



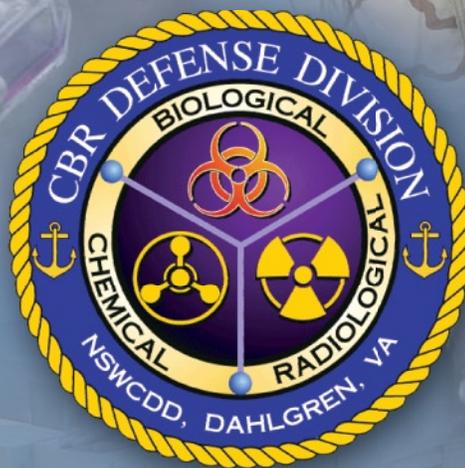
CBRN IAC

Chemical, Biological, Radiological & Nuclear Defense
Information Analysis Center

Newsletter



Volume 8 Number 4
2007



Spotlight on the Chemical, Biological, and Radiological (CBR) Defense Division at Naval Surface Warfare Center, Dahlgren, VA

Biomonitoring Assesses Exposure to Chemical and Biologic Agents

USAMRICD Welcomes New Commander

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Due dates for articles *approved for public release* are:

First Quarter (Number 1) - October 15th

Second Quarter (Number 2) - January 15th

Third Quarter (Number 3) - April 15th

Fourth Quarter (Number 4) - July 15th

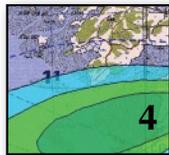
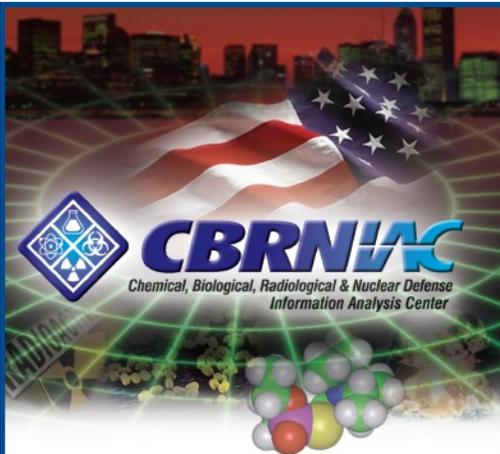
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CDR USA RDECOM
Edgewood Chemical Biological Center
ATTN: AMSRD-ECB-AP-T (CBRNIAC COTR)
5183 Blackhawk Road
Aberdeen Proving Ground, MD 21010-5424

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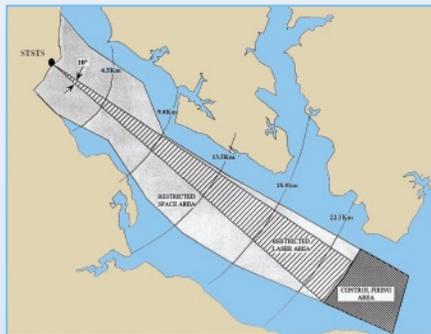
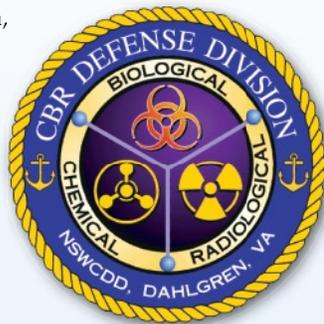
Spotlight on the Chemical, Biological, and Radiological (CBR) Defense Division at Naval Surface Warfare Center, Dahlgren, VA

By Michael Purello, P.E., Head, CBR Defense Division, Naval Surface Warfare Center Dahlgren Division

The maritime environment includes sea clutter, salt air, reflectivity off the water, high humidity, and wind. Replication of these conditions are needed to provide realistic "at sea" test parameters for equipment and systems that are going to be fielded and reliably operated in a maritime environment. These realistic "at sea" conditions are much harder, if not impossible, to replicate at land-locked facilities. Because weapon systems and sensors function differently over water than over land, it is necessary to test them in a coastal environment that blends air, water, and land in varying meteorological conditions.

Situated on the Potomac River on the Virginia/Maryland border, the Naval Surface Warfare Center Dahlgren Division (NSWCDD), located in Dahlgren, Virginia, has been at the core of U.S. Naval strength for nearly a century. As a Navy leader in Chemical, Biological, and Radiological (CBR) Defense, the CBR Defense Division (Code Z20) at NSWCDD provides a full complement of capabilities that support the naval warfighter both on land and at sea as well as the Joint and Homeland Defense communities. As an integral member of the Joint Service Chemical and Biological Defense Community, the CBR Defense Division has a successful track record of designing, developing, and supporting key CBR defense initiatives due to their innate understanding of what it takes to design and field CBR defense systems that will operate reliably in a maritime environment.

Furthermore, with the added Navy focus on littoral warfare, the waterfront nature of Dahlgren makes it an ideal location for the Navy to prepare and practice for littoral combat and test new "leading edge" systems under environmental conditions that are similar to the environments around the world where many of our current conflicts are occurring. Dahlgren's Potomac River Test Range is the nation's largest fully



Dahlgren's Potomac River Test Range (PRTR) is the nation's largest fully instrumented over-the-water test range. It allows the Navy to efficiently conduct testing in a realistic, controlled environment. Using the PRTR with Dahlgren's other RDT&E facilities, experiments can be conducted in real time with actual operating forces of the Navy or other branches of the military.

instrumented over-the-water range and allows the Navy to conduct testing in a realistic, yet controlled and/or instrumented environment. With over 130 scientists, engineers, technicians, and administrative personnel and state-of-the-art CBR defense facilities and equipment, Z20 has delivered countless products and services to the fleet, other services, and government agencies.



Falling under the Joint CBRN Defense Concept and Supporting Core Capabilities in an organizational construct of Sense, Shape, Shield, and Sustain with an additional capability of S&T, Z20's products and services include:

- Collective Protection System Design, Acquisition, and Installation for Ships and Buildings, and Fleet Support
- Detection Equipment Design, Development, Acquisition, Installation, and Fleet Support
- CBR Hazard Prediction Modeling and Simulation
- CBR Systems Engineering for Ship and Shore
- Rapid Prototyping and Fielding of CBR Equipment and Systems
- Decontamination Equipment and Procedures Development
- Scientific and Technical Research on CBR Defense Issues
- First Responder Equipment Fielding and Training
- Participation in Joint and International Chemical & Biological Warfare Defense Technical Committees
- Research and Development
- Test and Evaluation
- Acquisition Support
- Program Management
- Fleet and Fleet Exercises Support
- Homeland Defense Initiatives.

Continued pg. 5

Z20 combines a strong systems engineering approach, technical competence, experience, modern laboratory facilities, an attitude of continuous improvement, and an extensive collaborative network of relationships with other services, government, industry, and academia to deliver world class, full spectrum CBR defense solutions for the Fleet, warfighters, key national assets, operational facilities, and military installations.

The CBR Defense Division occupies the state-of-the-art research and development facilities of the Herbert H. Bateman Chemical/Biological Defense Center. This 54,000 square foot facility includes high-performance computing facilities utilizing state-of-the-art parallel processing technologies, Biosafety Level 2 and 3 (BSL-2 and BSL-3) Containment Facilities, Collective Protection Test Laboratory, Stand-Off Detection Laboratory, Quality Assurance Laboratory, Chemistry Laboratories, Materials Laboratory, and workspaces dedicated to the development of CBR defense products and technologies for the Navy.

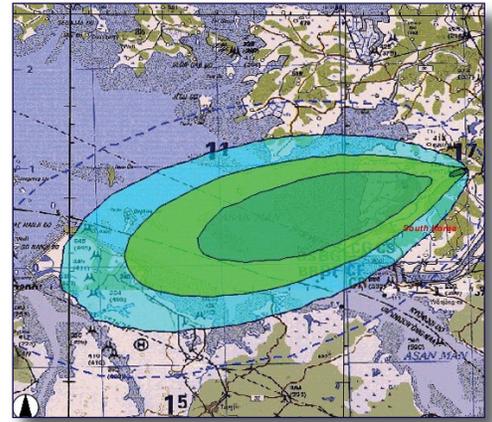


The proximity of the CBR Defense Division and its scientists, engineers and technicians to the seat of federal government as well as numerous military (Pentagon, Naval Station Norfolk, Edgewood Chemical Biological Center, Naval Research Laboratory, Office of Naval Research) and Government agencies (National Institute of Standards and Technology, Environmental Protection Agency, United States Department of Agriculture) fosters scientific, technical, and operational collaboration across services and government agencies.

As part of a larger Asymmetric Defense Systems Department with Measured Response Options and Infrastructure Assurance Divisions, and Counter-Narco Terrorism and Acquisition Program Offices, the CBR Defense Division is well positioned to counter numerous asymmetric challenges that threaten the military's ability to accomplish its mission.

The world's military posture continues to be in a state of flux as instability continues to be the norm across the globe. The number of countries with

the capability to produce a chemical or biological weapon is increasing. The ever-increasing proliferation and sophistication of chemical, biological, and radiological weapons by rogue nations and terrorist organizations, coupled with the growing emphasis on littoral maritime operations, have dramatically increased the threat against U.S. Naval Forces.

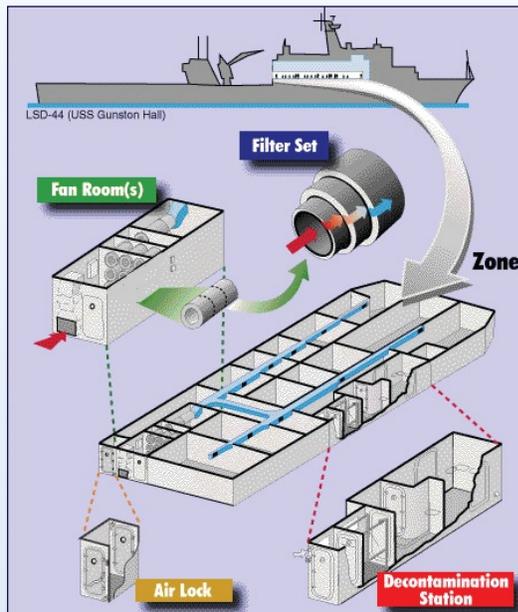


Plume dispersion models and hazard analysis and prediction tools help operators to develop plans and courses of action in the event of a biological or chemical agent release.

