



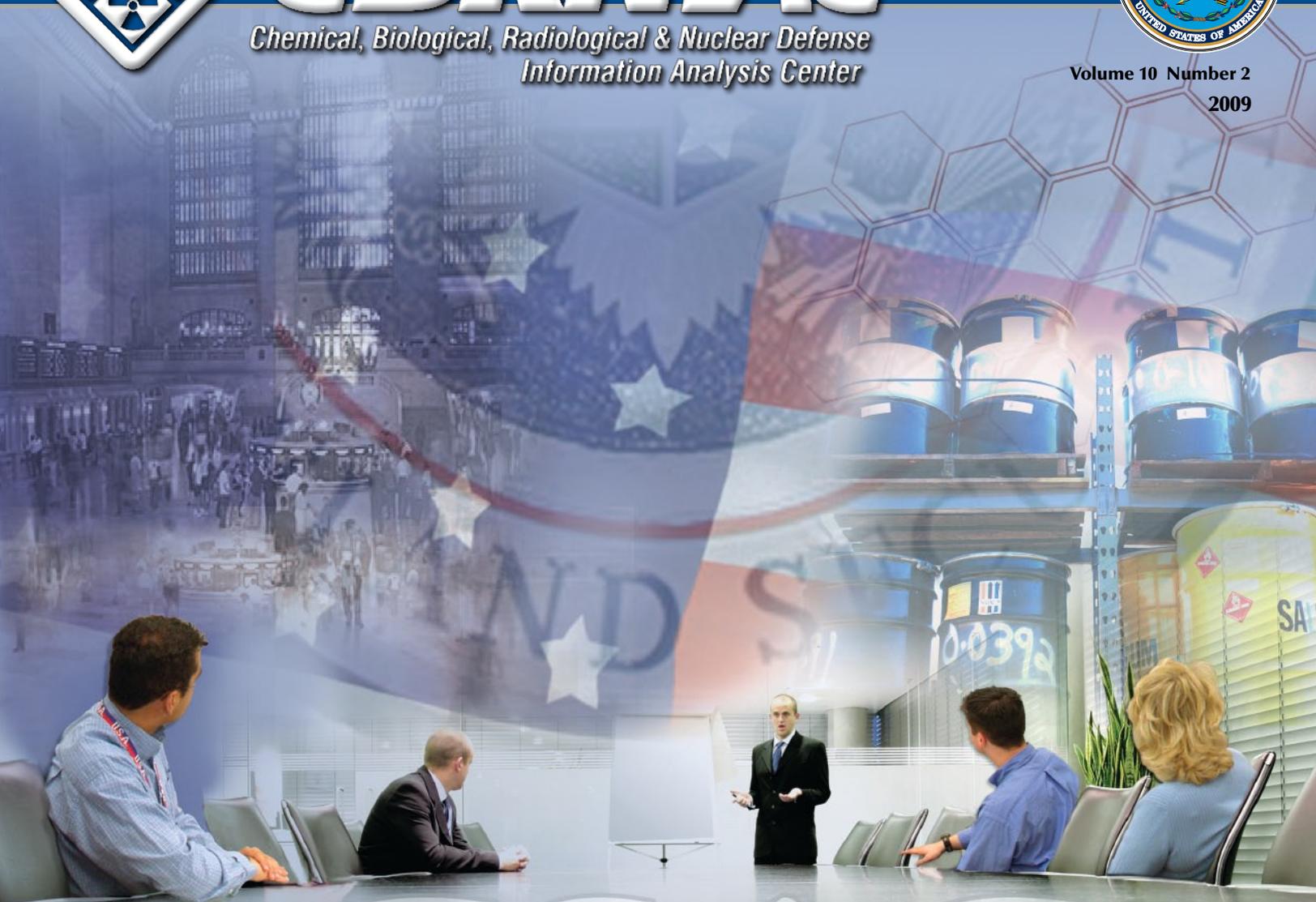
CBRN IAC

Newsletter



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

Volume 10 Number 2
2009



CSAC

The Chemical Security Analysis Center: Assessing the Hazard of Chemical Terrorism

Pine Bluff Ton Container Decontamination Facility

Environmental Health Support Emergency Response Training

Be a CBRNIAC Subject Matter Expert (SME)

The screenshot shows the CBRNIAC website interface. At the top, there is a navigation bar with links for Home, About CBRNIAC, Products & Services, and Technical Area Tasks. Below this is a search bar and a 'Go' button. The main content area is titled 'Subject Matter Experts' and features a sidebar with various links such as 'Calendar of Events', 'CBRNIAC Special Collection', and 'Inquiry Services'. The main text area contains a section titled 'Products & Services' with a sub-heading 'Would you like to be a CBRNIAC Subject Matter Expert (SME)?'. This section explains that CBRNIAC maintains a database of professionals who volunteer to support its mission. It also includes an 'SME FAQ' section with questions like 'What is a CBRNIAC SME expected to do?', 'How much of a time commitment is required?', 'Is my name published or released without my consent?', 'What subject areas of expertise are you seeking?', and 'What information do you require for your SME Database profile?'. The page concludes with contact information for the SME Application Form.

If your area of expertise falls within one of the CBRNIAC technical scope areas, you may qualify as a CBRNIAC SME!

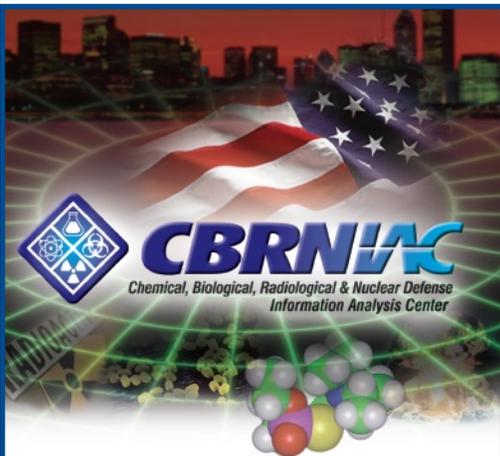
Complete the online [SME Application Form](#) to be considered for inclusion in the CBRNIAC SME database.

Learn more about this program at
<https://www.cbrniac.apgea.army.mil/Products/smes/Pages/default.aspx>

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2009



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.

The CBRNIAC is located in building E3330, Room 150, Aberdeen Proving Ground-Edgewood Area, Maryland 21010. For further information or assistance, visit or contact the CBRNIAC.

CBRNIAC
Aberdeen Proving Ground - Edgewood Area
P.O. Box 196 • Gunpowder, MD 21010-0196
410.676.9030 (phone) 614.458.0300 (fax)

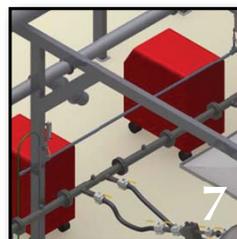
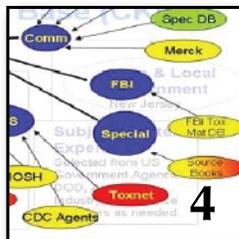
General Information & Core Program:
cbniac@battelle.org

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

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

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

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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 distributed in hardcopy format and 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. For each issue, articles must be received by the following dates:

- First Quarter (Number 1) – October 15th
- Second Quarter (Number 2) – January 15th
- Third Quarter (Number 3) – April 15th
- Fourth Quarter (Number 4) – July 15th

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The Chemical Security Analysis Center: Assessing the Hazard of Chemical Terrorism

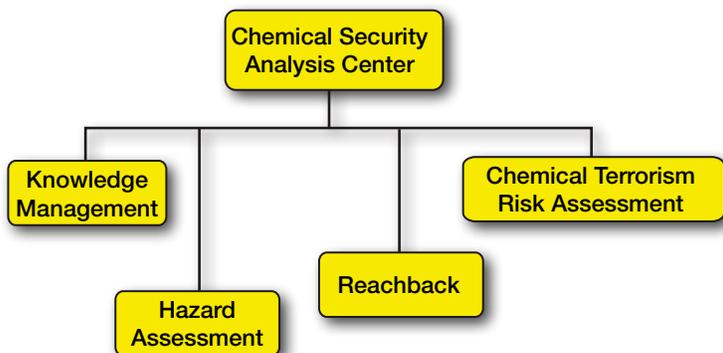
by Sharon Sharp, Chemical Security Analysis Center

The U.S. Department of Homeland Security (DHS) established the Chemical Security Analysis Center (CSAC) to provide a scientific basis for the awareness of chemical threats and the assessment of risks to the American public due to chemical hazards.

The DHS-sponsored CSAC infrastructure builds upon existing assets within the Department of Defense (DoD), Department of Justice, Environmental Protection Agency, National Institutes of Health, Federal Bureau of Investigation and the DHS's mutual interests and legacy investments, as well as the intelligence and law enforcement communities.

The CSAC is located at the Edgewood Area of Aberdeen Proving Ground to leverage Army expertise in the areas of chemical defense, chemical agents, and toxic industrial chemicals resident at the Proving Ground. The CSAC partners with organizations such as the Edgewood Chemical Biological Center, the U.S. Medical Research Institute of Chemical Defense, the U.S. Army Center for Health Promotion and Preventive Medicine, and the U.S. Army Chemical Materials Agency.

CSAC CORE PROGRAMS



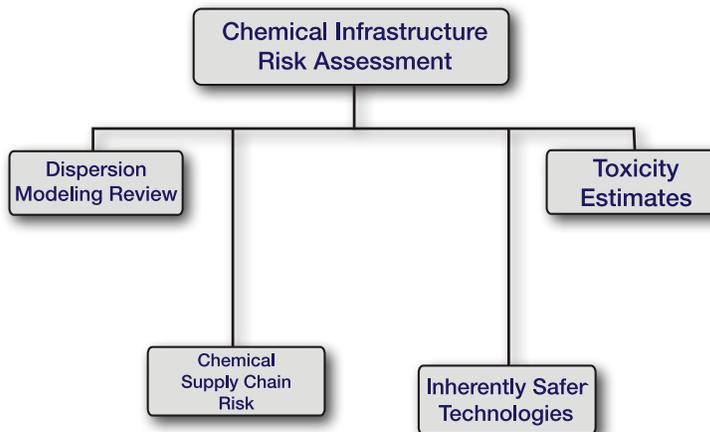
The CSAC is staffed from a variety of government organizations and outside contractors, each person selected based upon their individual expertise.

The permanent CSAC facility is under construction in the new Sample Receipt Facility and completion is anticipated by summer 2009. In the interim, DoD has provided temporary space to support the CSAC mission.

