chem-bio, WMD, and other threats to national security.

As always, feel free to contact me with questions or comments!

Sincerely,
Daniel J. Goldstein
Editor
Tactical Defense Media
301-974-9792
COMPANY MASS CASUALTY DECONTAMINATION SYSTEM

The Company Mass Casualty Decontamination System (MCD) uses state-of-the-art DRASH shelters and equipment to effectively decontaminate large numbers of patients quickly.

The MCD allows for a continuous flow of patients from any mass casualty incident and is configured to accommodate ambulatory, non-ambulatory or a combination of both. The internal plumbing and heating system provides five gallons per minute of decontamination solution and rinse water at each shower station, and contaminated runoff is contained in a secure berm before being pumped into a remote waste water storage bladder.

The DRASH shelters are designed to be set up quickly with minimal personnel, and are operable in extreme environmental conditions. The MCD is currently used by both Active Duty and USARC chemical response units.

The MCD System includes:
- Undress, decontamination, and redress shelters
- Integrated plumbing
- Water pumps and flow control
- Water heater with automatic solution injection
- Containment berms
- Waste water storage bladders
The Joint Project Management Office for Protection (JPM-P), one of eight JPM offices under DoD’s Joint Program Executive Office for Chemical and Biological Defense (JPEO-CBD), oversees Collective Protection (ColPro) against CB warfare agents by creating a Toxic Free Area (TFA) for safe personnel activity.

By Kathryn Dawson, JECP Lead Systems Engineer - Joint Project Management Office for Protection

U.S. military personnel must be able to successfully function wherever deployed. One key to success is the ability to conduct and sustain operations in an environment in which Chemical and Biological (CB) warfare agents are present, or may be introduced. Challenges posed by operating in a contaminated environment include minimizing the burden of Individual Protection Equipment (IPE), treating casualties, protection of critical equipment, and conducting Command and Control (C2) and Rest and Relief (R2) operations. These are all challenges the Warfighter must be equipped to overcome, and The Joint Project Management Office for Protection (JPM-P) assists with ensuring this happens.

Benefits of ColPro include eliminating the need to decontaminate sensitive equipment and provision of a clean environment free of dust and sand intrusion. As a result,
ColPro allows the Commander the flexibility to maintain balance between mission capability and CB survivability.

**A MULTI-TIERED EVOLUTION**

Since the 1950s, DoD has successfully developed and employed numerous Collective Protective systems around the globe to support warfighter requirements. These ColPro systems provide a safe operating environment for aircraft, mobile (vehicles & shipboard) systems, fixed site facilities (buildings), and transportable (protective tent) systems. An example of successful shipboard collective protective operations was the safeguarding of the interior of U.S. Naval vessels supporting the Fukushima Daiichi nuclear disaster operations in March 2011.

Specifically designed to meet the emerging needs of Joint Expeditionary Forces (JEF), the Joint Expeditionary Collective Protection (JECP) program is currently under development to integrate, test, procure, and field a Family of Systems (FoS). The JECP FoS will provide a ColPro capability (Tent Kits, Structure Kits and Standalone Shelter Systems) for the JEF with a reduced logistics burden while providing increased protection capability.

The JECP will protect JEF assets through a versatile and transportable ColPro capability that can be added to common structures and/or tentage or operate separately in the form of a standalone shelter. The added ColPro capability will allow the JEF to sustain operations for key functions -- such as C2, medical, and R2 – by providing the Warfighter with percutaneous, respiratory, and ocular protection while in a CB and/or Toxic Industrial Material (TIM) contaminated environment.

**MISSION ESSENTIAL FUNCTIONS**

The JECP FoS is comprised of active system solutions (those that use the powered blower and air filter), and passive system solutions (those that use filtration media). The JECP active systems include Tent Kits, the Structure Kit-Improved, and the Standalone Large. The JECP passive systems include the Standalone Man-Portable, Standalone Small, and Standalone Medium/Structure Kit-Unimproved. Unlike traditional ColPro systems, the JECP is smaller and lighter in weight; easy to transport, erect, strike and operate; and incorporates a modular open systems approach.

**TENT KITS**

The JECP is upgrading several existing tentage systems to ColPro systems. These tent kits use power or power components that are organic to the fielded units and thus readily available at the site where the JECP system is deployed.
**Structure Kits**

JECP structure kits allow personnel to establish a TFA inside spaces of opportunity while providing for continued operations without the need to erect new structures. JECP structure kits are comprised of configurations to collectively protect improved host structures (structures that have coherent walls and roofing, ventilation systems, doors, and windows) and unimproved host structures (e.g., mud hut, hangar, bunker, tent, or cave). Improved host structures generally have access to power in the form of either built-in power or generators. Unimproved host structures, while rudimentary in design/construction, provide environmental and other basic protection but do not have electrical power. Structure kits for unimproved host structures include the means to supply the power required to provide ColPro.

**Standalone Shelters**

The JECP standalone structures are self-contained (i.e., they do not require other supporting systems or components) and self-sustaining (they provide their own power and other support equipment). Also, the structures are modular, lightweight, compact, and available in multiple sizes/configurations to meet various missions and Service requirements as well as easily and rapidly erected, maintained, and operated. The multiple-sized configurations are defined as Man-Portable, Small, Medium, and Large.

Man-Portable configurations provide space for up to two-person expeditionary missions. Standalone Small configurations provide space for up to six-person expeditionary missions.

Medium configurations provide space for up to 12-person expeditionary missions. Although this configuration is not required to provide ingress/egress or environmental control components, it has the capability to interface with ingress/egress and environmental control components.

Large configurations provide space for up to 20-person expeditionary missions.

The JECP FoS will allow the JEF to successfully sustain operations wherever deployed, by sustaining key functions such as C2, medical, and R2 while in a CB and/or TIM contaminated environment. The JECP systems enable the sustainment of these functions by providing kits and standalone structures, while reducing the logistics footprint associated with existing large, heavy and complex ColPro systems. JECP systems are ideal for JEF forces because they can be used in remote locations and austere environments where fixed-site ColPro is limited or non-existent and sustainment/support is challenging. Initial fielding of JECP systems is scheduled to begin during Fiscal Year 2014.

More info: jpeo-cbd.osd.mil
As chemical and biological airborne threats become more advanced, the shelters, filters and systems used to repel them must evolve as well. That’s where the superior engineering that has made HDT a world leader comes in. Our expeditionary collective protection solutions include HDT Base-X® shelters, AirBeam® shelters, HDT CBRN filtration systems (including the HDT FFA400 and HDT M93 filters), and HDT ECUs, providing a fully integrated system, not just a collection of individual components. Protecting the personnel who protect the public — that’s HDT’s mission.
Mass Casualty Decon
By Mark Wlazlak, Manager of Business Development, DHS Systems LLC

Effective decontamination of large numbers of patients quickly is the core function of the Company Mass Casualty Decontamination System (MCD), a personnel decon system used in conjunction with DRASH or “Deployable Rapid Assembly Shelters”, a product of DHS Systems LLC, a wholly-owned company of DHS Technologies.

Allowing for a continuous flow of patients from any mass casualty incident, MCD is configured to accommodate ambulatory, non-ambulatory or a combination of both. An internal plumbing and heating system provides five gallons per minute of decon solution and rinse water at each shower station. Contaminated runoff is contained in a secure berm before being pumped into a remote waste water storage bladder.

Designed to be set up quickly with minimal personnel, and are operable in extreme environmental conditions, the DRASH MCD system is currently used by both Active Duty and U.S. Army Reserve Command (USARC) chemical response units.

Standalone Protective Zone
By Adam Bement, Business Development Manager, Utilis USA

Recently, the JECP program chose the Utilis TM54 design for the Standalone Large configuration. The integration of new Collective Protection (ColPro) technologies with Utilis shelters, erected in less than 5 minutes without requiring any additional set-up equipment such air compressors, push poles, or even a ladder, produces a safe and effective Toxic Free Area for working personnel.

The exterior folding frame and one-piece fabric allows a ColPro liner to be pre-installed in the shelter which significantly decreases initial set-up times. Another option for consideration is to have a chem-bio barrier introduced into the one-piece external fabric thus eliminating the need for the additional ColPro liner, greatly reduces logistics and complexity for the operator.

Expeditonary-ready Mobility
Dr. Carl Pates, VP of Engineering, HDT Expeditionary Systems Group

Transportable collective protection shelter systems, such as the XCP Systems from HDT Global, provide an integrated solution to expeditionary collective protection.

The HDT systems feature rapidly deployable shelters, such as the HDT Base-X® folding frame shelters which provide barrier protection against liquid and vapor contaminants through the combination of the shelter’s outer shell and the inner liner.

HDT also manufactures the Fan Filter Assembly (FFA) with the HDT M98 filter and the COLPRO Environmental Control Unit (ECU). These components provide air purification to the Toxic Free Area (TFA). The FFA and the shelter liner work together to create positive pressure within the shelter, ensuring the TFA is impervious to toxic materials. Each shelter supports an attachable single person airlock, which allows ingress and egress to the TFA without compromising its integrity.
CBRNE Lab Analysis and Collection

The Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) Directorate of the Pentagon Force Protection Agency (PFPA) is responsible for providing biological monitoring capabilities to protect the facilities and personnel of the Pentagon and other DoD affiliated entities. As part of this mission, the CBRNE Directorate is responsible for testing environmental samples for biological agents. PFPA CBRNE has been utilizing Polymerase Chain Reaction (PCR) and Electrochemiluminescence (ECL) methods since 2001 to test for the presence of a number of biothreat agents in environmental samples at its on-site lab located on the Pentagon Reservation.

The contract specifies requirements for personnel capable of performing PCR and ECL, or similar immunoassay procedure, to detect multiple biowarfare agents. Testing will occur primarily at an existing 24 hour, 7 day (24/7) Biosafety Level (BSL) 2/3 laboratory located on the Pentagon Reservation but, the contractor will also maintain an off-site BSL 2/3 laboratory for reach back capabilities and other duties. Contractor shall provide timely results in keeping with the Detect-to-Treat mission assigned to the Pentagon Force Protection Agency (PFPA).

More info: www.pfpa.mil

Antibiotics by Mail

The U.S. Postal Service (USPS) is working to develop dispensing plans in which postal carriers who volunteer to participate in the program will deliver antibiotics to residences in certain zip codes. Bio-threats such as anthrax, widely believed to be the most likely bioterrorist threat in the U.S. today, can be treated with certain antibiotics, generally referred to as medical countermeasures (MCMs).

