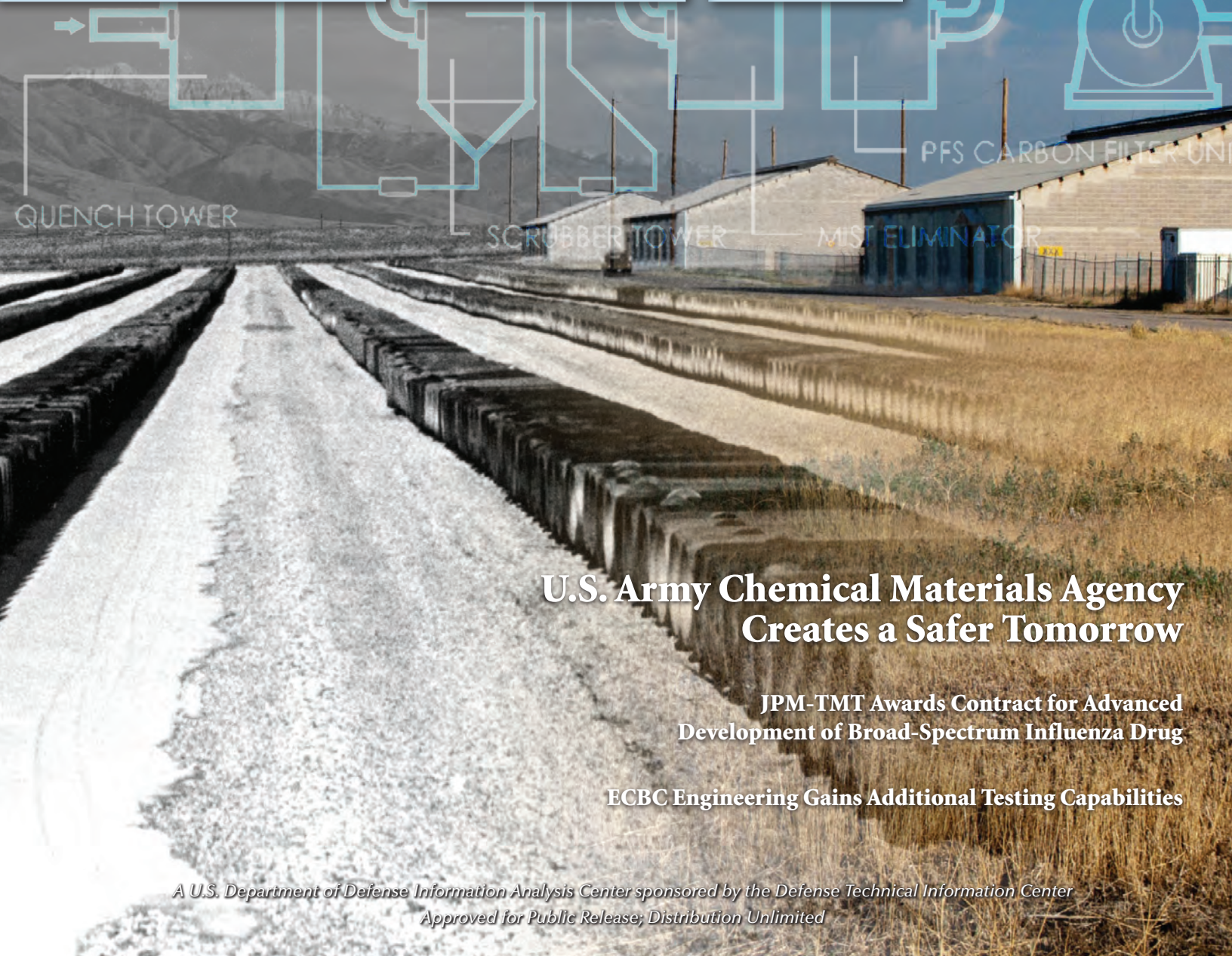
CBRNIAC Newsletter

Chemical, Biological, Radiological & Nuclear Defense Information Analysis Center

Volume 13 Number 2

2012



U.S. Army Chemical Materials Agency Creates a Safer Tomorrow

JPM-TMT Awards Contract for Advanced Development of Broad-Spectrum Influenza Drug

ECBC Engineering Gains Additional Testing Capabilities

A U.S. Department of Defense Information Analysis Center sponsored by the Defense Technical Information Center

Approved for Public Release; Distribution Unlimited

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

Download the CBRNIAC TAT flyer to learn more!

More than a just a deliverables-based contract vehicle!

The CBRNIAC Technical Area Task (TAT) Program

- Provides valuable analysis and Research and Development (R&D) solutions to tough CBRN Defense and Homeland Security problems.
- Creates new Scientific and Technical Information (STI) readily accessible to the CBRN Defense community.
- Saves federal resources by encouraging the re-use of STI.

Benefits:

- Broad CBRN Defense and Homeland Security Scope Areas
- Immense Repository of the CBRN Defense STI accessible through CBRNIAC Inquiry Services (4 hours or less are free for authorized users).
- Reasonable Rates – DTIC charges 0.7% for Customer Shared Direct Cost (CSDC) percentage.
- Quick Turnaround – The CBRNIAC contract is a pre-competed single-award CPFF IDIQ. New delivery orders can be added in 6-8 weeks.
- Excellent Performance – Average customer satisfaction rating is 4.8 out of 5.0.
- Team Building – Integrate across DoD, federal government, industry, and academia.
- Reachback – Access a nationwide resource of Subject Matter Experts (SMEs) and team members.

TATs can include:

- 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.

To initiate a TAT, send an email to **cbrniac-tat@battelle.org.**

For more information on initiating a TAT, go to:
https://www.cbrniac.apgea.army.mil/TAT/Initiate/Pages/default.aspx

For Frequently Asked TAT Questions:
https://www.cbrniac.apgea.army.mil/TAT/FAQ/Pages/default.aspx

For more information on the TAT process:
https://www.cbrniac.apgea.army.mil/TAT/process/Pages/default.aspx

Visit the TAT web site at
https://www.cbrniac.apgea.army.mil/TATPages/default.aspx
for more details!

Ordering Period for CBRNIAC Technical Area Tasks Extended!

On April 26, 2012, the Government issued a contract modification extending the ordering period for CBRNIAC Technical Area Tasks (TATs) and increasing the value of the CBRNIAC contract. The contract modification provides for a 12-month extension to the current CBRNIAC contract, plus several options for an additional 12 months.

The **Chemical, Biological, Radiological and Nuclear Defense Information Analysis Center (CBRNIAC)** is a Department of Defense (DoD)-sponsored Information Analysis Center (IAC) operated by Battelle Memorial Institute and supported by Horne International, Innovative Emergency Management, Inc., MTS Technologies, Inc., QuickSilver Analytics, Inc., and SciTech, Inc., and administered by the Defense Technical Information Center (DTIC) under the DoD IAC Program Office (Contract No. SP0700-00-D-3180).

The CBRNIAC Contracting Officer's Technical Representative (COTR) may be contacted at the following address:

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

U.S. Government agencies and private industry under contract to the U.S. Government can contact the CBRNIAC for information products and services. CBRNIAC services also extend to all state and local governments and the first responder community, to include local emergency planners, firefighters, medics and law enforcement personnel.

For further information or assistance, visit or contact the CBRNIAC.

CBRNIAC
1204 Technology Drive
Aberdeen, MD 21001-1228
410.676.9030 (phone) 614.458.0300 (fax)

General Information & Core Program:
cbrniac@battelle.org

Technical Area Task Program:
cbrniac-tat@battelle.org

Knowledge Management & Development Program:
cbrniac-kmd@battelle.org

http://www.cbrniac.apgea.army.mil/

Table of Contents

Volume 13 Number 2 2012

4 U.S. Army Chemical Materials Agency Creates a Safer Tomorrow

7 JPM-TMT Awards Contract for Advanced Development of Broad-spectrum Influenza Drug

8 Contract Awards

9 ECBC Engineering Gains Additional Testing Capabilities

10 New CBRNIAC Information Resources

11 Air University, AFNWC Unveil New Course

12 Calendar of Events

14 In the News

15 ECBC Inventors Pave Way for Enhanced Nerve Agent Detection, Awarded Patent

16 NNSA Achieves Major Milestone in Radioactive Source Security

16 NNSA Signs Cooperative Agreement to Support the Production of Molybdenum-99 in the United States Without the Use of Highly Enriched Uranium

17 Navy CBR Defense Chief Engineer Named Federal Engineer of the Year Award Agency Winner

18 ECBC Receives FLC Award for TAC-BIO

19 MRICD Employee Named 2011 Federal Library Technicican of the Year

20 Colonel Harry Glen Dangerfield, In Memorium

21 Biological Effects of Radiation

23 CBRNIAC Products: SIMKITs

24 Global CBRN Detector Market Survey

On the Cover: *Background*: Tooele storage yard past and present, provided courtesy of U.S. Army Chemical Materials Agency. *From left to right*: The last On-Site Container, shown behind the last Mustard Ton Container at the Tooele Chemical Agent Disposal Facility. Umatilla Chemical Agent Disposal Facility celebrates after delivery of the final Enhanced On-Site Container, which was part of their "Final Campaign" of Mustard Ton Containers. Explosive Destruction System operator at Pine Bluff Arsenal.

The ***CBRNIAC Newsletter***, a quarterly publication of the CBRNIAC, is a public release, unlimited distribution forum for chemical, biological, radiological and nuclear defense information. It is posted in Portable Document Format (PDF) on the CBRNIAC Homepage.

The CBRNIAC welcomes unsolicited articles on topics that fall within its mission scope. All articles submitted for publication consideration must be cleared for public release prior to submission. The CBRNIAC reserves the right to reject or edit submissions.

All announcements and articles are subject to the review and approval of the CBRNIAC COTR prior to publication. The appearance of an announcement, or article in the ***CBRNIAC Newsletter*** does not constitute endorsement by the DoD or the CBRNIAC.

U.S. Army Chemical Materials Agency Creates a Safer Tomorrow

Chemical Materials Agency Public Affairs Office

January 21, 2012, marked the end of an era for the U.S. Army Chemical Materials Agency, or CMA, as the destruction of the chemical weapons stockpile at Deseret Chemical Depot (DCD), Utah, ended. This milestone marks the completion of CMA's mission to destroy all chemical agent munitions and items declared at entry into force of the Chemical Weapons Convention (CWC) and assigned to CMA. CMA's overall efforts resulted in the safe destruction of more than 2.2 million munitions and bulk containers, containing 27,473.65 U.S. tons of nerve and blister agents, ultimately creating a safer tomorrow today for the United States and the world.

The CWC, an international treaty ratified by the United States in April 1997, originally required the complete destruction of the Nation's chemical weapons stockpile by April 2007. The United States was granted a five-year extension to April 2012, as allowed by the treaty. CMA safely and efficiently achieved this deadline ahead of schedule, safely destroying nearly 90 percent of the Nation's chemical weapons stockpile. In addition to the elimination of the bulk of the Nation's chemical weapons stockpile, The U.S. Army assigned CMA's Non-Stockpile Chemical Materiel Project (NSCMP) four destruction missions that included destroying binary chemical weapons, former chemical warfare production facilities, miscellaneous chemical warfare materiel and recovered chemical warfare materiel. NSCMP safely completed all four mission areas ahead of treaty schedule.

Milestones in U.S. Chemical Weapons Storage and Destruction

1960's and before

The United States begins stockpiling and using chemical weapons against Germany in World War I, which lasts from 1914 to 1918. The weapons are securely stored at U.S. military installations at home and abroad. In the late 1960s President Nixon halts the production of chemical weapons.

75mm projectile shells being filled with mustard at a filling plant in 1918.

1972

The Army forms the U.S. Army Materiel Command's Program Manager for Demilitarization of Chemical Materiel (PMCD), which develops environmentally sound chemical weapons disposal methods using incineration and chemical neutralization.

1979

The Army constructs and begins operating the Chemical Agent Munitions Disposal System (CAMDS), a pilot incineration facility located at what is now the Deseret Chemical Depot (DCD), Utah. The Army tests disposal equipment and processes at the plant, resulting in more than 91 tons of chemical agent safely destroyed.