The CSAC primary responsibilities include:

- Promote awareness and assessment through characterization of current and emerging chemical threats and agent knowledge management;
- Analyze and integrate chemical threat characterization data, including toxic industrial chemicals, chemical warfare agents, and other chemicals of interest;
- Integrate science-based risk assessments using physical, chemical, and toxicological information of threat and vulnerability;
- Utilize knowledge management techniques to provide definition and direction for filling knowledge gaps;
- Offer definition and direction to conduct forensic analysis based upon evidence from chemical terrorism;
- Provide reachback capability to provide expert analysis support; and
- Address and integrate interagency knowledge management functions with evolving DHS all-hazard knowledge management.

CSAC ADDITIONAL PROGRAMS



Continued pg. 5

CORE PROGRAMS

The CSAC core programs include four areas of chemical interest: the DHS central database repository (Knowledge Management System), hazard assessments, a 24/7 reachback response to specific questions, and a biennial chemical terrorism risk assessment (CTRA).

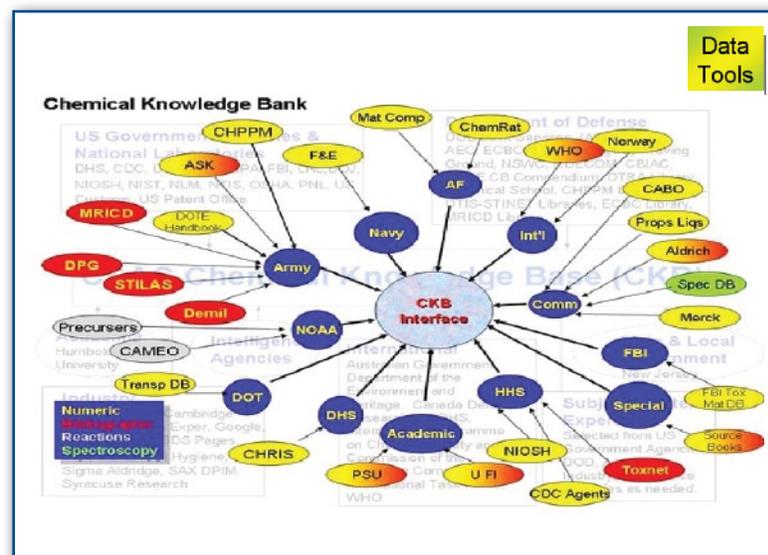
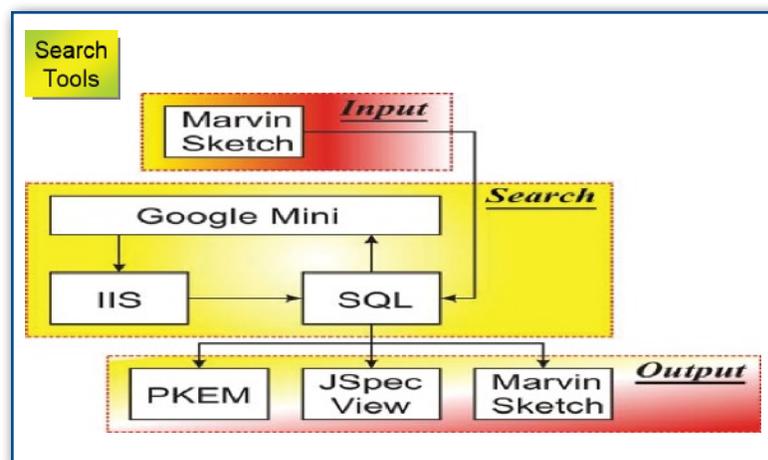
In addition to the core programs, CSAC also runs the Chemical Infrastructure Risk Assessment (CIRA), with its four projects, which include dispersion modeling review, chemical supply chain risk assessment, human toxicity estimates, and a review of inherently safer technologies.

CSAC Knowledge Management System

The CSAC's Knowledge Management System (KMS) is the DHS central repository of verifiable chemical hazard characterization data, that includes data related to toxic industrial chemicals, chemical warfare agents, pesticides, and pharmaceuticals.

This central depository has the capability for an efficient chemical data search, review, analysis and output. It supports all of the CSAC programs, including the core programs such as the development of hazard assessments, reachback responses, and risk assessments.

Interagency collaboration is utilized to identify data sets, information sources, and subject matter experts. The CSAC utilizes this extensive data repository to support all of its programs.

KMS Search and Bank Tools**Hazard Assessments**

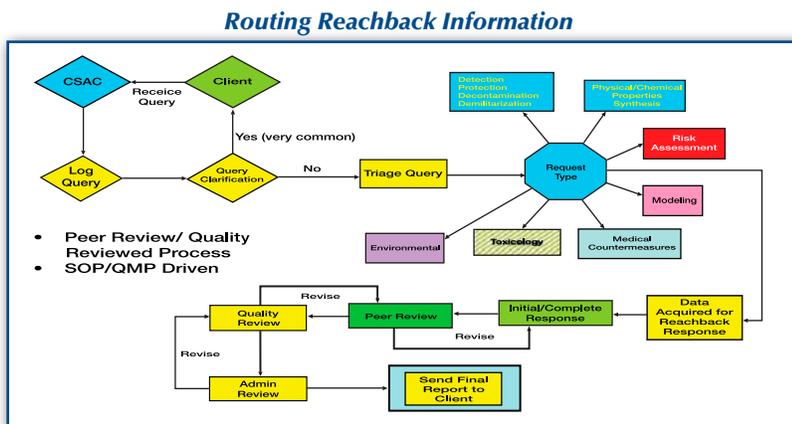
Population Threat Assessments (PTA) make predictions of public health risk hazards posed by potential chemical attacks on U.S. populations that are of the extent to result in mass casualties. PTA were developed primarily to inform Department of Health and Human Services of the hazards due to chemical threat materials, and will assist in driving medical mitigation decisions. Each assessment provides an in-depth analysis of a chemical class, taking into account physical properties, mechanisms of action, toxicity, health effects, dissemination methods, and environmental persistence.

Chemical Bulletins are peer reviewed reports intended for immediate publication as a synopsis for a specific hazard chemical. Reports include physical properties, nomenclature, synthesis, toxicology, emergency treatment, antidotal research, environmental issues, and possible terrorist scenarios.

Hazard Assessment Papers are similar to a PTA. The expected public health impact of a chemical attack is determined through plausible modeling, high-consequence scenarios. Each paper is a detailed assessment of one high-risk chemical.

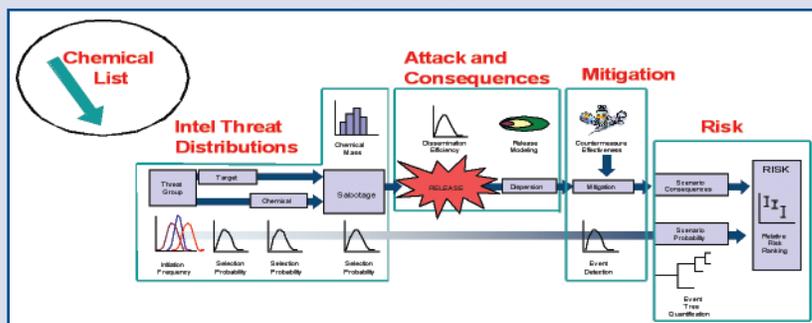
Source Book Series is key information reference and data required for detailed science-based assessments and analysis. Each book in the series includes a compilation of both intelligence and non-intelligence Science and Technology (S&T) information in a standard outline structure tailored for a specific agent or compound class.

Reachback provides subject matter expert analysis to execute a robust S&T based reachback response to questions posed by DHS and other federal agencies. Operations follow detailed methods laid out in a standard operating procedure (see flow chart on right). Chemical threat-related inquiries are answered on a twenty-four hour a day/seven days a week basis.



Chemical Terrorism Risk Assessment (CTRA) supports the development of a long-term risk-based strategy for chemical risk, integrating the findings of the intelligence and law enforcement communities with input from the scientific, medical, and public health communities. The CTRA determines the risk of a chemical attack on the public, taking into account the science of chemicals and human exposure, terrorist capabilities and intent, possibilities for different actions, potential for medical responses and mitigation, and the uncertainty of these factors.

CTRA-Probability Consequence Modeling

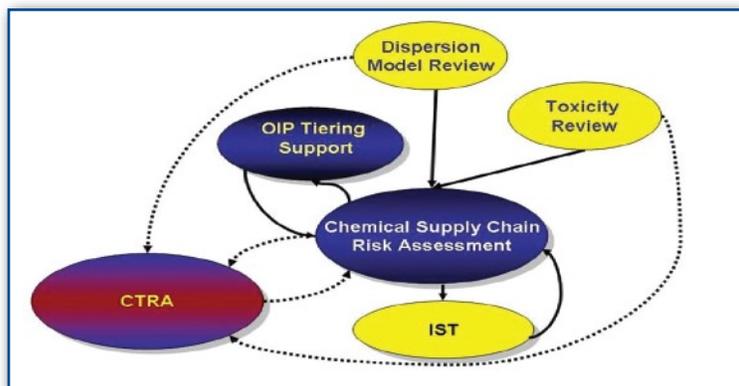


Overall risk of a chemical attack is established by multiplying its probability of successfully occurring by the consequence. To determine the probability of a chemical attack, the CTRA evaluates a sequence of 17 different events as an event tree; for a single chemical, the complete tree results in more than one million scenarios. Consequence modeling is utilized to determine the public health consequences of a chemical attack.

CSAC Special Programs

Chemical Infrastructure Risk Assessment (CIRA) evaluates risk to human health from a terrorist-initiated release of a chemical from the chemical supply chain. In support of this goal, the CSAC is reviewing and evaluating the large number of existing atmospheric transport and dispersion models and will select the most appropriate chemical dispersion model(s) for scenario of interest that describe both immediate and downstream impacts.

CIRA – Transportation and Dispersion Model Evaluation



A specific and detailed probabilistic risk assessment will then be conducted that focuses on releases due to terrorist events at different points in the chemical supply chain (e.g., facilities, storage, and transportation); this will aid in prioritizing chemical infrastructure threats. Based on these results, inherently safer alternative technologies will be explored that may potentially reduce the risk to human health from the higher priority processes and chemicals.