To be effective, these countermeasures generally must be delivered in very large quantities in a short period of time. For example, in the event of an outdoor release of aerosolized anthrax over a wide geographic area, hundreds of people would need prophylactic antibiotics within 48 hours of exposure to prevent deadly inhalational anthrax. Given the number of potential biological threats, an extensive array of different medical countermeasures are needed to protect the public against these agents. This in itself is a huge challenge, but the delivery of MCMs to those who need them during a public health emergency has been identified as a major challenge facing the medical and public health community.

More info: www.usps.com

RECHARGEABLE SPOTLIGHT

Streamlight®, Inc., a leading provider of high-performance flashlights, has introduced a lithium ion rechargeable version of its Waypoint® spotlight. The new handheld, pistol grip searchlight, featuring C4® LED technology, is designed to provide extremely bright lighting with an integrated long-range targeting beam. The light is also waterproof and floats.

The Waypoint’s deep-dish parabolic reflector produces a long-range targeting beam while also optimizing peripheral illumination. Powered by a lithium ion battery with an on-board safety control circuit, the Waypoint Rechargeable provides 5 hours of run time on the high setting, 50 hours on low, and 35 hours in emergency signal mode.

The rechargeable model offers three lighting settings, including high, low, and emergency signal modes. On the high setting, the light delivers 300 lumens measured system output and 80,000 candela peak beam intensity, over a range of 560 meters. On low, the light provides 25 lumens and 6,100 candela, over a range of 155 meters. The light’s C4 LED is impervious to shock and features a 50,000 hour lifetime.

More info: www.streamlight.com
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Mr. Kenneth Myers is Director of the Defense Threat Reduction Agency (DTRA) and the U.S. Strategic Command Center for Combating Weapons of Mass Destruction (SCC-WMD). Both are co-located on Fort Belvoir, VA. He assumed these responsibilities on July 27, 2009.

The DTRA mission is to safeguard the U.S. and its allies from Weapons of Mass Destruction (Chemical, Biological, Radiological, and Nuclear) and High Yield Explosives by providing capabilities to reduce, eliminate, and counter the threat and mitigate its effects. The agency is the Department of Defense’s Combat Support Agency for the Combating WMD (CWMD) mission and develops improved CWMD capabilities for the warfighter. The mission of the SCC-WMD is to synchronize the CWMD plans of the warfighters, and identify and advocate for needed CWMD capabilities. Together, these organizations provide CWMD expertise, support, and products at strategic (global and national), operational (theater and regional), and tactical (battlefield) levels to prevent the proliferation of WMD, deter and defeat WMD use, and reduce the effects of WMD.

During his leadership of DTRA and the SCC-WMD, Mr. Myers has further integrated the two organizations into an even more effective team; strengthened coordination and synchronization of CWMD plans, research and development programs, and support to CWMD operations across the Department, the U.S. Government, and among international partners; and directed programs to implement the President’s vision for global biological threat reduction and engagement and nuclear security, improved WMD defeat capabilities including the transition of the Massive Ordnance Penetrator for the defeat of underground WMD facilities to the Air Force for final testing.

To better implement the President’s nuclear and biological security policy initiatives and the 2010 Quadrennial Defense Review, Mr. Myers developed a new strategy to guide DTRA and the SCC-WMD. Named after the sponsors of the legislation that Cooperative Threat Reduction (CTR) program, Former Senator Sam Nunn (D-GA) and Senator Dick Lugar (R-IN), the Nunn-Lugar Global Cooperation Strategy applies the lessons learned from the execution of the CTR program to the new security environment. The strategy calls for more agile, flexible, anticipatory, and responsive nonproliferation programs and activities to meet emerging WMD threats and maximize opportunities for WMD threat reduction in cooperation with partners around the world. This strategy also increased DTRA/SCC-WMD support to the Combatant Commands’ theater security engagement efforts that shape more stable regional security environments.

Mr. Myers was interviewed by CST & CBRNE Editor Daniel J. Goldstein.
CST: Please explain the mission of DTRA/SCC-WMD and your role and functions as Director, DTRA.

Mr. Myers: The mission of DTRA and the SCC-WMD is to safeguard the United States and its allies from global WMD threats by integrating, synchronizing and providing expertise, technologies, and capabilities for reducing and eliminating WMD threats at their sources (Nonproliferation); deterring, interdicting, or defeating them (Counterproliferation); and mitigating the consequences of their use (Consequence Management). Together we provide synergy and momentum for more effective and efficient implementation of national and department Counter Weapons of Mass Destruction (CWMD) strategy and policy. We provide CWMD expertise and capabilities to a growing range of partners across DoD, the U.S Government, and the international community.

DTRA/SCC-WMD is a unique organization with 24/7 operations, a full Research and Development technology portfolio and a full time focus on just CWMD. As the Director of both DTRA and the SCC-WMD, I am dual-hatted. My job is to ensure that the agency and center - the core of the DoD and national expertise on the full scope of the CWMD mission - continues to strengthen the barriers between the American people and the WMD threat.

CST: From an evolving perspective, how is your office working to address the challenges of a changing national defense threat and CBRN defense strategy as we move into the second decade of the 21st century?

Mr. Myers: The threat posed by Chemical, Biological, Radiological, and Nuclear (CBRN) weapons is one of the greatest security challenges facing our nation and has the potential to undermine peace and stability around the globe. Additionally, our customers’ expectations of us are growing and we are anticipating and meeting them in innovative, efficient, and effective ways.

Through the Nunn-Lugar program, we continue our elimination activities and cooperative biological engagement in the Former Soviet Union and are expanding into new regions, including Africa and Asia. For a small investment, we are improving the safety and security of dangerous pathogens to ensure they don’t fall into the hands of terrorists, and building capacity to detect, diagnose, and report disease outbreaks and biological attacks.

As the nation’s expert on the onsite inspection of arms control treaties, we are supporting implementation of the New START Treaty. Last year, we conducted the full quota of 18 inspections within Russia and escorted 18 Russian inspections. Overall, we performed 276 arms control related missions in 2011.

We assist the Department of State to control and eliminate small arms and light weapons (SALW) including MANPADS. Our SALW teams perform assessments, provide technical advice, and share U.S. best practices through training and seminars worldwide.

Last year, our experts responded to 1,695 requests for technical and operational support, primarily from combatant
commands. That is nearly a one-third increase from 2010.

We transitioned the Massive Ordnance Penetrator, or the “MOP” to the Air Force to hold underground targets at risk and we continue to support its testing.

We also stood up the Consequence Management Assistance Program to help the combatant commanders build counter WMD capacity in partner states.

CST: How is your office addressing the ongoing needs of first responder force training and preparation in terms of joint and cross-sector information sharing and integration?

Mr. Myers: DTRA is the DoD Combat Support Agency charged with providing CWMD expertise and support to the Joint Chiefs of Staff, the Military Services, and the Combatant Commanders. While we serve all Combatant Commanders, we work most closely with the six Geographic Combatant Commanders (GCCs), USSTRATCOM, and the U.S. Special Operations Command (USSOCOM).

The contributions of the DTRA/SCC team are made daily at national, theater, and battlefield levels. For example, during the negotiations on the New Strategic Arms Reduction Treaty (New START), DTRA interpreters and on-site verification experts comprised 15 of the 56-members of the US negotiating team in Geneva. In addition, DTRA has conducted vulnerability assessments of the White House, the Capitol, and national-level command and control infrastructure. The Combatant Commanders rely upon us for CWMD planning and exercise support, training, and augmentation of their internal subject matter expertise to assist their CWMD efforts from theater security cooperation through warfighting and WMD elimination. We provide “boots on the ground” in hostile and uncertain environments to conduct vulnerability assessments, assist current military operations, and provide CWMD training. We are simultaneously and continuously addressing strategic, operational, and tactical level CWMD challenges.

Because the CWMD mission requires whole-of-government solutions, DTRA also works closely with NNSA, the Department of Homeland Security (DHS), and Department of Health and Human Services (HHS), in particular leveraging our collective Science and Technology investments and ensuring collaboration between our programs and activities. While DTRA, NNSA, DHS, and HHS share an interest in WMD-related science, the DoD application of that science is quite different from that of DHS as DoD forces must deploy and operate in unstable or hostile military environments at great distances from supporting infrastructure and
logistical support. The military forces that we support face space, volume, and weight limitations, and must be easily deployable, supportable, reliable, rugged and survivable, yet simple to use.

We select from the full range of national expertise, wherever that may be. Our performers include the DoD and Department of Energy/National Nuclear Security Administration (DCE/NNSA) labs, contractors, Federally Funded Research and Development Centers, University-Associated Research Centers, and academia.

CST: What are the greatest challenges facing your organization and how are you dealing with them?

Mr. Myers: The greatest challenges we face are declining budgets and increasing operational demands and expectations. To address these we’ve been undergoing a transformation process with several components. The first and easiest has been to reorganize DTRA and the SCC-WMD into a J-code based structure to streamline our own organization and make it easier for our mission partners to enter and navigate our organization. We are now organized along the following lines: J1 Human Resources; J2/5/8R Intelligence, Plans, & Resource Integration; J3/7 Operations, Exercises & Readiness; J4/8C Acquisition/Finance/Logistics; J6 Information Operations; and J9 Research & Development. We are focusing more on mission execution and finding innovative efficient and effective means for performing essential enabling functions. We’re also providing tools to enable our workforce to be better stewards of the resources entrusted to us. I’m proud of this organization and its enduring commitment to make us a higher performing team.

DTRA/SCC-WMD is transforming the way we operate by increasing our focus on business efficiencies while sustaining our ability to plan for, and support, combat and crisis response operations; it will increase our agility, flexibility, adaptability, responsiveness, and speed; and it will eliminate barriers to communication. It will clarify our reporting chain, streamline access to our capabilities to our military customers, and ensure transparent, accountable, agency-wide decisions.

Together, DTRA, the SCC-WMD, and the SJFHQ-E will provide a more capable DoD CWMD team that is better integrated within overall USG CWMD community. They will leverage and maximize skills, expertise, capabilities, and resources across all, and think and act as an integrated CWMD team.
The U.S. Joint IED Defeat Organization (JIEDDO) reported that between 2007 and 2011, U.S. combat operations in Iraq saw a greater than 25% drop in IED detonations and an over 100% increase in the number of found and cleared. Advances in trace explosives detection are building on this success.