The Chemical Agent Munitions Disposal System (CAMDS) designed and built as the primary test and development facility for the Nation's chemical weapons elimination program, CAMDS has served a vital role in the destruction of chemical weapons.

1986

Public Law 99-145 requires the safe destruction of the U.S. unitary chemical weapons stockpile. It also requires disposal facilities to be cleaned, dismantled and disposed of according to applicable laws and regulations. The stockpile is stored at eight military installations within the continental United States—Aberdeen Proving Ground, Md., Pine Bluff Arsenal, Ark., DCD, Utah, Umatilla Chemical Depot, Ore., Newport Chemical Depot, Ind., Anniston Army Depot, Ala., Blue Grass Army Depot, Ky., Pueblo Chemical Depot, Colo. – and on Johnston Island in the Pacific Ocean.

1988

The Army and the Federal Emergency Management Agency establish the Chemical Stockpile Emergency Preparedness Program (CSEPP) in response to Public Law 99-145 calling for added public protection.

1990

The Army's prototype full-scale disposal facility, Johnston Atoll Chemical Agent Disposal System (JACADS), begins destruction of the stockpile on Johnston Island.

Johnston Atoll Chemical Agent Disposal System.

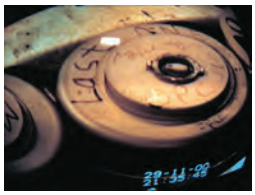
1992

Public Law 102-484 establishes Citizens' Advisory Commissions at each continental U.S. stockpile location. In compliance with Public Law 102-484, the Army creates the Non-Stockpile Chemical Materiel Project (NSCMP) to develop systems to safely assess, treat and destroy five categories of chemical warfare materiel not part of the declared stockpile.

Recovered chemical warfare materiel destroyed by Non-Stockpile Chemical Materiel Project.

1997

The United States ratifies the CWC, agreeing to dispose of its unitary chemical weapons stockpile, binary chemical weapons, recovered chemical weapons and former chemical weapons production facilities.



The last munition destroyed at Johnston Atoll Chemical Agent Disposal System—a VX nerve agent-filled landmine.

Continued pg. 5

CMA was formed in 2003 when the U.S. Army combined elements from the former United States Army Soldier and Biological Chemical Command and the former Program Manager for Chemical Demilitarization. The new organization consolidated the Army's chemical agent and munitions storage and demilitarization functions under a single organization. The Agency's mission is to protect, safely store and destroy aging chemical weapons while working toward the effective assessment, treatment and ultimate elimination of the Nation's chemical warfare materiel. Additionally, CMA was responsible for working with local emergency response agencies for emergency preparedness activities in communities that were near stockpile sites.

The completion of CMA's chemical stockpile elimination mission in January was accomplished at the Tooele Chemical Agent Disposal Facility, located at DCD. CMA managed the U.S. chemical weapons stockpiles at eight installations across the continental U.S., in addition to the stockpile at a remote island 850 miles south of Hawaii and had responsibility for chemical weapons disposal at seven of them. Incineration was the preferred chemical weapons disposal technology chosen at five of the stockpile sites, while neutralization technology was chosen for the two bulk agent storage sites in Maryland and Indiana. CMA completed chemical agent destruction operations at:

- **2000:** Johnston Atoll Chemical Agent Disposal System (JACADS), South Pacific *(Closed)*
- **2005:** Aberdeen Chemical Agent Disposal Facility (ABCDF), Md. *(Closed)*
- **2008:** Newport Chemical Agent Disposal Facility (NECDF), Ind. *(Closed)*
- **2010:** Pine Bluff Chemical Agent Disposal Facility (PBCDF), Ark. *(Closure in progress)*
- **2011:** Anniston Chemical Agent Disposal Facility (ANCDF), Ala. *(Closure in progress)*
- **2011:** Umatilla Chemical Agent Disposal Facility (UMCDF), Ore. *(Closure in progress)*
- **2012:** Tooele Chemical Agent Disposal Facility (TOCDF), Utah *(Closure in progress)*

The Umatilla Chemical Agent Disposal Facility, which completed disposal operations in 2011.

2000

JACADS completes destruction of its chemical weapons stockpile, making it the first stockpile facility to complete its mission. JACADS workers destroyed more than 412,000 chemical weapons.

2003

PMCD merges with the stockpile storage mission within the Army Soldier and Biological Chemical Command to form the Chemical Materials Agency (CMA).

2005

Aberdeen Chemical Agent Disposal Facility safely completes stockpile disposal operations on March 11, 2005.

Workers at the Aberdeen Chemical Agent Disposal Facility (ABCDF) at Aberdeen Proving Ground send the last emptied mustard agent container into the Ton Container Cleanout Facility for complete cleaning and decontamination. The Army completed destruction operations at the ABCDF in February 2006.

2008

Newport Chemical Agent Disposal Facility safely completes stockpile disposal operations on Aug. 8, 2008.

The Newport Chemical Agent Disposal Facility, which completed disposal operations in 2008.

Personnel at the Pine Bluff Chemical Agent Disposal Facility loading the last Ton Container onto the feed conveyor in the Lower Unpack Area.

The Pine Bluff Chemical Agent Disposal Facility, which completed disposal operations in 2010.

2010

Pine Bluff Chemical Agent Disposal Facility safely completes stockpile disposal operations on Nov. 12, 2010.

2011

Anniston Chemical Agent Disposal Facility safely completes stockpile disposal operations on Sept. 22, 2011; Umatilla Chemical Agent Disposal Facility safely completes stockpile disposal operations on Oct. 25, 2011.

A site banner at Anniston Chemical Agent Disposal Facility proclaims mission success, after chemical munitions destruction operations concluded on Sept. 22, 2011.

Umatilla Chemical Agent Disposal Facility celebrates after delivery of the final Enhanced On-Site Container, which was part of their "Final Campaign" of Mustard Ton Containers.

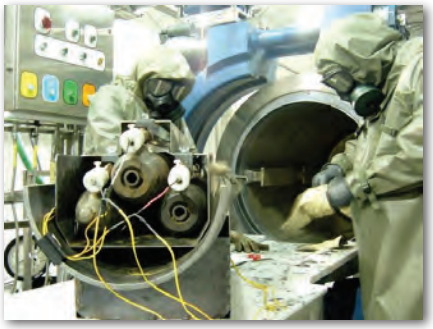
2012

The Tooele Chemical Agent Disposal Facility, which completed disposal operations in 2012.

Tooele Chemical Agent Disposal Facility safely completes stockpile disposal operations on Jan. 21, 2012; CMA completes its chemical stockpile elimination mission and all treaty requirements to destroy all chemical agent munitions and items declared at entry into force of the Chemical Weapons Convention and assigned to CMA for destruction.

Continued pg. 6

CMA's storage mission contributed to the success of its Chemical Stockpile Elimination Mission, providing safe, secure storage of the Nation's chemical weapons stockpile before its ultimate destruction. CMA manages a National Inventory Control Point and National Maintenance Point to ensure the stockpile is maintained safely during its remaining storage life.



The U.S. Army Non-Stockpile Chemical Materiel Project's Explosive Destruction System can treat up to six chemical warfare materiel items simultaneously on site. The transportable system contains all blast, vapor and metal fragments—protecting the surrounding environment and its operators.

In the past year alone, CMA achieved great milestones with the completion of disposal operations at the last three stockpile sites. ANCDF safely completed disposal operations of 666,529 nerve and mustard agent munitions and 2,254 tons of chemical agent on Sept. 22, 2011; UMCDF safely completed disposal operations of 220,604 munitions and containers that held 3,717 tons of nerve and blister chemical agents on Oct. 25, 2011; and TOCDF, the Nation's single-largest chemical weapons stockpile, safely completed disposal operations of more than 1.1 million munitions containing more than 13,600 tons of chemical agent on Jan. 21, 2012.

CMA continues to support the Nation's chemical demilitarization program by providing ongoing assessment and destruction of recovered chemical warfare materiel through NSCMP. CMA also retains the mission to safely and securely store the chemical agent stockpiles at Richmond, Ky., and Pueblo, Colo. Those stockpiles will be destroyed by the U.S. Army Element Assembled Chemical Weapons Alternatives, a separate Department of Defense program. Additionally, CMA continues to manage the Chemical Stockpile Emergency Preparedness Program with the Federal Emergency Management Agency, providing emergency preparedness assistance to communities surrounding the remaining stockpile sites. ◈

The last On-Site Container, shown behind the last Mustard Ton Container at the Tooele Chemical Agent Disposal Facility, marks the completion of CMA's mission to destroy all chemical agent munitions.

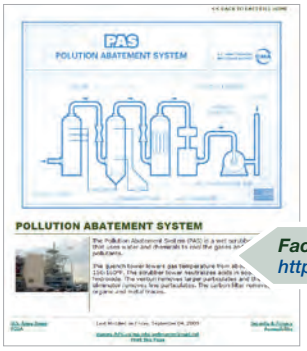
U.S. Army Chemical Materials Agency
CREATING A SAFER TOMORROW

Visit the Chemical Materials Agency Online

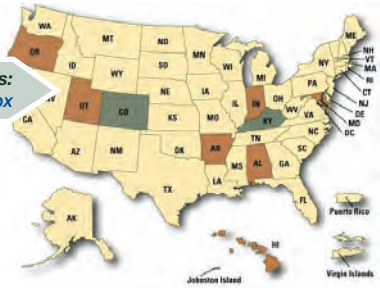
The U.S. Army Chemical Materials Agency (CMA) safely stores and destroyed the Nation's aging chemical weapons formerly stored at eight sites across the United States and on Johnston Atoll, effectively recovers the Nation's chemical warfare materiel and treats it and enhances national security.

The CMA's web site contains resources such as press releases, multimedia, fact sheets and interactive tools with information about the CMA's mission and its locations across the country.

Interactive timeline:
http://www.cma.army.mil/cmatimeline.aspx



Fact Files:
http://www.cma.army.mil/factfile.aspx



Activity Locations:
http://www.cma.army.mil/map.aspx

Latest News Releases:
http://www.cma.army.mil/pressroom.aspx

Get the latest information about CMA sites at
http://www.cma.army.mil/home.aspx

JPM-TMT Awards Contract for Advanced Development of Broad-spectrum Influenza Drug

MediVector, Inc.'s Favipiravir (T-705) targets multiple influenza virus strains

The Department of Defense's (DOD) Joint Project Manager Transformational Medical Technologies (JPM-TMT) awarded a $138.5M contract to MediVector, Inc. to further develop *Favipiravir* (T-705), a broad-spectrum therapeutic against multiple influenza viruses, including the 2009 H1N1 pandemic virus and drug resistant influenza strains. The four-year contract will help bolster the protection of the Joint Forces against naturally occurring pandemic influenza and/or biologically engineered flu viruses.

In the *Chemical and Biological Defense Program (CBDP) FY 2012-2017 Program Strategy Guidance (PSG)*, Andrew Weber, ASD(NBC), pointed out that "… the Department must be ready to play an important role in responding to pandemics, whether naturally occurring (H1N1) or not…" This contract award helps move DOD closer to that goal.

"Currently available medical countermeasures do not adequately protect the Joint Force," noted David E. Hough, Joint Project Manager of JPM-TMT. "This drug shows promise that it can mitigate flu symptoms by interfering with the influenza replication process. Our contract with MediVector addresses a capability gap in the protection of the Joint Forces."

Favipiravir (T-705) already has shown positive results in numerous published animal studies and Phase 1 human clinical trials. It also has demonstrated broad-spectrum activity against other RNA viruses listed by the Centers for Disease Control and Prevention as Category A and B Bioterrorism Agents/Diseases.

Lieutenant Colonel David Gibson, JPM-TMT's Joint Product Manager for the Emerging Infectious Diseases-Influenza Medical Countermeasure (EID-Flu MCM) acquisition program, states, "Influenza can pose a significant threat to the operational effectiveness of joint military forces worldwide. We understand the influenza pandemic threat and are staying apprised of the controversial research and decision to publish the studies on the development of engineered H5N1 avian viruses. This contract award will support the development of a new type of anti-influenza drug that will provide broad-spectrum coverage of influenza strains the Warfighter and nation may encounter."