Our Navy must be able to deal with emerging threats. NSWC Dahlgren's CBR Division's vision is to ensure that every fleet asset is protected from a CBR attack. Furthermore, we must ensure that our sailors can fight and win in a CBR threatened or contaminated environment. As new technologies are introduced, NSWCDD will be expected to play an integral role in assuring that the technologies perform as promised and are integrated across multiple systems and platforms.

With U.S. forces deployed across the world, the need for a comprehensive, robust, and effective CBR defense program cannot be overstated. The CBR Defense Division exists to provide our war fighter with the tools and capabilities necessary to detect, protect, and if necessary decontaminate hazards resulting from a CBR attack. The ability of the warfighter to successfully reduce, eliminate or in the event of a CBR attack, mitigate its effects is the ultimate metric of NSWC Dahlgren's CBR Defense Division. ♦

Visit NSWCDD online at <http://www.nswc.navy.mil/>



Shipboard collective protection provides a safe haven where personnel can perform their mission essential operations without the use of cumbersome individual protective equipment. Specified ship spaces are over pressurized with filtered supply air to prevent the ingress of any chemical, biological, or radiological contaminants



Quick turn-around, on-site support is one of the many services offered by the CBR Defense Division.



Contract Awards

Stand-Off Radiation Detector System (SORDS) Demonstrations

General Electric Global Research
Niskayuna, NY
Science Applications International Corporation
San Diego, CA
Naval Research Laboratory
Washington, DC
\$33,000,000 October 1, 2007
By U.S. Department of Homeland Security's (DHS) Domestic Nuclear
Detection Office (DNDO)
Washington, DC

NeuGene Program in Dengue Virus

AVI BioPharma, Inc.
Portland, OR
\$2,660,000 September 19, 2007
By U.S. Department of Defense, Washington, DC

Pursue a New Class of Antibacterials Targeting Potential Biothreat Outbreaks and Hospital-Acquired Infections

GlaxoSmithKline
United Kingdom
\$41,000,000 September 18, 2007
By U.S. Department of Defense, Washington, DC

HiFAWS (new technology that shows promise for a new generation of small, low-cost chemical agent detectors suited to a variety of applications)

UK Ministry of Defence
London, UK
\$2,500,000 (approximate) September 12, 2007
By Smiths Detection, Edgewood, MD

GammaRAE II Radiation Detector and MultiRAE Plus Toxic Gas Monitors

RAE Systems Inc.
San Jose, CA
By State of South Carolina
September 11, 2007

50 Lightweight Chemical Detectors

German Federal Office of Defence Technology and Procurement, BWB
Koblenz, Germany
September 11, 2007
By Smiths Detection, Edgewood, MD

Consumables and Software for Two of the Company's BSM-2000 Anthrax Detection Systems

Government of England
London, UK
September 10, 2007
By Universal Detection Technology, Los Angeles, CA

Develop Skin Micro-Electroporation for Improved Biodefense Vaccine Efficacy

VGX Pharmaceuticals
Blue Bell, PA
\$1,900,000 September 10, 2007
By Defense Threat Reduction Agency, Fort Belvoir, VA

Develop Nuclear-Detection Technology, Improve Risk Assessment, and Help Train for Assessing Nuclear Materials Proliferation

UC Berkeley
Berkeley, CA
\$1,400,000 September 4, 2007
By National Science Foundation and the Department of Homeland
Security, Washington, DC

Joint Warning and Reporting Network (JWARN) Block 2 Increment 1 Development and Initial Production of the Wireless JWARN Component Interface Device

Northrop Grumman Space and Mission Systems
San Diego, CA
\$10,617,301 August 31, 2007
By Space and Naval Warfare Systems Command, San Diego, CA

Chemical Agent Detectors

Bruker Daltonik GmbH
Leipzig, Germany
\$3,500,000 August 28, 2007
By Slovenian Armed Forces

Genetically Modified Goats to Produce Milk to Protect Against Nerve Agents

PharmAthen
Annapolis, MD
\$250,000,000 (approximate) July 26, 2007
By U.S. Department of Defense, Washington, DC



CBRN IAC
*Chemical, Biological, Radiological & Nuclear Defense
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Serving the CBRN Defense and Homeland Security communities

CDC's Biomonitoring Assesses Exposure to Chemical and Biologic Agents

by Robert H. Hill, Jr., Ph.D.

Two widely recognized events – the sarin attack in Tokyo in 1995 and the anthrax attacks in the United States in 2001 – brought home the reality that the United States, like other nations, may face terrorist threats from chemical or biologic agents in the future. Should such terrorist attacks occur, it is critical to confirm as soon as possible whether or not people have been exposed. This confirmation provides the medical and public health communities the information they need to manage the care of exposed people as well as to manage information for people who have not been exposed.

Since its inception in 1946, the Centers for Disease Control and Prevention (CDC) has been involved in investigations of human illness resulting from exposure to chemical and biologic agents. Over the years, CDC developed methods to assess these exposures. In the 1960s and 1970s, CDC's National Center for Environmental Health (NCEH) developed expertise in analytical chemistry, evaluating exposures of public health concern by using methods that measured pesticides, such as DDT and its metabolites, in blood. This process of directly measuring chemicals or their metabolites in people's blood or urine is known as biomonitoring, sometimes called biological monitoring. Using biomonitoring, CDC can confirm exposure by detecting the presence of specific chemicals or their metabolites and estimate their extent and magnitude by quantitative measurement of chemicals or biologic agents in the exposed population. This information is also essential to decision makers in the military and law enforcement. By demonstrating the effectiveness of biomonitoring technology, CDC's Division of Laboratory Sciences (DLS) has converted biomonitoring into an essential tool in helping the nation respond to terrorist events more quickly and effectively.

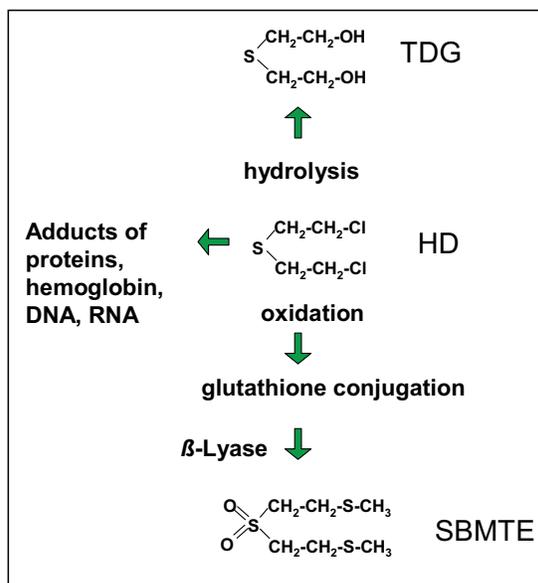
The DLS Mission

Advanced laboratory science and innovative techniques have put DLS scientists at the forefront of efforts to assess human exposure to chemicals and biologic agents. Their use of biomonitoring has helped change how others now think about assessing exposures to chemicals and biologic toxins. Their work includes developing, validating, transferring, and implementing new methods to measure metabolites or other biomarkers that indicate human exposure qualitatively and quantitatively. These methods show 1) whether or not exposure has occurred by measuring chemicals or their metabolites and 2) how much exposure has occurred – the dose received. DLS publishes CDC's *National Report on Human Exposure to Environmental Chemicals* (available in print, on CD, or online at <http://www.cdc.gov/exposurereport/>). This unique report provides an ongoing assessment of the U.S. population's exposure to selected chemicals in our environment. Using these data, DLS has established baseline or reference values that are critical in interpreting measurements of exposures that might occur during a chemical or biologic event. In planning for such an event, DLS has developed methods that measure potential environmental exposures to about 400 chemicals or biologic agents.

Biomonitoring for Chemical Toxicants

"The lab has expanded the use of biomonitoring by developing techniques that are sensitive and specific enough to identify chemical agents or their metabolites and certain biologic agents in human specimens. By measuring concentrations of these agents or their metabolites or adducts in blood or urine, we can determine the importance of potential human exposures," said Eric Sampson, PhD, DLS director. DLS has done this work in large part by emphasizing one area of advanced technology known as mass spectrometry. This technique lets DLS scientists measure the mass of specific fragments of molecules, including the agent or its metabolite, at very low concentrations. These measurements can confirm exposure and provide information about the relative concentrations that may be related to exposure or dose. "The sensitivity of mass spectrometry enables us to measure values in the general population to establish reference values. Having this information means that we are better able to interpret data from potential exposures to these agents," Sampson noted.

However, there are challenges in using these highly sensitive techniques. For example, when developing biomonitoring methods for detecting sulfur mustard (also known as HD), DLS found that thiodiglycol (TDG), a metabolite of sulfur mustard, was detectable in the normal human population, but since this metabolite could be derived from other exposure sources, it would not provide definitive confirmation of exposure to sulfur mustard. DLS then found a definitive measure of sulfur mustard exposure – another metabolite, SBMTE (or 1,1'-sulfonylbis[(2-methylthio)ethane]) – and developed a method to measure it using advanced mass spectrometry techniques.¹ Figure



1 shows the structure of HD, TDG, and SBMTE. DLS also found that a product (adduct) of HD and albumin, a protein found in people, could be used to assess exposure to HD. Both methods have been used successfully to evaluate human exposure to HD.

Figure 1. Conversion of sulfur mustard (HD) to biomonitoring products in the body that are useful in assessing HD exposure: thiodiglycol (TDG), 1,1'-sulfonylbis[(2-methylthio)ethane] (SBMTE), and protein adducts (an albumin adduct). Adapted with permission from Barr, et al. (2005)¹.