By Daniel J. Goldstein, CST & CBRNE Editor

Ever since the U.S.-led invasions of Afghanistan and Iraq in the aftermath of the 9/11 terrorist attacks, more than 70 percent of all U.S. and allied casualties in Iraq and Afghanistan have come from improvised explosive devices (IEDs) and Homemade Explosives or HME. And as the insurgency in Iraq peaked in spring 2007 with as many as 2,600 IEDs a month being detonated by Al Qaeda-in-Iraq and other Sunni forces opposed to the U.S.-led coalition, the need for handheld and rapid explosive detection was paramount.

It’s estimated that since the start of the insurgency in Iraq in 2004, the U.S. Joint Improvised Explosive Device Defeat Organization (JIEDDO) has spent nearly $19 billion on how to detect and defeat IEDs, with nearly all going to JIEDDO, formed in February 2006 at the height of the Iraq insurgency.

Even with the improvements and new technology, JIEDDO disclosed in its 2010 unclassified annual report that about 25 percent of IEDs in Afghanistan aren’t discovered until detonation. IED attacks in Iraq have fallen as the insurgency has abated, but a similar number of IEDs aren’t discovered until they’re activated.

And as the Iraq and Afghanistan missions wind down, the need for hand-held explosive detection continues.
JIEDDO’s annual report notes that IED events outside Iraq and Afghanistan averaged more than 600 events per month worldwide, causing more than 12,000 casualties.

**IMS Revolution**

DoD’s handheld explosive program was originally developed from experiences in Vietnam in the 1960’s, when improvised devices used by the Viet Cong caused a third of U.S. casualties. Dogs could detect the trace amounts of TNT and RDX that vaporize over a land mine or an IED but took months to train and often became casualties themselves during counter-IED, or C-IED missions.

The experience with the British Army in Northern Ireland in the 1980’s and 1990’s countering the Irish Republican Army’s IED campaign prompted DARPA in 1997 to launch a program known as “The Dog’s Nose.” seeking to create a sensor as capable as the thousands of olfactory receptors that an explosive-sniffing dog has. But it wasn’t until 2004 that the first commercial hand-held sensor was developed by a company named Nomadics, which in turn was bought by ICx Technologies and later acquired by FLIR.

At the heart of the so-called “Dog’s Nose” was Ion Mobility Spectrometry or (IMS). IMS modifies particles collected either by sniffing or direct transfer, ionizing them and then their “Time of Flight” (ToF) down a drift-tube with a detector on the end of it.

“IMS has many applications outside of trace explosive detection and there have been many improvements throughout the years but the core principle of operation remains the same;” says Tim Kirk, senior product manager for Counter-IED Technologies at Smiths Detection Systems of Edgewood, Maryland, another company which is expanding its fixed explosive detections equipment systems, which are often found in airports and used by the Transportation Safety Agency (TSA) to the hand-held product space. The company currently has about 90,000 products in the field, and many will be used at the upcoming Olympic Games in London this summer, he said.

IMS technology detects threats down to the nanogram level (1 billionth of a gram). “It’s due to this sensitivity that IMS has been such a popular method for trace detection for so many years and has been proven to be admissible evidence in a court of law,” said Kirk.

But the first and second-generation devices had their limitations. While handheld trace detection systems worked, Wichert says most required carrying a device that weighed as much as 15 pounds, took hours to warm up and could not effectively sample vapor.

“The Allied forces wanted something with a six-to-nine month development time, so there was a lot of 30-year old technology that was repackaged, but didn’t really address the original research and development issues,” said Clint Wichert, head of product development for FLIR Systems’ portable explosive detectors. FLIR, based in Portland, Oregon, typically makes hand-held thermal imagers and night-vision sights, but has recently acquired ICx Technologies in 2010 to increase its footprint in the fast-growing handheld space.

Now, devices like FLIR’s NXT (pronounced “next”) weigh just under three pounds and the company says it can detect a broad range of military, commercial, and HME threats in real-time. “With the ability to perform both vapor and particulate detection and the quick start-up time, an operator can take a Fido out of their rucksack and be screening at a checkpoint in less than five minutes,” said Wichert.

**Detection at a Distance**

But as IEDs were claiming more lives in Iraq and Afghanistan, JIEDDO wanted trace detection that allowed standoff as far away as 100 meters, with 100 percent real-time detection, and they wanted it within six months. “Unfortunately those were unrealistic expectations and the industry couldn’t deliver, however, if you look at where technology development was five years ago and where we are today, we are getting closer,” said Wichert.

This is starting to change with improvements how handheld detectors can be used at a distance. FLIR’s Fido OnBoard can be placed on any of a number of robots and perform trace vapor sampling of an IED or vehicle while the operator is out of harm’s way. FLIR is also working on a system that will improve the stand-off distance and will be able to pull explosives particles off of a surface from up to six inches away. That may not sound like much says Wichert, “but when you consider that some types of explosives can only be detected by particle contamination, it opens up a lot of doors.”

**Homemade Threat Detection**

But given the cat-and-mouse game of strategy and counter-strategy when it comes to IEDs, no agency or company can stand still. The recent emergence of Homemade Explosives (HMEs) in liquid form as evidenced by foiled Al Qaeda attempts to use liquid explosives aboard commercial aircraft, serves as added incentive,” noted Wichert. “The next three years are going to be pretty amazing for this area in terms of breadth of detection, size and weight of detectors and stand-off for vapor and particulates”. FLIR’s Fido systems now have the ability to not only detect conventional HMEs but also many of the peroxides and liquid-based explosives that have recently made the national headlines.

FLIR is also developing a different system thanks to DoD funding that can interrogate a substance from several meters away and positively identify it by its chemical fingerprint, all using an autonomous robot. “Imagine being able to send a
robot into a room and a few minutes later, having the room fully mapped with threat compounds clearly identified,” Wichert says.

According to Smiths Detection, handheld detectors will also soon be able to detect multiple chemicals simultaneously, just like a dog’s nose that can detect explosives and narcotics in the same sweep. “Shifting to dual drift tubes and modifying heating profiles enabled the detection of both positive and negative ions,” Kirk says. “Having this capability further improves the selectivity and library size of our instruments (and) allows for the detection of narcotics and explosives in a single platform.”

But even companies like FLIR and Smiths Detection both say that handheld detectors aren’t perfect, and after nearly $19 billion later, there still might not be anything better when it comes to explosive trace detection than, well, a real dog. “While Fido has cost, size, and training advantages over canines, dogs are able to sample a larger area much faster than any trace detector on the market today,” said Wichert.

**TEST ID KITTING**

Florida based Field Forensics Inc (FFI) already had their ELITE™ simple and reliable, explosives detection and identification kits, which are unique in their detection and identification of commercial, military and home made explosives, when they reacted to a request from theater for a simple to use tester to specifically identify a particular explosive. The device could be used in back-up to a screening kit or instrument and would be used when there was a known or suspected threat.

The result was the FFI IDEX tester, which has had a significant impact on attack the network operations in Afghanistan.

“After January 2010, the need to identify ammonium nitrate after its ban by the Karzai government became a primary intelligence requirement for our customer and we responded accordingly. Since then IDEX now includes a whole series of explosive and precursors detectors” says Craig Johnson CEO FFI.

In recent weeks, FFI have launched, IDEX-ULTRA™: 2-4-6 a colorimetric, disposable tester that in one step detects and identifies trace quantities of chlorates, ammonium and nitrates, and, it identifies bulk (visible) quantities of material. IDEX-ULTRA™ detects and identifies not only HME precursors but also HMEs - chlorate mixtures, ammonium nitrate (AN), calcium ammonium nitrate (CAN) and mixtures.
**Molecular-level I.D.**

Bruker Detection has announced the launch of the new ultrafleXtreme™ MALDI TOF/TOF system. The technology has been significantly enhanced to offer both increased analytical power and entirely new functionality, extending the applications envelope of MALDI TOF/TOF far beyond the conventional concepts of what's possible in molecular histology, glycoprotein and biopharmaceuticals analysis.

This next-generation ultrafleXtreme system incorporates Bruker’s patented smartbeam™ laser, now with up to 2 kHz repetition rate with true-pixel image resolution at 20µm for proteins.

The proprietary ImageID workflow is a fully-integrated process to provide scientists with integrated tissue maps for both protein distribution and identification. More than 100 proteins are typically characterized by the ImageID workflow, where consecutive histological sections are processed in parallel to generate complementary datasets in a single software environment for comprehensive analysis. ImageID yields identifications of approximately 80% of all peptides observed in imaging measurements, also those derived from high molecular weight proteins. For the first time, the method can access fixed (FFPE) tissue, allowing molecular histology to be applied to vast collections of archived clinical samples to unlock a potential treasure chest of biomarker data in cancer studies.

More info: Paula Audet at pfa@bdal.com

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**Portable, Explosion-proof LED Light**

Larson Electronics’ Magnalight.com has announced the release of the EPL-BS-161M-TP1-100 a tripod mounted LED light for hazardous locations. This unit is UL rated as Class 1 Division 1 – 2 Groups C & D and Class 2 Division 1 - 2 and uses a 16 inch LED light head to produce 10,000 lumens of light while drawing only 150 watts. The 8 pound collapsible tripod elevates the light head to 12 feet.

Larson Electronics’ Magnalight.com added a 150 watt, tripod mounted explosion proof light to its growing array of hazardous location explosion proof lights. The EPL-BS-161M-TP1-100 Class 1 and Class 2 Division 1 - 2 LED light can cover 8,000 square feet of area. The highly durable, watertight LED light is equipped with a non-sparking tripod that can securely elevate the light to 12 feet, while collapsing to 3 feet. At a weight of under 8 pounds, the tripod can serve as a short pedestal type stand or a full blown telescoping tripod, offering the operator the choice to take the light up on scaffolding or set it right on the tank floor.

The light can effectively bring 8,000 square feet to a bright white illuminated condition, to heights of 30 feet. Equipped with a 100 foot SEOOW cord and explosion proof plug, the EPL-BS-161M-TP1-100 explosion proof LED light can be used both as an LED blasting light and as a light source for coating and painting applications. This unit is multi-voltage capable and can be configured to operate on 120-277 volts 50/60 Hz. The LED light head measures 16 inches in diameter which allows it to fit through most standard size manholes and entry points. The LED light head can be removed from the tripod, the tripod collapsed, and the entire assembly passed through a manhole and reassembled once inside.