FUTURE WORK

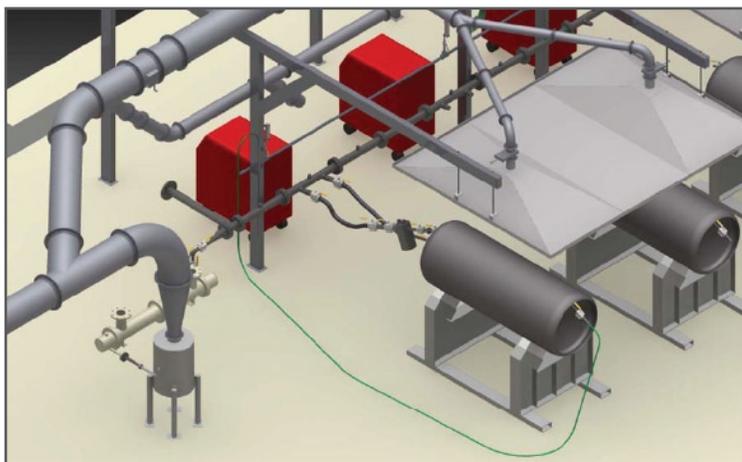
- Develop additional hazard assessments
- Expand the Reachback program
- Evaluate additional chemicals for the CTRA
- Broaden interagency involvement with the KMS
- Compile the most relevant data on chemical threat agents into the KMS
- Update the CTRA and CIRA every two years, incorporating new intelligence, technology, policies, and procedures. ♦

Pine Bluff Ton Container Decontamination Facility

By U.S. Army Chemical Materials Agency

In September 2003, the U.S. Army Chemical Materials Agency (CMA) began work to decontaminate and recycle 4,233 empty ton containers (TCs) stored at Pine Bluff Arsenal, Arkansas. While empty today, the 1,600-pound steel containers once held hazardous materials and required decontamination for residual chemical agent hazard.

CMA's Non-Stockpile Chemical Materiel Project (NSCMP) is using an electrical heating method known as magnetic induction heating to decontaminate the TCs. The process generates less waste than a liquid rinse process and provides more thorough decontamination. Increased safety, reduced environmental impact and quicker processing are benefits of electrical heating.



The TC decontamination process features a carefully designed venting system to capture any residual contaminants released from the TCs.

The TC decontamination process features a carefully designed venting system to capture any residual contaminants released from the ton containers.

Magnetic Induction Heating

Magnetic induction uses a magnetic field to raise the temperature of the TC. Insulation is placed over the container, and a copper coil is wrapped around the assembly. When the system is energized, the magnetic field causes the iron in the TC to heat up. The insulation prevents the heat from escaping, enabling operators to raise the surface temperature to the desired level.

CMA heats the TCs to 1,000°F for 60 minutes, well in excess of the standard required by the Army to achieve chemical agent decontamination. The process significantly reduces liquid waste.

How It Works

Operators bring the TC into the decontamination facility and put it in a glove box, where vent pipes and valves are installed. The TC



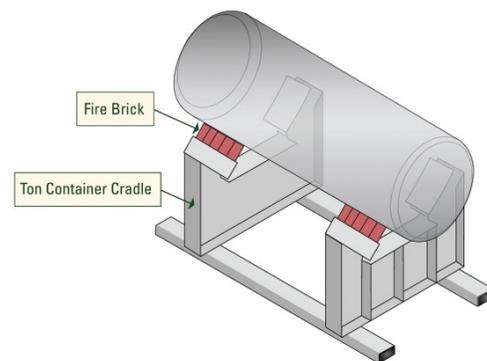
then is removed from the glove box, and operators weld on eight thermocouples, cover it with an insulating blanket and add the induction coil. A ball valve and pipe extension connects the TC's opening to the air manifold system, allowing the system to capture any contaminants.

The induction coil generates the magnetic energy needed to heat the TC, eventually reaching 1,000° F for a minimum of 60 minutes, ensuring decontamination to what the Army once termed 5X¹.

Next, operators cut power to the induction coil, remove the coil and remove the TC from the air manifold system. Workers then use a forklift to move the decontaminated TC, on its cradle, to an outdoor holding area for cooling.

TCs then are loaded onto flatbed trailers for transport to a treatment, storage and disposal facility in Andrews, Texas. The TCs are unloaded and cut in half crosswise (twice), and any remaining residue is removed from the TC halves.

The cleaned TCs are then sent to a metals recycler. 



On its cradle, the TC rests on a layer of fire brick, preventing heat transfer to the metal supports during the decontamination process.

For more information on the Non-Stockpile Chemical Materiel Project, call Karen Drewen, (410) 436-4292. You may also visit our Web site at <http://www.cma.army.mil/nscmp.aspx>.

¹ Suitable for public/unrestricted release. See DA PAM 385-61, 17 December 2008, 55-56. http://www.army.mil/USAPA.epubs/pdf/p385_61.pdf



Contract Awards

Evaluate Cethromycin's Efficacy in Combating Category A and B Bioterror Agents

Advanced Life Sciences Holdings, Inc.
Woodridge, IL
\$2,000,000
March 19, 2009
By U.S. Department of Defense, Washington, DC

Develop a Vaccine-Production System That Can Respond Quickly to Biological Threats

Fraunhofer Center for Molecular Biotechnology
Newark, DE
\$12,000,000
March 10, 2009
By U.S. Department of Defense, Washington, DC

Development of a Chemical and Biological Mass Spectrometer (CBMS) for Use in Military Reconnaissance Vehicles

ICx Analytical Instruments
Arlington, VA
\$40,000,000
March 4, 2009
By Hankuk Communication Company, South Korea

Development of New Therapy to Treat Resistant Strains of NIAID Category A and B Priority Pathogens

Achaogen
San Francisco, CA
\$26,600,000
March 3, 2009
By National Institute of Allergy and Infectious Diseases, Bethesda, MD

Design and Construction of a New General Administrative Facility for Chemical Biological Defense Activities

Bradley/Nason JV LLC
Wilmington, DE
\$22,275,000
February 27, 2009
By U.S. Army Corps of Engineers, Baltimore, MD

Develop a Vaccine to Protect Against Glanders and Melioidosis

University of Georgia
Athens, GA
\$1,100,000
February 26, 2009
By U.S. Department of Defense, Washington, DC

Joint Chemical Agent Detector (JCAD) Increment I – Power Communications Adapter Kits

Smiths Detection, Inc.
Edgewood, MD
\$7,799,789
February 9, 2009
By U.S. Army Research, Development and Engineering Command, Acquisition Center, Aberdeen Proving Ground, MD

Development of a Plant-Based Vaccine for Bird Flu

Fraunhofer Center for Molecular Biotechnology
Newark, DE
\$8,700,000
January 30, 2009
By Bill & Melinda Gates Foundation, Seattle, WA

Development of Nuclear Radiation Detection Technologies

Dynasil Corp. of America
West Berlin, NJ
\$5,600,000
January 23, 2009
By Department of Homeland Security, Washington, DC

180,000 Units (5.4 million doses) of ThyroShield™ Potassium Iodide

Nukepills.com
Moorseville, NC
\$1,400,000
January 22, 2009
By Kuwait Ministry of Health, Kuwait

Contract to Build a Plant to Manufacture Influenza Vaccine for Use in Case of a Pandemic

Novartis AG
Basel, Switzerland
\$486,000,000
January 15, 2009
By U.S. Department of Health and Human Services, Washington, DC

Production of the SAMOA (Système d'Alerte Mobile Avancée – Advanced Mobile Alert System) for the French Army

EADS Defence & Security
Newport, United Kingdom
\$45,400,000 (€ 35,000,000)
January 2009
By Delegation Generale pour L'armement (DGA), Ministry of Defence, France



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

Serving the CBRN Defense and Homeland Security communities

Environmental Health Supports Emergency Response Training

by Center for Domestic Preparedness Public Affairs

Emergency situations require quick response for the recovery and safety of those affected. Response methods aren't limited to extinguishing a fire, restoring power, or cleaning up hazardous materials. Underlying factors that may instantly affect a scene or will affect how emergency events unfold are often overlooked.

The Center for Domestic Preparedness (CDP) in Anniston, Alabama, recently partnered with the Centers for Disease Control and Prevention (CDC) in Atlanta, to deliver the inaugural Environmental Health Training in Emergency Response (EHTER) Introductory Level course at the CDP. The partnership will play a large role in the development of future EHTER course offerings at the CDP, which will provide Department of Homeland Security (DHS) funding for state, local, and tribal emergency responders.

According to the CDC, environmental health practitioners have important roles and perform critical functions during emergency response. Those functions include assessing shelters, testing drinking water, determining food safety, and controlling disease.

"Many factors in the environment can affect human health," said Rob Blake, chief of the Environmental Health Services Branch at the CDC. "All emergencies are local and all emergencies have an environmental component. This course increases readiness and ensures environmental health professionals are ready and have a certain level of awareness."

An additional benefit of the course is the unique insight it provides emergency response personnel. Pat Sullivan, a fire chief from Gulf Port, Mississippi, has been directly involved with several incidents that required a certain level of environmental knowledge to recover.

"Fire fighters normally worry about putting water on fires," said Sullivan. "Until a few years ago, we were never concerned that the water we're drinking or cooking with could be contaminated. Public health can help us plan on things we hadn't thought about, advise us about problems we're facing, and problems we may face in the next 12 hours. Then those events don't become another emergency—they



become another part of the operation that needs to be addressed."

According to the CDC, there is no current national, comprehensive, standardized education and training program in emergency preparedness and response for environmental health specialists. The EHTER course moves the nation toward a uniform training program that will benefit health practitioners and emergency responders who are first on the scene.

"It's shown me how we can interact with responders on scene and the support we can offer," said Jim Mazurowski, director of environmental health for Livingston County, N.Y., and a 2007 graduate of the CDC's Environmental Public Health Leadership Institute (EPHLI). "Many times, we're cut out of the conversation during emergencies and this course discusses why we need to be cut in. It's great training and gives a good picture of the environmental health role during emergency response. I see us as an asset to emergency responders first on the scene, to help understand issues and how the disaster may have affected infrastructure."

"I'm more educated and able to ask the right questions," added Sullivan. "Before this class, I might not have even thought about the question. You do yourself a disservice when you provide contaminated food and water to your own emergency personnel. Public Health is a tool that is underutilized. Incident commanders, fire personnel, law enforcement, and others in command roles need this course. They will understand that this is a tool that will help them do their job and make the incident go more smoothly."

The EHTER is three days long and includes presentations by environmental experts from around the U.S., including specialists from U.S. Public Health Service and the Food and Drug Administration (FDA). Future plans include conducting four pilot courses at the CDP over the next few months, before the course officially joins the CDP lineup. The CDC will oversee course delivery and continue to develop the class, in partnership with the CDP.

Continued pg. 10

Training *cont.*

"Public health response is a vital component of national response capability," commented CDP Superintendent Dr. Todd Jones. "In this multidiscipline field, environmental health professionals are an integral part of the overall know-how required to respond to natural or man-made incidents. Offering the EHTER course to state, local, and tribal environmental health resources through this innovative partnership between the CDP and CDC was simply the right thing to do. As we look to the future of this collaboration, our aim is to expand offerings that advance the professional competencies of environmental health emergency responders—and in doing so, increases the preparedness level of the nation as a whole."

Blake added that the new collaboration between the two organizations is a perfect blend—especially in the current financial climate.

"Travel and training budgets have been cut," he said. "The CDP's funding for state, local, and tribal responders allows them to receive excellent training and to prepare their communities. Although the course is primarily designed for the environmental health specialist, we're hoping that over time, we can encourage a good mix of other disciplines to attend, so they become aware of the need and we can learn from them—and so that they learn from us."