JPM-TMT looks to invest in mature drug candidates to reduce risk of technical failure and quickly deliver U.S. Food and Drug Administration (US FDA)-approved products to the Warfighter. Investing in drugs that test favorably in early stage human clinical trials reflects the program's goal to provide promising therapeutics to fight emerging infectious diseases. This approach seeks to maximize the likelihood of delivery of therapeutics to the Warfighter and reduces the cost to the government.

The contract with MediVector specifically will support safety and efficacy clinical trials to achieve U.S. FDA approval. Due to greater than anticipated technological maturity of *Favipiravir* (T-705), the advanced development timeline is more than two years ahead of schedule. Phase 3 clinical trials for *Favipiravir* (T-705) are expected to begin as early as Fall 2012. LTC Gibson explains, "This is a very exciting award as it incorporates cost reductions throughout the lifecycle of the project. Through this program, DOD is supporting groundbreaking medical technology in a cost effective manner that will assure the health and effective performance of the Warfighter in the global environment."

JPM-TMT's EID-Flu MCM acquisition program is focused on treatment options that may prove to be more effective than currently available drugs against virulent strains of the influenza virus. The program's success will enhance both the DOD's and the nation's ability to treat future influenza outbreaks as well as potentially weaponized influenza virus strains. ❖

About Joint Project Manager Transformational Medical Technologies

JPM-TMT, a component of the Joint Program Executive Office for Chemical and Biological Defense, aims to protect the Warfighter from emerging infectious diseases, genetically altered, and unknown biological threats. Through strategic investments and partnerships with innovative biotech firms, pharmaceutical corporations, other government agencies, and academic institutions, JPM-TMT facilitates the advanced development and acquisition of broad-spectrum medical countermeasures and systems to enhance our nation's biodefense response capability. For more information, visit www.jpmtmt.mil.

Contract Awards

Joint Chemical Agent Detector (JCAD)
Smiths Detection
Edgewood, MD
$27,000,000 April 26, 2012
By U.S. Army, Washington, D.C.

Joint Sensitive Equipment Wipes (JSEW)
First Line Technology, LLC
Chantilly, VA
$30,332.50 March 28, 2012
Polestar Technologies Inc.
Needham Heights, MA
$38,216.45 March 28, 2012
Atlantic Diving Supply, Inc.
Virginia Beach, VA
$38,932.50 March 28, 2012
Strategic Technology Enterprise, Inc
Mentor, OH
$5,267.80 March 28, 2012
By Natick Contracting Division (R and BaseOPS), Natick, MA

Combined Biological and Chemical Mechanisms for Degradation of Insensitive Munitions in the Presence of Alternate Explosives
Clemson University
Clemson, SC
$447,475.00 April 12, 2012
By USACE HEC, Ft. Belvoir, Alexandria, VA

Bioterrorism-Related Synthetic Vaccine Program
Inovio Pharmaceuticals, Inc.
Blue Bell, PA
$ N/A April 2, 2012
By U.S. Department of Defense, Washington, D.C.

Assess Detection Equipment for Compliance with the Common Analytical Laboratory System Requirements
MRIGlobal
Kansas City, MO
$9,000,000 March 26, 2012
By U.S. Army, Washington, D.C.

Supply Joint Biological Point Detection Systems to the Japanese Ministry of Defense
Chemring Detection Systems, Inc.
Charlotte, NC
$9,000,000 March 15, 2012
By Marubeni Aerospace Corporation, Tokyo, Japan

Emerging Infectious Diseases (Eid) Medical Counter Measure (Mcm)
MediVector, Incorporated
Boston, MA
$138,451,624 March 14, 2012
By Defense Threat Reduction Agency, Fort Belvoir, VA

Chemical Vapor Sampling Equipment
Battelle Memorial Institute
Dublin, OH
$5,700,000 March 7, 2012
By U.S. Army, Washington, D.C.

Development of Filters to Remove Arsenic from Drinking Water
University of Alberta
Edmonton, Canada
$100,000 February 29, 2012
By Grand Challenges Canada, Toronto, Canada

Services in Support of the Assistant Secretary of Defense for Nuclear, Chemical and Biological Defense
Science Applications International Corporation
McLean, VA
$95,000,000 February 9, 2012
By Office of the Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs, Washington, D.C.

Multi-Mission Multi-Threat (M3TD) Effort: Provide Contamination Detectors for a Data Collection Effort of Contact and Non-Contact Sensors

$294,924.00	Spectrum Photonics, Inc.
$387,462.00	Chem Image Bio Threat LLC
$350,299.00	Smiths Detection-Edgewood, Inc.
$335,939.00	Ahura Scientific, Inc.
$572,329.00	Thales USA Defense & Security, Inc.
$415,685.00	Smiths Detection-Edgewood, Inc.
$599,592.00	Science And Engineering Services, Inc.
$982,313.00	Northrop Grumman Security Systems, LLC
$216,025.00	Griffin Analytical Technologies, LLC
$266,815.00	Ahura Scientific, Inc.
$256,424.00	Nomadics, Inc.
$245,466.00	Chemring Detection Systems, Inc.
$608,103.00	Hamilton Sundstrand Corporation
$506,203.00	Charles Stark Draper Laboratory, Inc.
$350,299.00	Smiths Detection-Edgewood, Inc.
$498,131.00	Block Mems, LLC
$219,998.00	Chemring Detection Systems, Inc.
$98,864.00	Agentase, LLC
$122,606.00	ANP Technologies, Inc.

January 20, 2012
By Joint Project Manager for Nuclear Biological and Chemical Contamination Avoidance, Aberdeen Proving Ground, MD (http://globalbiodefense.com/2012/02/07/dod-cbrn-m3td-program-awards-for-chemical-detectors/)

Development of Novel Fluorocycline Antibiotic of the Tetracycline Class for the Treatment of Select Bacterial Infections
CUBRC
Buffalo, NY
$67,253,557 January 20, 2012
By Department of Health and Human Services, Washington, D.C.

Filovirus Vaccine Development and Manufacturing
Paragon Bioservices, Inc.
Baltimore, MD
$15,000,000 January 17, 2012
By Department of Defense, Washington, D.C.

ECBC Engineering Gains Additional Testing Capabilities

Engineering Protective Equipment Test Branch Expands Test Capabilities to Better Equip Warfigher

The Protective Equipment Test (PET) Branch recently took a large step toward increasing the safety and reliability of Warfighter equipment with its extensive laboratory renovations. PET's newly recertified labs, which have been under renovations for nearly a year, will soon be up and running allowing the team to expand their capability service offerings for the Warfighter.

"These new testing systems will allow us to run multiple tests a day, which heightens our accuracy in testing," said Jonathan Grzeika, a chemical engineer for the Carbon Team in the PET Branch. "The new hoods allow us to test more types of chemical agents, than we were able to before."

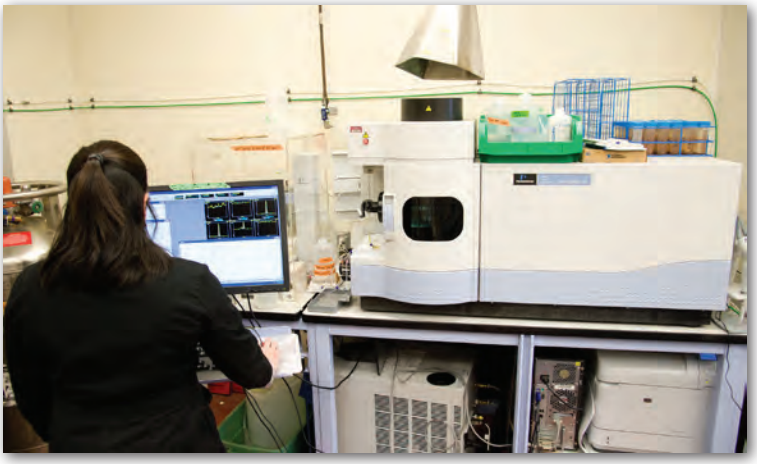
The PET branch works to "protect the nation's protectors" with a primary mission to conduct first article, production lot acceptance and surveillance testing on military, unique and civilian, individual and collective protective equipment. Grzeika said the new testing labs will enhance all aspects of the types of testing the PET Branch conducts: carbon testing, end item testing of filters, Aerosol Vapor Liquid Assessment Group (AVLAG) permeation test system, and better SiMulant Agent Resistant Test MaNikin (SMARTMAN) agent testing.

The upgrades to the labs and new equipment will increase the data quality, environmental control and capacity of PET's loose sorbent, canisters/cartridges and filter testing capabilities by four times the previous amount. The Quality Assurance capabilities will be enhanced allowing the branch to comb through a data set to determine anomalies in testing.

The goal for these renovations is to make the PET Branch a "one-stop shop" for production lot testing needs. With more hood space and increased testing capabilities, PET is able to become that one stop. Additional lab space will allow for there to be backup test systems in the event of maintenance work.

"When one hood is down for maintenance, there will be other usable hoods available," Grzeika said. "The labs will have a sorbent bed testing system with new analytical and environmental monitoring and controls, as well as a new filter system that can test four times as many filters as the previous system with new analytical instrumentation and environmental control and monitoring."

These new testing capabilities come at an especially pertinent time. During renovations, PET sacrificed space in order to make room for its new laboratories. Since the upgrades began in Spring 2010, PET created improvised testing spaces and collaborated with teams in ECBC's Research and Technology Directorate (R&T) to ensure the branch could continue to meet their customers' requirements and carry on with testing during the upgrades. While space was a luxury during this time, working with the R&T Directorate gave PET a sneak preview of the new technology they would receive following the renovations. During the downtime, PET transitioned several technological improvements and methods to the R&T Directorate's cutting-edge sorbent testing labs. Dr. Stan Ostazeski from R&T's Forensic Analytical Center also contributed hoods to help PET continue with testing during the move.



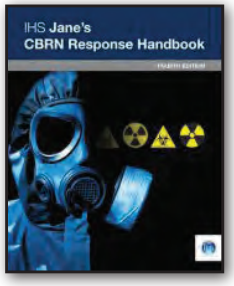
Grzeika said while he is glad PET did not lose momentum during the renovations and had good cause to form partnerships within R&T, he is excited to get to the new labs and utilize the optimized testing to produce major results for the Warfighter.

"The experience of improvising our work space really helped us become better testers. It was nice to develop our creativity—altering our test samples to take up half of the real hood space it typically requires," Grzeika said. "But at the same time, the idea of getting into these new labs and starting off with a fresh slate to do even more precise testing is exciting."

Visit ECBC online at: http://www.ecbc.army.mil.

New CBRNIAC Information Resources

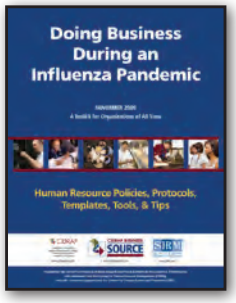
Garcia, Antonio F., Dan Rand, and John Howard Rinard Jr., eds. **Jane's CBRN Response Handbook**. 4th ed. Englewood, CO: IHS, 2011.



Jane's CBRN Response Handbook is a comprehensive pocket guide providing essential planning and response procedures for a chemical, biological, radiological or nuclear incident. An expansion of the highly popular Jane's Chem-Bio Handbook—the standard among first responders—this manual has been developed in line with current best practices and organized to facilitate usability in the field.

