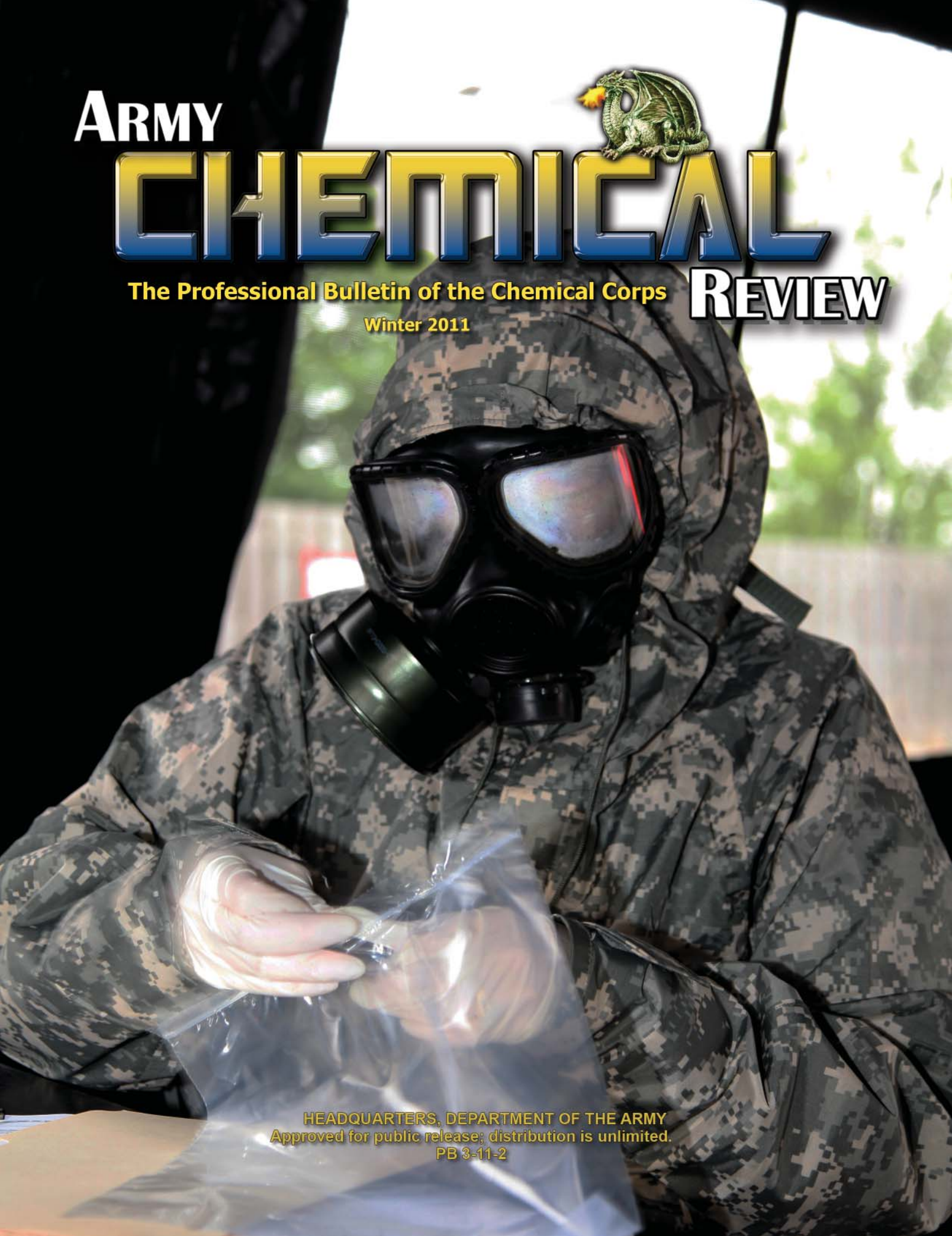

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U.S. Army
Chemical, Biological, Radiological, and Nuclear School
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COMMANDANT
COL Vance P. Visser **563-8053**
<vance.p.visser@us.army.mil>

ASSISTANT COMMANDANT
COL Jeffery Brodeur **563-8053**
<jeffery-brodeur@us.army.mil>

CHIEF OF STAFF
LTC Brant Hoskins **563-8052**
<brant.hoskins@us.army.mil>

COMMAND SERGEANT MAJOR
CSM Ted A. Lopez **563-8053**
<ted.lopez@us.army.mil>

DEPUTY ASSISTANT COMMANDANT– ARMY RESERVE
COL Jon Byrom **563-8050**
<jon.byrom@us.army.mil>

DEPUTY ASSISTANT COMMANDANT–NATIONAL GUARD
MAJ Javid Heravi **563-7676**
<javid.heravi@us.army.mil>

3D CHEMICAL BRIGADE
COL James Bonner **596-0016**
<james.bonner@us.army.mil>

DIRECTORATE OF TRAINING AND LEADER DEVELOPMENT
COL Nate Farmer **563-4111**
<nathaniel-farmer@us.army.mil>

PERSONNEL DEVELOPMENT OFFICE
SGM Montonya Boozier **563-7691**
<montonya.boozier@us.army.mil>

CHEMICAL DEFENSE TRAINING FACILITY
Mr. Daniel Murray **596-0608**
<daniel-murray@us.army.mil>

CHIEF OF DOCTRINE
MAJ Andrew Reichert **563-8189**
<andrew.reichert@us.army.mil>

G-37 AT–PUBLICATIONS
Managing Editor, Diane E. Eidson **563-4137**
<diane.eidson@us.army.mil>
Editor, Diana K. Dean **563-5004**
<diana.k.dean@us.army.mil>
Graphic Designer, Kathryn M. Troxell **563-5607**
<kathryn.troxell@us.army.mil>

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Back cover: Art work by Ms. Denise Sphar

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RAYMOND T. ODIERNO
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Chief of Staff

Official:

JOYCE E. MORROW
Administrative Assistant to the
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Chief of Chemical and Commandant,
U.S. Army Chemical, Biological, Radiological, and Nuclear School

Colonel Vance P. Visser

Fellow Dragon Warriors,

As Regimental Command Sergeant Major Ted A. Lopez and I travel around the world conducting Chemical Regiment business, leaders at all points stop us to sing your praises. Whether it's escorting convoys in Iraq, conducting weapons of mass destruction–elimination operations in Korea, or supporting homeland defense operations, you continue to prove yourselves as units and individuals. We are proud of what you have done—and are doing—in support of our Nation and our Regiment. Keep it up!

Serving as the commandant of the U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS) is an awesome and humbling experience. I would like to briefly review some of the milestones that we have achieved during the past year:

- **Regimental Campaign Plan:** The Regimental Campaign Plan, which was published in December 2010, charts a course of providing the latest equipment, tactics, techniques, and procedures and developing Soldiers and leaders toward an end state that will increase our capabilities. We are making excellent progress toward several of our interim goals. I invite you to keep up to date on this at the Chemical, Biological, Radiological, and Nuclear Knowledge Network (CKN) Web site at *<https://www.us.army.mil/suite/page/CKN>*.
- **Joint, Interagency, Intergovernmental, Multinational–Industry and Academia (JIIM-IA) Conference and Regimental Week 2011:** What a great conference we had here at Fort Leonard Wood, Missouri, in June 2011. It was great to see so many chemical, biological, radiological, and nuclear (CBRN) professionals in one place, sharing ideas, regaining common operational pictures, and reconnecting with old friends. Many of you have asked me about the new acronym *JIIM-IA*. Quite simply, this acronym is our way of acknowledging that the combating weapons of mass destruction enterprise encompasses much more than the Chemical Corps, but that we own a leading role in coordinating the efforts of the enterprise in support of the Nation's combating weapons of mass destruction objectives. We are looking forward to our next JIIM-IA Conference, which is scheduled for 25–29 June 2012 (see page 35).
- **CBRN response enterprise:** During the past year, half of the units in the Regiment have been racing to man, train, and equip for their new roles in the CBRN response enterprise. We have pressed hard to generate this new required capability, and I am proud to announce that, as I am writing this article, half of our Regiment has assumed their role in the CBRN response enterprise.