More info: Magnalight.com
Handheld Chem Warfare Agent Detector

Smiths Detection recently received a $27 million order from the U.S. Army under DoD's Joint Chemical Agent Detector (JCAD) program. The JCAD program is based on Smiths Detection's LCD 3.3, an advanced, light-weight, threat detection device that can be easily strapped to a belt. The LCD protects troops in the field by constantly sampling the air for the presence of chemical warfare agents and toxic industrial chemicals.

The enhanced M4A1 JCADs, which have started delivery, are manufactured in Smiths Detection's facility at Edgewood, Md. The plant, which employs nearly 250 people, recently expanded to help meet demand from the U.S. military for the JCAD program. It is the main U.S. manufacturing plant for X-ray and a range of chemical warfare detection systems.

More info: Chad Kolton at ckolton@hdmk.org

Advanced Robot-mounted Lightweight Chem Detector

Smiths Detection has been selected by the U.S. Army’s Edgewood Chemical and Biological Center to supply the Lightweight Chemical Detector (LCD) for use with a new advanced reconnaissance robot.

Under the CBRN Unmanned Ground Reconnaissance Advanced Concept Technology Demonstration program, the Edgewood Chemical and Biological Center will fit iRobot PackBot robots with the Smiths Detection LCD. The LCD can detect a wide range of chemical warfare agents including nerve, blister, blood and choking agents.

The new robots, which will be known as the CBRN Unmanned Ground Vehicle or CUGV, recently completed technical demonstrations at Aberdeen Proving Ground. They will be evaluated by soldiers of the 95th Chemical Company, U.S. Army Alaska, at Ft. Richardson and Elmendorf Air Force Base in September. If it is determined that the CUGV robot has military utility, it will be retained by the 95th Chemical Company in Alaska for two years.

The CUGV is designed to inspect potentially hazardous areas that other tactical vehicles cannot access. Using Smiths Detection’s LCD, the sensor payload can detect chemical warfare agents and toxic industrial chemicals. Additional sensors can detect oxygen levels, lower explosive limits and gamma radiation. The robot will then send data back to other manned systems or a command post, allowing soldiers and first responders to stay out of harm’s way.

More info: www.smithsdetection.com

Biodosimetry Cartridge for Measuring Radiation

PositiveID Corporation, developer of advanced technologies for diabetes management and airborne bio-threat detection systems for homeland defense, has announced its MicroFluidic Systems (“MFS”) subsidiary is collaborating with the University of Nevada to complete development of the company’s biodosimetry cartridge for measuring radiation levels. MFS’ biodosimetry cartridge is designed to enable clinicians and security personnel to measure the absorbed radiation doses quickly so that appropriate medical treatments can be implemented sooner.

The microfluidics-based platform under development for autonomous rapid diagnostics is a fully integrated system that uses PositiveID’s recently patented Dragonfly cartridge, which combines sample collection, preparation and purification, analysis, response, and reporting of results all within a multiplexed radiation response biomarker cartridge. The generic form factor cartridge will contain target specific multiplex assays with the precision of molecular diagnostics in an easy-to-use format. Integrating the entire protocol from sample input to results in a single, sealed cartridge will greatly simplify the process and reduce the time to attain results.

MFS is developing a clinical diagnostic countermeasure system as an automated platform for rapid identification of radiation exposure in less than one hour, with a target of 30 minutes or less. Current comparable systems and detection technologies can take up to two to five days and may require laborious steps. MFS is working with Jeffrey S. Thompson, Dean, College of Science and Professor of Physics at the University, to receive irradiated blood samples that are necessary to continue the development and testing of the biodosimetry cartridge.

The system that MFS is developing will be capable of functioning in limited-resource conditions, small clinics, medical military establishments, or hospitals. MFS is extending its already developed and proven automated biodetection technologies to meet the challenges for an integrated approach to simultaneously detect gene expression changes in response to radiation exposure in a fast and automated manner. The completed diagnostic system will be capable of analyzing whole blood or peripheral blood lymphocytes.

More info: www.PositiveIDCorp.com
As detection technologies provide advanced warning for imminent CBRN attack scenarios, the tendency is not to believe what perpetual training has prepared first responders to face.

By Jeff Prather, Founder, Warriorschool

The challenge then is to train the way we must most likely respond. And therein lays the rub.

Billy Mitchell was court-martialed for predicting Pearl Harbor decades early. Just prior to December 7th, Military Intelligence personnel broke the Japanese code and forewarned the chain of command. Then President Roosevelt knew we would be attacked and was eager to join the war. With all this advance notice why then, was the attack allowed to occur? Simply put, no one likes to think about the unthinkable. In the case of CBRNE this is especially true. The after effects, the damage, the deaths, the lingering dying, and the economic cost are difficult to comprehend.

REAL WORLD PREPARATION

Recently, Warriorschool was asked to participate in a federal red cell task force to imagine CBRNE scenarios incorporating the Mexican border. Our resulting efforts were termed nightmarish and overdrawn. In other words our clients did not want to think about dealing with what they had, in the beginning, asked us to think about.

The destructive potential of nuclear threats is of course enormous. History has proven repeatedly that conventional bombing only solidifies resistance on the ground. However, the strategic nuclear bombing by the US of civilian Japanese targets is the exception to the rule. Thus the uninitiated often grossly overestimate such threats. Especially when packaged in the most likely delivery vehicle: a suitcase nuke. The low yield (four to five kilotons) in a portable device just 24” by 16” by 8” of a SADM – Small Atomic Device Munition, combined with a “dirty” ground burst especially limited by surrounding structures such as city skyscrapers severely limits the tactical effect of such a device.

MIND OVER MATTER

The psychological effect, however, is another matter and the real goal of those who would harm us. Therefore, when training for the prevention and aftermath of such devices, it is paramount to focus not simply on the physical resulting mayhem but on the psychological warfare results as well.

Specifically, train-ups involving suitcase nukes should focus on public venues with the essential psychological
operations (psyops) effects of massed crowds combined with near real time national and international media feeds. This allows a realistic and obtainable template to focus on and respond to in real time.

Add in the radiologic element and the training scenario becomes even more specific. With the Nuclear Emergency Support Team (NEST) technologic capability to accurately detect nuclear threats within the noise of natural radiation, training scenarios can now follow ‘leaking trails’, while sorting out medical radiation. Such therapies as radioactive iodine in patients’ bloodstreams can sometimes set off alarms in the past.

NEW AGE THREATS

Before getting too comfortably dependent on technologic defenses, note that just a decade ago almost no one imagined third world terrorist utilizing first world jetliners as giant fuel laden bombs. The suitcase nuke scenario then should focus on asymmetrical warfare, outside the box thinking that are enemies have demonstrated. Training scenario concepts should thus include such strategic feints as multiple iodine injected patients drawing attention to themselves, intimidating publicity conscious officials and distracting focus away from the actual threat.

The point here is that the agent itself can be less significant than the vector. The carrier whether mosquito, rat, or purposefully infected illegal alien walking across the Arizona border with a job in a major city at a water treatment plant, is the real end game. Swatting a mosquito is nothing. But gunning down an illegal alien vector is entirely another, not just for the federal agent on the ground pulling the trigger, but for the beltway policymaker as well. A terrorist with his hand on a detonator attached to a back-packed suitcase nuke is an easy and justifiable shooting.

A Sinolaon peasant farmer with a strange, spreading black patch on his calf, under his pants is not. And even given the technological identification of the vector peasant how does shooting him play to popular media and open border activists groups?
REALITY-TRAINING DISCONNECT

These seemingly unrelated and irrelevant factors are precisely what are missing in today’s CBRNE scenarios. By example when the traitor terrorist U.S. Army Major Nidal Hasan shouted ‘Allah Akbar’ while murdering his own troops two years ago, it was labeled workplace violence and Islam was never even mentioned in the Army’s politically correct after action report.

Electronic attacks cover the spectrum from cyber to economic warfare. After the first Gulf War, two Chinese Army officers were so impressed with the conventional war waging skills of the United States that they concluded that we could never be beaten on the battlefield. Not to be deterred they took the traditional long range Chinese view and developed the doctrine of total war: That is attacking on all fronts. This includes military, but also cultural and economic targets. Interestingly, they concluded the most dangerous foe in the world today was not a nation state but an individual – George Soros, infamous for collapsing national economies and profiting in the billions via the collapse. They followed in his footsteps. Cyber spooks project now that the Chinese may have engineered our last market collapse. Or electronic warfare is as simple as turning off a city’s lights to force an evacuation along preplanned routes such as bridges and turnpikes primed for additional attack.

And now we come to the worst part; the unthinkable. Not one attack but many. A methodically layered attack designed on the Chinese total warfare concept. Just as a good infantryman will set an ‘L’ shaped ambush with grazing fire, then offering the enemy supposed cover just where he has planted his Claymores, so to might our enemies plan a layered, multi-dimensional CBRNE assault. All elements are easily transportable across the absurdly porous Mexican-US border.

Could our enemies not coordinate a combined CBRNE attack against us? Sounds absurd now, but so did Islamic terrorists flying jets into buildings not long ago. Our enemies are already thinking outside the box. We have to catch up. The Army Asymmetrical Warfare group is a start. But do those folks talk to the 74Ds (CBRN Ops Specialists) and are they talking to FA-52s (Nuclear Counter Proliferation Specialist)/and are all of them talking to Psyops and Special Forces, FBI, CIA and DHS?

Based upon my years dealing with military, intelligence and law enforcement bureaucracies, I don’t like my own answer.
From recon to rescue, recovery and decontamination, using the right equipment such as proper respiration wear can keep first responders safe from unseen dangers.

By David Warnacut, Portfolio Manager for Defense and Security, Draeger

There’s little question that the shifting landscape in military, civil defense, and law enforcement has made for an exciting yet challenging environment. Every situation is different: sensitive site exploitation and reconnaissance; rescue and recovery; decontamination. Within this shifting landscape the unknowns far outnumber the knowns, and there comes a need to innovate strategy and equipment to remain ahead of the game.

Even the seemingly benign variables can quickly become dangerous issues for a responder:

- The size of the site
- The time it takes to get in / out
- The environmental threats
- The size of the work load

The bottom line is that it’s not easy to know the best gear that’s needed to do the job and concentrate on your mission.