CB-206216
IHS
321 Inverness Drive South
Englewood, CO 80112
Phone: (800) 824-0768

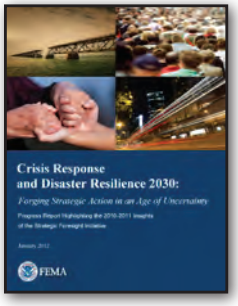
Doing Business During an Influenza Epidemic. Minneapolis, MN: Center for Infectious Disease Research and Policy, 2009.
http://www.cidrap.umn.edu/cidrap/files/33/cidrap-shrm-hr-pandemic-toolkit.pdf



"Influenza pandemics are a recurring cause of widespread morbidity and mortality in humans. The spring of 2009 ushered in the first influenza pandemic in more than 40 years and the first pandemic to occur in a global just-in-time economy, one that is also experiencing a recession. Human resource professionals are on the front lines of pandemic preparedness." *(Executive Summary)*

CB-093946
Center for Infectious Disease Research & Policy
University of Minnesota
Academic Health Center
420 Delaware St SE
MMC 263
Minneapolis, MN 55455
Phone: (612) 626-6770

Crisis Response and Disaster Resilience 2030: Forging Strategic Action in an Age of Uncertainty. Progress Report Highlighting the 2010-2011 Insights of the Strategic Foresight Initiative. Hyattsville, MD: FEMA, 2012.



http://www.fema.gov/library/file;jsessionid=860D52D3B86F8D840AD2BC4F9F01EBC4.Worker2Library?type=publishedFile&file=sfi_report_13.jan.2012_final.docx.pdf&fileid=70ed3250-4114-11e1-8c9e-001cc456982e

"This report presents the findings from foresight efforts thus far, including: uncertainties that define and drive the future environment; strategic needs and gaps our community will have to address; a look into the emergency management community of 2030; and finally, suggested next steps for the community to prepare for the future." *(Message from Director)*

CB-206325
Federal Emergency Management Agency
P.O. Box 10055
Hyattsville, MD 20782-8055
Phone: (800) 621-FEMA

Bunn, Matthew, Eben Harrell, and Martin B. Malin. **Progress on Securing Nuclear Weapons and Materials: The Four-Year Effort and Beyond**. Cambridge, MA: Project on Managing the Atom, Harvard University, 2012.
http://belfercenter.ksg.harvard.edu/files/Progress_In_The_Four_Year_Effort_web.pdf

"This four-year effort was endorsed unanimously by the UN Security Council in Resolution 1887 in September 2009 and by the first nuclear security summit in Washington in April 2010… In this paper, we offer a definition of appropriate goals of the four-year nuclear security effort and an assessment of how far the international community has come toward fulfilling those goals." *(Introduction)*

CB-206294
Progress on Securing Nuclear Weapons and Materials
Belfer Center for Science and International Affairs
Harvard Kennedy School
79 JFK Street; Mailbox 134
Cambridge, MA 02138
Phone: 617-495-4219

Updated Site-Specific Biosafety and Biosecurity Mitigation Risk Assessment, Final Report, Vol. 2. Washington, DC: Department of Homeland Security, 2012.
http://www.dhs.gov/xlibrary/assets/st/nbaf_updated_ssra_volume_ii.pdf

As part of its on-going risk assessment process and to comply with recent Congressional requirements, DHS updated the 2010 Site-Specific Biosafety and Biosecurity Mitigation Risk Assessment (SSRA) by incorporating the recommendations from the National Academy of Sciences and the most recent design plans for National Bio and Agro-Defense Facility (NBAF). *(Press Release)*

CB-206513
NBAF Program Manager
S&T DOR STOP 0217
Department of Homeland Security
245 Murray Lane, SW
Washington, DC 20528-0217
Phone: (302) 378-4579

Air University, AFNWC Unveil New Course

By Col. Clarence "CJ" Johnson, Air Force Nuclear Weapons Center Nuclear Capabilities Directorate director

A new course exploring advanced nuclear concepts was christened Feb. 29 at the Air Force Nuclear Weapons Center Nuclear Capabilities Directorate's Nuclear College.

It is a collaborative effort between the Air University's Counterproliferation Center, the Air Education and Training Command's Nuclear Operations, Plans and Requirements Directorate and the AFNWC Nuclear Capabilities Directorate's Education and Training Branch.

Dubbed "Nuclear 300," the course targets the following nuclear enterprise leaders: senior master sergeants and chiefs, field grade officers, Numbered Air Force, Major Command, Combatant Command and Headquarters Air Force staff officers, and major and lieutenant colonel squadron leaders. The curriculum is unique at the Nuclear College.

Brig. Gen. Garrett Harencak, Air Force Nuclear Weapons Center commander, offered opening remarks to the first class. He stressed the importance of the attendees being effective advocates for nuclear deterrence in national security.

"This course will be a game-changer for the way we professionally develop our nuclear enterprise leaders," he said.

Nuc 300 is a five-day professional continuing education offering that explores nuclear deterrence theory and application, nuclear operations policy and strategy, nuclear incident response and nuclear surety and effects.

In 2008 and 2009, both the Schlesinger Commission and the Air Force Nuclear Blue Ribbon Review highlighted the need for professional military education courses that address national defense and Air Force concepts for nuclear deterrence and defense and that properly prepare nuclear leaders for their duties and responsibilities.

The "Nuclear Roadmap" produced in 2008 by the Headquarters Air Force Director for Nuclear Operations, Plans and Requirements, identified the development of a continuing PME for NE personnel as an essential element to create a basic atmosphere of understanding for nuclear stewardship responsibilities. Nuc 300, along with its sister courses, the longstanding Nuclear Fundamentals course (Nuc 200), and the soon-to-be-released Senior Leader Nuclear Management course (Nuc 400), are designed to address those needs.

The CPC course director, Dr. Barry Schneider, both directed and taught during this initial class offering. He said he was pleased with the caliber of students in the class, as well as the depth of discussion and interchange.

The Nuclear College Director, Harold J. "Skip" Camacho, emphasized the significance of the course.

"The Nuc 300 course material goes much deeper into foundational nuclear deterrence and nuclear operations policy issues than any other course at the college. The representation, depth of experience and placement of leadership from across the NE for this initial class far exceeds that which has been represented in other Nuclear College courses to date."

Students and speakers included NE leaders from significant posts at Air Force Global Strike Command, Headquarters Air Force, the Defense Threat Reduction Agency, Air Education and Training Command, Air Combat Command and U.S. Strategic Command.

"Each student brought unique perspectives and experiences to class discussions that were invaluable and elevated the exchange of ideas far beyond expectations," Camacho said.

Both Schneider and Camacho expressed the significance of having a NE leader such as retired Maj. Gen. Tim McMahon serve as class mentor.

"The willingness of our senior leaders to invest the time and talent of a leader like Gen. McMahon to participate in this class shows the service's dedication to elevating quality and depth of nuclear- related professional continuing education for our current and future NE leaders," Camacho said.

McMahon currently serves as a special advisor to the Secretary and Chief of Staff of the Air Force for nuclear matters. In his last active-duty assignment, he was dual-hatted as the commander of both 20th Air Force and Task Force 214. He retired in May 2003, after serving nearly 32 years as a NE leader of distinction.

When asked about the collaborative relationship between the CPC and the Nuclear College, Schneider complimented the dedication of the staffs and their seamless efforts to deliver high-quality nuclear PCE.

"There is a powerfully synergistic effect between the quality of the course material and the dedication and experience of the course mentor, instructors, guest speakers and students. In addition to the outstanding working relationship between the CPC and college, there was something special about this first Nuc 300 class."

Schneider and Camacho said they look forward to watching where things go with the new course.

This article appears online at:
http://www.kirtland.af.mil/news/story.asp?id=123294127

Calendar of Events

Do you have a CBRN Defense or Homeland Security course or event to add to our Calendar? Submit the pertinent information via email to **cbrniac@battelle.org.** *The CBRNIAC reserves the right to reject submissions. For a more extensive list of events, view our online calendar at* **https://www.cbrniac.apgea.army.mil/Products/Events/Pages/default.aspx.**

Jul 4–6
SETAC Australasia Conference
Brisbane, Qld, Australia
http://www.setac.org/sapau/brisbane2012/

Jul 8–13
Drug Metabolism
Holderness, NH
http://www.grc.org/programs.aspx?year=2012&program=drugmetab

Jul 9–10
Vaccines Research and Development Conference
San Francisco, CA
http://www.gtcbio.com/component/conference/?file=home&cn=10th+Vaccines+Research+and+Development%3A++All+Things+Considered&cid=48

Jul 11–13
NACCHO Annual 2012 Meeting
Los Angeles, CA
http://www.nacchoannual.org/

Jul 15–18
Fifth International Conference on Paraoxonases
Columbus, OH
http://5pon.chemistry.osu.edu/

Jul 16
Current Issues in Immunizations-NetConference
Online 1200–1300EST
http://www.cdc.gov/vaccines/ed/onsite-trg.htm

Jul 16–17
CDC Epidemiology and Prevention of Vaccine Preventable Disease
Denver, CO
http://www.cdc.gov/vaccines/ed/onsite-trg.htm

Jul 17–18
The Fifth Annual Cyber Security Expo
Washington, DC
http://5pon.chemistry.osu.edu/

Jul 17–19
Commercializing Small Modular Reactors 2012
Washington, DC
http://www.cvent.com/events/commercializing-small-modular-reactors-for-domestic-and-international-markets-2012/event-summary-06e0aa3b08334088b345768619eec2ac.aspx?i=a95a746a-3b81-4f0d-9687-cdae97ba52be

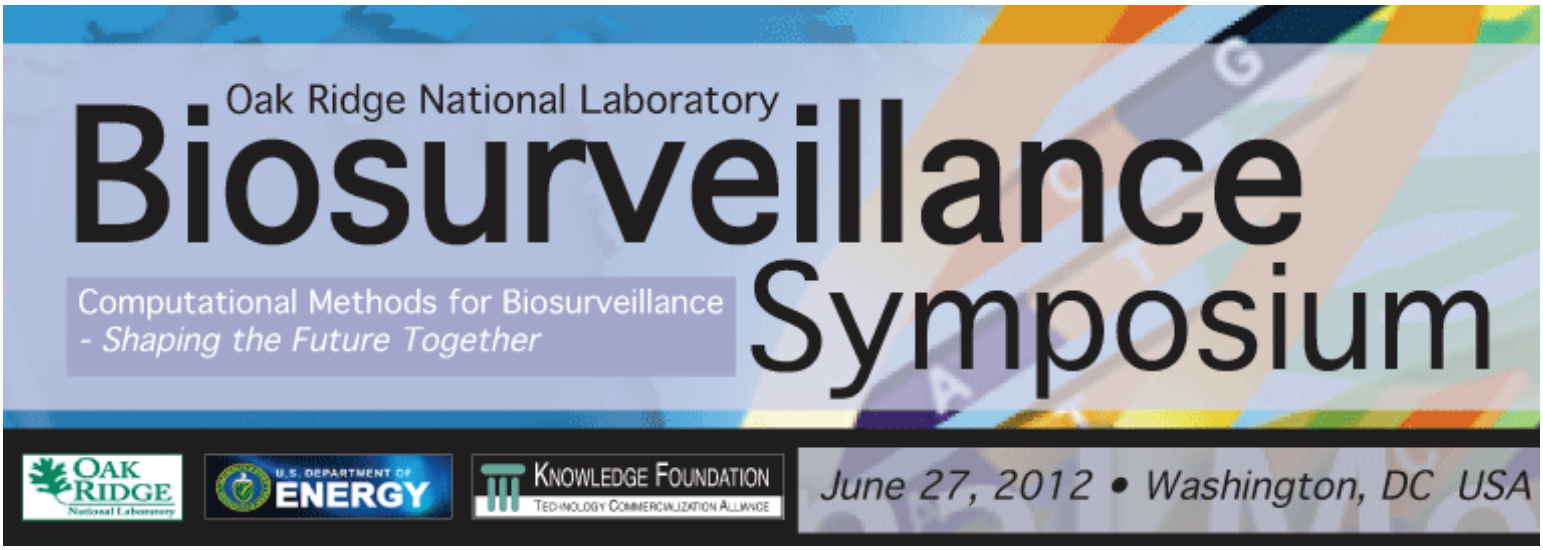
Jul 19–25
COURSE: Cellular Biology of Addiction
Barcelona, Spain
http://www.suportserveis.cat/CSHLSummerCourse/

Jul 21–24
Esri Homeland Security Summit
San Diego, CA
http://www.esri.com/events/homeland/index.html