"This course will assist in the development of Alabama's formal Environmental Health Response Plan," commented the Alabama Department of Public Health Department's Tim Hatch—a 2009 graduate of the CDC's EPHLI. "I now have more information of what we need to include, so the baseline environmentalist has these skills. If an emergency happens—large scale or small scale—we'll have a staff who can respond."

Today's disaster response may be slightly different from a few years ago. With the revision of the Incident Command System and the addition of the National Response Framework, responding to an emergency is no longer a subject pulled from a bookshelf. Responders and commanders must use a common-sense approach and decentralize authority in order to succeed. Public health must also be considered during every response and recovery operation.

The CDP offers 39 courses, designed for all emergency response disciplines. CDP training features the latest techniques and procedures, as well as some of the best equipment available. CDP training for state, local and tribal responders is fully funded by the Federal Emergency Management Agency (FEMA), a component of DHS. Round-trip air and ground transportation, lodging, and meals are provided at no cost to responders, their agency, or jurisdiction.

To learn more about the CDP, visit <http://cdp.dhs.gov> or call 866-213-9553. For more information about the CDC, visit <http://www.cdc.gov>. ◆

FEMA leads and supports the nation in a risk-based, comprehensive emergency management system of preparedness, protection, response, recovery, and mitigation, to reduce the loss of life and property and protect the nation from all hazards including natural disasters, acts of terrorism, and other manmade disasters

Download These Resources from the CBRNIAC Web Site:

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- **USANCA NBC Reports**
- **USANCA Combating WMD Journals**
- **2009 CBRNIAC Product Catalog**
- **CBRNIAC Introductory Brochure**
- **Chemical Biological Material Effects (CBME) Database Brochure**
- **Patent Search Results for CB Defense**
- **CBRN Defense Current News**
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**Your one-stop shop for
CBRN Defense scientific
and technical information
resources**

CBIRF Marines and Sailors Conduct Maritime Operations for the First Time in Seven Years

By Sgt. Leslie Palmer, Chemical/Biological Incident Response Force

Most Marines and sailors at Chemical Biological Incident Response Force (CBIRF), II Marine Expeditionary Force are used to operating on land. In an effort to disengage from their comfort zones, CBIRF Marines and sailors took their training to different venues.

CBIRF Marines and sailors exercised their chemical, biological, radiological, nuclear, and high-yield explosive (CBRNE) consequence management skills at Eastern Shield, an exercise here March 17th. For the first time in seven years, Marines and sailors forged their way to simulated casualties on a wobbly ship in the midst of ocean waters.

"My intent is to be able to take away enough lessons learned from this operation and formalize some sort of a standard operating procedure for maritime operations, because we'll (CBIRF Marines and sailors) come down here again and do the same thing. We'll be that much more prepared," said Col. John Pollock, commanding officer, CBIRF.

Preparation in CBRNE consequence management is vital, explained Pollock, who helped develop the training package for CBIRF. While the procedures are nothing new, he said, the Marines and sailors are operating in a different environment than what they are used to.

"They are getting ready to conduct agent identification. They are going to go on board and do search and extract operations, sectoring off this big ship and go through it searching for casualties," Pollock explained. "As the extractors find casualties, they will properly package and extract them; moving the casualties to the decontamination line. Then, the casualties will be moved to the medical stabilization tent, where they will be transported to some sort of civilian medical facility for follow on treatment."

In addition to conducting maritime operations, CBIRF's technical rescue platoon set up a highline on top of the ship, which is used in technical rescue to transport casualties from a high to low location.

"We've never done a highline off of a ship before, and we learned it was difficult...just getting the rope off the boat to the deck (ground) was a real challenge...but, we completed the mission," said Cpl. Jeson Coleman, training noncommissioned officer, technical rescue platoon, Headquarters and Service Company, CBIRF. "We get the job done, whether it's on top of a boat or on top of a building."

Learning how to operate in a contaminated environment while on a ship proved to be a difficult task, Coleman explained. Overcoming fears and completing the mission was the best part of the training here, Coleman added.



MOREHEAD CITY, N.C.-Sgt. Mark Warner (left), Cpl. Emidio Tenaglia (right), technical rescue technicians, technical rescue platoon, Headquarters and Service Company, Chemical Biological Incident Response Force, II Marine Expeditionary Force, assist in getting a simulated casualty from the ship to the ground using a highline in a simulated contaminated environment at Eastern Shield, in an exercise March 17th, 2009. For the first time ever, Marines with the technical rescue platoon set up a highline; which is used to transport simulated casualties from high to low places.

"It was scary walking up the plank with all of my gear, my pack on my back; carrying my tools while the ramp was bouncing back and forth, but I got through it. What really made it difficult was having our gas masks on, while we were setting the highline up. It's really easy to misjudge distances in gas masks," Coleman explained.

As one simulated casualty noted at the exercise, it's important to prepare for a CBRNE incident, because responders must know their equipment to its fullest extent. It may be useful in times of life or death.

"In a situation like this, you have to know what you're doing. Teamwork and camaraderie are very important," said Navy Petty Officer 3rd Class Brad Farber, simulated casualty, a hospital corpsman assigned to 2nd Medical Battalion, Camp Lejeune, North Carolina.

Taking their training to an uncommon venue for CBRNE consequence management operations, CBIRF Marines and sailors disengaged from their comfort zones further sharpening their emergency response skills. ♦

This article also appeared in the April 9, 2009 issue of the South Potomac Pilot.

Original press release can be found at <http://www.marines.mil/units/marforcom/iimef/cbirf/Pages/2009/CBIRFMarinesandsailorsconductmaritimeoperationsforthefirsttime.aspx>

Learn more about CBIRF at <http://www.marines.mil/units/marforcom/iimef/cbirf/Pages/default.aspx>



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 15	Best Practices for Disaster Communications Arlington, VA http://www.homelanddefensejournal.com/Courses/2009Courses/Best-Practices-Disaster-Communications.html	Aug 26–29	4th International Conference on Nanotechnology – Occupational and Environmental Health Helsinki, Finland http://www.ttl.fi/Internet/English/Information/International+meetings+and+symposia/Nanoeh2009/
Jul 27–29	COURSE: Pandemics and Bioterrorism: From Realistic Threats to Effective Policies Cambridge, MA http://web.mit.edu/professional/short-programs/courses/combating_bioterrorism.html	Aug 30–Sep 2	ACHMM 2009 National Conference San Diego, CA http://www.achmm.org/sandiego2009/index.php
Jul 29–31	NACCHO Annual 2009 Conference Orlando, Florida http://www.naccho.org/events/nacchoannual2009/index.cfm	Sep 8–12	First Responders Congress Las Vegas, NV http://www.firstresponders.cc/
Aug 6–9	Emergency Planning & Response Conference Kansas City, MO http://www.marc.org/gti/lepc-terc/	Sep 9–10	2009 Homeland Security Symposium and Exhibition Arlington, VA http://www.ndia.org/events/9490/Pages/9490_2009HomelandSecuritySymposiumandExhibition.aspx
Aug 9–12	2009 National Conference on Community Preparedness Arlington, VA http://www.iaem.com/NCCP2009.htm	Sep 14–15	Don't Drink the Water Arlington, VA http://www.homelanddefensejournal.com/Courses/2009Courses/Dont-Drink-The-Water.html
Aug 11–13	10th Annual Hazardous Materials Conference Provo, UT http://publicsafety.utah.gov/firemarshal/IntrmtnHazmatConf09.html	Sep 14–16	Clean Pacific Portland, OR http://www.cleanpacific.org/
Aug 11–13	2009 West Coast Disaster Management Integration Sacramento, California http://events.jspargo.com/dmi09/public/mainhall.aspx?ID=8064&sortMenu=101000&exp=3%2f6%2f2009+7%3a05%3a48+AM	Sep 15	Incident Management Arlington, VA http://www.homelanddefensejournal.com/Courses/2009Courses/Incident-Management.html
Aug 14–21	12th Annual Force Health Protection Conference Albuquerque, NM http://chppm-www.apgea.army.mil/fhp/	Sep 15–17	Measuring Air Pollutants by Diffusive Sampling and Other Low Cost Monitoring Techniques Krakow, Poland http://rsc-aamg.org/
Aug 23–28	COURSE: Medical Management of Chemical and Biological Casualties Ft. Detrick and Aberdeen Proving Ground, MD https://ccc.apgea.army.mil/courses/in_house/BrochureMCBC.htm	Sep 21–24	ASIS 2009 Anaheim, CA https://www.asisonline.org/education/programs/anaheim/default.htm
Aug 25–29	Fire Rescue International 2009 Dallas, TX http://www.iafc.org/displaycommon.cfm?an=1&subarticlenbr=356	Sep 21–25	COURSE: Field Management of Chemical and Biological Casualties Aberdeen Proving Ground, MD https://ccc.apgea.army.mil/courses/in_house/brochureFCBC.htm

Continued pg. 13

Calendar *cont.*

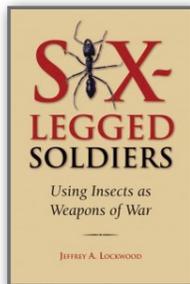
Sep 22–23	Frontline Disaster Planning Workshop Arlington, VA http://www.homelanddefensejournal.com/Courses/2009Courses/Frontline-Disaster-Planning.html	Nov 5–8	Responding to State-Assisted Terrorist Use of Chemical, Biological, Radiological or Nuclear (CBRN) Weapons Steyping, West Sussex, UK http://www.wiltonpark.org.uk/themes/defence/conference.aspx?confref=WP1003
Sep 24–25	Introduction to Terrorism & CBRNE – Basic Awareness Workshop Arlington, VA http://www.homelanddefensejournal.com/Courses/2009Courses/Introduction-Terrorism-CBRNE_Sep09.html	Nov 5–8	International Conference on Occupational Stress and Health San Juan, Puerto Rico http://www.apa.org/pi/work/wsh/2009/
Sep 27–Oct 2	Nanoelectronic Devices for Defense & Security (NANO-DDS) Conference Fort Lauderdale, FL http://www.nano-dds.com/2009/scope.shtml	Nov 7–11	APHA 137th Annual Meeting & Exposition Philadelphia, PA http://www.apha.org/meetings/
Oct 6–7	Anti-Terrorism and Force Protection Countermeasures Arlington, VA http://www.homelanddefensejournal.com/Courses/2009Courses/Anti-Terrorism-Force-Protection_Oct09.html	Nov 9–11	NHDF Symposium VII Colorado Springs, CO http://www.nhdf.org/2009_symposium.php
Oct 14	U.S. Patent & Trademark Office IT Security Day Alexandria, VA http://www.fbcinc.com/event.aspx?eventid=Q6UJ9A00IKTK	Nov 16–20	Chemical and Biological Defense Science and Technology (CBD S&T) Conference Dallas, TX http://cbdstconf.sainc.com/
Oct 18–23	COURSE: Medical Management of Chemical and Biological Casualties Ft. Detrick and Aberdeen Proving Ground, MD https://ccc.apgea.army.mil/courses/in_house/BrochureMCBC.htm	Nov 17–19	Clean Gulf New Orleans, LA http://www.cleangulf.org/
Oct 20–21	8th Annual Maritime Security Expo Long Beach, CA http://www.maritimsecurityexpo.com/	Dec 8–11	The Joint 6th Singapore International Symposium on Protection Against Toxic Substances (6th SISPAT) and 2nd International Chemical, Biological, Radiological & Explosives Operations Conference (2nd ICOC) Singapore http://www.sispat.com/
Oct 22–23	3rd International Conference on Maritime and Port Security Nantes, France http://www.nantes2009-maritimeportsecurity.com/#		
Oct 22–25	HOTZONE 2009 Houston, TX http://www.hotzone.org/hotzone/default.htm		
Oct 28–30	CBRNe Convergence Conference and Exhibition The Hague, The Netherlands http://www.cbrneworld.com/		
Nov 2–6	COURSE: Field Management of Chemical and Biological Casualties Aberdeen Proving Ground, MD https://ccc.apgea.army.mil/courses/in_house/brochureFCBC.htm		
			2010
		Feb 22–26	COURSE: Field Management of Chemical and Biological Casualties Aberdeen Proving Ground, MD https://ccc.apgea.army.mil/courses/in_house/brochureFCBC.htm
		Mar 1–3	International Security National Resilience (ISNR) Exhibition & Conference Abu Dhabi, UAE http://www.isnrabudhabi.com/
		Mar 14–19	COURSE: Medical Management of Chemical and Biological Casualties Ft. Detrick and Aberdeen Proving Ground, MD https://ccc.apgea.army.mil/courses/in_house/BrochureMCBC.htm