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Biomonitoring *cont.*

Figure 2 shows how a non-persistent chemical, such as HD, can be monitored to evaluate potential exposure over time.²

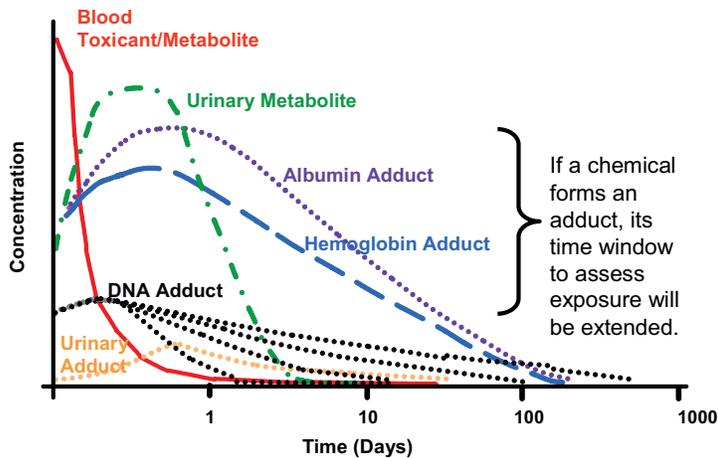


Figure 2. Hypothetical concentrations of biomonitoring products in blood and urine over time in days after a single exposure to a nonpersistent chemical (toxicant). These products could be the chemical in blood, urinary metabolites, or adducts of chemical with albumin, hemoglobin, or DNA. Adapted with permission from Needham and Sexton (2000)².

“Concentrations of nonpersistent chemicals quickly decrease after a single exposure, so measuring these in blood might not be valuable shortly after exposure. However, measuring metabolites in urine or adducts in blood would be better choices for measuring exposures days, weeks, or even months after that exposure,” notes Larry Needham, PhD, Chief of DLS’ Organic Analytical Toxicology Branch, and one of DLS’ recognized experts in biomonitoring.

Measuring a urinary metabolite, such as SBMTE, would provide evidence of exposure for a longer period of time but SBMTE too would begin to decrease so that after several days it would be below the limit of detection of the method. Measuring an adduct, such as the HD albumin adduct, would provide information about exposure for days, weeks, or perhaps months after an exposure. DLS found that exposure to HD followed the patterns expected of a non-persistent chemical, as illustrated in Figure 2.

A critical part of CDC’s mission is to prepare public health laboratories to be able to respond to possible emergencies involving exposures to toxic chemicals, such as chemical warfare agents, from terrorist attacks or other incidents. DLS plays a key role in this process by developing and validating biomonitoring methods and transferring the methods to members of the “chemical” arm of the Laboratory Response Network (LRN-C). DLS provides training, analytical standards, and quality –control materials to LRN-C laboratories so they will be able to use these methods to evaluate potential exposures in their regions and in some instances, to serve as surge capacity for DLS should a large-scale event occur (Figure 3).

DLS also developed two methods to measure the metabolites of organophosphate nerve agents using gas chromatography combined with mass spectrometry (GC/MS) and liquid chromatography combined with tandem mass spectrometry (LC/MS/MS). Another method developed at DLS to measure toxic elements, such as beryllium and

uranium, in urine uses inductively-coupled plasma mass spectrometry (ICP/MS). These methods have been “transferred” – that is, the state public health laboratories have been equipped with the instruments and trained to use the methods successfully in support of preparedness and emergency response efforts.

Biomonitoring for Biologic Toxins

Most recently, DLS has shown that these techniques also work for detecting exposure to biologic agents. Combining matrix-assisted laser-desorption ionization with time-of-flight mass spectrometry (MALDI) has yielded a new, highly sensitive, and highly specific method to measure exposure to botulinum toxin.³ Most biologic toxins are high molecular-weight compounds, are not volatile, and are so toxic that exposure to minute amounts can have serious health consequences. For many years, scientists had difficulty measuring exposures using analytic techniques such as mass spectrometry. However, the advent of techniques, such as MALDI, provides a new avenue for analyzing these toxins in human specimens. Botulinum toxin, a Select Agent and one of the most toxic substances known to humankind, has the potential to be used as a biologic weapon. The minimum lethal dose for botulinum toxin in mice is around 0.0003 µg/Kg, about 50 million times more toxic than sodium cyanide.⁴ Existing methods for identifying botulinum toxins rely on the use of mouse assays or culturing organisms to determine exposures. “This new approach is a breakthrough,” says David Ashley, PhD, Chief of DLS’ Emergency Response and Air Toxicants Branch. “MALDI shows the real utility of chemical methods to measure exposures that previously could only be measured by biologic or bioassay methods. This new mass spectrometric method offers more complete information that can be obtained faster, is more specific, more sensitive, and less costly than other methods in use. We have only begun to push this new boundary for the biomonitoring of biologic toxins.”

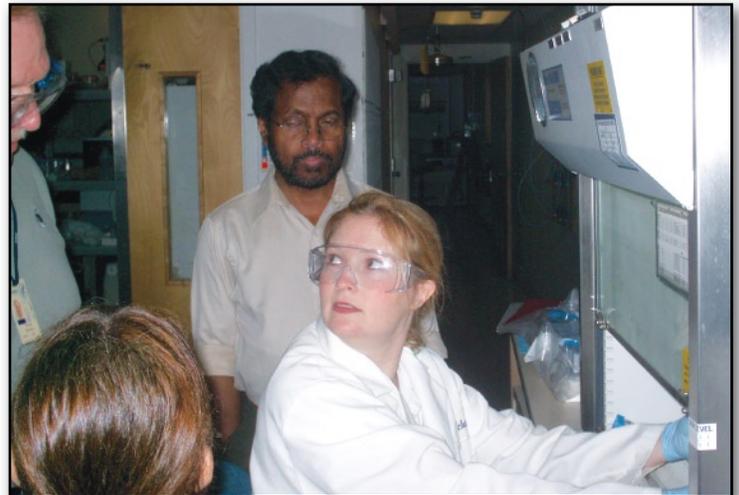


Figure 3. Dr. Steve Pappas of CDC provides insight in training for an ICP/MS method to State Laboratory scientists – Dr. Rej (California), Jessica Sims, and Arlene Lefebre (Louisiana) during a Laboratory Response Network training exercise. [Photo provided by Dan Paschal, CDC]

John Barr, PhD, the lead research chemist for this project, is now expanding this technique to detect exposure to another biologic toxin – anthrax. “Our most recent research shows that mass spectrometric methods can effectively measure the anthrax lethal factor in blood.

Continued pg. 9

Biomonitoring *cont.*

Our new methods will not only provide decision makers with the information needed faster but also will have more specificity than current methods," he said.

Dr. Sampson adds, "CDC's excellence in science must be the basis for making good public health decisions. The state-of-the-art chemistry we use in DLS for measuring people's exposure to chemical or biological agents provides critical scientific information that helps us solve important public health problems quickly and reliably." ♦

References

1. Barr JR, Young CL, Woolfitt AR, Capacio BR, Smith JR, Korte WD, Kalb SR, McWilliams LG, Ash D. Comprehensive quantitative tandem mass spectral analysis of urinary metabolites and albumin adducts following an accidental human exposure to sulfur mustard. Presented at the 3rd Conference on Mass Spectrometry Applied to Chemical and Biological Warfare Agents, April 17-20, 2005, Noodwijkerhout, Netherlands.
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4. O'Neil MJ, editor. The Merck Index 14th ed. Whitehouse Station, NJ: Merck & Co. 2006. pp. 222, 1482.

Access CBRNIAC's Database and Document Holdings through DTIC's TEMS



Access to the CBRNIAC's database and document holdings are available through Defense Technical Information Center's (DTIC's) **Total Electronic Migration System (TEMS)**.

TEMS allows an authorized DTIC user to search the Information Analysis Center (IAC) knowledge base using their web browser. By centralizing and standardizing IAC collections, TEMS enables users to search for, retrieve, and use the IACs scientific and technical information (STI). TEMS will also provide the capability to search for and retrieve classified documents and files via the Secret Internet Protocol Router Network (SIPRNET).

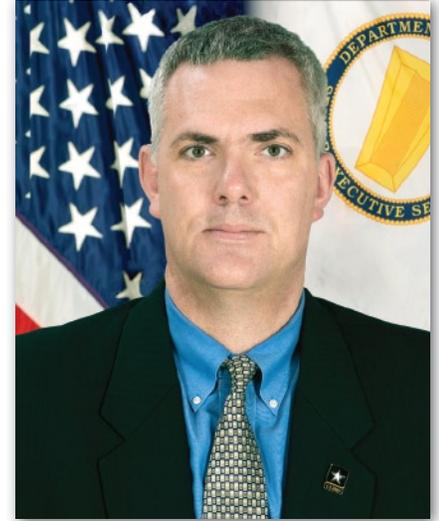
TEMS provides users easy access to CBRNIAC's database and document collection, as well as access to the combined knowledge base of all the DTIC-sponsored IACs. Users may choose to search only CBRNIAC, to search several IACs, or to search all of the IACs at the same time.

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Program Manager Named

Kevin J. Flamm Selected as Permanent ACWA Leader

Selection of Mr. Kevin J. Flamm as the Program Manager Assembled Chemical Weapons Alternatives (PM ACWA) has been approved by the Secretary of the Army after a competitive process by the office of the Under Secretary of Defense (Acquisition, Technology and Logistics). Flamm, who has been acting in the position since last April, now assumes full responsibility for life cycle management of the Defense Department's chemical weapons destruction program to destroy chemical weapons stockpiles in Colorado and Kentucky.



"In every position in which Kevin has been asked to serve, he has distinguished himself with integrity, initiative and selflessness," said Mr. Jean D. Reed, Special Assistant for Chemical and Biological Defense and Chemical Demilitarization Programs at the Pentagon's Office of the Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs. "I'm confident that he will lead the ACWA team, government and contractors alike, toward the safe and successful conclusion of this critical national program."

Prior to his selection as the PM ACWA, Flamm served as the Program Manager for the Elimination of Chemical Weapons within the U.S. Army Chemical Materials Agency. In this capacity, he was responsible for life cycle management of the destruction of chemical weapons stockpiles in Alabama, Arkansas, Indiana, Maryland, Oregon and Utah, in addition to related materials and former chemical weapons production facilities.

"I am both pleased and honored to be able to continue working with people I respect on a program of national importance in two communities so reflective of the American spirit," said Flamm. "They deserve, and will receive, our very best effort."

During his more than 27 years of federal service, Flamm has held numerous positions associated with the U.S. chemical weapons demilitarization and arms control programs. He served as Project Manager, Alternative Technologies and Approaches; Product Manager, Cooperative Threat Reduction; Department of Defense representative to, and member of, the United Nations Special Commission Destruction Advisory Panel; technical advisor to the U.S. delegations negotiating the Bilateral Chemical Weapons Destruction Agreement and the Chemical Weapons Convention; Chief of the Technology Exchange and Treaty Compliance Office; and the lead engineer responsible for the testing and evaluation of the equipment, processes and procedures being considered for use in the U.S. chemical demilitarization facilities.