Another challenging year lies ahead. We will continue to support operations in Iraq and Afghanistan while remaining prepared to defend the homeland. In addition, we have been directed by the Army to join in the effort to design, train, and equip a force fit for the post-Operation Iraqi Freedom/Operation New Dawn and Operation Enduring Freedom era. The Army recently released Army Doctrine Publication (ADP) 3-0, *Unified Land Operations,*[1] which supersedes Field Manual (FM) 3-0, *Operations*,[2] and highlights several new operational concepts. Our challenge is to determine how to posture the Regiment with doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) solutions to support the Army and retain our leadership role in the JIIM-IA CBRN response enterprise throughout the next several years. A few of the latest initiatives related to these efforts include—

- **Doctrine reengineering 2015:** The release of APD 3-0 officially kicked off a major shift in Army doctrinal design. Gone are the days of bulky, unwieldy, overly proscriptive doctrinal manuals. Army keystone and capstone doctrine will consist of 16 ADPs, each of which outlines general concepts in 10 pages or less. CBRN doctrine will also undergo a shift so that it nests within the new doctrinal concepts and supports our evolving missions.
- **Corps redesign:** The Regiment must examine organizational capabilities and design in order to structure and enable our forces to meet the requirements of a new era.
- **Army Learning Concept 2015 implementation:** The USACBRNS will continue to refine training and instruction according to Army Learning Concept 2015. This program is designed to better prepare our professionals for new environments by taking advantage of previous learning experiences (such as those encountered in combat), recognizing generational learning differences, and making use of the latest information technologies.

(Continued on page 12)

Regimental Command Sergeant Major

To chemical, biological, radiological, and nuclear (CBRN) Warriors: As we prepare to again move into winter here at the Home of the Chemical Corps and the U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS), I hope that you have had a great summer, that you have spent time with your Families, and that you have enjoyed some rest as we have been preparing for the challenges of operating in all parts of the world. I am very excited about our future and the future of the Chemical Corps.

Command Sergeant Major
Ted A. Lopez

To the Corps: Your dedication to training and developing our young CBRN Warriors has paid off. The threshold has finally been broken, and the Advanced Individual Training here at USACBRNS has been updated. A new, approved program of instruction outlines the proper training for CBRN Warriors to conduct full spectrum operations upon arrival at their units. Our young CBRN Soldiers will graduate with technician level hazmat qualifications and will be capable of conducting mass casualty decontamination. The hours spent on biological and radiological operations have been increased. These changes will enable U.S. Army Reserve and National Guard units to stay ahead of operational demands and maintain a rhythm in consequence management.

I want to highlight the outstanding work that our CBRN Warriors are doing. I had the distinct honor of spending time with our Warriors in Afghanistan, where I received an operations briefing from the 1st Cavalry Division. Members of the CBRN cell provided a great overview of current and future operations as well as descriptions of the latest homemade explosives (HMEs) and improvised explosive device events.

The entire Combined Joint Task Force Paladin command team is doing an outstanding job of executing the explosive ordnance disposal and counter improvised explosive device/HME mission throughout Afghanistan. Thanks to the chief of staff and the rest of the command for their great sponsorship, which enabled me to complete my mission in country.

The 20th Support Command (Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives) has done an outstanding job of task-organizing Warriors to support Combined Joint Task Force Paladin—largely by placing CBRN Warriors in nontraditional positions. Specifically, the combined explosive exploitation cell laboratory has assigned CBRN Soldiers to work side by side with other trained experts to catalog items, take fingerprints, process evidence, and investigate HMEs to help convict ***bad guys***. Many of the Warriors employed by the 20th Support Command had never before been deployed. While many commands are skeptical about deploying without previous deployment experience, the situation paid dividends for the 20th Support Command.

I spent one morning in Bagram, where I toured a combined explosive exploitation cell laboratory that is operated by a 22d CBRN Battalion (Technical Escort) CBRN response team and civilian and international experts in explosives, forensics, laboratories, chemistry, and methods of evidence collection. I have spent a great deal of time in these types of laboratories, and I was very impressed with the capabilities of this particular one. It is a professional, well-managed laboratory with a reputation of helping to convict ***bad guys***.

I spent a day with two CBRN NCOs who are doing a fine job of running counter improvised explosive device/HME lanes on Bagram Airfield. Although these positions are traditionally filled by engineers, our CBRN NCOs are excelling at the jobs due to the unbelievable amount of knowledge they have gained on counter improvised explosive devices and HMEs.

The mighty 22d CBRN Battalion also executed some outstanding missions in Canada. The CBRN response team took sensitive-site exploitation to the next level, resulting in great training by great CBRN/explosive ordnance disposal Warriors.

I want to thank our CBRN Warriors, Families, Retirees, Civilians, and Friends for the support they give to our great Warriors and to the Chemical Corps. Team, many Soldiers have lost their lives as a result of off-duty accidents. I ask that you work hard to remind Soldiers to take extra time to think before engaging in high-risk activities associated with privately owned vehicles, motorcycles, and boats; swimming; and other items, interests, and pursuits.

Our future holds many challenges as the Army adjusts to the Nation's balanced budget. Our leaders must continue to follow the Army values and to guide our CBRN Warriors as a profession. Be safe, and may God bless you all.

Elementis, Regamus, Proelium!

Triadic Response to Biological Incidents: A Recommendation

By Colonel Anthony Cruz, Colonel Paul Scholl, and Colonel Vance P. Visser

"Our lack of preparation is *a real emergency."*

—Former U.S. Senator Sam Nunn[1]

Throughout history, there have been biological incidents for which society has been unable to sufficiently respond or adequately contain. For example, the bubonic plague is a biological disaster originating in Biblical times and extending through three pandemics, with the last epidemic occurring in the United States from 1924 to 1925.[2] *Influenza pandemics, avian influenza (or the bird flu), the Influenza A H1N1 virus subtype (or the swine flu), and severe acute respiratory syndrome (SARS) have also presented unintentional biological hazards.*

According to the Chemical and Biological Weapons Nonproliferation Program, James Martin Center for Nonproliferation Studies, Monterey Institute of International Studies, Monterey, California, these are but a few of the more than 415 biological incidents cataloged from 1900 to 1999.[3] More than 30 of the 415 incidents were terrorist-related incidents involving the use of a biological weapon.[4] The anthrax attacks that took place in the United States in 2001 represent just one example of the continuing threat of intentional, terrorist-related biological incidents. The anthrax attacks, which killed five people and sickened an additional 22 to 63, are collectively acknowledged as the worst biological terrorist attack in U.S. history.[5,6]

The impact of biological incidents may far exceed the capabilities of local or state responders. According to an *American Foreign Policy Interests* article entitled "U.S. Disaster Recovery Readiness for a Biological Terrorist Incident: Part Two," a "first-time experience for the local emergency management administrators . . . could place inordinate stress on inexperienced personnel, untested contingency plans, and asynchronous coordinative linkages between private health care organizations and governmental agencies."[7] Regardless of whether a biological incident is the result of an unintentional act or a terrorist attack, the inability of local or state officials to quickly isolate, contain, and react to the incident endangers lives, threatens infrastructure, and may damage the psychological well-being of our Nation.[8] Due to the potential for such significant and far-reaching impacts, a triadic approach to biological incident response (involving local, state, and federal officials) should be prepared in an attempt to limit damage. According to the U.S. Department of Health and Human Services, events surrounding the 11 September 2001 and subsequent attacks have revealed the need to develop the infrastructure and tools necessary to respond to potential future terrorist events, including bioterrorist attacks.[9]

Impact of Biological Incidents

During the Great Pandemic of 1918–1919, influenza killed an estimated 30 to 50 million people, including more than 675,000 Americans.[10] Figure 1 illustrates the worldwide distribution of the 1918 influenza outbreak and indicates significant concentrations of cases in the United States and Europe. Unfortunately, a lack of knowledge contributed to the spread of the disease. According to the conventional medical wisdom of 1918, influenza was spread by bacteria. However, medical science had only begun to understand the complexities of microorganisms and their role in disease. Influenza was incorrectly attributed to *Pfeiffer's bacillus*, in spite of the fact that researchers continually failed to find the bacterium during autopsies. Consequently, treatments were ineffective.[11] Furthermore, the use of antibiotics to treat the influenza would also have been unsuccessful due to the need for a vaccine to combat the disease. Unfortunately, the mutating nature of the virus, coupled with the lack of transmission identifiers, causes a slow identification process. In addition, the ever-changing nature of the influenza virus makes the development of a vaccine difficult.[12] While the Great Pandemic was a naturally occurring biological

Figure 1. Geographic distribution of the 1918 influenza outbreak

incident, the United States has also been the victim of biological agents used in an intentional terroristic nature.

Following the 11 September 2001 terrorist attacks on the United States, anthrax attacks occurred in four metropolitan areas—New York, New York; Washington, D.C; Trenton/Princeton, New Jersey; and Boca Raton, Florida. These attacks raised public concern regarding response capabilities at local and national levels.[13] A photo editor at American Media, Incorporated (AMI) in Boca Raton died of inhalation anthrax on 5 October 2001. Shortly thereafter, an AMI mailroom employee became ill and was also hospitalized with inhalation anthrax.[14,15] By the end of November 2001, the statistics were sobering—an estimated 22 to 63 people had been infected with pulmonary or cutaneous forms of anthrax.[16]

Beyond the toll taken on human life, the anthrax attacks also accounted for a significant cost in terms of disruption and decontamination. In addition to the costs stemming from direct remediation efforts, further costs resulted from disruptions to the U.S. Postal Service. The total cost of cleanup in the Washington, D.C., area alone exceeded $24 million.[17,18] However, when all U.S. Postal Service and additional personnel costs are eventually calculated, the total cost for response to the anthrax attacks may exceed $3 billion.