New CBRNIAC Information Resources

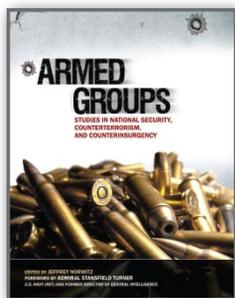
Lockwood, Jeffrey A. **Six-Legged Soldiers: Using Insects as Weapons of War.** New York: Oxford University Press, 2009.

"A remarkable story of human ingenuity—and brutality—*Six-Legged Soldiers* is the first comprehensive look at the use of insects as weapons of war, from ancient times to the present day." *(Inside Cover)*



CB-082633
ISBN 987-0-19-533305-3
Oxford University Press, Inc.
198 Madison Avenue
New York, NY 10016
Phone: 212-726-6000

Norwitz, Jeffrey H., editor. **Armed Groups: Studies in National Security, Counterterrorism, and Counterinsurgency.** Newport, Rhode Island: U.S. Naval War College, 2008.

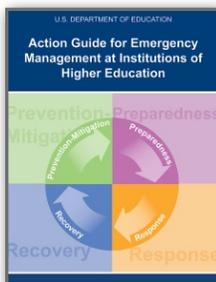


"This edited collection will consider armed groups to include classic insurgents, terrorists, guerillas, militias, police agencies, criminal organizations, war-lords, privatized military organizations, mercenaries, pirates, drug cartels, apocalyptic religious extremists, orchestrated rioters and mobs, and tribal factions. ... Armed groups are merely one vestige of mankind's struggle in an increasingly smaller world. Prevention of hostilities or rapid resolution thereof demands new solutions." *(Back Cover)*

CB-080502
ISBN 978-1-884733-52-9
U.S. Naval War College
686 Cushing Road
Newport, RI 02841-1270
Phone: 401-841-2236

Action Guide for Emergency Management at Institutions of Higher Education. Washington, DC: U.S. Department of Education, 2009.
<http://www.ed.gov/admins/lead/safety/emergencyplan/remSACTIONguide.pdf>

"This *Action Guide for Emergency Management at Higher Education Institutions* has been developed to give higher education institutions a useful resource in the field of emergency management. It is intended for community colleges, four-year colleges and universities, graduate schools, and research institutions associated with higher education entities, both public and private." *(Introduction)*

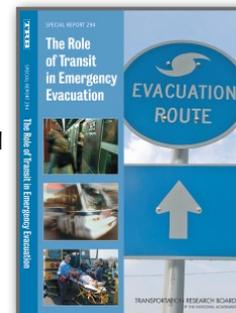


CB-083836
U.S. Department of Education
Office of Safe and Drug-Free Schools

400 Maryland Avenue, SW
Washington, DC 20202
Phone: 1-800-872-5327

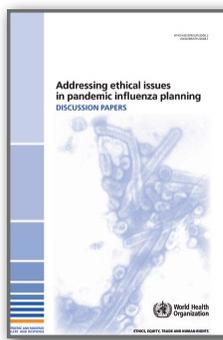
Committee on the Role of Public Transportation in Emergency Evacuation. **The Role of Transit in Emergency Evacuation.** Washington, DC: The National Academy of Sciences, 2009.
<http://onlinepubs.trb.org/Onlinepubs/sr/sr294.pdf>

"This study was requested by Congress and funded by the Federal Transit Administration (FTA) and the Transit Cooperative Research Program to explore the capacity of transit systems serving the nation's 38 largest urbanized areas to accommodate the evacuation, egress, or ingress of people from or to critical locations in times of emergency." *(Preface)*



CB-080936
ISBN 978-0-309-11333-5
The National Academies
Transportation Research Board
500 Fifth Street, NW
Washington, DC 20001
Phone: 202-334-2987

Dept. of Epidemic and Pandemic Alert and Response. **Addressing Ethical Issues in Pandemic Influenza Planning: Discussion Papers.** Geneva, Switzerland: World Health Organization, 2008.
http://www.who.int/csr/resources/publications/cds_flu_ethics_5web.pdf



"In March 2006, the World Health Organization (WHO) convened four working groups to review the literature and develop preliminary conclusions on key ethical issues in pandemic preparedness and response. The working groups included experts in ethics, law, and public health, WHO staff, and country representatives. This volume includes the background papers prepared by the chairpersons in consultation with their working group members." *(Introduction)*

CB-080250
World Health Organization
Department of Epidemic and Pandemic Alert and Response
20 Avenue Appia
1211 Geneva 27
Switzerland
Phone: 41-22-791-3264



In the News

Universities Plan Homeland Security Study

UPI.com

April 7, 2009

"Purdue and Rutgers universities will co-lead a U.S.-Canadian research group in a six-year, \$30 million U.S. Department of Homeland Security study. The researchers said they will create methods and tools to analyze and manage data in preparing for, preventing, detecting, responding to and recovering from terrorist attacks as well as natural and man-made disasters."

http://www.upi.com/Science_News/2009/04/07/Universities-plan-homeland-security-study/UPI-89661239124956/

University Consortium is Recommended Bidder for National Nuclear Lab

The University of Manchester News Release

March 23, 2009

"A consortium of Serco, Battelle and The University of Manchester has today been named Recommended Bidder to run the UK National Nuclear Laboratory (NNL)... The contract is for an initial 3 year period with 2 further option years."

<http://www.manchester.ac.uk/aboutus/news/display/?id=4514>

New Technique Used to Profile Anthrax Genome

ScienceDaily

March 20, 2009

"Scientists at the Georgia Institute of Technology have used a new approach, known as RNA-Seq, to profile the gene expression of the bacterium that causes anthrax, *Bacillus anthracis*. Their study, published March 20, 2009 online by the *Journal of Bacteriology*,... provides a much more detailed view of how bacteria regulate their gene expression."

<http://www.sciencedaily.com/releases/2009/03/090320102134.htm>

New Vaccine Delivered Via Smoothie

UPI.com

March 17, 2009

"A new generation vaccine has big benefits beyond eliminating the 'ouch!' factor, say U.S. researchers working on a vaccine delivered via

a smoothie. Mansour Mohamadzadeh of the Northwestern University Feinberg School of Medicine in Chicago have developed a new oral vaccine using probiotics..."

http://www.upi.com/Health_News/2009/03/17/New_vaccine_delivered_via_smoothie/UPI-15671237348013/

FDA Assessing Feasibility of Using Nanotechnology Test to Detect Anthrax Following a Bioterrorist Attack

FDA News

March 17, 2009

"The U.S. Food and Drug Administration has completed a 'proof-of-concept' study of a test that quickly and accurately detects the presence of even the smallest amount of the deadly anthrax toxin."

<http://www.fda.gov/bbs/topics/NEWS/2009/NEW01975.html>

Tissue-Cultured Smallpox Vaccine Appears Promising

Science Centric

March 11, 2009

"Administration of a tissue-cultured smallpox vaccine showed signs of an effective vaccine response with no serious adverse events, according to a study in the 11 March issue of JAMA."

<http://www.sciencecentric.com/news/article.php?q=09031141-tissue-cultured-smallpox-vaccine-appears-promising>

Drug Blocks Two of World's Deadliest Emerging Viruses

Weill Cornell Medical College Press Release

March 5, 2009

"...according to a new basic science study by researchers at Weill Cornell Medical College in the Journal of Virology... The researchers, based in Weill Cornell's pediatrics department, were surprised by their discovery that chloroquine, a safe, low-cost agent that has been used to combat malaria for more than 50 years, is a highly active inhibitor of infection by Hendra and Nipah."

http://news.med.cornell.edu/wcmc/wcmc_2009/03_05_09.shtml

Continued pg. 16

Vol. 6 No. 2 of the Chem-Bio Defense Quarterly Magazine is Now Available!

Joint Project Manager Chemical Biological Medical Systems (CBMS) has achieved unprecedented success and continues to overcome the evolving challenges of pharmaceutical advanced development through the fully integrated and parallel execution of the Defense Acquisition System and the FDA regulatory process. Our extensive organizational experience in this unique niche and our mission focus on CBRN Medical Countermeasures places CBMS at the forefront of protecting the Warfighter and nation. In the CBMS articles that follow, you will learn more about the innovative products and technologies CBMS has in advanced development to meet the Warfighter's needs.

To view the electronic version, visit: <http://www.jpeocbd.osd.mil/packs/Default.aspx?pg=420>

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Experimental Vaccine Protects Animals From Deadly Ebola Virus; May Prove Effective in Developing the First Human Vaccine
Southwest Foundation for Biomedical Research News and Publication

February 26, 2009

"Protection against Ebola, one of the world's deadliest viruses, can be achieved by a vaccine produced in insect cells, raising prospects for developing an effective vaccine for humans, say scientists at the Southwest Foundation for Biomedical Research (SFBR)."

<http://www.sfbr.org/News/detail.aspx?id=157>

Warwick University Step Closer to Anthrax Cure
CoventryTelegraph.net

February 25, 2009

"Researchers at Warwick University have made a discovery that could lead to a cure for the deadly disease anthrax."