Flamm was inducted into the Senior Executive Service in 2003. ♦



In the News

Milliken Releases New Protective Fabrics

United Press International

October 9, 2007

"Milliken released the new fabrics at the three-day 2007 Association of the United States Army Annual Meeting and Exposition in Washington...the fabrics protect soldiers against the harsh environments associated with armed combat, chemical and biological warfare and extreme climates."

http://www.upi.com/International_Security/Industry/Briefing/2007/10/09/milliken_releases_new_protective_fabrics/4621/

Officers Get Radiation Detection Gear

Carolyn Thompson

Associated Press Writer

September 18, 2007

"The state (NY) is bolstering counterterrorism efforts upstate by equipping law enforcement officers with portable radiation detectors designed to alert them to potential dirty bombs."

<http://www.amny.com/news/local/wire/newyork/ny-bc-ny--radiationdetector0918sep18,0,2190384,print.story>

Smoking Out Terrorism

Marni Pyke

Daily Herald

September 11, 2007

"Argonne National Laboratory scientist Nachappa "Sami" Gopalsami explains how this passive millimeter-wave device can identify chemicals that might be used as weapons."

<http://www.dailyherald.com/story/?id=35361>

MD Biotech to Develop Malaria Vaccine for Military

Jeff Clabaugh

Baltimore Business Journal

September 10, 2007

"GenVec Inc. will work with the military to develop a vaccine for a strain of malaria that causes more than half of malaria infections in military personnel."

<http://www.bizjournals.com/baltimore/stories/2007/09/10/daily6.html>

Chemical Detecting Robot Program Rolls Forward

Stew Magnuson

National Defense

September 2007

"Explosive ordnance disposal robots have proven their worth in Iraq and Afghanistan by reducing their operators' exposure to improvised bombs. The CBRN unmanned ground reconnaissance (CUGR) demonstration program seeks to reduce the risk for members of chem-bio units who must often walk into the unknown."

<http://www.nationaldefensemagazine.org/issues/2007/September/ChemicalDet.htm>

Glowing Report for Nerve Agent Detection

Jon Silversides

Chemical Science

September 10, 2007

"A chemiluminescent sensor could be used to detect sarin with a glow response...detect an analogue of the nerve gas sarin, giving off a blue glow in its presence."

http://www.rsc.org/Publishing/ChemScience/Volume/2007/10/glowing_dfp_detect.asp

Study: Vaccine Protects Against Poisoning From Inhaled, Ingested Ricin

Sue Goetinck Ambrose

The Dallas Morning News

September 9, 2007

"An experimental vaccine... protected mice against highly lethal doses of ricin delivered to the lungs or gut, and with little damage to the lungs."

<http://www.dallasnews.com/sharedcontent/dws/news/localnews/stories/090907dnmetricin.429bfd.html>

This Police Radar Targets Terrorism

Sam Wood

The Philadelphia Inquirer

September 9, 2007

"Called a RadTruck, it's part of a fleet of radiation-detecting SUVs in New Jersey...becoming the first state in a federal pilot program that aims to detect terrorist nuclear material before it can be detonated."

http://www.philly.com/inquirer/local/nj/20070909_New_SUVs_are_like_police_radar_for_terrorism.html

Vol. 4 No. 4 of the Chem-Bio Defense Quarterly Magazine is Now Available!

Vol. 4 No. 4 Chem-Bio Defense Quarterly Magazine

The Joint Project Manager Biological Detection (JPM-BD) is developing and fielding several biological detection systems, including the Joint Biological Point Detection System (JBPDS), the Joint Biological Stand-off Detection System (JBSDS), and the Joint Biological Tactical Detection System (JBTDS). These products form the cornerstone of the Joint Services' current and future biological defense (BD) strategy. This issue of Chem-Bio Defense Quarterly highlights JPMBD's office's efforts in Biological Defense.

To view the electronic version, visit: http://www.jpeocbd.osd.mil/page_manager.asp?pg=4&sub=0

Would you like to receive the link to upcoming issues or have a hard copy version for your office or organization? If so, complete the interactive form at http://www.jpeocbd.osd.mil/page_manager.asp?pg=0&sub=9.



USAMRICD Welcomes New Commander

by Cindy Kronman, U.S. Army MRICD Public Affairs

The U.S. Army Medical Research Institute of Chemical Defense (MRICD) welcomed back Col. Timothy K. Adams, on July 20, as he assumed command of the laboratory from Col. Brian J. Lukey. From late 2005 to mid-2006 Adams briefly served as MRICD's deputy commander and returns to the institute after graduating from the National War College. Lukey, who took command of MRICD in January 2006, returned to Fort Detrick, Maryland, where on July 27 he assumed command of the U.S. Army Medical Materiel Development Activity.

The change of command ceremony was presided over by Col. Jonathan J. Jaffin, acting commander of the U.S. Army Medical Research and Materiel Command. The 287th Army Band from Wilmington, Delaware, provided musical accompaniment to the ceremony, and among the many distinguished guests were five former MRICD commanders: Col. (Ret) Ernest Takafuji, Col. (Ret) Gary Hurst, Col. (Ret) James Little, Col. (Ret) James Romano, and Col. (Ret) Gennady Platoff.

Before the ceremony, Jaffin presented Lukey with the Meritorious Service Medal, and his wife, Marita, with a Certificate of Appreciation.

"Brian has simply been stellar as commander of MRICD," said Jaffin. "One of the crucial areas for chemical defense is the expansion of interagency cooperation. Brian has helped lead this effort on virtually every front. He's worked with the National Institutes of Health, increasing cooperation between ICD and NIH, increasing the amount of work ICD has done for this nation through NIH, and culminating in ICD's being recognized as an NIH Center for Excellence."

Jaffin also called Lukey a "tireless advocate for the future" of MRICD.

"He's been working," Jaffin continued, "to ensure a new ICD be built to carry on this mission through the 21st century, with the ability to provide state-of-the-art research for many years to come."

As he took the podium after relinquishing command, Lukey said, "This change of command is not about me or even Col. Adams. It is about you. Each and every one of you in some way is connected to the accomplishments of the MRICD mission."

"COL Adams," he said, "you are taking over the best job I have ever had. These people are by far your greatest asset. They will make your job easy and fun."

"I am honored and humbled to have commanded this unit," Lukey said.

Jaffin called Adams a "worthy successor," noting in addition to his long history with MRICD and the MRMCM as a soldier, veterinarian, and leader, his earlier Army career as a field soldier, which included his deployment and his instruction of Special Forces courses.

"Build on the work Brian has done," Jaffin said to Adams, "and keep ICD the premier chemical defense lab in the world."

"It is a privilege to once again be able to return here to ICD," Adams began. "To be trusted with one of MRMCM's and MEDCOM's most precious assets is truly a distinct honor."

"The dedicated commitment and quality of work which is produced within this lab is absolutely remarkable, and ICD is not only a research icon, but also an organization which is admired, respected, and recognized on both a national and international scale."

Adams commended Lukey's service to MRICD.

"He has taken exceptional care of the ICD family and has brought the unit significantly forward during very difficult and challenging times and with significant personal sacrifice," said Adams.

Looking to the future and his stewardship of the institute, Adams told the assembled crowd, "The bar has been set high, so our work, ICD, is cut out for us as we adapt to new challenges and continue to provide the very best to our warfighters around the world and to our homeland security."



Photo caption: Incoming commander Col. Timothy Adams accepts the unit flag from Col. Jonathan Jaffin. (Photo by Cary Sisolak)

"I welcome these challenges," said Adams, "and look forward to working with you once again."

Adams first entered military service after high school in 1974 and became a Special Forces medic. Separating from the service in 1977, he earned a bachelor's degree in biochemistry from Purdue University and then a doctorate in veterinary medicine, 1986, from Purdue Veterinary School. Adams re-entered the service, taking a direct commission in The United States Army Veterinary Corps. Adams also holds a master's in public health

Continued pg. 12



Calendar of Events

Do you have a Chemical and/or Biological Defense or Homeland Security course or event to add to our Calendar? Submit the pertinent information via email to cbrniac@battelle.org or online at http://www.cbrniac.apgea.army.mil/info/posting_request.php. The CBRNIAC reserves the right to reject submissions. For a more extensive list of events, view our online calendar at http://www.cbrniac.apgea.army.mil/info/calendar_06.php.

- January 28 - February 1 **HTC-10 & Extech®-10 & Public Safety and Security**
Oud Sint-Jan, Belgium
<http://www.ordibo.be/htc/>
- February 5-8 **COURSE: Hospital Security Preparedness (HSP)**
Washington, DC
http://www.web.sitelms.org/view_event.php?event_id=39
- February 14-18 **2008 American Association for the Advancement of Science (AAAS)**
<http://www.aaas.org/meetings/>
- February 11-15 **COURSE: Field Management of Chemical and Biological Casualties**
Aberdeen Proving Ground, MD
https://ccc.apgea.army.mil/courses/in_house/brochureFCBC.htm
- March 2-7 **PITTCON®2008**
New Orleans, LA
<http://www.pittcon.org/archive/2006/homepage6b37.html?appname=376&moduleid=858>
- March 3-4 **ER One 5th Annual Conference: Hospitals on the Frontline**
Washington, DC
http://www.web.sitelms.org/view_event.php?event_id=42
- March 9-14 **COURSE: Medical Management of Chemical and Biological Casualties**
Ft. Detrick and Aberdeen Proving Ground, MD
https://ccc.apgea.army.mil/courses/in_house/BrochureMCBC.htm
- March 11-13 **NavExFor 2008: Naval Expeditionary Forces Symposium and Expo**
Virginia Beach, VA
http://www.defensetradeshows.com/NAVEXFOR08_General_Info.html

Innovation in Homeland Security Education

University of Maryland, University College, March 18-19, 2008

Call for Presentations

Researchers, academics, and practitioners are invited to submit proposals for presentation at the Summit on March 18 - 19, 2008. Presentations should be on a topic of significance to the Homeland Security and Homeland Defense education communities that fall into the theme of the Conference *"Innovation in Homeland Defense and Security Education."*

Examples for each of the four presentation tracks:

Innovation in Education

- New courses, courseware, and programs
- New methodologies
- Instructive classroom-based exercises
- Maintaining currency in fluid environments

Innovation in Program Development

- How to get programs started
- How to run the administrative gauntlets for program approval
- Finding and hiring faculty
- Developing multi-departmental programs

Innovation in Research

- Policy analysis
- Center of Excellence topics
- Gaining strategic advantage through technology

Innovation in Technology

- Graphic Information Systems
- Second level fiber connectivity
- Information sharing and intelligence

Student presentations will also be considered.