The first bioterrorist attack on the United States in the 21st century revealed the government's difficulty in responding to such incidents and highlighted the need for immediate training of law enforcement and government officials—even in the midst of the crisis. Due to the unconventional delivery method and conflicting initial and subsequent exposure estimates, government agencies disseminated confusing and contradictory information to the public.[19,20] The circumstances surrounding the anthrax attacks and the resulting problems with local, state, and federal agency response indicated the need for a combined effort in addressing the complex issues encountered in a biological incident.

Combined Response Actions

The government response to the anthrax attacks should not have come entirely as a surprise.[21] Local jurisdictions had purchased chemical and biological response equipment without the benefit of formal threat and risk assessments based on valid threat data, indicating that these agencies had acted without first identifying the problem.[22] Furthermore, the Dark Winter Exercise, which was conducted in June 2001, indicated that the Nation was woefully unprepared for a biological attack based on a smallpox scenario. The following shortcomings were identified during the exercise:[23]

- An attack could threaten vital national security interests.
- Current organizational structures and bureaucracies are not designed to deal with the response management of a biological incident.
- There is no existing U.S. health care surge capability—even when hospitals and the pharmaceutical and vaccine industries are taken into account.

- Working with the media is an immediate challenge.
- The use of a contagious pathogen as a bioweapon presents catastrophic challenges to political, cultural, operational, and legal systems.

An important additional lesson learned from the Dark Winter Exercise was that a response to this level of incident or attack greatly strains ad hoc relationships between state and federal agencies involved in the response. Moreover, this strain on relationships overwhelms the decisionmaking processes and the strategies, plans, and information systems required for a coherent response. The identification of these problem areas leads to the recognition of the need for a well-developed, preplanned response by local, state, and federal agencies.[24] Finally, the exercise also indicated that such a biological event would result in massive civilian casualties, cause a breakdown in essential institutions and services, prompt civil disorder, lead to violations of the democratic processes, and compromise national security.[25]

In 1998, the U.S. Congress approved the establishment of 10 National Guard civil support teams expressly to assist civil authorities in the event of a weapons of mass destruction incident. Congress later authorized the establishment of additional civil support teams. The current civil support team total is 55, with a team located in each state (and two in California), the District of Columbia, Guam, Puerto Rico, and the Virgin Islands.[26] In addition, the National Guard also acquired the Chemical-Biological Incident Response Force duties from the Marine Corps.[27] Consequently, the vast majority of response capability is now under National Guard mission command. Because the National Guard is a state (as opposed to a Department of Defense [DOD]) asset, the use of a civil support team falls under the purview of the state governor. This arrangement negatively impacts the time it takes to respond to an immediate weapons of mass destruction threat.

Although the Federal Bureau of Investigation (FBI) has specific weapons of mass destruction response capabilities, the agency responds in support of FBI investigations.[28] Thus, opportunities for a coordinated joint local, state, and federal response to a biological incident are limited. This situation is typical of local and state relationships with federal agencies; the main form of federal support is advice on how to handle the situation.[29] From a mission command perspective, as well as the perspective of personnel and equipment brought to bear, the response to a biological incident should be determined before the incident actually occurs in order to limit the damage to people, the infrastructure, and the psychological well-being of the Nation. For these reasons and the results identified during the Dark Winter Exercise, there is a need for a triadic response to these types of incidents.

Whole-of-Government Response

Although many hospitals and other urban facilities have adopted plans that address biological incidents, their inability to fund and maintain required response capabilities is a hindrance to effectively handling potential situations.[30] But the cost of failing to properly prepare for a biological incident may be exponentially greater than the cost of emergency preparedness programs designed to assist in responding to these incidents. In addition, the impact of a biological incident for which local or state agencies are unprepared may include political destabilization and social disruption.[31] Severe psychological effects may also occur.[32] Based on the need for immediate response capabilities to reduce these impacts, a combined, whole-of-government approach designed around local, state, and federal agencies should be included as an established and integrated aspect. This would allow the specific expertise and required resources to be brought to bear against biological incidents—regardless of whether those incidents are terroristic in nature.[33] While the need for preparedness is evident, that need must be weighed against budgetary restrictions and the likelihood that an incident will occur.

Given the constraints of current budget shortfalls and the statistically low threat of biological incidents, most local and state agencies cannot afford the equipment and training necessary to maintain an adequate response capability.[34] However, a partnership between local and state agencies and the federal government can be formed to create a quick-reaction team capable of immediately responding to biological incidents when they occur. Under such a partnership, the three levels of government must work together in an effective and efficient manner to prevent the additional loss of life and the possible economic impacts on infrastructure and sources of food and water.[35]

Due to the relatively lengthy incubation period of some diseases, local responses to biological incidents may take place without the direct knowledge of the actual precipitating incident. This can result in slow response times. Moreover, once the original incident has been recognized, the myriad of initial response actions required to prevent additional problems (surveillance, additional diagnoses, the establishment of prophylaxis and treatment regimes, and the provision of mortuary facilities) quickly exceeds local capabilities.[36] These local issues and actions occur in parallel with required state response actions.

States are responsible for coordinating resources and actions across the various local jurisdictions. In addition, state agencies are responsible for delivering federal assistance to local areas within a disaster region, which further taxes an already overburdened state system.[37] When responding local or state agencies become overwhelmed, they determine whether to call upon the federal government to coordinate, assist, or direct responses.[38] Requests for federal assistance are usually made by the state governor when local and state resources and capabilities are insufficient to contain the crisis.[39]

Factors that may be used to determine the requested level of participation from the federal government include the intended target, the potential consequences, and the capabilities of local or state authorities. It is this last factor for which a predetermined federal government response may be needed.

The Department of Health and Human Services is the federal agency with responsibility for medical and public health response.[40] However, DOD is responsible for supporting state agencies when the capacity of the state to respond is exceeded, when the mission is DOD-eligible, and when the request falls under DOD.[41] Although DOD is restricted from enforcing civilian law during domestic incidents, the agency is not restricted from supporting civil authorities—even if that support aids in enforcement.[42] According to the provisions of the *National Response Framework*,[43] "Many DOD components and agencies are authorized to respond to save lives, protect property and the environment, and mitigate human suffering under imminently serious conditions, as well as to provide support under their separate established authorities, as appropriate."[44] The use of DOD resources is further based on an evaluation of the legality, lethality, risk, cost, and impact on readiness. And more importantly, the aspect of appropriateness in using DOD personnel and resources in responding to a biological incident within the United States must also be considered.[45]

There are four separate situations for which the military may be called upon to assist domestic law enforcement agencies involved in handling a threat or act of terrorism:[46]

- Providing technical support and assistance to law enforcement and other crisis response personnel.
- Interdicting an event and apprehending those responsible.
- Restoring law and order following an incident.
- Abating the consequences of a terrorist act.

The first two situations represent crisis response actions, while the other two are considered consequence management actions.[47] Furthermore, the capability that DOD brings to a biological response may itself deter hostile actors.[48] For these reasons, the federal government—especially DOD—must be included in immediate, whole-of-government responses to biological incidents.

Regardless of where DOD personnel are deployed in support of biological incidents, the Secretary of Defense remains in command of DOD forces.[49] However, this mission command caveat should not preclude the use of DOD personnel and resources to protect the United States or defend our national security interests. The combination of local, state, and federal agencies in an immediate and combined response is vital in addressing local, state, and national concerns across the spectrum of biological incident response.

Conclusion

More than 400 biological incidents were recorded in the United States from 1900 to 1999.[50] A lack of preparation for these types of incidents constitutes a real emergency at local, state, and federal levels.[51] Consequently, a prepared, triadic response capability that includes local, state, and federal assets is required to protect U.S. national security interests.

The use of the federal government as a predetermined first responder is a prudent step in precluding the escalation of a biological incident beyond the capabilities of local and state first responders.[52] Without federal expertise and support, the social and economic costs of an incident may be insurmountable and the United States may suffer great harm. The inclusion of the federal government—specifically DOD—allows for a known response structure without the need for local and state agencies to maintain the complete response system in their budgets.

Endnotes:

[1]Sam Nunn, "Combating Terrorism: Federal Response to a Biological Weapons Attack," testimony before the House Government Reform Committee, Subcommittee on National Security, Veterans Affairs, and International Relations, 23 July 2001.

[2]"Bubonic Plague," *New World Encyclopedia*, 29 September 2008, *<http://www.newworldencyclopedia.org/entry/Bubonic_plague>*, accessed on 7 November 2011.

[3]Jonathan B. Tucker, "Historical Trends Related to Bioterrorism: An Empirical Analysis," *Emerging Infectious Diseases*, Vol. 5., No. 4, August 1999, *<http://wwwnc.cdc.gov/eid/article/5/4/99-0406_article.htm>*, accessed on 7 November 2011.