<http://www.coventrytelegraph.net/news/coventry-news/2009/02/25/warwick-university-step-closer-to-anthrax-cure-92746-23006836/>

Simple Elixir Called A 'Miracle Liquid'

Marla Dickerson

LA Times

February 23, 2009

"It's a kitchen degreaser. It's a window cleaner. It kills athlete's foot. Oh, and you can drink it. The stuff is a simple mixture of table salt and tap water whose ions have been scrambled with an electric current. Researchers have dubbed it electrolyzed water...a substance that scientists say is powerful enough to kill anthrax spores without harming people or the environment."

<http://www.latimes.com/news/printedition/front/la-fi-magicwater23-2009feb23,0,1620173.story>

Universal Detection Technology Working with the U.S. Department of Commerce to Market Its Anthrax Detection Equipment in Iraq
MSNBC.com

February 17, 2009

"Universal Detection Technology announced today that through its deal with US Department of Commerce's Commercial Service, it is promoting the Company's handheld assays, used for detection of up to five bioterrorism agents. ...The kits are designed to test for anthrax, botulinum toxin, Ricin, plague (*Y. Pestis*) and SEBs in as little as 3 minutes."

<http://www.msnbc.msn.com/id/29242406/>

Veterinary College Researchers Work to Protect People from Deadly Effects of Nerve Gases

Jeffrey Douglas

Virginia Tech News

February 17, 2009

"A veterinary pharmaco-toxicologist in the Virginia-Maryland Regional College of Veterinary Medicine at Virginia Tech is leading a team... to explore the development of a nanotechnology-based approach for protecting people from the deadly effects of nerve gases like Sarin, VX, and others that can be used as agents of terror...The experiments will involve the use of nanoparticles called fullerenes—commonly known as "Buckyballs"—that have been modified to enhance their water solubility and catalytic and antioxidant properties."

<http://www.vtnews.vt.edu/story.php?relyear=2009&itemno=97>

Scientists Uncover Secrets of Potential Bioterror Virus

The University of Texas Medical Branch at Galveston Public Affairs
Office Release

February 16, 2009

"Researchers at the University of Texas Medical Branch at Galveston have discovered a key tactic that the Rift Valley Fever virus uses to disarm the defenses of infected cells."

<http://www.utmb.edu/gnl/news/items/bioterror.shtml>

AF Officials Standardize Training For Nuke Inspectors

Daniel Monahan

Air Force Link

February 12, 2009

"Inspectors throughout the Air Force attended the first Nuclear Surety Inspector's Course from Feb. 2 to 6 at the Air Force Inspection Agency, Kirtland Air Force Base, N.M...The objective of the course is to standardize all training and certification of Air Force NSI Inspectors."

<http://www.af.mil/news/story.asp?storyID=123135364>

Progress Made Toward Smallpox Medication

UPI.com

January 12, 2009

"U.S. scientists say they have taken the first step toward developing a pharmaceutical medication to treat smallpox and the emerging human monkeypox."

http://www.upi.com/Science_News/2009/01/28/Progress_made_toward_smallpox_medication/UPI-65531233174304/

NNSA Recovers 20,000 Radioactive Sources From Around the United States

National Nuclear Security Administration Press Release

January 14, 2009

"The Department of Energy's National Nuclear Security Administration (NNSA) announced today that it has recovered over 20,000 excess and unwanted sealed radioactive sources in the United States. These sources are made from plutonium, cesium, americium, cobalt, strontium and other radioactive materials."

<http://nnsa.energy.gov/news/2270.htm>

DHS Approves \$450M Biothreat Lab at Kansas State

John Milburn

MSNBC.com

January 13, 2009

"The Department of Homeland Security has approved a site at Kansas State University for a \$450 million lab to study livestock diseases and some of the world's most dangerous biological threats."

<http://www.msnbc.msn.com/id/28628459/>

Nose-spray Vaccine Against Botulism Beneficial in First Tests
redOrbit.com

January 8, 2009

"A preclinical study found a new nasal spray vaccine to provide complete protection against a major botulism toxin, according to a study published today in the Nature journal *Gene Therapy*."

http://www.redorbit.com/news/health/1620388/nosespray_vaccine_against_botulism_beneficial_in_first_tests/

History of Army Chemical and Biological Decontamination – Part IV

By Jeffery K. Smart, U.S. Army Research, Development and Engineering Command Historian

This article is Part IV of a series of articles extracted from the *History of Army Chemical and Biological Decontamination*, by Mr. Jeffery K. Smart, U.S. Army Research, Development and Engineering Command (RDECOM) Historian, July 2007. This presentation is edited, with permission of the author, for the *CBRNIAC Newsletter*.

THE 1940's

Decontaminating Agents

Bleach



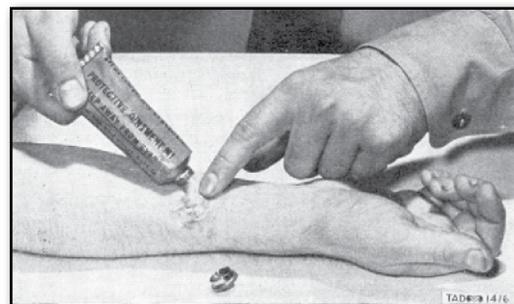
During World War II, the British provided information on new grades of bleach that had longer storage life than the U.S. grades. As a result, the Army standardized three new grades. Grade 1 had 35% available chlorine, but was unsuitable for tropic storage. It was classified limited standard in 1944

and then obsoleted in 1945. Grade 2 had 30% available chlorine and could be stored in the tropics for an extremely limited amount of time. It was classified substitute standard in 1944 and obsoleted in 1945. Grade 3, also referred to as British Topical Bleach, had 30% available chlorine and the lowest moisture content. This allowed for tropical storage up to four years. The cost of Grade 3 was also similar to Grade B, the standard bleach. Grade 3 was classified standard and Grade B was reclassified limited standard. Finding producers of Grade 3 bleach was a problem during World War II and much of the Army's bleach was imported from the British. During the war, the Army procured over 19,000 tons of bleach from American contractors and over 15,500 tons from the British through the reverse Lend-Lease program. After the war, the Army continued to have problems locating suppliers. The standardization of Super-tropical Bleach (STB) in 1950 convinced the Army not to pursue construction of Grade 3 production facilities but instead concentrate on STB production. Grade 3 was reclassified substitute standard and eventually obsoleted in 1956.²⁴



M4 Protective Ointment

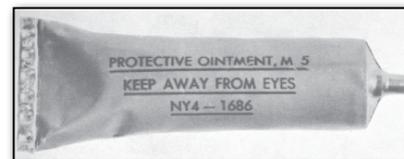
The first standardized protective ointment with some decontamination capability was designated M1 Protective Ointment in 1940. It was a jelly-like compound



consisting of dichloramine-T in triacetin and cellulose acetate butyrate that had 4.5% active chlorine. Initial testing indicated the ointment provided some protection against mustard agent. The Chief of the Medical Research Division at Edgewood Arsenal, Maryland, demonstrated the effectiveness of the ointment by rubbing it on his arm and then adding mustard agent. He still received a burn, but it was considered less severe and localized. Because the vesicant agent lewisite was also known as M-1, the protective ointment was redesignated M4 Protective Ointment in 1942 to eliminate the appearance that it was only for lewisite. Over 56 million tubes of the ointment were procured in 1941–1943. An additional 1.6 million were procured for special jungle use. Additional testing of the ointment during the war found it too irritating to human skin. After M5 Protective Ointment was standardized in 1943, the remaining stocks of M4 ointment were issued as a skin decontaminant.²⁵

M5 Vesicant Agent Protective Ointment

Continued research on protective ointments that were less irritating than M4 Protective Ointment led to the discovery of chloramine S-330 mixed with a jelly-like composition. The S-330, with 7.5% active chlorine,



liberated chlorine to neutralize blister agent. In the late 1950s, it was also found effective against V-type nerve agents, but not G-type nerve agents. The ointment could be applied before or after an attack. To be effective after an attack, it had to be used within five minutes or the blister agent would penetrate the skin and cause blisters. It could also be used to decontaminate small nonporous areas of equipment. The ointment was available in a collapsible metal .75-ounce tube as part of the M5 Protective Ointment Kit. After the later versions of the

Continued pg. 18

History *cont.*

M5 series Protection and Treatment Kits were obsoleted in 1969, M5 Protective Ointment was redesignated a separate end item called M5 Vesicant Agent Protective Ointment. After this action, the Navy kept M5 ointment as a standard item and it also remained a standard item for several Medical Supply Sets.²⁶

Biological Agent Decontamination

The establishment of the Army's biological warfare program at Fort Detrick, Maryland, during World War II led to a biological agent decontaminant program. Initial work concentrated on testing the standard decontaminants against biological agents. Bleach, particularly high-test bleach, was the most effective, although DANC [Decontaminating Agent, Non-Corrosive] was less corrosive on metal items. Other potential decontaminants examined included ethylene oxide, sulfur dioxide, formaldehyde, ethylene imine, and even the standard smoke agents. All had various problems and research on the topic continued after the war. In 1947, the Army initiated a second program to develop a better decontaminant for microorganisms. This program proved a significant challenge and the Army did not standardize a biological decontaminant developed under this program until 1960.²⁷

Nerve Agent Decontamination

Following the discovery of the German nerve agent program in 1945, the U.S. Army tested standard decontaminants against the new nerve agents (designated GA, GB, and GD). DANC was found to be unsuitable for the decontamination of nerve agents. Bleach slurry and dilute water solutions of alkalis were reported as effective decontaminants. Hot soapy water was also recommended, while cold water only partially removed the nerve agents.²⁸

Decontaminating Equipment

M2 Decontaminating Apparatus

The Army first began testing commercial fire extinguishers as possible decontaminating devices in 1934. The next year, the E4R1 Demustardizing Apparatus, a commercial 1-1/2-quart hand-held fire extinguisher called the Fyr Fyter and filled with CC1 solution, was tested on the U.S.S. Eagle. This was a successful test although the E4R1 was difficult to fill with decontaminant and had a small capacity. Additional tests were held by the Field Artillery at Fort Hoyle, Maryland, in 1936 using CC1 solution to decontaminate artillery pieces. The success of these tests indicated the need for a small



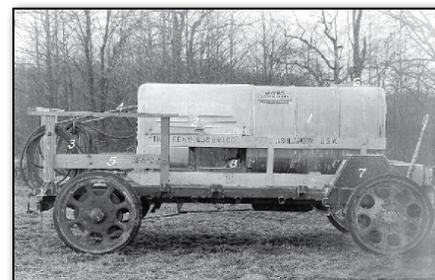
decontaminating device that could be easily carried on a vehicle and then used for decontaminating parts of vehicles and equipment that a soldier touched. In 1940, the E4R1 was standardized as the M2 1-1/2 Quart Decontaminating Apparatus. The unit held either CC1 or DANC and had a pump handle on top and the spraying nozzle on the bottom. It could



decontaminate approximately 12 square yards. During World War II, the Army procured over 1.9 million M2 devices. The primary problem with the unit was that the DANC made the brass parts corrode rapidly. In 1950, it was reclassified limited standard although still used by the Army and the Marines. The M2 unit was obsoleted in 1969 in favor of the M11 Decontaminating Apparatus, standardized in 1960.²⁹