Jul 22–26
HPS 57th Annual Meeting
Sacramento, CA
http://hps.org/meetings/meeting30.html

Jul 23–25
7th Annual Night Vision Systems Summit
Arlington, VA
http://www.nightvisionevent.com/Event.aspx?id=724674&mac=IDGA_Events_Learn_Listing_2011&utm_source=idga.org&utm_medium=iq_partner&utm_campaign=iq_eventlist&utm_content=text&utm_term=eventpage_learnlink

Continued pg. 13



Jul 23–25 **Counter IED Summit July 2012**
Tampa, FL
http://www.counteriedsummit.com/

Jul 23–25 **COURSE: Pandemics, Bioterrorism and International Security**
Fairfax, VA
http://www.ocpe.gmu.edu/programs/health_public_safety/bioterrorism.php

Jul 23–25 **Border Management Summit North**
Seattle, WA
http://www.bordermanagementsummit.com/Event.aspx?id=724988

Jul 25 **Chemical Demilitarization Citizens' Advisory Commission Meeting**
Pueblo, CO
http://www.bordermanagementsummit.com/Event.aspx?id=724988

Jul 29–Aug 3 **Drug Resistance**
Easton, MA
http://www.grc.org/programs.aspx?year=2012&program=drugresist

Jul 29–Aug 3 **Radiation Chemistry: Radiation Driven Processes in Physics, Chemistry, Biology and Industry**
Andover, NH
http://www.grc.org/programs.aspx?year=2012&program=radchem

Jul 30 – Aug 1 **Actionable Intelligence Summit: Special Operations Edition**
Washington, DC
http://www.actionableintelsummit.com/?mac=IDGA_Events_Learn_Listing_2011&utm_source=idga.org&utm_medium=iq_partner&utm_campaign=iq_eventlist&utm_content=text&utm_term=eventpage_learnlink

Jul 30–Aug 2 **2012 Chemical Sector Security Summit**
Baltimore, MD
http://www.dhs.gov/files/programs/gc_1176736485793.shtm

Aug 1–4 **FRI 2012**
Denver, CO
http://s36.a2zinc.net/clients/iafc/fri12/Public/MainHall.aspx?ID=2716

Aug 4–5 **Science & Technology Policy**
Waterville Valley, NH
http://www.grc.org/programs.aspx?year=2012&program=grs_scipol

Aug 6–9 **Soldier Equipment & Technology Expo & Conference**
Fort Bragg, NC
http://www.soldierequipmentexpo.com/Event.aspx?id=698996&mac=IDGA_Events_Learn_Listing_2011&utm_source=idga.org&utm_medium=iq_partner&utm_campaign=iq_eventlist&utm_content=text&utm_term=eventpage_learnlink

Aug 19–23 **ACS Fall 2012 National Meeting and Expo**
Philadelphia, PA
http://portal.acs.org/portal/acs/corg/content?_nfpb=true&_pageLabel=PP_ARTICLEMAIN&node_id=395&content_id=CNBP_029137&use_sec=true&sec_url_var=region1&__uuid=ab309d71-f1e7-470e-9bf8-16d9988cadb0

Aug 20–22 **Biometrics and Identity Management Exhibition and Conference**
Washington, DC
http://www.bioidentityexpo.com/

Aug 20–24 **Radiological Emergency Planning: Terrorism, Security, and Communication**
Boston, MA
https://ccpe.sph.harvard.edu/programs.cfm?CSID=REP0000&pg=cluster&CLID=1

Aug 22–24 **European Intelligence and Security Informatics Conference (EISIC) 2012**
Odense, Denmark
http://www.eisic.eu/default.aspx

Aug 27–28 **Biosurveillance Conference**
Washington, DC
http://www.ndia.org/meetings/2320/Pages/default.aspx

CBRNIAC Listserv Announcement Service

The CBRNIAC has a listserv service that can be used to disseminate announcements about upcoming events and activities on behalf of Federal and DoD government agencies.

If you would like to have the CBRNIAC email your announcement to members of the CBRN Defense and Homeland Defense communities registered on the CBRNIAC Listserv, send your announcement information to cbrniac@battelle.org.

In the News

Miniature Sandia Sensors may Advance Climate Studies
Sandia Labs News Release
April 10, 2012
"Self-sealing valves also increase data reliability for airborne industrial and battlefield gas detection and point-of-contact medicine."
https://share.sandia.gov/news/resources/news_releases/miniature_sensors/

NNSA, FBI Conclude Counterterrorism Exercise in Hawaii, Marking the Completion of Radiological Security Enhancements Program
National Nuclear Security Administration News Release
March 29, 2012
"The National Nuclear Security Administration (NNSA) and the Federal Bureau of Investigation (FBI) today announced the completion of Island Thunder, a table-top counterterrorism exercise in Hawaii."
http://nnsa.energy.gov/print/mediaroom/pressreleases/hawaiirad32912

Fusion Presents Low Proliferation Risk, Experts Conclude
Institute of Physics
March 29, 2012
"American researchers have shown that prospective magnetic fusion power systems would pose a much lower risk of being used for the production of weapon-usable materials than nuclear fission reactors and their associated fuel cycle."
http://www.iop.org/news/12/mar/page_54894.html

Lawrence Livermore National Laboratory Licenses Microbial Detection Array Advance to Missouri Firm
Stephen P. Wampler
LLNL Press Release
March 22, 2012
"...Known formally as the Lawrence Livermore Microbial Detection Array (LLMDA), the technology could enable food safety professionals, law enforcement, medical professionals and others to detect within 24 hours any virus or bacteria that has been sequenced and included among the array's probes."
https://www.llnl.gov/news/newsreleases/2012/Mar/NR-12-03-03.html

New Paper by Notre Dame Researchers Describes Method for Cleaning Up Nuclear Waste
William G. Gilroy
Notre Dame News
March 20, 2012
"While the costs associated with storing nuclear waste and the possibility of it leaching into the environment remain legitimate concerns, they may no longer be obstacles on the road to cleaner energy. A new paper...showcases Notre Dame Thorium Borate-1 (NDTB-1) as a crystalline compound that can be tailored to safely absorb radioactive ions from nuclear waste streams."
http://newsinfo.nd.edu/news/29727-new-paper-by-notre-dame-researchers-describes-method-for-cleaning-up-nuclear-waste/

NRC Amends Regulations on Security of Radioactive Materials
NRC News
March 16, 2012
"The Nuclear Regulatory Commission is amending its regulations to codify and expand upon recent security measures the agency has imposed for certain sensitive radioactive materials…establishes security requirements for the most risk-significant radioactive materials…"
http://pbadupws.nrc.gov/docs/ML1208/ML120800455.pdf

Official: DOD Improves Posture on 'Loose Nuke' Threat
Cheryl Pellerin
American Forces Press Service
March 15, 2012
"Though the Defense Department's role in nuclear nonproliferation centers on dismantling weapons of mass destruction in former Soviet Union states, DOD also plans, equips and trains for scenarios in which terrorists get their hands on nuclear weapons…"
http://www.defense.gov/news/newsarticle.aspx?id=67572

Molecule May Aid Nuclear Waste Clean-Up
The University of Edinburgh News Release
March 12, 2012
"Scientists have produced a previously unseen uranium molecule, in a move that could improve clean-up of nuclear waste."
http://www.ed.ac.uk/news/all-news/120312-nuclear

Nerve Gas Litmus Test Could Sense Airborne Chemical Weapons
Nicole Casal Moore
University of Michigan News Service
March 12, 2012
"Nerve gases are colorless, odorless, tasteless and deadly...The paper strips are designed to change color from blue to pink within 30 second of exposure to trace amounts of nerve gas."
http://ns.umich.edu/new/releases/20266-nerve-gas-litmus-test-could-sense-airborne-chemical-weapons

£3m Project to Develop Test for Dirty Bombs
University of Liverpool University News
March 12, 2012
"Scientists at the University are developing a test for nuclear materials that could prevent the construction of atomic weapons and 'dirty bombs'…The £3 million international project, funded by the European Commission, will deliver a prototype mobile detection system to reduce the risk of radioactive and nuclear materials being used for terrorism."
https://news.liv.ac.uk/2012/03/12/3m-project-to-develop-test-for-dirty-bombs/

NRC to Issue Orders, Information Request as Part of Implementing Fukushima-Related Recommendations
U.S. Nuclear Regulatory Commission Press Release
March 9, 2012
"The Nuclear Regulatory Commission has authorized its staff to issue immediately effective Orders to U.S. commercial nuclear reactors. This action begins implementation of several recommendations for enhancing safety at U.S. reactors based on lessons learned from the accident at Japan's Fukushima Daiichi nuclear power plant."
http://pbadupws.nrc.gov/docs/ML1206/ML120690627.pdf Continued pg. 20

ECBC Inventors Pave Way for Enhanced Nerve Agent Detection, Awarded Patent

Edgewood Chemical Biological Center's Jim Genovese, Robin Matthews and Science Applications International Corporation on-site contractor Kwok Ong, were awarded with an official patent in November, for their latest accomplishment, the Rapid Agent Identification of Nerve Agent detector (RAIDON).

The new technology, U.S. Patent number 8057761, bridges a capability gap in the world of chemical detection supplementing the currently fielded tactical chemical detection devices. It permits quick discrimination between classes of nerve agents in the field environment once nerve agent is detected.

"There are numerous detectors such as JCAD, ACADA, M256A1 that detect nerve agents, but the problem is they are all vanilla. They don't tell you what family of nerve agents they fall in," said Jim Genovese, Leader of the Innovative Development Engineering Acquisition Team.

The M256A1 kit is currently used across the Department of Defense to provide a chemical vapor detection capability at low cost, with minimal training, and without the need for a power source. An improved version, the M256A2 kit, entered production in FY10 to a standard detection method for low volatility solid and liquid agents in the field. However, it still does not provide nerve agent classification capability.

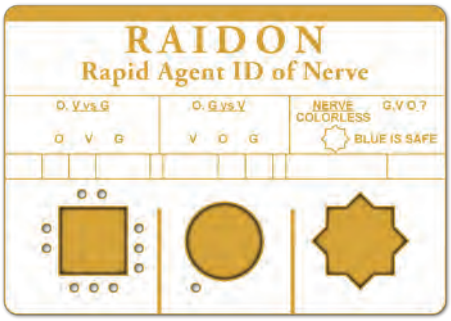
"The RAIDON provides the nerve agent classification information lacking in the existing kits by leveraging the field-proven technology and form/function of the M256A1 kit," Genovese said. "Once the M256A1 shows nerve agent detection, tactical users can then quickly detect and discriminate nerve agent types in the field without having to use sophisticated detectors."

The inventor trio work on the RAIDON began more than six years ago, in 2005, when Genovese identified a requirement and growing need in both the medical and intelligence communities for identifying the speciation of nerve agents. Fielding a detector that is capable of expedient discrimination of nerve agent classes in the field permits more effective medical responses and protective measures tailored to the detected agent's characteristics.

"The RAIDON can provide a near-term tactical method for discriminating nerve agent and pesticide class at a low cost and with low technical risk," Ong, co-inventor chemist, said.

The prototype does not require a complicated, expensive, instrumental base, but instead is likened to "retro chemistry" and is something the Warfighter would be able to carry in their pocket. In order to minimize training requirements and enable rapid transition from prototypes to production-ready systems, the RAIDON uses colorimetric chemical reactions similar to the M256A2 kit.

"It is simple and gets the capability to the Warfighter. We are not afraid to try creative and retro methods," Matthews, Applied Detection Technology team member and co-inventor chemist, said. Genovese lightheartedly describes his team's approach to the research as "Edisonian," characterized by "hunt and try" discovery. As the patent recipients of Genovese's well-intended wild goose chases, Matthews and Ong look back fondly now at the various milestones of success, which eventually led to the development RAIDON.



"We would try more of one thing, less of the other, dry versus wet—it was all a part of going through the rigor to find the best means for classifying the nerve agents," Matthews said.