[4]Ibid.

[5]Robert J. Blendon et al., "The Impact of Anthrax Attacks on the American Public," *Medscape General Medicine,* 2002, *<http://www.medscape.com/viewarticle/430197>*, accessed on 7 November 2011.

[6]Tyler C. Cymet and Gary J. Kerkvliet, "What is the True Number of Victims of the Postal Anthrax Attack of 2001?" *The Journal of the American Osteopathic Association*, Vol. 104, No. 11, 1 November 2004, *<http://www.jaoa.org/cgi/content/full/104/11/452>*, accessed on 7 November 2011.

[7]Joseph W. Foxell Jr. and Robert E. McCreight, "U.S. Disaster Recovery Readiness for a Biological Terrorist Incident: Part Two," *American Foreign Policy Interests*, Vol. 24, Issue 2, April 2002, EBSCO Host Connection*, <http://connection.ebscohost.com/c/articles/10910127/u-s-disaster-recovery-readiness-biological-terrorist-incident-part-two>*, accessed on 7 November 2011.

[8]Ibid.

[9]"Performance and Accountability Report: Fiscal Year 2002," U.S. Department of Health and Human Services, *<http://www.hhs.gov/of/reports/account/acct02/sect1/progperform.html>*, accessed on 7 November 2011.

[10]"The Great Pandemic: The United States in 1918–1919," U.S. Department of Health and Human Services, *<http:///1918.pandemicflu.gov/the_pandemic/03.htm>*, accessed on 7 November 2011.

[11]Ibid.

[12]Caroline Ash and Leslie Roberts, "Influenza: The State of Our Ignorance," *Science,* Vol. 312, No. 5772, 21 April 2006.

[13]Blendon et al., 2002.

[14]Cymet and Kerkvliet, 2004.

[15]David Heyman, "Lessons From the Anthrax Attacks: Implications for U.S. Bioterrorism Preparedness," Center for Strategic and International Studies and Defense Threat Reduction Agency, April 2002, *<http://www.fas.org/irp/threat/cbw/dtra02.pdf>*, accessed on 7 November 2011.

[16]Cymet and Kerkvliet, 2004.

[17]Heyman, 2002.

[18]"Capitol Hill Anthrax: EPA's Cleanup Was Successful; Opportunities Exist To Enhance Contract Oversight," Report to the Chairman, Committee on Finance, U.S. Senate, U.S. General

Accounting Office, June 2003, *<http://www.gao.gov/new.items/d03686.pdf>*, accessed on 7 November 2011.

[19]"Anthrax in America: A Chronology and Analysis of the Fall 2001 Attacks," working paper, Center for Counterproliferation Research, November 2002, *<http://www.ndu.edu/centercounter/ANTHRAX%20CHRONOLOGY.pdf>*, accessed on 7 November 2011.

[20]Heyman, 2002.

[21]Ibid.

[22]Steve Bowman, "Homeland Security: The Department of Defense's Role," Report for Congress, Congressional Research Service, 14 May 2003.

[23]"Exercise Overview," *Dark Winter*, Center for Biosecurity, University of Pittsburg Medical Center, 2011, *<http://www.upmc-biosecurity.org/website/events/2001_darkwinter/index.html>*, accessed on 7 November 2011.

[24]Ibid.

[25]Ibid.

[26]"Homeland Defense: National Guard Bureau Needs To Clarify Civil Support Teams' Mission and Address Management Challenges," report to the Chairman, Subcommittee on National Security, Emerging Threats, and International Relations; Committee on Government Reform; House of Representatives, U.S. Government Accountability Office, May 2006, *<http://www.gao.gov/new.items/d06498.pdf>*, accessed on 7 November 2011.

[27]Joe Pappalardo, "Marines To Hand Off Decontamination Duties to Guard," *National Defense*, National Defense Industrial Association, January 2005, *<http://www.nationaldefensemagazine.org/archive/2005/January/Pages/Marines_to_Hand_Off5914.aspx>*, accessed on 7 November 2011.

[28]Joseph W. Foxell Jr. and Robert E. McCreight, "U.S. Disaster Recovery Readiness for a Biological Terrorist Incident: Part Four," *American Foreign Policy Interests,* Vol. 24, Issue 4, August 2002, EBSCO Host Connection, *<http://connection.ebscohost.com/c/articles/10910158/u-s-disaster-recovery-readiness-biological-terrorist-incident-part-four>*, accessed on 7 November 2011.

[29]Ibid.

[30]"Hospital Preparedness: Most Urban Hospitals Have Emergency Plans But Lack Certain Capacities for Bioterrorism," Report to Congressional Committees, U.S. General Accounting Office, August 2003, *<http://www.gao.gov/new.items/d03924.pdf>*, accessed on 7 November 2011.

[31]Foxell and McCreight, Part Four, 2002.

[32]Jeffrey D. Brake, "Terrorism and the Military's Role in Domestic Crisis Management: Background and Issues for Congress," Report for Congress, Congressional Research Service, 27 January 2003, *<http://www.au.af.mil/au/awc/awcgate/crs/rl30938.pdf>*, accessed on 7 November 2011.

[33]Ibid.

[34]"Combating Terrorism: Analysis of Potential Emergency Response Equipment and Sustainment Costs," Report to Congressional Requesters, Government Accounting Office, June 1999, *<http://www.gao.gov/archive/1999/ns99151.pdf>*, accessed on 7 November 2011.

[35]"Exercise Overview," *Dark Winter*, 2011.

[36]Heyman, 2002.

[37]Ibid.

[38]Brake, 2003.

[39]Heyman, 2002.

[40]Ibid.

[41]"Overview: ESF and Support Annexes Coordinating Federal Assistance in Support of the National Response Framework," U.S. Department of Homeland Security, January 2008, *<http://www.fema.gov/pdf/emergency/nrf/nrf-overview.pdf>*, accessed on 8 November 2011.

[42]Brake, 2003.

[43]*National Response Framework*, U.S. Department of Homeland Security, January 2008.

[44]"Overview: ESF and Support Annexes Coordinating Federal Assistance in Support of the National Response Framework," January 2008.

[45]DOD Directive 3025.18, *Defense Support of Civil Authorities (DSCA)*, 29 December 2010.

[46]Brake, 2003.

[47]Ibid.

[48]Foxell and McCreight, Part Two, 2002.

[49]"Overview: ESF and Support Annexes Coordinating Federal Assistance in Support of the National Response Framework," January 2008.

[50]Tucker, 1999.

[51]Nunn, 2001.

[52]Heyman, 2001.

At the time this article was written, Colonel Cruz, Colonel Scholl, and Colonel Visser were students of the Joint and Combined Warfighting School, Joint Forces Staff College, Norfolk, Virginia.

Colonel Cruz is the Chief, Joint Operations Directorate–Southern Command, J-33, Joint Staff, The Pentagon, Washington, D.C. He holds a bachelor's degree in business administration from the University of Puerto Rico and a master's degree in public administration from Troy State University (now Troy University), Alabama.

Colonel Scholl is the Chief, Capabilities and Requirements Division, Joint Nonlethal Weapons Directorate, Marine Corps Base Quantico, Virginia. He holds a bachelor's degree in criminal justice administration from Park College (now Park University), Parkville, Missouri, and a master's degree in human services from the College of Great Falls (now the University of Great Falls), Montana. He is currently working toward a PhD in social and community services from Capella University.

Colonel Visser is the Chief of Chemical and the Commandant, U.S. Army Chemical, Biological, Radiological, and Nuclear School, Fort Leonard Wood, Missouri. He holds bachelor's degrees in biology and chemistry from Trevecca Nazarene College, Nashville, Tennesee, a master's degree in analytical chemistry from Kansas State University, and a master's degree in military arts and sciences from the School of Advanced Military Studies, U.S. Army Command and General Staff College, Fort Leavenworth, Kansas.