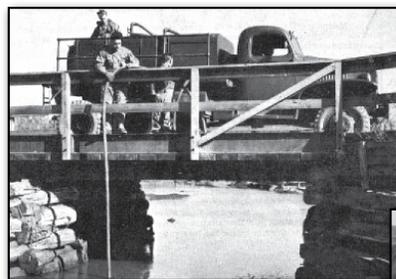
M3 Decontaminating Apparatus

The 1930s investigation of commercial powered orchard sprayers for use as a large-scale decontamination apparatus eventually led to the selection of one particular device for standardization. The Myers Silver Cloud Spray Outfit was modified



to handle the corrosive nature of bleaching powder and designated the E6R2. The unit consisted of a 300-gallon storage tank, an engine, a pump, and two spray guns. It was mounted on a steel frame with wooden skids and was designed to fit on a truck bed or a trailer. The unit used either CC1 solution or bleaching powder and water mix. The E6R2 was standardized as the M3 Power-Driven Decontaminating Apparatus in 1940 primarily for use with decontamination companies. Only six of the units were procured by 1941. Further testing of the M3 apparatus determined that the separate engine could be eliminated by mounting the unit on a truck and using the truck's engine. In 1943, the M3 was reclassified limited standard following the standardization of the M3A1 truck mounted decontaminating apparatus and the improved M4 skid mounted unit. Further procurement of the M3 stopped in 1943 and in 1945 the M3 was obsoleted.³⁰

M3A1 Decontaminating Apparatus



Following the standardization of the M3 Apparatus, the Army decided that the unit should be an integral part of a truck that used the truck's engine instead of a separate

engine. As a result, the M3A1 Power-Driven Decontamination Apparatus was standardized in 1941 for both the Army and the Army Air Corps. The unit consisted of a 400-gallon wood tank mounted on a standard Ordnance truck chassis. It was designed to spray bleach slurry by the use of a high-pressure pump and two spray guns. A separate heater unit was available for when the unit was used for cold weather decontamination or for troop showers. Over 1,500 of the units were produced during World War II. By 1943, it was replaced by improved versions and was reclassified limited standard. To reduce inventories, it was obsoleted in 1958.³¹

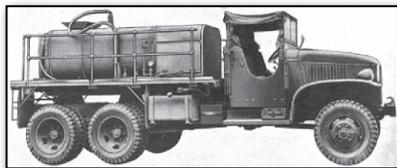


Continued pg. 19

History *cont.*

M3A2 Decontaminating Apparatus

Minor improvements in the design of the M3A1 Apparatus led to the standardization of the M3A2 Power-Driven Decontaminating Apparatus in 1943. The improvements included an improved pump, agitator, and piping arrangement. The Army procured 426 units during World War II and 62 units during the beginning of the Korean War. The Air Force procured 175 units and the Navy 82 units. One of the major problems with the M3A2 was that the wooden tanks were made of cypress sapwood that rotted in the tropics and allowed fungus growth. In 1952, the standardization of the improved M3A3 unit with a metal tank resulted in the M3A2 being reclassified to limited standard. The unit was then obsolete in 1971.³²



M4 Decontaminating Apparatus



The lack of available truck chassis to use for the M3A1 Apparatus and the need for shipment to the theater of operations led to the Army standardizing a skid-mounted version of the M3A1. Designated the M4 Power-Driven Decontaminating Apparatus, it consisted of a

wooden 400-gallon tank, a pump, an integral engine, and two spray guns. It was limited standardized in 1943 for use by the Army, Navy, and Army Air Corps. During the war, 2,625 units were procured. The skid-mounted configuration was thought to be better for shipment overseas, but it proved unpopular with field units. The M4 unit was replaced by the M3A3 Decontamination Apparatus and obsolete in 1958 due to problems with the gasoline engine maintenance.³³

M5 Decontaminating Apparatus

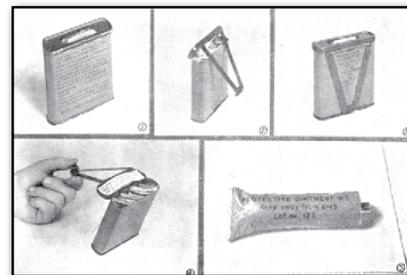
During World War II, one problem with the M3 and M4 series apparatus was that water had to first be mixed with the bleaching powder to create slurry. This could take up to 40 minutes to complete. In addition, there was a shortage of M3A2 Decontaminating Apparatus. This led the Army to investigate a commercial modified orchard fertilizer spreader to directly disseminate dry bleaching powder on roads, runways, and fields. By 1944, the Army identified the E2 Dry Agent Motorized Decontaminating Apparatus as the best design. It consisted of a hopper and two distributing fans mounted on a one-ton steel trailer. The unit could decontaminate approximately 14,000 square yards. The E2 was then classified as a limited procurement item. The Army Air Corps procured 200 units and sent most of them overseas for possible use on airfields. Further development work was dropped



on the E2, but in 1947, the Army standardized the E2 as the M5 Dry Agent Decontaminating Apparatus. Problems with the production of the M5 unit led to its reclassification as limited standard in 1949. The Army then decided there were no further requirements for a dry agent disseminator and obsolete the M5 in 1951.³⁴

M5 Protective Ointment Kit

The original shipping containers for M5 Protective Ointment tubes consisted of a metal can 3.5-inches wide, 4-inches high, and one-inch deep with a hinged waterproof lid. It held four tubes of M5 Protective Ointment for use with vesicant agents like mustard



and lewisite. Each tube was wrapped in cheesecloth for use as an applicator. Under the lid of the container was a spot for a small tube of British Anti-Lewisite (BAL) eye ointment. In 1944, this combination was standardized as the M5 Protective Ointment Kit. During World War II, the Army procured over 26.5 million kits and issued them to soldiers in the field where they were kept in the protective mask carrier. The kit was also part of the Gas Casualty Treatment Set issued by the Medical Corps. In 1950, the M5 kit was reclassified limited standard in favor of the M5A1 kit. The existing stocks of the M5 kit were then converted to M5A1 kits and the M5 kit was obsolete in 1953.³⁵ ♦

Endnotes

24. CWTC 953, 17 Mar 44; CWTC 1463, 4 Oct 45; CCTC 2174, 1 Sep 50; CCTC 3190, 20 Feb 56; *Report of Production*, 3.
25. CWTC 166, 12 Jul 40; CWTC 854, 3 Dec 43; CWTC 854, 3 Dec 43; AMCTC 7124, 23 Jul 69.
26. CWTC 854, 3 Dec 43; CCTC 2168, 25 Aug 50; AMCTC 7124, 23 Jul 69; TM 43-0001-26-1, *Chemical Defense Equipment*, 1982, p. 4-17; Leo P. Brophy, Wyndham D. Miles, and Rexmond C. Cochrane, *The Chemical Warfare Service: From Laboratory to Field* (Washington, D.C.: Office of the Chief of Military History, 1959), 92-93.
27. Rexmond C. Cochrane, *Military Biology and Biological Warfare* (Edgewood Arsenal, MD: Chemical Corps School, 1947), 240-247; Rexmond C. Cochrane, *Biological Warfare Research in the United States* (Office of the Chief Chemical Corps, 1947), 194-200; Memorandum, subj: Type Reclassification In-Process Review for the Decontaminating Agent, Biological, BPL, 11 Jul 78.
28. TM 3-500, 1961, 128.
29. Mankowich, 1:60-62; CWTC 164, 16 Jul 40; CWTC 279, 19 Nov 40; CCTC 2084, 17 Mar 50; CCTC 2282, 28 Feb 51; TM 3-500, 1961, 120.
30. CWTC 50, 30 Aug 39; CWTC 1466, 4 Oct 45; *Report of Production*, 2; Mankowich, 2:266-273.
31. CWTC 422, 16 Dec 41; CCTC 3407, 4 Feb 58; *Report of Production*, 2; Makowich, 2:273-276.
32. AMCTC 4923, 14 Sep 66; AMCTC 8698, 25 Mar 71; TM 3-500, 1961, 122; *Report of Production*, 2; Mankowich, 2: 276-279.
33. CWTC 664, 25 Feb 43; CCTC 3407, 4 Feb 58; AMCTC 8698, 25 Mar 71; *Report of Production*, 2; Mankowich, 2:279-283.
34. CCTC 1723, 20 Feb 47; CCTC 2707, 16 Nov 51; Mankowich, 1:102-105, 2:283-294.
35. CWTC 947, 17 Mar 44; CCTC 2168, 25 Aug 50; CCTC 3583, 12 Jun 59; CCTC 3769, 15 Aug 60.

Disclaimer

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CBRNIAC Co-Hosts Technical Forum on CBRN Scientific Information Collaboration

On February 5, 2009, the Chemical, Biological, Radiological and Nuclear Defense Information Analysis Center (CBRNIAC) co-hosted a technical forum on **Chemical, Biological, Radiological and Nuclear (CBRN) Scientific Information Collaboration**. The purpose of this Forum was to develop consensus statements on ways to mitigate gaps in current policies that control the sharing of CBRN scientific and technical information in an interagency environment.

Experts in the field of information sharing gathered in Arlington, Virginia to exchange ideas and suggestions for future endeavors that would make relevant and timely CBRN scientific information accessible to the CBRN defense community and Homeland Security professionals without compromising national security.

Mr. Ronald Evans, Director of the CBRNIAC welcomed participants and attendees.

Mr. Jean Reed, Special Assistant, Chemical Biological Defense and Chemical Demilitarization Programs, Department of Defense provided opening remarks.

Ms. Roberta Schoen, Director of Operations at the Defense Technical Information Center (DTIC), provided insight into DTIC's Information Sharing Policies.

Current status and gaps in *Scientific Information Sharing Progress and Policy* were addressed by representatives from several key agencies and organizations:

- **Dr. Peter Emanuel**, Chemical and Biological Policy Analyst, Office of Science and Technology Policy (OSTP) in the Executive Office of the President;
- **Rear Admiral Arthur Lawrence**, Assistant Surgeon General and Director, Department of Health and Human Services /Office of Security and Strategic Information (HHS/OSSI);
- **Dr. Lawrence Kerr**, Senior Bio Advisor to the Director, National Counterproliferation Center (NCPC) within the Office of the Director of National Intelligence (ODNI);
- **Dr. George Famini**, Director, Chemical Surety Analysis Center (CSAC), Department of Homeland Security (DHS);
- **Dr. Michael Kuhlman**, Director, National Biological Threat Characterization Center (NBTHC) of the National Biodefense Analysis and Countermeasures Center (NBACC), DHS; and

- **Dr. Tonya Nichols**, Acting Associate Division Director for the Threat and Consequence Assessment Division, Environmental Protection Agency's (EPA's) National Homeland Security Research Center (NHSRC).