While the awarded patent is the "cherry on top" of the team's past six years of successful research, it is not the end of the three inventors' story. In fact, it is more of a second beginning. A prototype of the RAIDON currently exists but the team is in need of further funding to refine the chemical concepts and conduct stability testing. For now, the technology does not exist in theater.

As a means of generating buzz around the invention, Genovese presented their research accomplishments to Dr. Charles Hurst, COL (Ret), Chief of the U.S. Army Medical Research Institute of Chemical Defense Chemical Casualty Care Division in the fall of 2009. Hurst's advocacy for the continued development of the RAIDON technology was clear in a follow up letter addressed to the Joint Project Manager for Nuclear Biological Chemical Contamination Avoidance.

"To my knowledge these capabilities are unique and are cutting edge. For medical personnel the RAIDON will allow for nerve agent/cholinergic substance discrimination, greater protection and more efficient and effective treatment regimens resulting in better patient outcomes," Hurst stated in the letter.

"I believe, Hurst's words were 'we needed the RAIDON in the field yesterday'," Genovese said. "As a valued customer and a key member in the U.S. Army medical community, his support was significant."

The team remains optimistic that their research will be taken to the next level to develop the RAIDON past a prototype. Between Ong, Matthews and Genovese, they boast an impressive resume of awarded patents and have a thorough understanding of how patents can evolve.

"You can never be too busy to patent your work. In many ways, it can be the most important thing you do," Genovese said. "Make time to do the needed paperwork to file for a patent.

You may get push back, but do your due diligence to stand by your work and its authenticity. You are the subject matter expert."

National Nuclear Security Administration

NNSA Achieves Major Milestone in Radioactive Source Security

The National Nuclear Security Administration (NNSA) announced this month the recovery of the 30,000th disused and unwanted radioactive source. The NNSA's Global Threat Reduction Initiative's (GTRI) milestone of 30,000 sources represents a total of more than 825,000 curies of radioactivity. These sources were recovered in partnership with Los Alamos National Laboratory, Idaho National Laboratory and the Conference of Radiation Control Program Directors from sites throughout the United States.

The 30,000th source was one of several hundred disused unwanted sealed sources packaged and removed from a licensed facility in North Carolina. Because there are no commercial disposition options, NNSA/GTRI routinely recovers radioactive sources no longer in use from companies licensed by the U.S. Nuclear Regulatory Commission (NRC) or an Agreement State in the interest of national security, public health and safety. Facility operators partner with NNSA to safely and securely remove the sources once they are no longer needed.

Every year, hundreds of sources become disused and unwanted in the United States. Secure storage at the site where the sources are located is a temporary measure, but the longer sources remain disused or unwanted, the greater the chance that they will become abandoned or security will lapse. Due to their high activity and portability, some radioactive sealed sources could be used in radiological dispersal devices (RDD), commonly referred to as "dirty bombs." An attack using an RDD could result in significant economic impacts, radiation exposure, and considerable social disruption. Removal of radiological sources contributes to NNSA's nonproliferation mission.

"This marks an important milestone for NNSA and GTRI," said NNSA Deputy Administrator for Defense Nuclear Nonproliferation Anne Harrington. "GTRI's domestic work to reduce the threat of dirty bombs is comprehensive in scope, well-coordinated with other agencies, states and the private sector, and results oriented."

GTRI's work to remove and protect nuclear and radiological materials at civilian sites worldwide, as well as convert research reactors that operate on those materials, directly supports President Obama's goal to prevent the acquisition and use of dangerous materials in weapons of mass destruction and other forms of terrorism. Domestically, NRC and Agreement States are responsible for the safety and security of licensed sources and meeting the current regulatory requirements. However, NNSA has been working collaboratively with the NRC and Agreement States and their licensees to provide voluntary opportunities to further enhance the security of their sources and devices and incorporate best practices as applicable and appropriate.

Originally published March 23, 2012.
http://nnsa.energy.gov/mediaroom/pressreleases/radsource32312

NNSA Signs Cooperative Agreement to Support the Production of Molybdenum-99 in the United States Without the Use of Highly Enriched Uranium

The National Nuclear Security Administration's (NNSA) Global Threat Reduction Initiative (GTRI) announced today the signing of a cooperative agreement with the Morgridge Institute for Research (Morgridge) to further the development of accelerator-based technology to produce molybdenum-99 (Mo-99) in the United States without the use of proliferation-sensitive highly enriched uranium (HEU). Mo-99 is a medical radioisotope used to diagnose heart disease, treat cancer and study organ structure and function.

The cooperative agreement between NNSA and Morgridge, which totals $20.6 million and is funded under an equal cost-share arrangement, will accelerate the development of Morgridge's technology to produce Mo-99 without the use of HEU. In addition to aligning with domestic and international nonproliferation commitments, the Mo-99 produced by Morgridge would also support the goal of ensuring a reliable domestic supply of this critical medical radioisotope for U.S. patients.

"The production of this medical isotope without the use of highly enriched uranium is essential for advancing our nonproliferation commitments and minimizing the use of HEU in civilian applications worldwide," said Deputy Administrator for Defense Nuclear Nonproliferation Anne Harrington. "The significant technical advancement of our domestic commercial partners is critical for achieving a diverse, reliable supply of molybdenum-99 for the U.S. medical community."

The United States currently does not have a domestic production capability for Mo-99. The United States imports 100 percent of its supply from foreign producers, most of which use HEU in their production processes. Over the past few years, technical difficulties and shutdowns at the major Mo-99 production facilities have caused severe supply shortages, greatly impacting the availability of Mo-99 to the medical community. Instability in the Mo-99 marketplace has been exacerbated by artificially low prices of Mo-99, creating difficulties for new producers to enter the market, as well as for current international producers to transition from HEU targets to low enriched uranium (LEU) targets.

NNSA has entered into agreements with four domestic commercial entities to accelerate the establishment of a diverse, reliable supply of Mo-99 within the United States that is not produced with HEU. NNSA also works with international producers to assist in the conversion of existing Mo-99 production facilities from the use of HEU targets to LEU targets. These efforts are part of the NNSA Global Threat Reduction Initiative's mission to minimize and, to the extent possible, eliminate the use of HEU in civilian applications worldwide.

Originally published May 8, 2012.
http://nnsa.energy.gov/mediaroom/pressreleases/morgridge

Navy CBR Defense Chief Engineer Named Federal Engineer of the Year Award Agency Winner

The National Society of Professional Engineers (NSPE) honored Michael Pompeii as a 2012 Federal Engineer of the Year Award (FEYA) Agency winner at a National Press Club ceremony, Feb. 23, 2012.

Pompeii—Chief Engineer for the Naval Surface Warfare Center (NSWC) Dahlgren Chemical, Biological and Radiological Defense Division—was recognized for his vision, leadership, technical expertise and achievements that significantly improved the Navy's ability to deal with a CBR attack.

The 2012 Federal Engineer of the Year Award is sponsored by the Professional Engineers in Government and honors engineers employed by a federal agency that employs at least 50 engineers worldwide. Candidates are nominated by their employing federal agency.

"Mike is extremely deserving of this award and I am thrilled that he was selected over many fine candidates," said NSWCDD CBR Defense Division Head Michael Purello. "With his education in mechanical and systems engineering, professional engineering license, and almost 30 years of experience in Navy CBR Defense, Mike has truly helped the Navy in numerous ways and contributed to the success of the Navy CBR Defense program.

The Federal Engineer of the Year is selected by a panel of judges established by NSPE Professional Engineers in Government who consider engineering achievements, education, continuing education, professional/technical society activities, NSPE membership, awards and honors, and civic and humanitarian activities.

Pompeii's accomplishments as a nationally and internationally renowned CBR Defense expert—particularly in the area of Collective Protection Systems (CPS)—include:

- Expanded the Navy's capabilities to research, develop, and field revolutionary systems for the Navy, Department of Defense and the nation.
- Led the design, development and delivery of the Shipboard Collective Protection Systems, CPS Personnel and Casualty Decontamination Stations, Selected Area CPS, and the Improved Point Detection System. (CPS works by using special filters to remove contaminants from intake ventilation air and then providing a slight overpressure inside the CPS zone to prevent entry of contaminants through any leak paths.)
- Developed the Shipboard Chemical Hazard Assessment Guide and authored major changes in Navy shipboard CBR defense doctrine and procedures.

Michael Pompeii, Chief Engineer for NSWC Dahlgren Chemical, Biological and Radiological Defense Division

- Spearheaded efforts resulting in multi-million dollar cost reduction for the Navy.
- Reconstituted and validated the Navy's aerial simulant release capability to support at sea testing of ship CBR Defense capabilities.
- Developed realistic challenge levels that are now the standard for designing shipboard CBR defense equipment.
- Developed a groundbreaking threat validation report that will be the basis for redefining: 1) how and why shipboard CBR defense testing is conducted in the future and, 2) standards for shipboard CBR defense equipment.
- Assessed the threat and developed response procedures for radiological dispersal devices for ships.
- Led the CBR Defense Division's response to the 2011 radiation releases from the Fukushima nuclear plants.
- Established the Dahlgren Radiological Control Data Center to efficiently capture and analyze ship contamination levels, which could significantly impact the fleet's response to future radiation contamination incidents.

ECBC Receives FLC Award for TAC-BIO

The U.S. Army Edgewood Chemical Biological Center (ECBC) has received an Award for Excellence in Technology Transfer from the Federal Laboratory Consortium for its work on the Tactical-Biological Detector (TAC-BIO). The TAC-BIO program resulted in five patents addressing state-of-the-art optics and optical interrogation techniques. In addition, it also provides a biological agent detector that costs nearly 10 percent less, is 50 percent smaller, weighs 80 percent less and uses only four percent of the energy.

The TAC-BIO is a biological agent sensor developed at ECBC that is low-cost, low-power and compact in size. It is designed to rapidly detect the presence of an airborne biological threat and to provide an early warning to minimize exposure and casualties to our Armed Forces. The device exploits the scientific principle that biological aerosols will fluoresce and scatter light when exposed to ultra violet (UV) light. These signals can be used to detect the existence of a threat.

Prior to the TAC-BIO, most biological agent detectors used large and costly UV lasers to extract optical signals from threat aerosols. However, a shift toward a low-cost detector began in 2002 when John Carrano, Ph.D., led an effort within the Defense Advanced Research Projects Agency (DARPA) to develop Semiconductor Ultraviolet Optical Sources (SUVOS), a type of light-emitting diode that could replace the larger and more costly UV lasers.

TAC-BIO began with funding from DARPA to explore the potential of designing a biological agent detector based on SUVOS technology. Funding from the Defense Threat Reduction Agency allowed ECBC scientists and engineers to advance the design toward a mature, Technology Readiness Level 6 product.

The effort was supported by the Center's Chemical Biological Systems Integration team within its Research and Technology Directorate and the Advanced Design Manufacturing team within its Engineering Directorate. The team was led by Division Team Leader David Sickenberger and included six other ECBC employees.

"I'm very proud of the work our team has done on the TAC-BIO and the paradigm shift it has driven to low-cost biological agent detectors," said Sickenberger.

ECBC transitioned the TAC-BIO into industry, specifically General Dynamics and Research International, Inc., in 2009 and 2010 respectively. Collaboration among the organizations was made possible through three technology transfer mechanisms that helped industry access the Center's expertise and facilities: a patent licensing agreement; cooperative research and development agreement; and partnership intermediary agreements.

The ECBC Technology Transfer team played an integral role in these transitions by managing the licensing process. The team engaged a Department of Defense partnership intermediary, TechLink, for resources on publicizing the availability of such a system to interested industry organizations.

"Commercialization of the TAC-BIO by our partners is the culmination of many years of effort by the inventors, and their cooperation with the Technology Transfer Team to enable an expedited path to commercial success," said Technology Transfer Team Lead Dhirajlal Parekh.

Efforts to improve the product are ongoing. Work continues to make the product simpler, more durable in all weather conditions and more capable. Other potential licensees continue to be interested which will allow for further modification of the TAC-BIO system prior to wide distribution and fielding.

ECBC has been recognized as a critical national asset in the chemical biological defense community and their innovative workforce evolves CBRNE defense technologies and capabilities worldwide.