The CBRN Search: A Different Perspective on the Employment of Modern Chemical, Biological, and Radiological Detection and Analytical Equipment

By Mr. Peter G. Schulze

There has been a long doctrinal history of nuclear, biological, and chemical (NBC) reconnaissance—now referred to as chemical, biological, radiological, and nuclear (CBRN) reconnaissance—within the U.S. Army and the Chemical Corps. As early as 1935, the need to identify, mark, and avoid contaminated areas was discussed in Chemical Warfare School publications.[1] Just before World War II, the U.S. War Department promulgated Field Manual (FM) 21-40, *Defense Against Chemical Attack*—a document that associated the concept of traditional reconnaissance with the establishment of a chemical defensive posture and the ability to rapidly recover from an attack to continue offensive operations.[2] During the 1980s, NBC reconnaissance was refined and incorporated into a set of common and specialized Soldier skills associated with passive defense measures that were designed to sustain continuous operations and maneuvers during and against a massive Soviet Bloc attack. Today, CBRN reconnaissance remains articulated within the context and limitations of passive defense; there has been no fundamental change since before World War II. However, the movement toward the "rapid" and evolving acquisition of modern detection and analytical equipment sets and the need for an Army that is capable of simultaneous offensive, defensive, and stability or defense support to civil authorities operations has created new complexities and challenges for a Corps that has been organized, trained, and educated around the historical paradigm of passive CBRN defense. In light of the increased capability of the Chemical Corps to detect and analyze hazards, CBRN reconnaissance tactics, techniques, and procedures (hereafter simply referred to as "techniques") must be intellectually reviewed and potentially revised to complement the Army's core competencies of combined arms maneuver and wide-area security, while also supporting the National Strategy to Combat Weapons of Mass Destruction (WMD).[3]

Defining the Problem

The central theme of U.S. Army Training and Doctrine Command (TRADOC) Pamphlet (Pam) 525-3-1, *The United States Army Operating Concept*, is the development of operationally adaptable forces that are capable of combined arms maneuver and wide-area security within the context of joint, interagency, intergovernmental, and multinational efforts.[4] Throughout the past few years, CBRN doctrine has evolved to support this theme within the context of the *National Strategy to Combat WMD*. The shift in capstone CBRN doctrine from a passive defense-centric model to one centered on the *National Strategy to Combat WMD* was timely and relevant to experts who were concerned with the evolving strategic threats associated with WMD. However, for those engaged in the current armed conflict, many of the underlying techniques associated with CBRN doctrine continue to be disconnected from tactical reality.

In the most recent working draft of Technical Manual (TM) 3-11.37, *Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Reconnaissance and Surveillance*, CBRN reconnaissance operations are defined as " . . . those operations undertaken to obtain, by visual observation or other detection methods, information on the potential or actual CBRN hazards and threats in an area of operations." This definition and the one currently contained in FM 3-11.19, *Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical Reconnaissance*, remain connected to the intellectual framework of traditional NBC warfare threats.[5] While doctrinally consistent, these definitions fail to communicate—from a layperson's perspective—how CBRN capabilities support the operational commander who is concerned with maintaining situational awareness regarding ongoing or current hybrid threats within his area of operations. In addition, the techniques associated with CBRN dismounted reconnaissance in the approved version and the draft revision are very similar to those used for the historical NBC reconnaissance purposes of identifying, marking, avoiding, and reporting of contaminated areas. These techniques do not support the combined arms synergy needed to facilitate an understanding of the operating environment, enemy clandestine activities, and civil and environmental considerations in support of military operations. In addition, they fail to address how the dismounted employment of emerging technological solutions can support a robust operational awareness of clandestine explosive manufacturing activities and other potential warfighter hazards.

> In our tactical forces, we have built-in organizational flexibility. We must recognize this and capitalize on it in our orders. To get maximum combat power, we must have plans flexible enough to meet rapidly changing situations; but careful planning is not enough. This must be coupled with the readiness to change and adapt to situations *as they are*, not as they *were expected to be*.
>
> —General Bruce C. Clarke[6]

The dismounted CBRN reconnaissance construct remains a valuable common Soldier and specialized technique required to protect the force during unified land operations. However, this technique alone cannot be used to adequately address the employment of specialized technology designed to detect and analyze the full range of chemical, biological, and radiological hazards and explosive precursors. The addition of this highly specialized equipment within a traditional employment construct has created what is often referred to as a "technology facade," which is the use or integration of technology without the benefit of the dogma, terminology, or infrastructure necessary to support its application as a viable strategy.[7]

When a collective group of individuals subconsciously holds onto familiar dogma solely because it has long been held to be true or holds onto existing terminology solely because it is comfortable, there is a limiting effect. Our continued insistence on, and application of, techniques designed to detect, mark, and avoid traditional chemical contamination has caused the Chemical Corps to fall victim to the common fallacy of *argumentum ad antiquitam,* or "appeal to tradition." This philosophy has limited our perspective and has hidden from the operational commander's view our potential, as part of a combined arms team, to directly contribute to countering future hybrid threats and current clandestine activities associated with the manufacture of homemade explosives—now the most common threat facing our force.

The enemy use of existing battlefield, industrial, and commercial improvised material, including chemical precursors and associated nontraditional materials used for the production of homemade devices and explosives, has been an ongoing issue for many years. Entirely new organizations, such as the Joint Improvised Explosive Device Defeat Organization and the Counter Explosive Hazards Center, were established to deal with this threat. In addition, TRADOC approved a standardized, integrated program for counter improvised explosive device (IED) training and education and mandated common skills training in the institution and in support of predeployment efforts.[8] At about the same time, the U.S. Army Chemical School changed its name, mission, vision, doctrine, and focus to encompass CBRN operations that span the entire range of CBRN hazards. In March 2007, the U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS) received international recognition and accreditation to train and certify specialists in safe operations across the entire range of hazmat. In support of emerging CBRN operations, the Joint Program Executive Office for Chemical and Biological Defense initiated plans to acquire sets, kits, and outfits designed to detect and analyze a significantly wider array of CBRN hazards (including explosives and explosive precursors) than previously attempted. Despite these changes, we continue to limit our capabilities by exclusively clinging to techniques that were designed to protect the force from a massive chemical or nuclear attack and by our inability to communicate our capabilities in common warfighter terminology.

Developing the Solution

To succeed in this increasingly competitive environment, the Army expects our leaders and organizations to understand and adapt to situations more quickly than our adversaries do. Accordingly, the USACBRNS must place a renewed emphasis on new techniques, training, education, and leader development to produce a new generation of Soldiers and leaders who are capable of succeeding in the face of uncertainty and effectively employing emerging technologies outside traditional areas of comfort. To conduct simultaneous offensive, defensive, and stability or defense support to civil authorities operations and rapidly transition from one type of operation to another (including operations that support a commander's ability to gain complete knowledge of his entire area of operations), our forces must change long-held concepts and adapt to current and future operational environments.[9] Although dismounted route, area, and zone CBRN reconnaissance remains a valuable aspect of the protection warfighting function, it is unclear where reconnaissance ends and other activities begin that can maximize the entire array of technological solutions available to the CBRN specialist.

One concept that can be used to support the commander's situational awareness is *military search*. This concept, which has already been described in various doctrinal publications, has the best potential for creating the combined arms synergy needed to facilitate an understanding of the operating environment and enemy clandestine activities and for maximizing the emerging technological solutions fielded to CBRN units now and into the future. There are various search levels within military operations.[10] A *CBRN search* is an advanced form of search that requires a specialized team and equipment. An *advanced search* is a deliberate, preplanned operation undertaken when specific intelligence indicates the presence of chemical, biological, or radiological material; hazmat; explosive or hazardous-device precursors; or environmental hazards. Military personnel who are members of advanced search teams typically receive the most advanced levels of training to learn new techniques, acquire unique skills, and prepare for the increased risks associated with advanced searches.

The term *CBRN search* (or, alternatively, another term that is consistent with emerging doctrine) should be defined as "the planned, systematic, tactical assessment of a site where some form of clandestine activity, natural

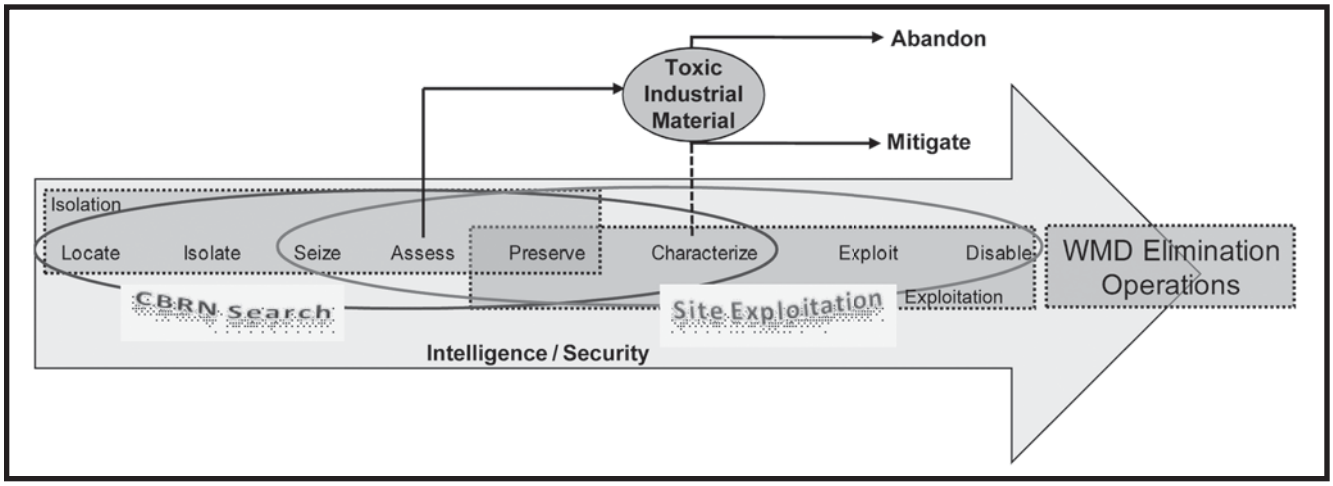


Figure 1. Role of CBRN search in WMD elimination operations

or man-made incident, or contamination has occurred or is suspected, with the objective of locating, assessing, and documenting suspected CBRN substances, material, or facilities." CBRN substances and material include chemical, biological, and radiological manufacturing and homemade explosives precursors, waste, and by-products; processing, production, and weaponization equipment; and postevent and postproduction residues and hazards. A CBRN search, which is typically conducted with a combined arms team of specialists, may involve the application of specialized tools and techniques and may be conducted in several phases. The search is conducted in conjunction with—or as a result of—operations at brigade level or below, in response to accidental or deliberate tactical or domestic CBRN events, or in response to an actual or suspected spill or other unplanned release.