Relying on past experience isn't necessarily enough, either. Historically, there have been three options available, a traditional self-contained breathing apparatus (SCBA), a closed-circuit breathing apparatus (CCBA) or an air purifying respirator (APR).

A basic SCBA and its compressed air cylinder provides clean, breathable air. It is commonly used in an environment “immediately dangerous to life and health” or in an oxygen-deficient environment. Positive Pressure regulators prevent contaminants entering the mask but it has a limited duration of 30 to 60 minutes. There are certainly situations where that is plenty of time to carry out the mission, but the added pressure of knowing a clock continues to tick away adds an unnecessary layer of stress to the mission.

A SCBA can provide a duration time up to 4 hours. These units can be quite costly to implement throughout a team, however. These high initial acquisition costs and a higher overall total cost of ownership can make implementation unrealistic.

An APR or powered air purifying respirator (PAPR) provides good basic protection against CBRN contaminants but lasts for low duration at higher concentrations and offers no protection in IDLH / oxygen deficient environments. Again, in this case, the limitations outweigh the benefits.
For true confidence when facing the unknowns, a system is needed that enables the wearer to be at their best for missions with an unknown length - perhaps as long as 4 hours. It needs to be capable of detecting contamination or oxygen deficiency, and the wearer needs to be able to hydrate during the mission.

Draeger has found a way to meet these challenges and incorporate the main modes of operation (APR, PAPR, SCBA, SCBA/PAPR and SCBA/APR) into a single system. The DHS 7000 Hybrid System is the one system for any tactical CBRNe environment.

The mask accommodates both positive and negative pressure. Only one mask is needed for APR, PAPR, and SCBA modes and it can be fitted with a hairnet for increased comfort. Further, a spectacle insert is available for wearers with glasses; another feature that lets the wearer keep their mind on the mission.

In APR Mode, the Draeger DHS 7000 uses a Rd40 Connection and a Cap 1 CBRN Canister. The canister is also compatible with the Dräger CDR 4500. In PAPR mode the system is airtight, waterproof, and impact resistant with a 115-150 LPM flow rate. The battery operating time is 10 hours, but the batteries may be “hot-swapped”

SCBA Mode uses a mechanical gauge, matte black cylinder and CBRN LDV with >550 l/m air flow. It features an adjustable 3-position ergonomic backplate and harness. The backplate is manufactured with lightweight carbon composite.

The answer to conquering the unknowns lies in the other features as well:

**Can you easily communicate?**

Draeger has adapted MS-COM to the UL 913 requirements needed for NFPA approval. A new microphone housing has been engineered for integration into the cam and it is easily removable for cleaning. The ergonomic, streamlined design integrates via a simple click-on attachment to mask. Compatible with multiple wireless communication platforms, it offers tremendous versatility and ensures accurate, consistent communication throughout the team.

**Importance of field of vision**

If you can’t see you can’t do your job. Vision is ensured with impact-resistant polycarbonate visor that protects eyes from projectiles. Additionally, it boasts a 90% field of vision for maximum situational awareness.

A mechanical indication of mask breathing mode is based on an NFPA PRISM Head-Up display and an amended housing geometry fits into 3-port-mask. The AirBoss PLUS SCBA transmitter was adapted to PSS 7000. This patent-pending display is visible from inside the mask directly coupled to the transition device, and a black version for special forces applications is available. The wearer can be confident he or she has an accurate understanding of how long he or she can continue the mission.
STAY SHARP AND HYDRATED

One of the keys to remaining strong and sharp during a mission is the ability to remain hydrated. Obviously, that’s not easy to do while wearing a mask in an unknown environment. The Dräger DHS 7000 boasts a hydration device for extended-duration use. It can be implemented on either the left or right side to accommodate left or right-handed shooters. The wearer can quickly switch between positive and negative pressure to adapt to changing environment and works with M1 military canteens or CamelBak.

HOW IT WORKS IN ACTION

The use of the Dräger DHS 7000 Hybrid System in an actual situation might begin with a team heading into an unknown hazardous environment. The reconnaissance begins in APR/PAPR mode.

Suddenly, the team makes audio or visual identification of dangerous substances. The cylinder valve is opened and switch to safe SCBA mode. The mission is carried out; full communications with the rest of the team continues uninterrupted. Further, the entire team takes advantage of the integrated hydration connection.

The mission is finalized with a safety margin of gas in the cylinder and the team returns to a safe area.

Modern missions are full of unknowns, and only the best-equipped teams will continue to thrive in these volatile environments. Dräger’s DHS 7000 has been born from over 100 years of respiratory innovation and is perhaps the best tool for conquering the unknowns of the modern mission.

With unique offerings such as one mask for APR, PAPR, and SCBA, a low logistical footprint, integrated communications, broad field of vision, and hydration, the Dräger DHS 7000 is the single system that gives peace of mind, lets the wearer concentrate on the mission, and conquer the unknowns.

The data 3 modes approved (NIOSH CBRN PAPR, APR, NIOSH CBRN and NFPA 1981 SCBA) 2 additional combination modes (Not approved): SCBA / PAPR or SCBA / APR Communication System MS Com (UL conform), Mask available in 3 sizes (s, m, l), Easy switching between positive and negative pressure, Visual indicator for negative pressure, Single FFM with positive and negative pressure operation, Seamless switching from APR/PAPR to SCBA mode (no exposure to ambient air), Proven and reliable Dräger SCBA / proven and reliable C420 Mil. PAPR and Compatible to the existing equipment at FBs (PSS 100/ PSS7000).

More info: www.draeger.com

Whether used for military, law enforcement, or responder applications, the complete modular Draeger DHS 7000 system offers the user versatility to adapt to a range of CBRN environments and can be used as a CBRN Cap 1 APR, CBRN PAPR Cap 1, or as a CBRN SCBA with only one face piece. (*The DHS 7000 Hybrid system is not approved as a combination APR, PAPR and SCBA.)
The evolution of security efforts to protect New York City’s rail lifeline from CBRN attack sheds light on a continually-morphing threat.

By Samuel M. Katz, TDM Correspondent

Less than forty-eight hours before New York City and the rest of the United States was about to pay tribute to the fateful morning of September 11, 2001, and remember the nearly 3,000 men, women, and children, who were murdered by al Qaeda’s ambitious multidimensional catastrophic terrorist attack against the United States, the City of New York sounded the alarms of a critical threat. Standing at the podium late into the evening, New York City Mayor Michael Bloomberg—flanked by NYPD Commissioner Ray Kelly and Janice K. Fedarcyk, the FBI Assistant Director in Charge of the New York Field Office—addressed a concerned city about unconfirmed reports of al Qaeda terrorists inside the United States looking to strike at New York City on the tenth anniversary of the 9/11 attacks.

Hints of the intended attack were discovered from the treasure trove of raw intelligence seized by U.S. Navy SEALs during “Operation Geronimo,” the May 2, 2011, raid that terminated Osama bin Laden at his safe-house in Abbotabad, Pakistan; more concrete details of al Qaeda’s came from a reliable informant from Pakistan’s lawless tribal areas. Mayor Bloomberg was non-specific in his warnings, but the tone of the news conference was sobering.

As reporters were offered the sketchiest of briefings based on information that could be publicly released, law enforcement assets throughout the New York metropolitan area was being ordered into Manhattan. If New York was going to be hit again, the terrorists would have to penetrate a sea of police. The terrorist threat, however, was more specific than the politicians and police commissioners were letting on. The plot, the informant hinted, focused on suicide truck bombs targeting New York City’s mass transit in an attempt to inflict catastrophic loss of life. The terrorists appreciated that targeting New York City’s transportation arteries were certain to hit the lifeblood of New York City.

Multi-tentacled Threat

Terrorists—from Hamas to al Qaeda’s indigenous offshoots in Europe to Chechen Jihadists and separatists—have long targeted public transportation as a means of paralyzing cities and inflicting horrific casualties; terrorist armies of previous generations (the IRA and Algerian Jihadists) had targeted the London Underground and the Paris Metro Mass transit. In Israel (buses and bus stations) were favorite targets of Hamas and Palestinian Islamic Jihad suicide bombers. On March 11, 2004, al Qaeda inspired
Jihadists killed 191 people and wounded 1,800 in a series of sophisticatedly-linked bombings of Spanish commuter rail targets.

On July 7, 2005, homegrown Jihadist suicide bombers perpetrated what became known as the 7/7 bombings in which three London Underground trains and a double-decker bus were hit in coordinated strikes; fifty-two people were killed in the coordinated bombings and another 700 seriously wounded (two weeks later, British authorities intercepted a plot to once again hit London transport in a failed and foiled suicide strike). In Mumbai, and in Moscow, suicidal terrorists had long favored the target-congested environment of rail infrastructure as the focus of their attack planning. Security forces in Russia and India have had to contend with years of responding to IEDs and suicide bombers striking out at filled-to-capacity rail cars.

“Terrorists are always seeking targets of opportunity where the collateral damage can be greatest and where they can maximize impact with the least expenditure,” commented a British law enforcement commander who requested anonymity. “Terrorists look to where they can strike a public at its most vulnerable, and where better to hit than a targeted population that is either tired going to work, tired coming home from work, or rushing about to catch a train or a bus. These commuters are focused on getting to their destinations and not security. They are easy marks. And, if the terrorists are successful,” the commander continued, “then how many commuters will rush back into the train stations the following mornings?”

A GARGANTUAN TASK

Securing one of the largest subway systems in the world, as well as commuter rail lines that carry more people a day than live in many mid-size cities became an increasingly acute problem in the aftermath of the 9/11 attacks and the stark realization that New York City was a frontline target in the Global War on Terror (GWOT). And it was a virtually impossible system to protect completely. The New York City Subway system, owned and operated by the Metropolitan Transit Authority (MTA), is the fourth largest underground rapid transit system in the world (after Tokyo, Moscow, and Seoul). Consisting of 468 stations with some 210 miles of routes, the system averages over four million riders per day. It is one of the four rapid transit systems in the United States that operates twenty-four hours a day, seven days a week. Commuters who live outside the confines of New York City utilize additional rail services, the Long Island Rail Road and Metro-North, to reach parts to reach Manhattan daily. The Long Island Rail Road, or LIRR, is the busiest commuter rail system in the United States, carrying 81.5 million passengers per year; the LIRR feeds into Penn Station in midtown Manhattan. The Metro-North railroad serves the suburbs north of the city, as well as portions of Connecticut; Metro-North feeds into the sprawling Grand Central Terminal in midtown. Other rail lines, such as New Jersey Transit and Amtrak, also bring commuters into New York City daily.