ECBC is the Army's principal research and development center for chemical and biological defense technology, engineering and field operations. ECBC has achieved major technological advances for the warfighter and for our national defense, with a long and distinguished history of providing the Armed Forces with quality systems and outstanding customer service. ECBC is a U.S. Army Research, Development and Engineering Command laboratory located at the Edgewood Area of Aberdeen Proving Ground, Maryland. For more information about the Edgewood Chemical Biological Center, please visit our website at http://www.ecbc.army.mil or call (410) 436-7118.

MRICD Employee Named 2011 Federal Library Technician of the Year

By Cindy Kronman, MRICD

Leanna Bush of the US Army Medical Research Institute of Chemical Defense (MRICD), Aberdeen Proving Ground, Md., is the Library of Congress's Federal Library and Information Network (FEDLINK) 2011 Federal Library Technician of the Year. Bush received her award on May 14 at FEDLINK's two-day spring exposition, "Brave New World," in Washington, D.C.

MRICD's Leanna Bush has been named the 2011 Federal Library Technician of the Year by the Library of Congress's Federal Library and Information Network. (Photo by Darrell Jesonis, MRICD)

"We all recognize Leanna as an invaluable asset to our library," said Col. Peter Schultheiss, MRICD's commander, upon hearing of Bush's selection. "Certainly no library technician is more deserving of this award."

Bush was nominated by Pamela Scheuermann, the librarian at MRICD's Wood Technical Library. Scheuermann's nomination cited Bush's "outstanding customer service, in-depth knowledge of the collection, and understanding of researchers' information needs."

"Leanna has established herself as the go-to information resource at MRICD," said Scheuermann.

Among Bush's duties are preparing and administering the library budget, managing the journal subscription contract, copy cataloging, developing the collection, fulfilling interlibrary loans, tracking library use metrics, and maintaining the library's administrative files. In 2011, Bush initiated a project to scan the library's entire translation collection, which she saved to a shared network drive, making individual articles available to the institute's investigators from their desktops through links on the library's SharePoint site. Bush also collected or created PDF files of over 3700 articles, technical reports, proceedings papers, abstracts, and posters authored or co-authored by institute staff, thereby expediting the staff's access to past and current research in the medical chemical defense program.

"Leanna used EndNote, a bibliographic editing software, to create a data base of the institute's bibliography," explained Scheuermann. "The EndNote format gives ICD researchers the added functionality to automatically format references in MS Word and insert citations and endnotes using the 'Cite While You Write' feature. Author bibliographies can be generated quickly when needed for evaluations or other documentation of researchers' work."

Bush was "quite surprised" when she received an email from the Library of Congress notifying her of her selection for the award and is grateful to Scheuermann for nominating her as well as to Dr. Alfred Sciuto, Dr. Heidi Hoard-Fruchey and Lt. Col. Shannon Stutler, who provided letters of recommendation to accompany the nomination package.

"I feel honored and humbled to be recognized by my library colleagues with this prestigious award," said Bush. "It is a very gratifying feeling to know that I have contributed in a small way to the research of my agency."

The letters of reference from Sciuto, Hoard-Fruchey and Stutler all praised Bush's proficiency, dedication, and customer service. Sciuto, a senior research physiologist at MRICD, noted her impressive ability to procure even hard-to-find documents.

"What is amazing to me," wrote Sciuto, "is that she knows the library so well that she is able to quickly pinpoint what is needed. This is not surprising in that for several years she handled every library operation without fail, alone, while the institute searched for a librarian."

Hoard-Fruchey, an MRICD research biologist, credited Bush with maintaining the crucial support the library provides the institute's researchers.

"She has advocated on behalf of our scientific staff to improve our book collection, keep a journal collection on site, and express the importance of access to electronic journals," wrote Hoard-Fruchey. "In addition, she is always looking for ways to improve services at the library."

Citing Bush's digitization of the translations, which also freed up shelf space, allowing the institute's archived laboratory notebooks to come out of storage in a warehouse, and her creation of the comprehensive interactive bibliography, Stutler, chief of MRICD's Research Support Division, wrote, "Ms. Bush continues to make a notable impact on our institute's ability to accomplish its mission."

Stutler also noted that Bush "quickly and cheerfully responds to all requests for assistance, and routinely offers suggestions for improving the outcomes."

Bush's competency and efficiency weren't her only qualities that impressed the staff.

"She always makes all patrons feel welcome," said Stutler, and Hoard-Fruchey wrote, "I have always found Ms. Bush to be helpful, friendly, and reliable." In his nomination letter, Sciuto described Bush as "unassuming, mild-mannered, polite and a delight to work with."

Bush began her career in MRICD's library as a contract employee nearly twenty years ago and became a civilian employee in 2006.

Visit MRICD online at http://usamricd.apgea.army.mil/.

Continued pg. 22

Colonel Harry Glen Dangerfield, In Memoriam

Colonel Harry Glenn Dangerfield, M.D., 81, of Frederick, MD passed away Monday, April 23, 2012 at Tranquility Assisted Living in Frederick, MD. He was the beloved husband of Joan Dangerfield for 54years.

Born August 18, 1930 in Cushing, Oklahoma he was the son of the late Harry Nathan and Lydia Craig Dangerfield.

Colonel Dangerfield was a 1952 graduate of Westminster College in Fulton, Missouri and a 1956 graduate of St. Louis University School of Medicine. Harry proudly served in the United States Army where he commanded Medical Research Team in Vietnam from 1966-67. He was also the Chief of Bacteriology Division and Deputy Commander USAMRIID. Harry was a staff officer, Medical Division and Chief for the US Army at Ft. Detrick, a Research Fellow and Instructor for the Department of Medicine at the University of Florida, Commander and Scientific-Technical Director for the U.S. Army Medical Research Institute of Infectious Disease, Ft. Detrick, Commander and Scientific-Technical Director for the U.S. Army Research Institute of Environmental Medicine, Natick, MA, Deputy Commander, U.S. Army Medical Research and Development Command, Ft. Detrick, Commander for the U.S. Army Medical Material Development Activity, Ft. Detrick and Executive Assistant and Executive Officer for the Health Care Systems for the office of the Surgeon General, DA. After retiring from the Army he accepted a research position with SAIC where he worked for 12 years. Harry was a founding member of Sigma Alpha Epsilon at Westminster College, Omicron Delta Kappa, Phi Beta Pi, American Medical Association, American College of Physicians, American Society of Microbiology and Consultant to the Surgeon General, DA in Environmental Medicine. Harry also enjoyed skiing, reading and listening to music. He was active at St. John the Evangelist Catholic Church where he was a Eucharistic Minister. Harry was also a member of the Literacy Council and spoke for the American Cancer Society about breast cancer.

In addition to his wife he is survived by his three children Patrick John Dangerfield and wife Angelia of Pennsville, NJ, Beth Dangerfield Green and husband Jack of Walkersville and Julia Seanez and husband Salvador, Jr. of Frederick; grandchildren Kristin, Patrick, Matthew, Mollie, Ashley and Emily and great-grandchildren Brant and Kelcie.

He is preceded in death by his granddaughter Natalie Green.

Memorial Contributions may be made to the Literacy Council Literacy Council of Frederick County, Inc.110 E. Patrick St. Frederick, MD 21701.

In the News *cont.*

Using Graphene Foam to Detect Subtle Traces of Hazardous Gases, Explosives
Michael Mullaney
PHYS.ORG
March 8, 2012
"Fazel Yavari has developed a new sensor to detect extremely small quantities of hazardous gases. The Rensselaer Polytechnic Institute doctoral student harnessed the power of the world's thinnest material, graphene, to create a device that is durable, inexpensive to make, and incredibly sensitive."
http://www.physorg.com/news/2012-03-graphene-foam-subtle-hazardous-gases.html

Universal Detection Technology Unveils the Smartphone Application for Its RadSmart Radiation Detection Device
Universal Detection Technology News Release
March 8, 2012
"Universal Detection Technology…announced today that that it has unveiled the first generation smartphone application for its RadSmart Device. The RadSmart is designed to detect radiation levels on surfaces and in food and to automatically send the collected data to a smartphone."
http://markets.financialcontent.com/precisionir/?GUID=20809277&Page=MEDIAVIEWER

Origami-Inspired Paper Sensor Could Test for Malaria and HIV for Less Than 10 Cents, Report Chemists
LabSpaces.net
March 9, 2012
"…One-dimensional paper sensors, such as those used in pregnancy tests, are already common but have limitations. The folded, 3-D sensors, developed by Crooks and doctoral student Hong Liu, can test for more substances in a smaller surface area and provide results for more complex tests."
http://www.labspaces.net/118294/Origami_inspired_paper_sensor_could_test_for_malaria_and_HIV_for_less_than____cents__report_chemists

New Federal Interagency Enforcement Center Opens as Part of the President's Export Control Reform Initiative
U.S. Department Of Homeland Security News Release
March 7, 2012
"U.S. Immigration and Customs Enforcement (ICE) today announced the opening of a multi-agency center established to coordinate and enhance federal export enforcement efforts."
http://www.ice.gov/news/releases/1203/120307washingtondc.htm

Smiths Detection Unveils Mobile, Low-Cost Cargo Scanner
Homeland Security Newswire
March 5, 2012
"Smiths Detection has unveiled a next-generation X-ray cargo scanner that is smaller, more cost effective and designed for easier operation in the field than traditional mobile systems."
http://www.homelandsecuritynewswire.com/dr20120306-new-cargo-screening-unveiled

Biological Effects of Radiation

United States Nuclear Regulatory Commission Office of Public Affairs Fact Sheet

Background

Radiation is all around us. It is naturally present in our environment and has been since the birth of this planet. Consequently, life has evolved in an environment which has significant levels of ionizing radiation. It comes from outer space (cosmic), the ground (terrestrial), and even from within our own bodies. It is present in the air we breathe, the food we eat, the water we drink, and in the construction materials used to build our homes. Certain foods such as bananas and brazil nuts naturally contain higher levels of radiation than other foods. Brick and stone homes have higher natural radiation levels than homes made of other building materials such as wood. Our nation's Capitol, which is largely constructed of granite, contains higher levels of natural radiation than most homes.

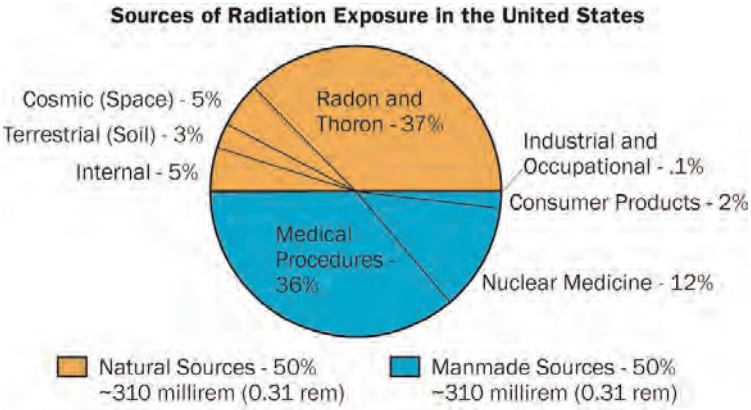
Levels of natural or background radiation can vary greatly from one location to the next. For example, people residing in Colorado are exposed to more natural radiation than residents of the east or west coast because Colorado has more cosmic radiation at a higher altitude and more terrestrial radiation from soils enriched in naturally occurring uranium. Furthermore, a lot of our natural exposure is due to radon, a gas from the earth's crust that is present in the air we breathe.

About half of the total annual average U.S. individual's radiation exposure comes from natural sources. The other half is mostly from diagnostic medical procedures. The average annual radiation exposure from natural sources is about 310 millirem (3.1 millisieverts or mSv). Radon and thoron gases account for two-thirds of this exposure, while cosmic, terrestrial, and internal radiation account for the remainder. No adverse health effects have been discerned from doses arising from these levels of natural radiation exposure.