Presentation Proposals must contain the following:

Name of Presenter(s)

Affiliation/Institution

Contact Information (email and phone number)

Presentation Title

Presentation Description: A brief (75 words or so) overview of the topic

Presentations should be planned for 45 minutes, to include time allotted for questions and answers. Submit proposals no later than January 11, 2008 to Lance Robinson, robinsonl@battelle.org, and Stan Supinski, sbsupins@nps.edu. Requests will be evaluated on the appropriateness to the theme of the conference, clarity, originality, and potential value to conference attendees.

Registration:

Registration information can be found online at <http://www.hsdec.org>

Points of Contact for additional information:

NPS/UAPI - Stan Supinski, (sbsupins@nps.edu)

Patrick Newman, DHS Office of the CLO (Patrick.newman@associates.dhs.gov)

HSDEC - Lance Robinson (RobinsonL@battelle.org)



The Defense Threat Reduction Information Analysis Center (DTRIAC) – A Critical Information and Analysis Resource for the Defense Threat Reduction Agency (DTRA) and the Threat Reduction Community

Weapons of Mass Destruction (WMD) have the potential to threaten American lives – military and civilian – at home and around the world. The DoD created the Defense Threat Reduction Information Analysis Center (DTRIAC) to bring together the resources, experience, and technical expertise needed to help the United States reduce present threats and prepare for future threats. For over 30 years, DTRIAC personnel have been serving as the steward of this information/analysis resource for DTRA, preserving it and making it accessible to users in an easy, reliable way.

The DTRIAC, sponsored by the Defense Threat Reduction Agency (DTRA), has been a chartered Information Analysis Center (IAC) under Department of Defense (DoD) Directive 3200.12 and DoD Instruction 3200.14 since 1964, under the DoD Scientific and Technical Information Program. DTRIAC is the oldest of DoD's IACs, and since it is directly sponsored by DTRA (versus Defense Technical Information Center), DTRIAC is termed a "Military" IAC.

IACs are organizations formally chartered by the DoD and staffed with experienced scientists, engineers, analysts, and information specialists. Specifically, DTRIAC is chartered to acquire, digest, evaluate, synthesize, store, publish, and disseminate all scientific and technical information currently existing and being generated by DTRA and other sources whose mission areas are complementary to those of DTRA.

Over the years, DTRIAC has served the needs of the Defense Atomic Support Agency and its successor agencies - the Defense Nuclear Agency, the Defense Special Weapons Agency, and since 1998, DTRA. DTRIAC continues to support the evolving mission needs of DTRA.

The mission of DTRA is to safeguard America and its allies from WMD (chemical, biological, radiological, nuclear, and high yield explosives - CBRNE) by providing capabilities to reduce, eliminate, and counter the threat, and mitigate its effects.

DTRIAC is part of the Defense Threat Reduction University (DTRU). DTRA is developing the DTRU to be DTRA's representative in an alliance of multinational, federal, state and local CBRNE education, training, and research organizations within and external to the government. In addition to DTRIAC, the DTRA portion of DTRU consists of the Defense Nuclear Weapons School, the School of Threat Reduction Studies, and an outreach program. DTRU represents a premier national capability to integrate and build a trained and

educated professional force to deny, reduce, destroy, respond to, and mitigate the effects of CBRNE proliferation and use, and to support the combating WMD mission.

DTRIAC is the knowledge management cornerstone of DTRU. As such, DTRIAC develops and maintains a comprehensive knowledge base of combating WMD and CBRNE information. By identifying, collecting, organizing, digitizing, and proffering both unstructured (for instance, documents) and structured (for example, test data) information for greater access by the threat reduction community, DTRIAC facilitates information exchange and fosters research, development, and analyses to expand the existing knowledge base.

DTRIAC has "core" and "non-core" missions. The core mission is the maintenance of the collection, acquisition of new collection items, response to technical inquiries, document and photograph conversion to electronic format, information analysis, scientific and technical analysis, and other related IAC tasks. The core activities are funded so that requests generally requiring less than eight hours of research time can be accommodated. The "non-core" activities focus primarily on responding to research and analysis requests requiring considerably more than eight hours of effort. Generally speaking, non-core activities are performed by engineers and scientists who have a broad knowledge of the information and specific subject matter expertise.

DTRIAC has three offices, physically separate, but virtually and seamlessly linked: one on Kirtland Air Force Base, Albuquerque, New Mexico, and two in Alexandria, Virginia.

The Value of Data – Past, Present, and Future

Kirtland Air Force Base is an extensive installation, covering thousands of acres and employing over 20,000 people. With its storage-friendly climate, available space, and physical proximity to the Air Force Research Laboratory as well as two of the nation's three Department of Energy National Laboratories for nuclear weapons development (Los Alamos and Sandia), it is fitting that DTRA chose Kirtland to host its IAC. DTRIAC archives an extensive collection of information on the entire U.S. nuclear weapons program (nuclear weapons development, testing, deployment, and a myriad of weapons effects), spanning the program's inception during World War II to present day. Given this history, DTRIAC is uniquely poised as a growing data center for information on other threats, such as radiological weapons ("dirty

bombs”), high-yield explosives, and related phenomenology associated with chemical/biological threats. This “treasure trove” of information consists of well over three million items such as plans and reports (with tens of millions of document pages), photographs, miles of film, waveforms, tables and diagrams.



Figure 1. DTRIAC Staff in Document Collection Vault and the Film Collection Vault at Kirtland AFB

Past Data Help Predict Future Performance

Why is this compilation of information important? The enormity of the DTRA mission, the DTRIAC collection, and the existence of other relevant non-DTRIAC resources often require significant technical and subject matter expertise to perform the required research and analysis support. The DTRIAC team is comprised of both domain experts and information specialists who can effectively and efficiently research and analyze WMD data to support specific user needs including activities such as:

- Responding to technical inquiries;
- Performing in-depth technical analyses and special studies of WMD issue areas;
- Developing modeling and simulation tools and programs;
- Generating and evaluating data; verifying/validating existing data;
- Providing scientific, technical, and operational support across threat reduction areas – filling the voids in existing data;
- Establishing training courses in mission areas;
- Supporting technical exchange of information through facilitating/hosting conferences, meetings, and symposia; preparing conference proceedings, journals, handbooks, and other publications.

DTRIAC is designed to support not only all DTRA directorates but also customers throughout the threat reduction community. The DTRIAC collection is a foundational element and a definitive source for conducting scientific and technical information research and analyses across a broad range of topics to include weapons effects (e.g., radiological, nuclear, conventional, improvised, and other threat weapons), assessments (e.g., consequence management, anti-terrorism, force protection, hazard prediction), and reachback support (e.g., lessons learned, advanced concept technology demonstrations).

Below are just two examples of the relevance of DTRIAC research and analysis support:

- Imagine you are a scientist or engineer developing a new system or theoretical model, but you couldn’t do any tests to

verify if your system or theory was going to work. Because of restrictions from the Comprehensive Nuclear-Test-Ban Treaty, which bans all nuclear detonations for military or civilian purposes, the historical research and test data contained within DTRIAC collection provide an irreplaceable and solid baseline upon which to base your system or model.

- In the conventional weapons effects area, scientists or engineers wanting to design a new test structure, analyze existing structures, study structural response, perform force protection assessments, or investigate specific counter-terrorism strategies, can take advantage of DTRIAC’s extensive holdings in these areas.



An example of one of several bunkers on KAFB that store DTRIAC overflow.



DTRIAC's south end warehouse at Kirtland Air Force Base (KAFB), New Mexico

Compiling Information on New Threats

New CBRNE threats continue to emerge as terrorists invent new means to accomplish their mission. In order to counter these threats more effectively, remain abreast of the latest threat developments, and to continuously improve the flow of information to those tasked to respond to these threats, DTRIAC provides both information and technical analysis support across the full spectrum of all CBRNE threats. This support is often fulfilled through cooperative efforts with other agencies and IACs, such as the Chemical, Biological, Radiological, and Nuclear Defense IAC, to service the needs of the threat reduction community as a whole. ◆

How to Contact DTRIAC

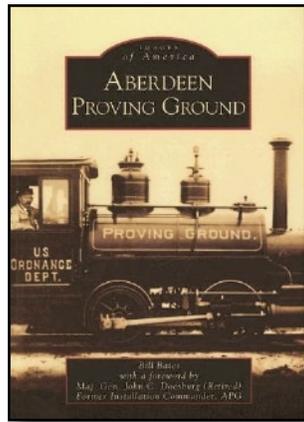
The DTRA program manager for DTRIAC can be reached at (505) 853-0644. Information can also be obtained from <http://www.dtra.mil/cst/dtriac>.



New CBRNIAC Information Resources

Bates, Bill **Images of America: Aberdeen Proving Ground.** Mount Pleasant, SC: Arcadia Publishing, 2007.