Even before the 9/11 attacks, the reality of transit security was not lost to officials charged with safeguarding the massive network of subways and commuter lines in New York—especially considering that terrorists had tried—and failed—to hit the subways before. Indeed, New York City’s subway system was the target of a suicidal terrorist plot four years after the 1993 bombing of the World Trade Center and four years before the 9/11 attacks when the NYPD’s elite Emergency Service Unit shot and wounded two Palestinian drifters hours before they were to detonate their explosive vests inside a Manhattan-bound B Train during the morning rush on July 31, 1997.

ONE SUCCESSOR’S VISION

Much of the daunting mission to secure New York City’s rails fell on the New York City Police Department. Following the September 11, 2001, attacks, the NYPD was forced to reinvent itself virtually overnight as a department that turned the tide against violent crime into a proactive and ever-vigilant counterterrorist force. Police Commissioner Ray Kelly, who assumed command of the NYPD in 2002, immediately responded to the challenge. Kelly understood two basic facts as he led a department protecting a city both of which had been devastated by 9/11 attacks: New York City could not rely upon the federal government, and primarily federal intelligence and law enforcement entities, for its defense, and that the primary challenge facing a police department tasked with preventing terrorism was an intelligence-gathering and intelligence-analyzing infrastructure and culture. Kelly created the department’s Counterterrorism Bureau, the first of its kind in the nation, to develop innovative, forward-looking policies and procedures to guard against the threat of international and domestic terrorism in New York City. Kelly assembled an elite team of leaders and experts, including many from the Central Intelligence Agency, to spearhead this new effort in truly unchartered territory.

Kelly’s vision was novel and global. Detectives were dispatched to such cities as London, Toronto, Singapore, Tel Aviv, Madrid, and Amman to gather intelligence on terrorist tactics and first responder tactics. Great emphasis was placed on local intelligence-gathering, and Arabic, Urdu, and Pashtun, speaking patrolmen—some still in the academy—were pulled into units whose role it was to monitor Jihadist web sites and keep tabs on possible threats emanating locally. Ultimately, however, Kelly’s mission would be won—or lost—on the ground. The NYPD placed great emphasis on tactical initiatives and a public-police partnership and media and education campaign designed to alert the riding public as to the threats at hand.

ESU TO COUNTER TERROR EVOLUTION

Tactically, the counterterrorism initiative—especially involving transit initiatives—centered on the elite Emergency Service Unit, or ESU. The saying in the NYPD was always that “When a citizen needs help, he calls the police. When the police need help, they call ESU.” ESU was, by design,
The thin blue force of last resort. The unit had the weapons, the tools, and the trained personnel to deal with any and all emergencies in the city: from suicidal jumpers about to leap into the frozen East River from atop the Brooklyn Bridge, to saving victims from the mangled wreck of a subway train derailment, ESU was a source of confidence and relief to police commanders that tactical emergencies and disasters—natural and man-made—would be effectively and safely handled by the E-men. Fourteen members of ESU lost their lives in the rubble of ground zero, however, and many of those killed were the most experienced veterans in the unit. The attacks were the most devastating single event in the unit’s seventy-six year history.

The ESU traces its creation to 1925 and the formation of a reserve force of officers who could be called on to perform “extraordinary” rescue assignments; many of these volunteers were also part-time carpenters, welders, riggers and electricians and the trucks they rode, modified fire-trucks, soon carried larger and more specified emergency equipment. Years later, life-saving gear was added to the trucks, with the cops sent to emergency medical training. The unit was also among the nation’s first mobile tactical response force with what was once called the department’s Firearms Battalion; as its officers carried Thompson submachine gun, the unit was also known by the daunting nickname of the “Machine Gun Squad.” The unit eventually developed into a force called the Mobile Security Unit (MSU) that was tasked with its original mandate of responding to emergency situations such as wrecks and disasters, as well as backing up precinct cops on dangerous jobs that the lightly armed precinct officers were ill-equipped to handle.

In the early 1970s the unit soon developed a counter-terrorist tactical role, especially involving hostage-rescue, following the 1972 Munich Olympic Massacre. At the time, few police forces possessed a special tactics and weapons unit that could deal with a hostage crisis, and few police forces knew how to deal with the rising tide of criminals armed with heavier firepower than the cops on the beat. With a rising heroin epidemic in the 1970s and an explosive crack situation in 1980s, however, ESU didn’t have to wait until terrorists decided to strike before being deployed tactically. They became one of the busiest tactical response units in the world encountering a criminal element that was well armed and indiscriminate in their use violence. Combined with its rescue tasks, according to current NYPD statistics, the unit responded to a remarkable 148,000 jobs in 2010.

NYPD SOD to the Rescue

Although staffing levels have varied over the years, the unit has historically consisted of approximately 350-400 officers who fall under the NYPD’s Special Operations Division (SOD), a command that also controls aviation, harbor, and mounted units, along with their respective sub-units—Canine, SCUBA, and the Emergency Medical Squad; the NYPD SOD is headquartered at Floyd Bennett Field, in Brooklyn. Operationally, ESU is divided into ten geographic Emergency Service Squads (ESS), or “Trucks,” spread out throughout the five boroughs: ESS-1 is based in midtown Manhattan; ESS-2 is based in Harlem, in northern Manhattan; ESS-3 is based in the eastern part of The Bronx; ESS-4 is based in the western portion of The Bronx; ESS-5 is based in Staten Island; ESS-6 is based in southern Brooklyn; ESS-7 is based in western Brooklyn; ESS-8 is based in northeastern Brooklyn; ESS-9 is based in southern Queens; and, ESS-10 is based in northern Queens. Additional ESU resources, such as HAZMAT and specialized rescue equipment, are based at Floyd Bennett Field and can be deployed to support any precinct or unit operation throughout the city. Unlike many SWAT teams in the United States—and around the world—ESU operates in three shifts, twenty-four-hours a day, 365 days a year.

Deterrence, both tactical and technological, was the lynchpin of Commissioner Kelly’s counterterrorism strategy. Random deployments of heavily-armed ESU personnel to
strategic sites (financial, tourist, entertainment, judicial, and transportation) at random times of the day was meant to provide citizens and tourists alike with an armed and reassured presence of security. Known as HERCULES, the operations could have a dozen or so armed ESU officers, wearing their full battle rattle, standing in front of the New York Stock Exchange in time for the opening bell, and then deploying quickly to Times Square a half hour later. HERCULES deployments would send teams to Jewish neighborhoods during the high holy days, and to sporting events attended by 50,000 or so fans. The effort follows no pattern or geographic timetable; the quick and rapid show of force is designed to unnerve potential hostile terrorist surveillance and intelligence-gathering teams and deter them from striking at the particular location covered by the armed specialists. HERCULES deployments consist of uniformed and plain clothed officers from the Intelligence Division along with contingent from Canine.

MASS TRANSIT ATTACK DETERRENCE

Another high-profile counterterrorism initiative is known as TORCH (Transit Operational Response Canine Heavy Weapons). TORCH focuses on the city’s heavily-used lifeline of subway lines, providing a dedicated tactical deterrent inside designed to deter terrorists from hitting mass transit. "After the bombings in Madrid, Moscow, and London, we realized that we have to be visible and vigilant," an ESU sergeant commented, while patrolling a subway station near Central Park with a team of ESU detectives on a sweltering summer’s day when the temperature reached 100° (F) outdoors, and close to twenty degrees hotter inside the oven-like station. “It not easy moving around and remaining effective on a day like today, especially wearing the heavy vest and helmet and carrying an assault rifle, but the terrorists don’t let the elements stop them, so we can’t let them stop us, either.”

The NYPD’s efforts were augmented along the commuter rail lines by heavily-armed tactical displays by Suffolk County Police Department Emergency Service, Nassau County Police Department Bureau of Special Operations and MTA PD Emergency Services along trains and stations belonging to the LIRR, and MTA PD Emergency Services, New York State Police Mobile Response Teams and Connecticut State Police Tactical Unit reinforced efforts along the Metro-North lines leading into New York City and Grand Central Station.

The NYPD ESU’s tactical shows of force have been reinforced by patrol officers deployed en mass to what are “in your face” and unyielding displays of might and resolve. These include the Critical Response Vehicle (CRV) operations, where uniformed officers from each of the City’s seventy-six precincts assemble and then patrol in marked vehicles along strategic stretches of city thoroughfares. CRV operations can involve over 100 police cruisers, all flashing their lights and blaring their sirens, in displays that are effectively awe inspiring. Another initiative, the Transit Order Maintenance Sweeps (TOMS), groups teams of officers stopping, boarding and inspecting subway trains; and subway container inspection and explosive trace detection, in which officers examine bags and other containers carried by passengers entering the subway system to detect explosives. Federal—U.S. Department of Homeland Security and U.S. Department of Transportation—grants are instrumental in funding many of these initiatives, and were key in helping the NYPD place some 3,100 CCTV systems inside the subway system; a further 1,000 cameras expected to be installed on the subway by the end of 2011. Security cameras plays a pivotal role in tracking potential threats and coordinating operations for the 2,500 patrol officers assigned to the department’s Transit Bureau.

Following the 3/11 Madrid Bombings and the 7/7 London Bombings, the NYPD began to introduce random package searches at city subway stops. Although civil libertarians cried foul that the inspections were nothing more than a camouflage cover for racial profiling, NYPD officials explained that such random efforts to keep potential suicide bombers off the city’s rail lines was the only concern and issue. Indeed, the efforts were combined with a dedicated public information campaign called “If you see something, say something.” The program, reinforced by a relentless and well-produced TV and radio advertisement blitz, urged passengers to: be alert to unattended packages; be wary of suspicious behavior; take notice of people in bulky or inappropriate clothing; report exposed wiring or other irregularities; report anyone tampering with surveillance cameras or entering unauthorized areas; and, to learn the basics of safe train evacuation during an “incident.” The campaign was receptively embraced by law enforcement officials who boasted that the information system netted thousands of tips and calls from aware citizens, and riders were happy to be participants in the city’s war on terror, and not merely bystanders or possibly victims.