CBRN search operations are planned and executed to substantiate the presence of suspected materiel and to protect and preserve sites if necessary. In addition, CBRN searches may prompt or complement more extensive law enforcement and exploitation actions. The results of a CBRN search support the tactical commander's determination regarding whether threats, hazards, information, personnel, or material associated with a site warrant any further action.

CBRN searches complement and are consistent with many of the basic tactical activities that comprise WMD-elimination operations. Within the WMD-elimination construct, CBRN searches support the techniques required to secure and assess suspected sites, materials, equipment, and personnel as illustrated in Figure 1. In transitioning from search activities to exploitation activities, more specialized teams assume a greater responsibility for the mission. These teams may be comprised of military intelligence, military police, explosive ordnance disposal, engineer, or CBRN (technical escort or special-operations forces) personnel or other government agencies.

Summary

The term *CBRN search* may or may not be the appropriate term to describe the techniques required to support current operations; however, the USACBRNS and the Chemical Regiment need to review, reconsider and, if necessary, modify our techniques to support simultaneous offensive, defensive, and stability or defense support to civil authorities operations. It is not enough to change overarching doctrine, thereby "making" the Chemical Corps relevant; our techniques must directly impact current and future operations. Properly developed and communicated, CBRN search could be the first of many critical changes needed to support unified land operations today and into the future.

While the doctrinal transition from a purely passive CBRN defense perspective to one that encompasses the full range of CBRN operations is apparent and relevant to CBRN experts, there is still a procedural gap with regard to how CBRN elements and personnel can support current operations from a warfighter perspective. As members of the CBRN community, we must ask ourselves tough questions about how we coordinate and communicate CBRN capability and adaptability using a common language. How do we dismantle the intellectual and organizational stovepipes of the Chemical Corps and provide the synergy needed to contribute tactically to known operational and environmental threats from a combined arms perspective? How can CBRN specialists apply techniques and leverage complex technology designed to detect and analyze the full range of chemical, biological, and radiological hazards and explosive precursors to close known gaps against the most common threat our Soldiers face today and will face in the future?

Endnotes:

[1]*Protection Against Chemical Warfare*, Book 5, the Chemical Warfare School, October 1935.

[2]FM 21-40, *Defense Against Chemical Attack*, 1 May 1940.

[3]Homeland Security Presidential Directive (HSPD) 4, *National Strategy to Combat Weapons of Mass Destruction*, December 2002.

[4]TRADOC Pam 525-3-1, *The United States Army Operating Concept: 2016–2028*, 19 August 2010.

[5]FM 3-11.19, *Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical Reconnaissance*, 30 July 2004 (with Change 1, 31 December 2008).

[6]Bruce C. Clarke, "Mission-Type Orders," *Military Review*, September 1961.

[7]Lawrence A. Tomei, *The Technology Facade: Overcoming Barriers to Effective Instructional Technology,* Allyn & Bacon Publisher, Boston, 2002.

[8]Dorian D'Aria and Tahnee L. Moore, "Adapting the Army: Institutionalizing Counter-IED Training Efforts," *Engineer: The Professional Bulletin of Army Engineers*, January–April 2010.

[9]TRADOC Pam 525-3-1, 19 August 2010.

[10]Iain Church, "Counter Explosive Hazards Center," *Engineer: The Professional Bulletin of Army Engineers*, October–December 2005.

Mr. Schulze is the technical director for the Directorate of Training and Leader Development, USACBRNS, Maneuver Support Center of Excellence, Fort Leonard Wood, Missouri. He holds undergraduate degrees in electrical engineering from the Oregon Institute of Technology and in history from Virginia Polytechnic Institute and State University and a master's degree in education from Virginia Polytechnic Institute and State University.

("Chief of Chemical and Commandant, U.S. Army Chemical, Biological, Radiological, and Nuclear School," continued from page 2)

- **One Army School System integration:** The USACBRNS One Army School System pilot supports the full spectrum of CBRN course delivery requirements, courseware equivalency, and resource sharing for all components and will serve to completely integrate all Regular Army, U.S. Army Reserve, and Army National Guard Dragon warriors in their professional development training here at Fort Leonard Wood.

In closing, I would like to thank you for all that you do in support of the Nation and invite you to join us in examining, analyzing, and ushering in changes that will posture our Regiment for the future. Updates are available via the CKN.

Endnotes:

[1]ADP 3-0, *Unified Land Operations*, 10 October 2011.

[2]FM 3-0, *Operations*, 27 February 2008.

Elementis, Regamus, Proelium!

CKN
CBRN Knowledge Network Web Site

Do you need up-to-date information about chemical, biological, radiological, and nuclear (CBRN) career management, courses, equipment, doctrine, and training development? All of this information and more is available at the CBRN Knowlege Network (CKN) Web site. To visit the CKN, go to the Fort Leonard Wood Web site at <*http://www.wood.army.mil/*> and select "MSKN" from the "For DA Employees" drop-down box in the left-hand column. At the Army Knowledge Online (AKO) portal, log in using your user name and password or computer access card (CAC). On the *Maneuver Support Knowledge Network* page, select the "USACBRNS Knowledge Network (CKN)" button to check out this great resource.

Leveraging the Chemical Corps

By Captain Winslow Tandler

The threat of a chemical or nuclear attack on the United States is real—and so, too, is the possibility of a biological agent release. Any of these could cause mass panic unlike anything we have ever seen. The Chemical Corps is charged with defending our Nation against chemical, biological, radiological, and nuclear (CBRN) attacks; as CBRN Soldiers, it is our job to keep our fellow Soldiers and our Nation safe from such events. However, the Chemical Corps mission is primarily defensive in nature, focusing on consequence management, with little or no offensive capability. The Army needs a Chemical Corps that will proactively challenge and stop those who seek to use these weapons against the United States. Given the current environment, the modern Army and the Chemical Corps must actively combat CBRN threats before an attack occurs, rather than wait to manage the consequences later.

Today's Chemical Corps has a split personality. On one hand, CBRN Soldiers in nonchemical units rarely practice their trade. They routinely find themselves relegated to various staff positions with a long list of additional duties. While these assignments may represent valuable, challenging experiences that produce well-rounded Soldiers, they greatly marginalize the expertise of CBRN personnel. Commanders of combat arms units generally have little interest in leveraging the knowledge of their CBRN staff. This is not the fault of the commander or the CBRN staff. Even a commander who has the best CBRN officer/noncommissioned officer team ever assembled still lacks the ability to influence a possible CBRN attack. When threatened by a CBRN attack, the commander is forced to raise the mission-oriented protective posture level or cease operations altogether, thereby limiting Soldier effectiveness. Although a truly successful commander can sometimes influence the operating environment to his advantage, one with limited CBRN assets at his disposal is stripped of the ability to do so.

On the other hand, CBRN Soldiers who serve in actual chemical units have a wide range of missions, including reconnaissance, decontamination, and technical escort. Although these units are comprised mainly of CBRN Soldiers assigned to CBRN missions, they remain underutilized as largely passive and defensive assets. They are invaluable in times of crisis, allowing units to recover from a CBRN attack, continue their missions through contaminated environments, or avoid previously contaminated areas. With the exception of technical escort or other highly specialized units, chemical units are completely passive and reactive. They cannot impact or prevent an attack before it takes place; they have a job only if a CBRN attack has already occurred. Technical escort units are very specialized units that focus on destruction and elimination operations. But while technical escort personnel may be the first on the scene of an incident and may take the lead during toxic materials handling, they require a secure area and outside support to operate. They lack the offensive capability to aggressively search for the most dangerous weapons and the organizations that harbor them.