"Over 200 photos in this book include scenes of the fertile farmlands of Aberdeen, Edgewood, and Michaelsville and their transformation, beginning in 1917, into the military base known today as Aberdeen Proving Ground, or APG. Views of daily life on base include the "Toonerville" Trolley, a small-scale train that shuttled commuting personnel between the main gate and the buildings on post. The book documents changes in the ways wars have been fought, and changes in society as a result of war. Brave officers voluntarily tested the effects of mustard agent and other chemical weapons on protective clothing and gas masks. Local women sewed gas masks for troops and civilians. Women moved into key jobs on base during World War Two, manufacturing and maintaining tanks and weapons systems as the need for great numbers of troops depleted the workforce of civilian males. APG scientists led the way into the Computer Age when they developed ENIAC, the first electronic digital computer." *(Back Cover)*



CB-059806
ISBN 978-07385-4436-6
Arcadia Publishing
420 Wando Park Blvd.
Mount Pleasant, SC 29464
Phone: (843) 853-2070

Stannard, J. Newell **Radioactivity and Health: A History; Volume 1: Laboratory Research.** Columbus, OH: Battelle Press, 1988.
Stannard, J. Newell **Radioactivity and Health: A History; Volume 2: Environment Aspects.** Columbus, OH: Battelle Press, 1988.
Stannard, J. Newell **Radioactivity and Health: A History; Volume 3: Applied Aspects, Instrumentation, and Conclusions.** Columbus, OH: Battelle Press, 1988

"Professor Stannard's comprehensive book, now reprinted in three volumes, is a response to the need for a definitive review of the biomedical research directed toward understanding the behavior and effects of radioactive materials in the biosphere. Sponsored by the U.S. Department of Energy, Office of Health and Environmental Research, Radioactivity and Health documents the development of our knowledge in this area from before the 18th century into the early 1980s.



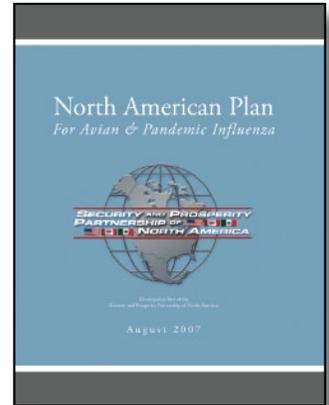
Presented in a narrative style and generously illustrated, Radioactivity and Health is more than just a compilation of facts and figures. It

includes anecdotal material and explains the role played by principal men, women, and institutions. Extensive indexing by the author and editor make it easy to find specific subjects, people, places, and events." *(Abstract)*
CB-059695 (Vol. 1)
CB-059700 (Vol. 2)
CB-059701 (Vol. 3)
ISBN 087079-590-2
Battelle Press
505 King Avenue
Columbus, OH 43201-2693
Phone: (614) 424-4089

Security and Prosperity Partnership of North America **North American Plan For Avian and Pandemic Influenza.** Washington, DC: Security and Prosperity Partnership of North America, 2007.

"The North American Plan for Avian and Pandemic Influenza outlines how Canada, Mexico and the United States intend to work together to combat an outbreak of avian influenza or an influenza pandemic in North America." *(Executive Summary)*

CB-058149
Security and Prosperity Partnership of North America
U.S. Department of Commerce
1401 Constitution Ave., NW
Washington, DC 20230
Phone: (202) 482-2000

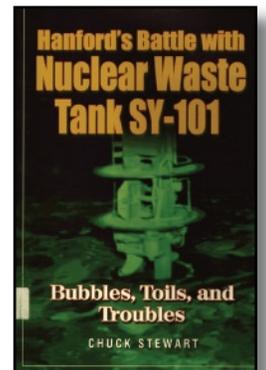


Stewart, Chuck **Hanford's Battle with Nuclear Waste Tank SY-101: Bubbles, Toils, and Troubles.** Columbus, OH: Battelle Press, 2006.

This book tells the story of one of the only nuclear waste tanks in the United States that was proven to be hazardous.

"SY-101 was a dominating element in DOE waste management for the last decade of the 20th century. The possibility of a flammable gas burn in SY-101 was acknowledged as the safety issue of highest priority in the entire DOE complex during the early 1990s.... This narrative presents the whole SY-101 story from the viewpoint of those who lived through it." *(Back Cover)*

CB-060584
ISBN 1-57477-155-8
Battelle Press
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Phone: (614) 424-4089



USAMRICD Scientist to Participate in the Maryland Excellence Awards Program

Maryland's U.S. senators, Barbara Mikulski and Benjamin Cardin, have selected Dr. Margaret G. Filbert, director of consultations for the U.S. Army Medical Research Institute of Chemical Defense (MRICD), to serve on the 2007 Board of Examiners for the Maryland Performance Excellence Awards program. Filbert, along with her fellow examiners, will evaluate the award applications from state businesses and organizations to determine the recipients of the Senate Productivity and the Maryland Quality Awards.



Sponsored by Maryland's U.S. senators and the Maryland Technology Enterprise Institute (MTEI) at the University of Maryland, the program recognizes organizations for their performance excellence, thereby encouraging quality and productivity improvements to foster a stronger, more competitive economy. The program began in 1983 and in 1997 adopted the criteria of the Baldrige National Quality Program, which was created by an act of Congress in 1987 and is administered by the National Institute of Standards and Technology.

The Board of Examiners is comprised of volunteers, selected through a competitive application process, from across the industries in which the organizations are recognized: manufacturing, service, public sector, nonprofit, education, and health care. To be eligible, applicants must be U.S. citizens and work in Maryland or the greater metropolitan Washington area.

Filbert was invited by the MTEI to submit an examiner application. In addition to detailing work experience, education, and professional affiliations, applicants identify and describe their analytical, communication, team member, and leadership skills.

"I think my strong points were probably having been a researcher for many years and then a manager as chief of research operations," says Filbert, who has over 50 years of government service. "Now as director of consultations, one of the three core capabilities of the institute, I am responsible for a third of the institute's mission."

The applicants are also asked to describe their experience or familiarity with the Baldrige criteria or other related assessment experience, as well as to rank their abilities to assess applicants in different areas and their own level of the knowledge and skills required by examiners. Lastly, applicants are asked to describe why they would like to serve on the board.

"I applied," says Filbert, "because I thought that participation as an examiner would be beneficial in evaluating the strength of MRICD."

Once selected, examiners attend several training seminars before receiving an organization's award application to evaluate. The program estimates that evaluation of the application, independently and in discussions with other team members, possible site visits to the award applicant, and feedback meeting with award applicants require approximately 100 to 150 hours of the examiners' time over a five-month period. At the program's spring awards ceremony, examiners receive letters of recognition from their U.S. senators and the University of Maryland, and have the opportunity to meet and be photographed with these leaders.

Another benefit of serving as an examiner is the opportunity to network with other professionals. Also serving on this year's board are individuals from the National Institutes of Health, Food and Drug Administration, Red Cross, U.S. Department of Education, Bureau of Engraving and Printing, and the National Institute of Standards and Technology, as well as from Maryland colleges and universities and Maryland corporations.

Visit MRICD online at <http://chemdef.apgea.army.mil> 



CBRNIAC
Chemical, Biological, Radiological & Nuclear Defense
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and technical information
resources**

Edgewood Chemical Biological Center (ECBC)



Presents "This Month in History"



By Jeffery Smart, U.S. Army Research, Development, and Engineering Command (RDECOM) Historian

This year marks Edgewood's 90th Anniversary. Since 1917, ECBC has served as the Nation's lead science and technology center for the development of chemical and biological defense products and services. From April 2007 to October 2007 ECBC is commemorating its 90-year history with lectures, informational products and special events. As a special anniversary feature, ECBC has created "This month in History" on its Website. July, August, and September highlights are presented here.

1970: The Vietnam War

In **July** 1970, Edgewood Arsenal was deeply involved in supporting the ongoing Vietnam War. For the Weapons Development and Engineering Laboratories (WDEL), riot control agents and dissemination



devices were a major concern. The riot control agent "CS" was in great demand, not only for clearing enemy tunnels in Vietnam, but also for civil disturbances in the United States. The M25 series CS grenades and the M674 CS cartridge (Handy Andy) were in short supply. The ENSURE Program, a special program to move developmental items quickly to the troops fighting in Vietnam, reported a need for a stand-off CS rocket. Edgewood developers tested the XM99 2.75-inch CS rockets at Dugway Proving Ground, UT. The XM33 Portable Riot Control Agent Dispenser, a new backpack sprayer similar to a flamethrower, was undergoing operational tests at Fort Riley, KS. Because target personnel could pick up existing tear gas grenades and throw them back at the thrower, Edgewood Arsenal was working on the XM47 CS grenade that had a skittering effect that made it difficult to pick up after functioning.

In 1970, WDEL was also working on a lethal chemical weapons program. Binary chemical weapons that divided the lethal nerve agents into two less-than-lethal chemicals were much safer to produce and store for long periods. The post was in the process of developing 155mm and 8-inch binary chemical projectiles. Recent restrictions on open air testing resulted in simulated tests so far, but some processes like the effect of the binary reaction in the projectile, could not be tested by simulants.

The Defense Development and Engineering Laboratories (DDEL) worked on detectors, protective masks, and decontamination. Already, DDEL had developed the M28 Riot Control Agent Mask for the war. One of DDEL's experimental detectors, however, was very unique. The concept that detectors could be used to find enemy personnel hiding in jungle terrain led to the development of the XM3 Personnel Detector. Research had determined there were 400 chemical compounds emitted from the human body. In addition to human emissions, the unit detected minute particles from fires, tobacco smoke, engine exhaust, and other emissions that indicated human activity.

The Vietnam War work at Edgewood Arsenal also attracted unwanted attention. Throughout the month of July, protesters at the front gate

[today it is the Edgewood Gate] attempted to enter the post to plant a pine tree. On July 8, about 50 protestors showed up. Colonel Paul R. Cerar, in his last month as Edgewood Arsenal Commander, denied their request to enter the post and warned the protestors that it was illegal to protest on post without his permission. Over the next couple of days, 25 protestors were arrested. Having to keep the front gate closed, however, also caused disruption to the workforce. Finally on July 16 a compromise was achieved and the protestors planted their small pine tree on Federal land, but outside the front gate. Eventually, Edgewood accepted another pine tree and it was planted somewhere on the post.

On July 21, Colonel William M. Home, Cerar's temporary replacement, issued a news release about the protestors and the role of Edgewood Arsenal in the Vietnam War:

While the demonstrators were protesting against war and chemical warfare in particular, they fail to realize the vital role Edgewood Arsenal plays in preventing wars and maintaining peace.



The research and development performed at Edgewood Arsenal has enabled the United States to maintain a limited offensive capability in order to deter the use of chemical weapons by the threat of retaliation in kind. In the field of chemical warfare, deterrence is the primary objective of the United States. Largely because of our known capability to retaliate in kind, gas warfare was not employed by the enemy during World War II, or in any subsequent armed conflict in which the United States has been involved.