Each speaker presented the view from his/her individual agency as it pertains to how information sharing is being done, not done, or not done well, and suggested ways in which interchange could be better facilitated through policy and other initiatives.

Mr. Don McGonigle, Knowledge Management (KM) and Information Operations, CBRNIAC, spoke on National Strategy Discussions and Consensus Building.

During lunch, guest speaker **Matt Wald** of Context Advisory Group provided a presentation on "Advancing CBRN Defense through Innovation Communities." In his talk, Mr. Wald urged participants to think about forming knowledge-sharing communities to find innovative solutions to large strategic problems in chemical and biological defense.

After lunch, attendees were directed to small group breakout sessions to develop "Consensus Statements." Following the breakout sessions, Don McGonigle summarized the results of the discussion groups with a presentation on "Scientific Information Collaboration Consensus Report Development."

Dr. James King, Deputy Director, CBRNIAC, brought the Forum to a close and adjourned the Forum at 3:30 pm. The proceedings of the Forum will be available as a CBRNIAC product in the near future.

About the CBRNIAC Subject Matter Experts

Ronald L. Evans is the Director of the CBRNIAC and has more than 30 years of senior level program management experience related to CBRN defense research, development and acquisition (RDA) and homeland security. As Director of CBRNIAC, Mr. Evans manages the Core program, the KM program and the technical area task (TAT) program. Mr. Evans earned a B.A. in zoology from the University of Washington, and an M.S. in logistics management from the Air Force Institute of Technology.

Jean Reed is Special Assistant, Chemical and Biological Defense and Chemical Demilitarization Programs, in the Office of the Assistant to the Secretary of Defense (Nuclear and Chemical and Biological

Continued pg. 21

Defense Programs). As Special Assistant, Mr. Reed has responsibility for oversight of chemical and biological defense programs throughout the Department of Defense and destruction of the United States stockpile of lethal chemical agents and munitions. Mr. Reed earned a B.S. in Physics (with Distinction) in 1960 and an M.S. in physics in 1963. He is a graduate of the National War College, the Army War College, and the Army Command & General Staff College, where he earned the degree of Master of Military Art & Science. He was a Research Fellow at the National Defense University and a Senior Army Fellow at the Army's Strategic Studies Institute.

Roberta Schoen is Director of Operations for DTIC. As the Director of Operations, Ms. Schoen deals with many issues impacting the marking of documents and the access to and sharing of scientific and technical information. She has worked in various capacities at DTIC since coming there as an intern in 1980. Ms. Schoen holds an MBA from George Washington University, a MLS from University of Maryland, and a B.S. in chemistry from University of Maryland.

Peter Emanuel, Ph.D. is currently assigned to the Homeland Defense and National Security Division within the OSTP in the Executive Office of the President. His work includes managing a portfolio on chemical and biological detection, decontamination, and protection issues as well medical countermeasures and related life sciences policies of interest to the science and technology community. Prior to joining OSTP he served as the Branch Chief of the BioDefense Team at the Edgewood Chemical Biological Center. Dr. Emanuel earned a Ph.D. in molecular and cell biology from the Pennsylvania State University and a B.S. in microbiology from the University of Maryland at College Park.

Rear Admiral Arthur J. Lawrence is the Director, OSSI. Dr. Arthur J. Lawrence, Jr., is a career officer in the U.S. Public Health Service (PHS) Commissioned Corps and serves as an Assistant Surgeon General. His current assignment is in the Office of the Secretary, DHHS. He has 36 years of active duty in the Corps and has served in clinical, management, and policy-making positions. In his current position, he is responsible for the oversight and policy management for physical security, personnel security, and strategic information for the Department. RADM Lawrence pursued undergraduate and graduate studies at the Massachusetts College of Pharmacy and is a clinical pharmacist. He holds an MBA focused on organizational development from Suffolk University, Boston, and earned a Doctor of Philosophy degree in management science and applied economics, with a concentration in social systems sciences, from the Wharton School of the University of Pennsylvania.

Lawrence D. Kerr, Ph.D. is the Senior Bio Adviser to the Director of the NCPC within the Office of the Director of National Intelligence. He joined the NCPC in April 2006. Prior to this, from 2001 to 2006, he was Director for Biodefense Policy with the White House Homeland Security Council and the OSTP. Dr. Kerr holds a B.S. in biology and history from the University of the South in Sewanee, Tennessee. Dr. Kerr completed his Ph.D. in cell biology at Vanderbilt University in 1990 and undertook his post-doctoral work in immunology and virology at the Salk Institute for Biological Studies in San Diego, California. Dr. Kerr is currently an Associate Professor of microbiology and immunology at Georgetown University School of Medicine in Washington, DC.

George Famini, Ph.D. is the Director of CSAC, which was established under the DHS in 2006. This center, co-located with Department of Defense assets at Aberdeen Proving Ground, Maryland, provides a scientific basis for the awareness of chemical threats and the assessment of risk to the American public due to chemical hazards. CSAC is the interagency resource for chemical terrorism information, and has ongoing interagency collaboration with several key assets within and outside DHS, including the DHHS, DoD, FBI, and EPA. Dr. Famini earned a B.S. degree in chemistry from Towson State University, an M.S. degree in organic chemistry from the University of Delaware, and a Ph.D. in Theoretical chemistry from Lehigh University.

Michael R. Kuhlman, Ph.D. is the Associate Laboratory Director, NBACC, and is a recognized leader in the field of biological threat characterization. Dr. Kuhlman regularly collaborates with key stakeholders in the Intelligence Community, the Department of Defense, and the Public Health Community. In his current role, he is responsible for leading the NBTCC of NBACC, the laboratory established for DHS. Dr. Kuhlman received his MSPH and Ph.D. degrees from the University of North Carolina School of Public Health.

Tonya Nichols, Ph.D. is the Acting Associate Division Director for the Threat and Consequence Assessment Division within the EPA's National Homeland Security Research Center. Dr. Nichols is the technical lead for the incident-based microbial risk assessment research program. She is the EPA Project Officer for the Support for Environmental Rapid Risk Assessment (SERRA) database that contains an extensive compilation of scientific information designed to assist in assessing and mitigating hazards in the aftermath of a bioterrorist event. She received her Ph.D. in microbiology from the University of Louisville and an M.S. in biology from Baylor University.

Matthew Wald is a founding partner of Context Advisory Group, a business consultancy that combines strategy, Web 2.0, social networking, and change management thinking to help organizations design, build, and govern Business Networks that immediately deliver value. He has held senior operating positions with global, multi-billion dollar technology and service organizations in the telecommunications, Information Technology (IT), and research and development industries. Mr. Wald earned his BSCIS from the Ohio State University.

Donald B. McGonigle is a Senior Research Scientist with Battelle and the manager of the KM and Information Technology Program for the CBRNIAC. Mr. McGonigle has over 27 years experience in all aspects of systems engineering and content management with specialized expertise in Chemical and Biological Warfare Defense solutions. He provides the national security community with information portals, databases, and collaborative systems. Mr. McGonigle earned his B.S. in biomedical engineering from Duke University.

James M. King, Ph.D. is the Deputy Director of the CBRNIAC. He oversees the Core and Knowledge Management Programs at the CBRNIAC. Dr. King has over 22 years of experience in the DoD, in a variety of senior level management and research and development positions, along with 11 years with the CBRNIAC. Dr. King holds a B.A. in history from New York University and an M.A. and Ph.D. in psychology from the University of Texas at Arlington. ♦

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Under contract with the Defense Technical Information Center (DTIC), the CBRNIAC and its IT group have developed and supported the critical information systems used by the CBRNIAC since its establishment (as the CBIAC) in 1986. Working with the subject-matter expertise and information resources of the CBRNIAC, IT services are uniquely able to offer custom CBRN Defense IT products, solutions, and content to the CBRN Defense and Homeland Security Communities.

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- Private sector organizations.

If you would like more information about how the CBRNIAC can enhance your organization's information and knowledge management capabilities, please contact John Campo, PMP, CBRNIAC IT Manager at 410-306-8527 or campo@battelle.org.

CBRNIAC Products

CBRNIAC Forum: The Future of Toxicology in CB Defense

Publication Date: 6-2008

CBRNIAC Number: CR-08-19

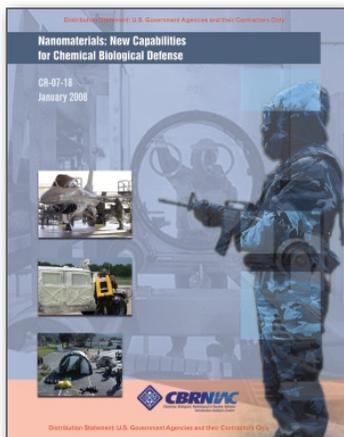
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On June 19, 2008, the CBRNIAC hosted its first “CBRNIAC Tech Forum” on Aberdeen Proving Ground, Maryland. Subject Matter Experts (SMEs) presented an informative overview of key topics related to “The Future of Toxicology in CB Defense.” The three topics discussed during this forum were “Investigational Drug Development,” “Animal Rule in FDA Licensure,” and “Alternatives to Animal Testing.” The slide presentations for each of the topics, along with a transcript of the Question and Answer session conducted at the end of the Forum are included in this CD.



Nanomaterials: New Capabilities for Chemical Biological Defense



Publication Date: 1-2008

CBRNIAC Number: CR-07-18

Distribution: U.S. Government Agencies and Their Contractors Only; Unclassified

Price: \$10

Nanomaterial development is advancing at a pace that is sure to yield important new capabilities applicable to CB Defense over the next five to ten years, specifically in areas related to Individual Protection (IP), Collective Protection (COLPRO), Contamination Avoidance (CA), and Decontamination (DECON). This report summarizes the CB Defense needs for IP, COLPRO, CA, and DECON, provides an overview of nanomaterial advancements, describes potential nanomaterials applications for improving IP and COLPRO, outlines potential nanomaterials for improving DECON, and provides a summary of potential uses of nanomaterials in other areas of CB Defense.

Proceedings of the 2007 Scientific Conference on Chemical and Biological Defense Research

Publication Date: 2-2008

CBRNIAC Number: SOAR-08-24

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This CD contains the complete proceedings of the 2007 Scientific Conference on Chemical and Biological Defense Research which was held from 13–15 November, 2007 in Timonium, MD. The conference addressed the full range of topics of interest to the chemical and biological defense community.



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