The current threat presents daunting challenges due to its evolving nature, the proliferation of independent terrorist cells, and the potential for unseen devastation. Twenty years ago, the most likely threat to the United States was from other nations. They had the manpower and resources necessary to develop sophisticated weapons. While we currently face no imminent threat from separate nation-states, Iran, North Korea, and third-world countries with psychotic dictators continue to keep us on our toes. But these nations are not our only threat. According to experts, a small, decentralized terrorist cell would be the most likely group to attack the United States with weapons of mass destruction (WMDs) today. Just a few years ago, these cells—many of which are spiritually dedicated to the destruction of Western civilization—were nearly impossible to track or infiltrate, presenting enormous challenges to the Army and civilian agencies working against them. While they do not possess the manpower or resources necessary to produce anything more harmful than a homemade improvised explosive device, their deep roots in various terrorist networks provide them with the ability to acquire nearly anything. For instance, just a little more than 2 years ago, reports indicated that 40 members of an al-Qaida affiliate in northern Algeria died after self-exposure to the bubonic plague while attempting to weaponize the bacteria.[1] Furthermore, while al-Qaida was busy planning the 11 September 2001 airplane attacks on the United States, they were also planning a separate biological attack—and they nearly succeeded. Mr. George Tenet, the former director of the Central Intelligence Agency (CIA), testified that while planning for the 11 September attacks, al-Qaida initiated a program dedicated to the development of weaponized anthrax and a dispersal device and that they hired Yazid Sufaat (a Malaysian terrorist who was a biologist from California State University in Sacramento) for the development.[2] More recently, Ms. Janet Napolitano, Secretary of the Department of Homeland Security,

explained to a House committee that the terrorist threat has "evolved significantly . . . and continues to evolve."[3] Even the threat of small terrorist cells that consist of just one to three people with no affiliation to larger, foreign-based groups is real. Should a group like this gain the ability to disperse a biological agent on our home soil, it would be cataclysmic—forever altering not only the lives of this generation, but also the lives of those to come.

The United States cannot afford a single WMD attack. While our response to the events of 11 September 2001 has decreased the threat of another external attack, independent extremists from within our borders (such as Major Nidal Malik Hasan, formerly of Fort Hood, Texas, and many others) still pose a threat. The Army can reduce the ability of these internal groups to harm the United States by targeting their foreign sponsors and promoters—especially those who have access to WMD materials.

The distinction between internal and external threats is diminishing, and our margin of safety is decreasing. While the Department of Homeland Security works to stop internal threats, the U.S. military must work to halt overseas attacks. Fortunately, the units and capabilities necessary to combat these threats already exist. Special Forces (SF) chemical reconnaissance detachments have the training and support necessary to carry out aggressive, unilateral missions that can destroy the WMD capabilities of our largest—or smallest—threats. Chemical reconnaissance detachments, which are trained to operate in unique circumstances with little guidance, are able to detect, locate, seize, and render-safe or destroy specific hazards. A chemical reconnaissance detachment is essentially an extra SF detachment with the technical know-how and capability to accomplish any CBRN task within the SF mission set.

Assets with these capabilities are not limited to SF; however, other such teams are not available for widespread use. This is where changes to the Army and the Chemical Corps are needed. There is currently very little CBRN support in brigade combat teams (BCTs). While there are various CBRN Soldiers on staff and in Fox reconnaissance platoons, BCTs are poorly equipped to handle CBRN events—or, more importantly, to specifically target CBRN threats. To properly prevent any sort of CBRN event, BCTs need to be able to actively target the facilities and individuals at the heart of the threat. For instance, if a platoon in Iraq or Afghanistan were to come across a chemical facility or biohazard, they would have no choice but to leave it, secure the area, and wait for backup in the form of explosive ordnance disposal or technical escort personnel to arrive. This is an incredibly inefficient operation. For one thing, the platoon and higher units must rely on outside assets to complete their mission. More importantly, this system does not encourage the commander or staff to specifically target the chemical facilities or biological laboratories that may be the biggest threats within their battlespace. However, if each platoon—or maybe even one platoon in each company—had the basic skills and equipment necessary to handle the situation themselves, they could actively target the chemical threats in their battlespace, while still maintaining their core competencies. They would become an incredible unit asset. Technical escort personnel should remain available for the less fluid situations, such as preplanned and coordinated missions and for more technically complex situations; but for routine patrolling and targeting, first responders should be from combat arms units—especially during full spectrum operations.

While BCTs would do well to increase their CBRN response capabilities, the Chemical Corps would also benefit from taking a more active approach to defeating WMD. The Corps should bring its two biggest assets— technical knowledge and equipment—to the fight. The SF chemical reconnaissance detachments could serve as models for this transformation.

In a combat support role, the Chemical Corps does not participate in the standard targeting cycle of an infantry battalion. This is the mind-set of a reactive Corps. Chemical units should, instead, adopt an offensive mind-set to prevent attacks from occurring. By adding explosive ordnance disposal-qualified Soldiers, the unit would create the internal ability to reconnoiter, detect, seize, and destroy any CBRN threat with which they come in contact. These required skills are already in place in most chemical units. The only things missing are the combat skills and direct action mission set that would vault the Chemical Corps into the next phase of our history.

The evolving threat that we face today is deadly. The modern Army and the Chemical Corps must adapt to actively combat CBRN threats before they occur, rather than wait to manage the consequences later. This can be accomplished in two distinct ways:

- Equip and train traditional BCTs to handle CBRN events and mission sets.
- Equip and train technically advanced Chemical Corps Soldiers to handle offensive combat situations, targeting the most dangerous threats on the battlefield.

These actions would push the Chemical Corps toward the mainstream within the Army and leverage the skill sets of some of the most technologically advanced Soldiers any army has ever seen.

Endnotes:

[1]Eli Lake, "Al Qaeda Bungles Arms Experiment," *The Washington Times*, 19 January 2009.

[2]Bob Graham et al., "World at Risk: The Report of the Commission on the Prevention of WMD Proliferation and Terrorism," Vintage Books, New York, December 2008.

[3]Keith Johnson, "Officials Warn of Domestic Terrorism Threat," *The Wall Street Journal*, 10 February 2011.

Captain Tandler is the operations officer, Officer Training Department, U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS), Fort Leonard Wood, Missouri. He holds a bachelor's degree in finance from Fordham University, New York.

Shifts in the Army and the Chemical Corps: *Our Relevancy and the Way Ahead*

By Captain Sarah E. McKay

When the Fukushima Daiichi nuclear reactor disaster occurred as a result of the 11 March 2011 Tōhoku earthquake and tsunami off the eastern coast of Japan, my husband sent me an e-mail message with the subject of "Your branch just became relevant again." He has questioned the relevancy of the Chemical Corps before, and I'm sure he will again. Many of my peers in other branches have similar questions; they ask what I do besides unit status reports. While they may think they're being funny, I usually take offense. As the Army's smallest—but most versatile—branch, why do we continue to be misunderstood and misused?

Since the inception of the Chemical Corps during World War I, we have continually adapted and changed—something most other branches have not been able to accomplish. The Chemical Corps continues to shift with the changing times, and our shifts tend to correlate with shifts in the Army—whereas branches such as those of the engineer and infantry do not change much in size along with the Army's downsizing or increase in troops. The engineers continue to build bridges and the infantry continues to march, while the Chemical Corps adapts and changes. Chemical, biological, radiological, and nuclear (CBRN) Soldiers are constantly challenged with changes in enemy tactics and civilian disasters, yet no one seems to know what the smallest branch in the Army really does.

By War Department authority, the Chemical Warfare School was established at Edgewood Arsenal, Maryland, in September 1920. The true origin can be traced, though, to Lakehurst Proving Ground, Lakehurst, New Jersey, where the first course was held from 5 January to 31 March 1920. The Chemical Warfare School revised its curriculum in 1942 to include the Unit Gas Officer's Course for aviation assets, the Unit Gas Officer's Course for line units, and naval chemical courses, which were offered only in the spring and fall. Each course was 4 weeks long, and Soldiers from fire and police departments were trained in defending against chemical attacks.[1]

The Engineer and Infantry Branches have been around for many more years than the Chemical Corps, but both their missions have remained similar in theory and practice. The Engineer Corps was established with the goal of producing engineer officers who were well versed in civil engineering and in the tactics and techniques of engineers. The main objective was to increase the effectiveness of combat troops by improving routes of communication, creating and destroying obstacles, and aiding in the construction of protective works. All of these tasks are comparable to tasks currently taught at the Engineer School. Engineers continue to create and destroy obstacles and provide construction assets as needed. Route reconnaissance has now been incorporated as an engineer function; however, even that could be considered "improving routes of communication."[2]

Meanwhile, the Infantry School curriculum originally included courses on battalion command and staff officers, rifle and heavy-weapons company officers, and officer motor maintenance. The objectives of the school were to teach detailed infantry tactics and techniques and to present a working familiarity with the tactics and techniques of the associated arms to build competent leaders for all infantry units and to provide qualified instructors as needed. These objectives are almost identical to those of the Infantry School today, which are to "educate, train, and inspire infantry lieutenants so that, upon [Infantry Basic Officer Leadership Course] graduation, they demonstrate the competence, confidence, physical and mental toughness, and moral/ethical fiber necessary to lead platoons in any operational environment."[3]