Man-made sources of radiation from medical, commercial, and industrial activities contribute about another 310 mrem to our annual radiation exposure. One of the largest of these sources of exposure is computed tomography (CT) scans, which account for about 150 mrem. Other medical procedures together account for about another 150 mrem each year. In addition, some consumer products such as tobacco, fertilizer, welding rods, exit signs, luminous watch dials, and smoke detectors contribute about another 10 mrem to our annual radiation exposure.

The pie chart to the right shows a breakdown of radiation sources that contribute to the average annual U.S. radiation dose of 620 mrem. Nearly three-fourths of this dose is split between radon/thoron gas and diagnostic medical procedures. Although there is a distinction between natural and man-made radiation, they both affect us in the same way.

Above background levels of radiation exposure, the NRC requires that its licensees limit maximum radiation exposure to individual members of the public to 100 mrem (1mSv) per year, and limit occupational radiation exposure to adults working with radioactive material to



Source: NCRP Report No.160(2009)
Full report is available on the NCRP Web site at www.NCRPpublications.org.

5,000 mrem (50 mSv) per year. NRC regulations and radiation exposure limits are contained in Title 10 of the Code of Federal Regulations, Part 20.

Biological Effects of Radiation

We tend to think of biological effects of radiation in terms of their effect on living cells. For low levels of radiation exposure, the biological effects are so small they may not be detected. The body has repair mechanisms against damage induced by radiation as well as by chemical carcinogens. Consequently, biological effects of radiation on living cells may result in three outcomes: (1) injured or damaged cells repair themselves, resulting in no residual damage; (2) cells die, much like millions of body cells do every day, being replaced through normal biological processes; or (3) cells incorrectly repair themselves resulting in a biophysical change.

The associations between radiation exposure and the development of cancer are mostly based on populations exposed to relatively high levels of ionizing radiation (e.g., Japanese atomic bomb survivors, and recipients of selected diagnostic or therapeutic medical procedures). Cancers associated with high-dose exposure (greater than 50,000 mrem) include leukemia, breast, bladder, colon, liver, lung, esophagus, ovarian, multiple myeloma, and stomach cancers. Department of Health and Human Services literature also suggests a possible association between ionizing radiation exposure and prostate, nasal cavity/sinuses, pharyngeal and laryngeal, and pancreatic cancer.

The period of time between radiation exposure and the detection of cancer is known as the latent period and can be many years. Those cancers that may develop as a result of radiation exposure are indistinguishable from those that occur naturally or as a result of exposure to other carcinogens. Furthermore, National Cancer Institute literature indicates that other chemical and physical hazards and lifestyle factors (e.g., smoking, alcohol consumption, and diet) contribute significantly to many of these same diseases.

Continued pg. 22

Although radiation may cause cancers at high doses and high dose rates, currently there are no data to establish unequivocally the occurrence of cancer following exposure to low doses and dose rates—below about 10,000 mrem (100 mSv).

Even so, the radiation protection community conservatively assumes that any amount of radiation may pose some risk for causing cancer and hereditary effect, and that the risk is higher for higher radiation exposures. A linear, no-threshold (LNT) dose response relationship is used to describe the relationship between radiation dose and the occurrence of cancer. This dose-response hypothesis suggests that any increase in dose, no matter how small, results in an incremental increase in risk. The LNT hypothesis is accepted by the NRC as a conservative model for determining radiation dose standards, recognizing that the model may over estimate radiation risk.

High radiation doses tend to kill cells, while low doses tend to damage or alter the genetic code (DNA) of irradiated cells. High doses can kill so many cells that tissues and organs are damaged immediately. This in turn may cause a rapid body response often called Acute Radiation Syndrome. The higher the radiation dose, the sooner the effects of radiation will appear, and the higher the probability of death. This syndrome was observed in many atomic bomb survivors in 1945 and emergency workers responding to the 1986 Chernobyl nuclear power plant accident. Approximately 134 plant workers and firefighters battling the fire at the Chernobyl power plant received high radiation doses—80,000 to 1,600,000 mrem (800 to 16,000 mSv)—and suffered from acute radiation sickness. Of these, 28 died within the first three months from their radiation injuries. Two more patients died during the first days as a result of combined injuries from the fire and radiation.

Because radiation affects different people in different ways, it is not possible to indicate what dose is needed to be fatal. However, it is believed that 50% of a population would die within thirty days after receiving a dose of between 350,000 to 500,000 mrem (3500 to 5000 mSv) to the whole body, over a period ranging from a few minutes to a few hours. This would vary depending on the health of the individuals before the exposure and the medical care received after the exposure. These doses expose the whole body to radiation in a very short period of time (minutes to hours). Similar exposure of only parts of the body will likely lead to more localized effects, such as skin burns.

Conversely, low doses—less than 10,000 mrem (100 mSv)—spread out over long periods of time (years) don't cause an immediate problem to any body organ. The effects of low doses of radiation, if any, would occur at the cell level, and thus changes may not be observed for many years (usually 5–20 years) after exposure.

Genetic effects and the development of cancer are the primary health concerns attributed to radiation exposure. The likelihood of cancer occurring after radiation exposure is about five times greater than a genetic effect (e.g., increased still births, congenital abnormalities, infant mortality, childhood mortality, and decreased birth weight). Genetic effects are the result of a mutation produced in the reproductive cells of an exposed individual that are passed on to their offspring. These effects may appear in the exposed person's direct offspring, or may appear several generations later, depending on whether the altered genes are dominant or recessive.

Although radiation-induced genetic effects have been observed in laboratory animals (given very high doses of radiation), no evidence of genetic effects has been observed among the children born to atomic bomb survivors from Hiroshima and Nagasaki.

NRC regulations strictly limit the amount of radiation that can be emitted by a nuclear facility, such as a nuclear power plant. A 1991 study by the National Cancer Institute, "Cancer in Populations Living Near Nuclear Facilities," concluded that there was no increased risk of death from cancer for people living in counties adjacent to U.S. nuclear facilities. At the NRC's request, the National Academy of Sciences is currently engaged in a state-of-the-art update to the earlier study. The new study will examine cancer rates in communities around operating and decommissioned nuclear power plants, as well as nuclear fuel cycle facilities.

[October 2011] Reveiwed March 29, 2012

This fact sheet can be found online at: http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/bio-effects-radiation.html

U.S. NRC Fact Sheets & Brochures

Additional Fact Sheet and Backgrounder categories include:

Nuclear Security and Emergency Preparedness
- Incident Response
- Cyber Security
- Dirty Bombs
- Emergency Planning and Preparedness
  - Nuclear Fuel Facilities
  - Nuclear Power Plants
- Force-on-Force Security Exercises
- Radiation Source Security and Replacement
- Safety and Security Improvements
  - Fact Sheet, Backgrounder
- Storage of Spent Nuclear Fuel

Nuclear Materials and Waste
- Blending of Low-Level Radioactive Waste
- Byproduct Materials
- Depleted Uranium and Other Waste Disposal
- Dry Cask Storage of Spent Nuclear Fuel
- Failed Prostate Implant Procedures at VA Hospital in Pa.
- Irradiated Gemstones
- Irradiators
- License Application for Depleted Uranium at U.S. Army Sites
- Low-Level Waste Import Proposal
- Medical Event Risks
- Medical Use of Radioactive Materials
- Mixed Oxide Fuel
- Plutonium
- Polonium
- Radioactive Waste
- Reducing Spent Nuclear Fuel Hazards
- Transportation
- Tritium EXIT Signs
- Uranium Enrichment
- Uranium Mill Tailings
- Uranium Recovery
- Veterans Affairs Medical Events in Pa.
- Yucca Mountain Licensing

Nuclear Reactors
- Nuclear Reactors
- Chernobyl Accident
- Decommissioning
- Deregulation
- Environmental Monitoring
- Emergency Preparedness
- Fire Protection
- Improvements Resulting From Davis-Besse Incident
- License Renewal
- License Transfers
- Licensing Process
- New Nuclear Plant Designs
- Nuclear Insurance *(Price-Anderson Act)*
- Operator Licensing
- Oversight of Nuclear Power Plants
- Plant Performance after TMI Accident
- Power Uprates
- Reactor Pressure Vessel Issues
- Reactor Risk
- Research and Test Reactors
- Seismic Issues for Nuclear Power Plants
- Steam Generator Tube Issues
- Summary of Japan Events in March 2011 and NRC Response
- Three Mile Island Accident
- Tritium Production
- Tritium and Drinking Water Standards
- Underground Pipes at Nuclear Reactors

For these Fact Sheets and more, visit http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/

QUANTITY LIMITED!
Will not be restocked!

CBR Simulant Training Kit

Federal, State, and Local Government Agencies Only – Further Distribution Only as Authorized by TSWG; Unclassified

SIMKIT-07-03 *$750* *August 2007*

The Comprehensive **CBR Simulant Training Kit** is an updated version of the previous CBR Simulant Kit, combining the non-hazardous visual and odor simulants available in the original kit with additional CBR simulants. These simulants are not designed for use with detectors. There is no chemical similarity to agents other than look and smell. The kit is designed to assist a wide range of security and response personnel in recognizing low-purity chemical, biological, and radiological (CBR) materials that fall within plausible terrorist production capabilities.

https://www.cbrniac.army.mil/Products/Catalog/Pages/ViewItem.aspx?ID=SIMKIT-07-03

Temporary Price Reduction! Limited Quantities!

Explosive Simulant Kit

Federal, State, and Local Government Agencies Only – Further Distribution Only as Authorized by TSWG; Unclassified

SIMKIT-06-02 *~~$810~~ $700* *March 2006*

The **Explosive Simulant Kit** is a hands-on tool containing representative simulants of common commercial and improvised explosive materials as well as common initiators. These simulants consist of both visual simulants (look) and tactile simulants (feel). These simulants are not explosives and are not designed for use with detectors. There is no chemical similarity to explosives other than look and feel. The kit can be used by trainers, airport security, border security, law enforcement and other interagency users. Each kit includes a user manual that describes the simulated explosives and the precursors required to make these explosives.

https://www.cbrniac.apgea.army.mil/Products/Catalog/Pages/ViewItem.aspx?ID=SIMKIT-06-02

For more details, visit our online Product Catalog:
https://www.cbrniac.apgea.army.mil/Products/Catalog/Pages/default.aspx

US Government Market Surveys – CBRN Detection & DNA Purification

The Edgewood Chemical Biological Center (ECBC) is proud of the success and popularity over the last decade of our Market Surveys for Chemical, Biological, Radiological Detectors! Hard bound copies of the 2011 edition were distributed throughout the global defense community & the web site recorded more downloads than all previous versions combined.

ECBC would like to invite YOU & YOUR COMPANY to participate in the (ALL NEW) 2013 Global Chemical, Biological, Radiological Detector Market Survey by clicking on this link:

www.CBRNHorizonScan.com

This survey will be the biggest & most detailed yet!!! The new version is a collaboration with our international partners in Europe and the Pacific Rim to reach more companies than ever.

DON'T MISS A CHANCE TO MARKET YOUR PRODUCT.

The online survey has been revamped based on feedback received for the 2011 version. We are interested in your DETECTION SYSTEMS FOR CHEMICAL, BIOLOGICAL, and RADIOLOGICAL DETECTION. If you are interested in your system joining the many systems already being used by responders in this widely used survey, we invite you to click the link above and provide the required information.

The US Government is also conducting a market survey on DNA Purification Systems and Kits. This effort is focused exclusively on commercially available products.

Please visit this web site to submit your DNA Purification Kit or System:

http://www.SamplePreparationHorizonScan.com

The online survey consists of 25 questions and takes less than 15 minutes to complete. The information you provide will be used for inclusion in a product guide and may be used for planning purposes by the U.S. government. Please do not submit proprietary or classified information.

I would also like to bring to your attention a related Request for Information (RFI) for commercially available technologies that perform or enable sample collection of biological materials [Solicitation Number: W911SR-12-I-0001] which can be found on FedBizOpps at this link: https://www.fbo.gov/index?id=d634127b5bb092e43e00e0bc531ad0b5

We appreciate your participation and look forward to receiving your completed online surveys.

Peter Emanuel Ph.D.
US Army Edgewood Chemical Biological Center
peter.a.emanuel.civ@mail.mil