FORWARD WITH LESSONS LEARNED

The terrorist alert that gripped New York City in the days prior to the tenth anniversary came and went without incident. The efforts of the NYPD, and the dozens of other federal, state, and local law enforcement agencies that work tirelessly to keep the city’s rail arteries pumping, were successful. Yet the vigilance has not wavered. From Commissioner Kelly on down to the ESU detective negotiating his Kevlar battle rattle as he enters a randomly-selected subway stop for the TORCH initiative, all members of the NYPD realize that the “big job,” the catastrophic terrorist strike that kills hundreds, can happen at any time. Multiple pieces of the security puzzle must all fit one into the other for the apparatus to work. In keeping New York vibrant and on the move, failure is simply not an option.
Thermo Scientific instruments, deployed globally for unknown chemical and explosives identification, get added boost with advanced communications capability and improved algorithms.

By John Kenneweg, Sales Director, Portable Analytical Instruments, Thermo Scientific, Inc.

Military and civilian first responders have relied on Thermo Scientific instruments for more than eight years – first with the Ahura FirstDefender®, which revolutionized field-based chemical identification. The intuitiveness, proven reliability, and ruggedness have led to widespread adoption by the entire CBRNE community with thousands of instruments in active use worldwide. Building on this legacy, the company continues to innovate, and has introduced next-generation Raman instruments as well as a complementary line of handheld FTIR spectrometers to address the broad range of chemical threats.

The combination of Thermo Scientific handheld Raman and FTIR instruments has brought the lab to the field, literally fitting in the pockets of military and civilian first responders.

**FirstDefender RM and FirstDefender RMX**

FirstDefender RM is the second generation Raman instrument, replacing the industry-leading FirstDefender. Weighing 1.8 pounds (800 g), the instrument is half the weight, half the size and up to ten times faster than the original FirstDefender, yet houses an extensive library of more than 11,000 chemicals that continues to expand annually. The library and the instrument’s automatic mixture analysis enable analysis of millions of possible chemical combinations, critical in the field as responders are faced with mixed or contaminated chemicals. FirstDefender RM can be used in point-and-shoot mode or via the integrated vial holder. New features include improved detectors and electronics and the ability to use rechargeable or common disposable batteries, as well as enhancements to the user interface including the National Fire Protection Association (NFPA) hazard diamond, spectrum overlay for comparing scanned materials to library items of interest and a tabbed library for easier navigation.

Using the same platform as FirstDefender RM, FirstDefender RMX extends the point-and-shoot capability with a fixed fiber optic probe. Weighing 2 pounds (919 grams), the instrument operates in handheld mode or attaches to the gripper arm of a tactical robot, connecting via an RS232 port. This enables remote operation to provide users with the ability to execute their response missions with a greater level of safety.

**TruDefender® FT**

TruDefender FT is the smallest and lightest handheld FTIR/diamond ATR system available today. While this scientific technique has been used for chemical analysis in the lab for decades, the highly complex optical components were miniaturized and ruggedized to create TruDefender FT. In addition to being the smallest on the market, it is also the only field-based FTIR system certified to MIL-STD-801F specifications including drop, shock, vibration and operation in extreme conditions.
temperatures. Based on user feedback, TruDefender FT was designed to provide reliable analysis with very little training, helping make complex analyses easy to execute and reducing the weight load of our overburdened military personnel downrange.

**TruDefender FTi**

TruDefender FTi expands the core chemical analysis capability of TruDefender FT by adding advanced 3G communications, allowing scan results to be sent from downrange to incident command or technical reachback—yours or ours—without leaving the hazard zone. Whether requesting spectral analysis assistance or sending results to team members anywhere in the world via SMS text or email, results are sent within seconds with a press of a button. This enables downrange personnel to continue their mission of indentifying chemical threats. This real time transmission of data— including chemical name, CAS number and spectrum—expands a response team’s capability and ensures the team can move forward with remediation as quickly and safely as possible.

TruDefender FTi offers embedded 3G Mobile Phone capability and Direct Connection to Incident Command and Reachback Responders continually seeking solutions to make the response process easier, safer and faster. As discussed, Raman and FTIR are well-known, proven laboratory techniques; however, earlier instruments were either too large or fragile for effective field use, or were not deconable. The FirstDefender and TruDefender instruments were designed for field use; not as an afterthought, but from the beginning. Our goal was to help responders obtain fast, reliable chemical identification downrange—but identification is just the first step.

Once a chemical is identified, that information must reach the incident commander for rapid action—whether escalation in the case of a genuine threat or releasing valuable resources in the event of a hoax or benign material. Trying to radio a complex chemical name—like 9,10-Phenanthrenequinone for example—to incident command is virtually impossible.

TruDefender FTi is the first device to combine lab-proven FTIR technology with consumer-proven 3G mobile phone communication. Combining these technologies allows reliable results to be sent to the incident commander or to
reachback scientists 24/7/365, while circumventing typical communication challenges.

**Complementary Tools for Confirmatory Testing**

The National Guard Weapons of Mass Destruction Civil Support Teams (CSTs) have used Thermo Scientific chemical identification products for years—first standardizing on the Ahura FirstDefender in 2007 as their field Raman solution. In 2011, after a rigorous evaluation, the National Guard chose to add TruDefender FTi as their field FTIR solution. Recognizing the value of the TruDefender FTi, the CSTs were the first organization to standardize on this revolutionary piece of equipment and have now deployed a TruDefender FTi as well as a FirstDefender in every state and territory within the United States.

Another organization that has specified Thermo Scientific instruments is the Technical Support Working Group (TSWG) under the Combating Terrorism Technical Support Office. Recognizing the increasing threat of homemade explosives (HME) to U.S. military forces, TSWG investigated numerous commercially available systems to recommend a comprehensive EOD HME kit. Thermo Scientific FirstDefender was included in Phase I of the effort, of which nineteen kits were fielded worldwide. Phase II of the project aimed at offering the same capability in a smaller form factor. FirstDefender is still the Raman component of the kit, and the three-pound Thermo Scientific FT has been selected as the FTIR component. This kit, incorporating the complete Thermo Scientific solution for explosives response, is now a program of record through PMS-EOD under the Weapons of Mass Destruction Kit.

In March 2012, an incident response team was called to address suspicious powder spilling from an envelope that had arrived from overseas. The responding team had access to both FirstDefender and TruDefender FTi analyzers. The team quickly and easily tested the unknown substance using both products. The FirstDefender, using Raman spectroscopy, returned a single positive match of the exact chemical name. The extensive onboard database also informed the response team of additional information and hazards associated with this chemical. The TruDefender FTi, using FTIR spectroscopy, indicated inclusive results and instructed the response team to contact Thermo Fisher Scientific for reachback support.

Using the TruDefender FTi 3G wireless feature, the response team sent the analysis results directly to reachback scientists in approximately 1 minute. While the spectrum collected from the instrument was not a match to the library, it did include detailed spectral information which could be further analyzed by the reachback team. Using this valuable information, the team provided a preliminary analysis within 30 minutes, while the response team was still on scene. This ability to accurately and reliably identify unknowns—using two lab-proven technologies and backed by a 24/7 staff of reachback scientists—represents a tremendous tactical advantage for responders.

Many standard operating procedures require the use of at least two independent technologies to confirm the identification of unknown substances. When every second matters, users rely on the accuracy, reliability and ease of use of Thermo Scientific analyzers to ensure a safe, fast response.

**A Unique Approach to Chemical Identification**

In early development, it was decided that accuracy and reliability of our instruments—and thus the safety of our users—were of paramount importance. This meant developing software that provides the most accurate answers possible, leaving no ambiguity as to the results—no guesswork required, and no advanced spectroscopy training needed to interpret results or choose from a list of possible answers.

A radical change in approach was needed. Simply trying to improve the old way of doing things was not going to address the problem of training and confidence in results. New algorithms were designed from the ground up, removing the need to invest weeks to months of spectral interpretation training. Presenting data in an easy-to-understand way allowed a greater array of personnel to access to state-of-the-art equipment and reliable data in the field. Our groundbreaking approach has been widely accepted by the CBRNe community, and has allowed us to stay a step ahead of emerging identification challenges.

Thermo Scientific handheld chemical identification instruments use sophisticated chemometric algorithms to match the “fingerprint” of an unknown chemical to items in the extensive on-board chemical library. These decision-making algorithms have proven to be extremely robust. While others in the market are now exploring the addition of chemometrics to bolster their products’ capability, this is a core strength of the FirstDefender and TruDefender product development teams.

In March 2012, we introduced TruDefender FT/FTi v1.5, the first software release to incorporate the company’s new patent-pending chemical matching algorithms. The new software enables faster and more robust mixture analysis, while improving accuracy and maintaining simplicity.

More info: www.thermoscientific.com/mil-chemid

www.tacticaldefensemedia.com
The Joint Program Executive Office for Chemical and Biological Defense (JPEO-CBD) is DoD’s single focal point for R&D, acquisition, fielding, and life-cycle support of CBRN defense equipment and medical countermeasures.

By Cicely R. Levingston, Chief, Strategic Comms Policy and Initiatives, JPEO-CBD

Comprising a headquarters and eight subordinate Joint Project Management Offices (JPMOs), the Joint Program Executive Office for Chemical and Biological Defense (JPEO-CBD) leads, manages, and directs the acquisition and fielding of CBRN detection and reconnaissance systems, from individual and collective protection systems, decontamination systems, and information management systems to medical devices, drugs and vaccines, and installation and force protection systems. In September 2011, JPEO-CBD headquarters transitioned from Falls Church, Virginia to DoD’s CBRNE Center of Excellence, Aberdeen Proving Ground, MD.

**Joint Effort, Single Mission**

Each of the JPEO-CBD’s eight JPMOs leverage talent and expertise (military, civilian, and support contractors) from across our nation’s armed services under a single chain of command to provide the best CBRN defense technology, equipment, and medical countermeasures at the right cost, at the right time. The JPEO-CBD maintains its relevancy by continually adapting to change. The organization operates in an environment where threats, technologies, requirements, and stakeholders’ objectives can shift overnight. While these shifts may change our operational environment, they do not change our mission to field equipment and pharmaceuticals to counter or mitigate the CBRN threat. Even the smallest use of a CBRN weapon can create instability, doubt, and fear among our citizens and allies. We work to deploy interoperable systems at our installations worldwide to address this threat.