Since the U.S. has pledged not to be the first to use lethal chemical weapons, we must be fully aware of the capabilities of these weapons in the hands of potential adversaries. It is important that Edgewood Arsenal continue to conduct research and development in all phases of chemical warfare, not only to provide necessary detection and protective equipment, but to fully define and quantify the potential threat from these weapons and the hazards involved if they are ever used against us.

By the end of the month, the tree planted outside the gate had disappeared. Then the tree planted on post was run over by a lawn mower. In early August, both trees were replaced. By then, Edgewood Arsenal had returned to normal and was again hard at work supporting the war effort.

Continued pg. 19

1990: Operation Desert Shield/Storm

On **August 2**, 1990, Saddam Hussein sent Iraqi troops into Kuwait. Five days later, President George Bush ordered U.S. forces sent to Saudi Arabia at the request of the Saudi government as part of what became Operation Desert Shield (ODS). Not since World War I had U.S. troops been sent to face an enemy that not only had used chemical weapons extensively within the last few years, but also had publicly announced their intentions to use chemical/biological (CB) weapons against the United States.

During ODS, the Chemical Research, Development and Engineering Center (CRDEC), a predecessor organization of Edgewood Chemical Biological Center, was extremely busy supporting the warfighter. To support around the clock needs of U.S. Forces, an Emergency Operations Center was established at Edgewood as the focal point for operation and logistical inquiries pertaining to chemical defense equipment. Excerpts from a December 1990 article in ChemNotes, CRDEC's newsletter, described the additional support to ODS in the months after the August invasion:

- *As quickly as the immediate threat of CB warfare to U.S. Forces and its Allies was envisaged, requirements for materiel assistance, training, analyses, and modeling poured into the center. We continue today to give immediate service on an around-the-clock basis to each of the Armed Services, adding to more than 2,000 technical responses already transmitted during Operation Desert Shield. In addition, the situation placed an unplanned mission requirement on CRDEC, which was answered by the entire workforce. Active support has ranged from long hours and weekends in the office to extended travel into Southwest Asia.*
- *We quickly fielded the M17 Lightweight Decontamination System to TRADOC schools and to elements of FORSCOM to support the operation, nearly two years ahead of the original fielding plan.*
- *We conducted analyses and modeling efforts to provide preliminary information on the Iraqi CB warfare capabilities.*
- *Our Foreign Intelligence Office continued to play a critical role in the acquisition of foreign designed equipment for evaluation by CRDEC experts.*
- *The Chemical Agent Monitor has become widely accepted by U.S. forces, and we are using available equipment to deploy these contamination monitors to soldiers in Saudi Arabia.*



M17 Lightweight Decontamination System



Chemical Agent Monitor

- *Employees in our Physical Protection Directorate coordinated the evaluation of a Topical Skin Protectant that provides protection against mustard (HD).*
- *CRDEC played an integral role in issuing M43-series Masks to U.S. Army Aviators deploying to Saudi Arabia as well as accelerating the delivery of masks for fielding.*
- *Another accelerated program was the XM28 Simplified Collective Protection Equipment, which provides collective protection for tentage and addresses Corps Hospital and Air Force Base needs.*
- *Just after successfully completing the engineering test phase, several of the XM21 Remote Sensing Chemical Agent Alarm systems were refurbished for immediate deployment in support of*



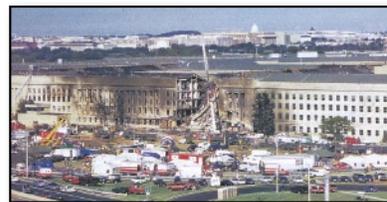
XM93 NBC Reconnaissance System

- *Head-to-head competition for the XM93 NBC Reconnaissance System resulted in competitive contract awards to a U.S. manufacturer teamed with a German company. Army awareness of this unique technological advancement for the battlefield was evidenced when the decision was made to expedite fielding of the Recon System to Saudi Arabia in support of Operation Desert Shield.*

This groundwork accomplished during August-December 1990 in support of ODS also contributed to our ability to rapidly mitigate the aftermath of 9-11 and helped to prepare our troops for the second Gulf war.

2001: Attack on America

On **September 11**, 2001, four commercial airliners were hijacked. Two were crashed into the World Trade Center buildings in New



York City, one flown into the Pentagon, and the fourth crashed in a Pennsylvania field short of its target. American military installations around the world went to Force Protection Condition Delta, the highest alert status. President George

W. Bush promised to "hunt down and punish" the terrorists responsible for the attacks. Maryland declared a state of emergency, shutting down schools early, cancelling events, and asking citizens to limit the use of cell phones and other lines of communication. Aberdeen Proving Ground (APG) was shut down on September 12 except for critical operations to allow the security changes to take place. Several unmanned gates that were previously opened, were locked and only two gates in each area of APG remained opened, but heavily guarded with 100% identification checks conducted.

On September 14, President Bush authorized a partial mobilization of the reserves for homeland defense and civil support missions in response to 9/11. About 10,000 Army reservists were expected to be called up. The collective missions were designated Operation Noble

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History *cont.*

Eagle. On September 19, the Army disseminated a FBI warning about possible threats:

Since September 11, 2001, unconfirmed terrorist threats have been reported regarding the potential use of chemical and/or biological and/or radiological and/or nuclear weapons of mass destruction. The FBI emphasizes that these threats are unconfirmed by the intelligence community; however, it is requested that recipients stay on heightened alert.

Although the airplane attacks on 9/11 did not include chemical and biological (CB) weapons, the Edgewood Chemical Biological Center (ECBC) was ready to help the nation.

Mr. Jim Zarzycki, ECBC Technical Director, led the ECBC response to the crisis. Three months later, he would write about September 2001:

There was never a time more critical for the chemical and biological defense technical community to mobilize and respond. . . Just in the Edgewood CB Center alone, the hands-on-expertise of nearly 1,000 scientists, engineers, and technical support personnel have been working tirelessly to prepare our warfighters, address our CB counter-terrorism needs, and increase our homeland security.

ECBC's areas of expertise were many. Examples included providing extensive information about force protection and the protection levels of defensive equipment. Work on an emergency escape hood for use in CB incidents was expedited. The Protection Factor Facility received numerous requests from federal, state, and local agencies to provide advice and services for respiratory requirements. Homeland Defense planning, already an important ECBC program, suddenly was in great demand. ECBC provided technical support to assess threats and vulnerabilities of many cities, including Washington, D.C. and Baltimore. Numerous training classes were held around the country. Not all of ECBC's contributions had national impact. ECBC's Computer Aided Engineering and Experimental Fabrication Teams designed a metal bracket to hold flashing lights used on Jersey barriers at the front gate.



Aberdeen Proving Ground's Chemical Agent Storage Yard in the 1980s

After 9/11, APG took action to increase the protection of the mustard agent stockpile at APG. ECBC provided technical expertise to assist with protecting Edgewood's ton containers of mustard agent, a possible terrorist target. Operation Roving Osprey was initiated to provide enclosed "hardened" storage

facilities at the various chemical stockpile sites around the country that stored bulk chemical agents outside. This involved moving the agent to temporary sites and then moving it to completed hardened facilities. Although the hardened structures would not eliminate the need for demilitarization, they would significantly reduce the risk to the general public living near the installations.

More importantly, ECBC assisted with the planning on how to destroy the stockpile quicker, and thus entirely remove the threat. Discussions started right after 9/11 and ECBC took the lead for designing and constructing manual drain stations in the neutralization process used at APG.

Major General John C. Doesburg, Commander of the U.S. Army Soldier and Biological Chemical Command, issued a statement to the workforce in early October:

As we recover from the shocking events of 11 September, all of us have spent many frustrating days improving our readiness and security. It appears we will continue to be in a state of increased vigilance for the near term. As the holiday weekend approaches, take time, consistent with safety and security to reflect on the stressful period. Exercise the discipline to take care of yourselves. As operational pace increases, we will need to display patience and more rigorous staffing in our replies to all these numerous requests for information and data. Everyone realizes patience is a virtue, but making it happen takes work, whether it is in the cue coming on post or responding to hectic and chaotic taskings. Remember that we need to bend with wind. Stay calm, stay safe, stay secure. Thanks for your overwhelming patriotism during these trying times.

The attacks on September 11, 2001 presented many challenges for ECBC. But this was just the beginning of the Global War on Terrorism. 

Visit ECBC Online at <http://www.ecbc.army.mil/about/history.htm> for additional historical and commemorative features.

The screenshot shows the website for the Edgewood Chemical Biological Center (ECBC), part of the U.S. Army Research, Development and Engineering Command (RDECOM). The page features a navigation menu with links for 'Who We Are', 'Products', 'Services', 'Commodities', 'Unique Facilities', and 'Information Products'. A 'HIGHLIGHTS' section includes 'This Week's News' and a notice about commemorating the 90-year history of the center. The main content area is titled 'History of ECBC' and provides a brief overview of the center's mission since 1917. Below this is an 'ECBC Historical Timeline' with a grid of years from 1910 to 2000. A specific entry for 1917 is expanded, detailing the establishment of the War Gas Investigations at American University in Washington, D.C., and President Woodrow Wilson's proclamation designating Gunpowder Neck, MD, as the site for the first chemical shell filling plant in the United States. The page also includes a 'contact us', 'sitemap', and 'search' link in the top right corner.

U.S. Army Edgewood Chemical Biological Center Named 2007 Army Laboratory of the Year

Edgewood Chemical Biological Center (ECBC) was awarded the Army Laboratory of the Year Award for 2007 at an awards ceremony Sunday. ECBC received the Laboratory of the Year designation in the small development laboratory category of the annual award program that evaluates Army laboratories on their accomplishments in research, development, management, and on contributions to the Global War on Terrorism.

"The enormous technical ability of ECBC's scientists, engineers and other specialists was the most significant factor in ECBC winning this award this year," said Dr. Joe Corriveau, acting Director for Research and Technology at ECBC, who accepted the award at a ceremony in Crystal City, VA.

The ECBC research accomplishment this year was for significant advances in biological standoff detection.

"Indeed, advances in algorithm development, technology optimization, and test methodologies at ECBC have allowed scientists to demonstrate for the first time ever the ability for detect-to-warn standoff biological aerosol identification," he said.