The JPEO-CBD maintains a healthy science and technology base program, a promising advanced development component, and continued procurement of essential defense systems. We develop broad-spectrum technologies for integration into a system-of-systems approach for countering the evolving weapons of mass destruction threat. As a result, our portfolio consists of an evenly balanced mix of Medical Countermeasures (MCMs) that include prophylaxes, therapeutics, biosurveillance, and diagnostics as well as non-medical equipment (such as CBRN individual protection, detection, force protection, and decontamination). This ratio represents a recent strategic shift towards a comprehensive response to the threat of bioterrorism and emerging chemical threats.

The following is a brief description of the capabilities provided by each JPMO within the JPEO-CBD:

www.tacticaldefensemedia.com
The Joint Project Manager for Biological Defense (JPM-BD) is comprised of a dedicated team of acquisition professionals charged with creating and sustaining affordable materiel solutions that accurately detect, identify, warn, deter, and defeat biological threats to the Warfighter. Located on the Edgewood Area of Aberdeen Proving Ground, MD, JPM-BD manages the development, fielding, and sustainment of point detection systems and consists of the Joint Product Manager for Point Family of Systems, the Joint Product Director for Stand-off Detection, and the Joint Product Director for Strategic Initiatives.

The JPM-BD continuously looks for cutting edge commercial and non-developmental technology to fulfill operational needs in the area of early warning, point biodetection, and environmental biological surveillance. The JPM-BD partners with industry, academia, and other government organizations to find the most effective and affordable material solutions to fill capability gaps and lower the operation and sustainment cost of the existing fleet of biological defense equipment for the Warfighter.

The Joint Project Manager for Chemical Biological Medical Systems (JPM-CBMS) is responsible for research, development, acquisition, fielding, and life cycle management of U.S. Food and Drug Administration (FDA)-approved/cleared medical systems for protection, treatment, and diagnostic capabilities against CBRN warfare threat agents. It is critical to note that all CBRN medical countermeasures are approved by and regulated through the FDA. The JPM-CBMS is located on Fort Detrick, MD, and aggressively explores opportunities to partner with other government agencies, industry, academia, and allied countries for all CBRN medical countermeasure efforts.

The JPM-CBMS is comprised of three Joint Product Management Offices: The Joint Vaccine Acquisition Program (CBMS-JVAP), Biosurveillance (provisional) (CBMS-BSV), and the Medical Identification and Treatment Systems (CBMS-MITS). The CBMS-JVAP has three products in advanced development to protect the Warfighter: 1) Recombinant Botulinum Vaccine, 2) Plague Vaccine, 3) and Trivalent Filovirus Vaccine. The CBMS-BSV product office develops and integrates state-of-the-art CBRN technologies to enable early warning, identification, and situational awareness of CBRN threats to U.S. forces. The CBMS-BSV portfolio includes the Critical Reagents Program and two diagnostic programs: The Joint Biological Agent Identification and Diagnostic System and the Next Generation Diagnostic System. The CBMS-MITS serves as the life-cycle manager for the Convulsant Antidote for Nerve Agents, Antidote Treatment Nerve Agent Autoinjector, and Soman Nerve Agent Pretreatment Pyridostigmine. Advanced development efforts within CBMS-MITS include Bioscavenger, Advanced Anticonvulsant System, and Medical Radiation Countermeasures.

The Joint Project Manager for Guardian (JPM-G) is dedicated to developing, fielding and sustaining integrated capabilities that prepare and protect our homeland, installation, and tactical forces. This JPMO fields CBRNE Defensive, Physical Security, Force Protection, Emergency Management and Weapons of Mass Destruction Consequence Management capabilities that fuse, automate, and integrate data from disparate systems to assist commanders in planning for, responding to, and recovering from all-hazard threats and/or incidents. The capabilities provided by JPM-G are employed in tactical operations, on forward operating bases, DoD installations, and in support of domestic and foreign consequence management operations. The JPM-G is comprised of Product Manager Force Protection Systems, Product Director Emergency Management, Product Director Integrated Base Defense, and Joint Product Manager Consequence Management. The offices of JPM-G are located on the Edgewood Area of Aberdeen Proving Ground, MD.

The Joint Project Manager for Information Systems (JPM-IS) manages the acquisition of Chemical Biological Defense Program information systems, with first increments of two programs of record (Joint Effects Model and Joint Warning and Reporting Network) currently fielded and second increments in the advanced development process. In addition to fulfilling this traditional acquisition program office role within the JPEO-CBD, JPM-IS uniquely functions as the primary focal point for all Information Management/Information Technologies (IM/IT) issues and requirements that impact DoD Chemical Biological Defense programs and their development. The offices of JPM-IS are located in San Diego, CA.

The Medical Countermeasures Initiative (MCMI) was established in 2010 by a White House Memorandum that called for the development of a national capability that
allows the U.S. Government to counter known and unknown chemical, biological, and radiological (CBR) attacks or naturally-occurring emerging infectious diseases. This initiative stemmed from the 2009 H1N1 flu pandemic and the inability to rapidly produce a vaccine in a timely manner. While MCM is a national capability, the Medical Countermeasures Advanced Development and Manufacturing (MCM ADM) will be an enduring and dedicated capability for DoD that complements efforts by the Department of Health and Human Services but differs significantly in focus area and scale. The JPM-MCM ADM manages this effort from its Stafford, VA offices.

The ADM will be a DoD-dedicated capability that provides DoD MCM developers with a set of core services: 1) Contract Manufacturing Organization, 2) Contract/Clinical Research Organization, 3) Test and Evaluation, and 4) Fill and Finish. Additionally, the ADM, and its core services, will have the ability to be tailored to the needs of each contractor as well as provide valuable lessons learned from previous development which will be passed on to the next MCM contractor. These services will increase DoD’s efficiency through the application of lessons learned to future MCM developments while lowering cost and schedule.

Joint Project Manager for Nuclear, Biological, and Chemical Contamination Avoidance (JPM - NBC CA) The Joint Project Manager for Nuclear, Biological, and Chemical Contamination Avoidance (JPM-NBC CA) is a team of dedicated acquisition professionals responsible for efficiently providing effective operational capability to the Warfighter. The organization is located on the Edgewood Area of Aberdeen Proving Ground, MD. This JPMO develops, produces, integrates, tests, fields, and sustains NBC detection, obscuration, and reconnaissance systems. The JPM-NBC CA ensures their system development efforts integrate materiel solutions and services that focus on joint Warfighters’ needs within cost, schedule, and performance.

The JPM-NBC CA staff consists of the following product areas:

- Product Director Sensors,
- Product Director Cross-Commodity Advanced Threats & Test Infrastructure, and
- Joint Product Manager Reconnaissance & Platform Integration.

Joint Project Manager for Protection (JPM - P) The Joint Project Manager for Protection (JPM-P) provides both direct and indirect support to the nation’s Chemical, Biological, Radiological and Nuclear (CBRN) Defense. As the DoD total life-cycle manager for Individual and Collective Protection plus Hazard Mitigation Equipment, JPM-P develops, fields, and sustains CBRN protection and hazard mitigation capabilities. Primarily, these capabilities are provided through systems such as protective garments and respirators, equipment and personnel decontamination, and collective protection shelters and systems.

The JPM-P not only provides equipment to the DoD but also supports Federal agencies such as the Department of Homeland Security and Federal Bureau of Investigation as well as provides products for foreign military sales. This equipment provides all customers with the protection required to effectively conduct active combat, consequence management, and homeland defense operations in CBRN threat environments.

Joint Project Manager for Transformational Medical Technologies (JPM - TMT) The Joint Project Manager for Transformational Medical Technologies (JPM-TMT) facilitates the advanced development and acquisition of broad-spectrum medical countermeasures (MCM) and systems to enhance our nation’s biodefense response capability. In addition to the routinely recognized drug development challenges of cost, schedule, and performance, JPM-TMT must also address Warfighter requirements that may not always align with the many technical challenges associated with MCM product attributes and the Food and Drug Administration’s (FDA) drug approval process. The challenge for JPM-TMT is to strike a balance between fielding critical MCM against threats for which no countermeasure exists and providing capabilities that meet Warfighter requirements.

The JPM-TMT has groundbreaking initiatives underway. Those include: 1) the Hemorrhagic Fever Virus Class MCM Acquisition Program focused on delivering broad-spectrum and/or platform-based MCM to mitigate the effects of HFV exposure; 2) the Emerging Infectious Diseases-Influenza MCM Acquisition Program that supports the development of a broad-spectrum and/or platform-based MCM that targets multiple influenza virus strains, including the H1N1 virus; and 3) proposed Response Systems and Predictive Systems capabilities that would seek to field solutions to enhance chemical, biological, radiological and nuclear military operations and improve mission planning effectiveness. The JPM-TMT is located on Fort Belvoir, VA.

More info: www.jpeo-cbd.osd.mil

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Features

NY 24th CST
The New York National Guard’s 24th Weapons of Mass Destruction Civil Support Team (WMD-CST), Ft. Hamilton, NY trains 24-7 to keep ever-present threats unrealized.

Locked-In Positions
Developments in personal tracking systems keep tabs amidst chaos of disaster response

Mitigating the CBRN Threat
Uncovering the latest in CBRN threat concealment techniques before they reach U.S. soil

Leadership Forum
Industry leaders in CBRN medical response technologies help enable fielded solutions.

Command Profile
U.S. Naval Sea Systems Command EOD Technology Division

Special Section:
HRF Unit Evolution Homeland Response Force (HRF) Units are consolidating regional response protection.

Bonus Distribution:

Calendar of Events

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Every second matters.

When time and safety are critical, military personnel rely on Thermo Scientific handheld chemical identification instruments to rapidly identify explosives, narcotics, precursors and other chemical threats directly at the point of need.

With more than 4,500 handheld instruments deployed worldwide, we understand what first responders demand of their equipment—and why every second matters. That's why our award-winning FirstDefender® Raman instruments are already deployed by all branches of the U.S. military for field-based chemical and explosives identification. TruDefender® FT is an ideal complement to our Raman instruments, designed to provide laboratory-quality FTIR results in a rugged, easy-to-use instrument that can literally fit in your pocket.

For rapid, accurate analysis of potential chemical hazards, turn to Thermo Scientific handheld instruments. To schedule a demonstration, email sales.chemid@thermofisher.com, visit www.thermoscientific.com/mil-chemid or call +1 (978) 642-1132.
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