Development of an on-the-move surface contamination detection capability based on Raman spectroscopy was nominated as ECBC's technology accomplishment. This work, which is taking place under the Chemical Biological Radiological Unmanned Ground Reconnaissance program will allow warfighters to conduct reconnaissance activities at operational tempo, a capability that has not been possible in the past.

The top ECBC management accomplishment was the successful partnership between DHS, FBI and ECBC in designing and constructing the CBR Sample Receipt Facility. This accomplishment resonated



Technicians at ECBC's Process Engineering Facility (PEF) engage in research and development of cell-based manufacturing processes for producing proteins, enzymes, antibodies, and other cellular products. Photo courtesy of ECBC.



The ability to conduct detection of pathogens from a distance will provide added protection for our warfighters. Here, an ECBC researcher adjusts controls on a biological standoff detection system during a test. Photo courtesy of ECBC.



Using powerful Nuclear Magnetic Resonance equipment, ECBC researchers are able to measure the residue of chemical agent on various operational surfaces. This information is important because it directly affects procedures used by warfighters in the field and helps scientists develop better surface detection systems. Photo courtesy of ECBC.

with the Army Laboratory Assessment Group, which is charged with choosing each year's winners, because of the interagency collaboration and project cost savings.

"That we've been able to bring together three very different agencies to collaborate on one mission under one roof is an enormous achievement," said Mr. Jim Zarzycki, Technical Director of Edgewood Chemical Biological Center. "This makes it possible for law enforcement and military units to coordinate their investigative efforts. And by sharing a facility instead of building two, we are being good stewards of taxpayer dollars."

The development of a test bed for biological detectors in support of the Department of Homeland Security's BioWatch program was submitted as ECBC's contribution to the Global War on Terrorism. The test bed will provide vital support to the development of the next generation biological detection capability for our homeland.

"Overall, our contributions to the warfighter are significant year after year," said Zarzycki. "I am pleased that the Army Laboratory Assessment Panel agreed. The scientists, engineers and specialists at ECBC are doing incredible work. This award recognizes and honors that contribution," he said.

Additional information about ECBC and photographs of each of the winning technologies are available at <http://www.ecbc.army.mil/pr/index.htm>.

For more information about the Edgewood Chemical Biological Center, please visit our Web site at <http://www.ecbc.army.mil> or call (410) 436-3610. ♦

CBRNIAC Technical Area Task (TAT) Program – More Than Just a Deliverable-based Contract Vehicle!

CBRNIAC
Chemical, Biological, Radiological & Nuclear Defense
Information Analysis Center

TECHNICAL AREA TASK (TAT) PROGRAM
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QUICK (6 WEEKS)
CONVENIENT & RESPONSIVE

TASK-ORDER CONTRACT VEHICLE FOR INDEPENDENTLY FUNDED ANALYTICAL AND/OR TECHNICAL EFFORTS:

- Studies and Analyses
- Hardware Development
- Technical Consulting
- Training Courses
- Information Collection and Compilation
- Design and Development of Models, Simulations, and Databases
- Support of Conferences, Symposia, Working Groups
- Test and Evaluation of Materials, Components, and Systems
- Laboratory Studies (Including Surety Work)
- Engineering Design, Prototyping, and Low-rate Production

AND MORE!
AS A MEMBER OF THE CBRNIAC FAMILY, YOU HAVE FREE ACCESS TO:

- Technical Inquiry and Referral Services
- CBRNIAC Database
- Battelle or Team Member Reachback Support

TYPE: Pre-competted single-award CPFF IDIQ
CONTRACT NUMBER: SP070D-00-D-3180 to Defense Technical Information Center (DTIC)
USERS: DoD and Federal Agencies and their Contractors, State and Local Government Agencies and Emergency Responders.
BENEFITS: Large and scalable delivery orders
Up to 3-year period of performance
Incrementally funded and managed by you
Deliverables-based contract

The CBRNIAC TAT program is supported by Battelle Memorial Institute and their team members:

MIS Technologies, Inc. HORNE INTERNATIONAL Innovative Emergency Management INCORPORATED QuickSilver

Let the convenience of a CBRNIAC TAT deliver the Chemical, Biological, Radiological and Nuclear (CBRN) Defense and Homeland Security scientific and technical products and information you need!

TATs provide Research and Development (R&D) capabilities for many aspects of CBRN Defense and Homeland Security-related technical efforts:

- Analysis of Manufacturing Processes for Nuclear, Biological and Chemical (NBC) Defense Systems
- Chemical and Physical Properties of CB Defense Materials
- Chemical Identification
- Combat Effectiveness
- Counterproliferation
- Counterterrorism
- Decontamination
- Defense Conversion and Dual-Use Technology Transfer
- Demilitarization
- Domestic Preparedness / Homeland Security
- Environmental Fate and Effects
- Force Protection
- Individual and Collective Protection
- International Technology Proliferation and Arms Control
- Medical Effects and Treatment
- Nuclear, Biological and Chemical Survivability
- Radiological and Nuclear Defense
- Smoke and Obscurants
- Toxic Industrial Chemicals and Toxic Industrial Materials
- Toxicology
- Treaty Verification and Compliance
- Warning and Identification

TATs produce new Scientific and Technical Information (STI) and products for the CBRN Defense community.

The TAT Program offers:

- A pre-competted, single-award, Cost Plus Fixed-Fee (CPFF) Indefinite Delivery/Indefinite Quantity (ID/IQ) contract with new tasks added as delivery orders (D.O.)
- Technical Reachback Expertise in CBRN Defense and Homeland Security
- State-of-the-Art Research, Engineering, and Surety Facilities
- Capability to create specialized CBRN Defense products and information collections
- Expanded access to CBRNIAC information resources
- Searchable STI managed by classification and secondary distribution instructions. Saves Federal resources by encouraging reuse of STI.

Continued pg. 23

Who can initiate a CBRNIAC TAT?

DoD and Federal Agencies and their Contractors, State and Local Government Agencies, Emergency Responders, and commercial entities.

What are the benefits of using the CBRNIAC TAT vehicle?

- Up to 3-year period of performance
- Scalable D.O. incrementally funded and managed by your organization
- Deliverables-based contract
- Awarded in 6-8 weeks
- Modest 3.5% Defense Technical Information Center (DTIC) fee

How do I initiate a CBRNIAC TAT?

Interested parties can submit a white paper or draft Statement of Work (SOW) to the CBRNIAC TAT Program Manager describing the technical support that is needed. Once it is determined that the requirements meet the scope of the CBRNIAC contract, a Proposal Manager will be assigned to coordinate the proposal process through award of the task Delivery Order. Because it is a pre-competed single-award CPFF ID/IQ, Proposal Managers work closely with the client to create a SOW for an R&D deliverables-based delivery order that will meet the needs of the customer. The client needs only to review and approve the final SOW, review and approve the proposal and costing, and send funds to DTIC.

Examples of the type of work that can be done under CBRNIAC TATs:

- Information collection and compilation
- Design and development of models, simulations and databases
- Studies and analyses
- Basic and applied research including laboratory work (e.g., with dilute and neat agents)
- Test and evaluation of materials, components, and systems
- Technical consulting
- Training courses
- Support of conferences, symposia, working groups
- Engineering design, prototyping, and low-rate initial production (LRIP).

Example of CBRNIAC TAT Efforts:

New Mobile Bio-Threat Trailer Protects United States Air Force Medical Operations

The Chemical, Biological, Radiological, and Nuclear Defense Information Analysis Center (CBRNIAC), through its Technical Area Task Program, has designed and delivered the first Laboratory Response Team (LRT) trailer to McConnell Air Force Base (AFB) in Kansas. Subsequent deliveries to other bases, including Wright-Patterson AFB in Ohio, Grand Forks AFB in North Dakota, and MacDill AFB in Florida, are scheduled. The LRT trailer is a self-contained, climate-controlled laboratory that houses advanced test equipment, such as the Joint Biological Agent Identification System (JBAIDS), to perform rapid analysis and identification of biological agents. The trailers provide a new stand off test capability that allows the LRT to respond to biological incidents and quickly identify threat agents in water, air, food, and clinical samples. The LRT trailer solution is compliant with Headquarters U.S. Air Force (USAF) directives and provides the needed protection and safeguards. The laboratory equipment in the LRT trailer can identify a suspect agent at the DNA level. That information not only allows commanders to quickly react to protect their operations but also is invaluable as a resource to support civilian first responders through defense support to civil authorities in the event of an incident involving a biological agent.

For details, visit <http://iac.dtic.mil/success/cbrniac-story2.html>



(U.S. Air Force photo/Senior Airman Jamie Train)

For Additional photos and press release on the LRT, see http://www.af.mil/news/story_print.asp?id=123040347

Who do I contact?

For additional information on the TAT program, contact the CBRNIAC TAT Program Manager at cbrniac-tat@battelle.org or visit the CBRNIAC Website at <http://www.cbrniac.apgea.army.mil/tats/index.php>. ♦

J.A.C.K.S.

JKO

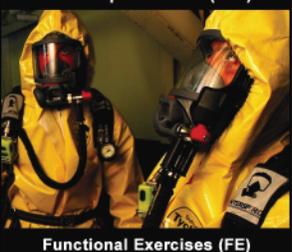
CBRN IP3
Installation Protection Program Portal

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Table-Top Exercises (TTX)

Functional Exercises (FE)

Full-Scale Exercises (FSE)



Installation Protection Program Portal

Introducing the CBRN Installation Protection Program's (CBRN IPP) premiere location for the latest information in installation protection. This portal is designed to provide access to the IPP non-material solution that installation personnel, CBRN professionals, and First Responders will find valuable. It is open to all branches of the Armed Forces.

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- MIL/CIV Coordination**
 - Exercise Scenarios**
 - Instructor Access**
 - Homeland Security News**
 - Links & References**

- Reference Search Engine**
- Forums**
 - Bioterrorism News**
 - International Terrorism News**
 - RSS Headline News**
 - JKO Tools**

Two convenient ways to access CBRN IP3:
Available through "CBRN links" section of the Joint Acquisition Chemical, Biological, Radiological, Nuclear Knowledge Center (JACKS): <https://jacks.jpeocbd.osd.mil/>

Also available through AKO: <https://www.us.army.mil/suite/page/449823>

CBRN IP3

Installation Protection Program Portal

15 National Planning Scenarios & Executive Summaries



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