The Chemical Corps did not exist before the start of World War I, but after the first German use of chlorine gas on British and French troops on 22 April 1915, the United States realized a need for some sort of specialized chemical branch, as the infantry had no way of combating this new type of warfare. The Chemical Warfare Service (CWS) was created on 2 June 1918. It is estimated that, by the end of World War I, 91,198 Soldiers—including some Americans—died as a result of chemical weapons.[4] However, between World War I and World War II, this death toll became irrelevant; and the Chemical Corps was nearly disbanded. The United States had successfully won a war against the German Empire and no longer saw a need for large numbers of Soldiers, so the CWS underwent its first reduction. A lower budget and threats of cutting the program altogether would have rendered the United States crippled against future chemical threats. Fortunately, the Army elected to keep the CWS with the hopes of experimenting on offensive and defensive chemical weapons.[5]

By World War II, CWS troops were using smoke operations and flame weapons in the European and Pacific Theaters. The Japanese continued to use biological weapons against the Chinese, while the Germans were quickly developing nerve agents that could kill within minutes. The infantry could not combat these new threats. The Army needed to adapt to meet the possible threats from the enemy, and they needed the help of a branch of service that was equally adaptable. Once again, they looked to the smallest branch for assistance. Infantry and armor units depended on smoke-generating units to provide cover for crossings and troop movements. The CWS was again expanded to manage the growing demand. This may have been a turning point for the Army and the Chemical Corps—a point where the Chemical Corps would continue to change and evolve as the Army's mission and tactics changed and evolved.

Soldiers wear early model gas masks.

At the end of World War II, the CWS was redesignated as the Chemical Corps and chemical and biological weapons improvements continued. More improvements, such as "people sniffers" and thicker fuel flames, were made during the Korean War. The fuel was reportedly used to clear large areas for mines and booby traps and to prepare areas for helicopter landings,[6] much like the route clearance operations that engineers conduct today. Not only were chemical Soldiers responsible for hiding troop movements, they were apparently also responsible for clearing the way prior to movement. How much more versatile could such a small organization be? It is difficult to imagine that the Chemical Corps could be considered irrelevant.

The post-Vietnam era presented yet another threat of shutdown for the Chemical Corps. As the extensive number of drafted troops were let go, the size of the Army shifted downward. And so, too, did the size of the Chemical Corps—but, again, too soon. The subsequent Russian threat brought the Corps back to life; and, once again, we met the Army's need to defend—this time, against our Cold War enemy. Figure 1 illustrates the high degree of threat that would have been posed by the Russians had a chemical or biological agent been released. While the Army found new ways to protect the United States from a possible Russian nuclear attack, the Chemical Corps found possible ways to combat ever-growing Russian chemical and biological weapon capabilities. As the United States ended all offensive aspects of the chemical-biological (CB) weapons program in the late 1960s to mid-1970s, the Chemical Corps continued to develop tactics, techniques, and procedures to protect the force.

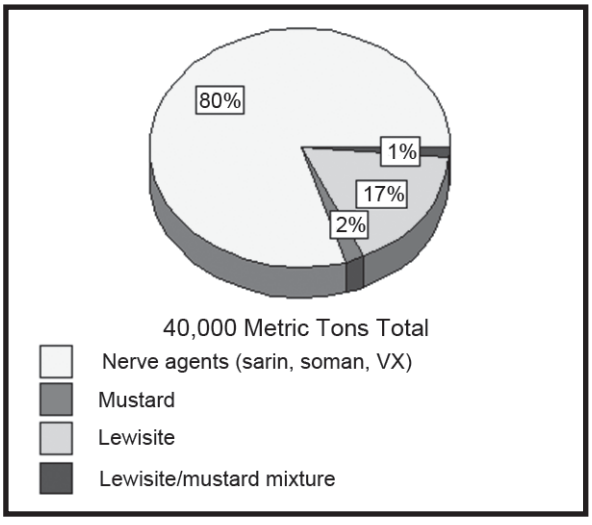


Figure 1. Chemical agents in the Russian stockpile

The end of the Cold War brought some relief to the Chemical Corps, but domestic chemical threats still loomed. In 1982, several young adults were struck ill with cyanide poisoning after ingesting tainted Tylenol® capsules. Similar incidents occurred in 1986 with packages of Sudafed® and Lipton Cup-a-Soup™. These incidents could not be fought with traditional tactics. The need for specialized teams was recognized, and civil support teams were established to protect U.S. citizens from such attacks.

Shortly after these incidents, the Army began to transform once again—this time, to enter Iraq in support of Operation Desert Storm. The importance of the Chemical Corps was realized before the invasion, since a chemical attack similar to that mounted by the Germans in World War I was possible—but this time, the technology was predicted. Saddam Hussein, the president of Iraq, was known to have used chemical weapons against the Kurdish people in northern Iraq in 1988. If Hussein would use chemical weapons on his own people, what would stop him from using them on American troops? Again, the smallest branch in the Army became more relevant among the

force. Extensive training prepared the troops for the fight; fortunately, the training was not necessary. The second invasion of Iraq would be quite different.

Several of my close friends participated in the 2003 invasion of Iraq, and every single one of them complains about the days they spent wearing joint-Service, lightweight, integrated suit technology with an M40 gas mask on their hip, ready for any sign of a chemical attack. A few of them experienced brief moments of panic when some chlorine tanks exploded; but thankfully, the vapor burned off too quickly to cause damage. The fact that the terrorists knew that chlorine vapor clouds would be deadly to the troops revealed their knowledge of modern-day chemical warfare. They attempted to defeat our troops by using tanks and homemade chemical explosives. Although CBRN training has traditionally taken a backseat to infantry tactics, I believe that CBRN training is equally important.

It is difficult to recognize and find the current enemy. And because advances in technology are making it easier to activate and use chemical weapons with only a basic knowledge of toxic industrial chemicals, these terrorists are capable of crippling our forces. While the widespread use of chemical weapons is not a critical concern at this point, is the Army willing to wait until it is a concern to realize the importance of the CBRN Soldier?[7] Yet, CBRN Soldiers are being taken from our companies; we are being downsized.

Today, we are dealing with a CBRN crisis—not in a combat zone, but in an area of the world in which we have worked for more than 60 years. The Fukushima Daiichi nuclear reactor disaster brought the realities of CBRN defense to the surface in a major way. Most of our peers and colleagues do not even know what CBRN stands for—let alone that CBRN Soldiers handle radiological events. However, Operation Tomodachi—which was carried out in hopes that injuries and secondary hazards could be limited and fixed—included members of CBRN programs from all military branches. Many of our peers and colleagues were shocked when the Army sent a chemical unit from Hawaii to help support the operation.[8] But what other branch of the Army is capable of providing the extensive support and aid that the Chemical Corps can?

CBRN threats are found in every corner of the globe, and the Chemical Corps has the means to combat these threats. More Regular Army CBRN Soldiers should be trained on how to handle domestic and international CBRN incidents such as the disaster that occurred in Japan, making our troops more versatile. Advanced individual training and basic officer leader's courses should not be limited to military-focused training, but should cover full spectrum CBRN operations so that Soldiers can improve their knowledge base and gain greater versatility. We will not move forward until the Army understands the vital daily importance of the Chemical Corps in garrison and combat environments.

As conflicts end, we historically experience a downward shift in numbers; yet at the beginning of the next conflict, we again rise to meet the demand. Doesn't our Corps deserve to remain at constant strength? The Army has now begun downsizing following our most recent conflict; and as always, the Chemical Corps will soon follow. However, removing Soldiers from company level units not only limits those units, but the Army as a whole. And when our expert knowledge is lost, we become even more irrelevant in the eyes of other branches. Let's try to change that attitude. Let's keep pace with the changing times through continued research and constant CBRN training. After all, the threats will only get worse as time goes on; advances in antibiotic-resistant bacterial strains—some of which can be weaponized—will continue.

Elementus, regamus, proelium! Let us rule the battle by means of the elements—a motto that could not be more appropriate, especially today. While the Army cannot afford to downsize one of its most useful branches, it will. So, I'm anticipating the moment when I walk into my office and am greeted by one of my colleagues who says, "Hey Chemo, how does this mask thing go on?"

Endnotes:

[1]*The Officers Guide*, 8th edition, Military Service Publishing Company, Harrisburg, Pennsylvania, 1942.

[2]Ibid.

[3]Infantry Basic Officer Leadership Course (IBOLC) Web site at *<http://www.benning.army.mil/infantry/199th/ibolc/index.htm>*, accessed on 25 October 2011.

[4]"Chemical Weapons," Federation of American Scientists, *<http://www.fas.org/nuke/guide/usa/cbw/cw.htm>*, accessed on 25 October 2011.

[5]"U.S. Army Chemical Corps History," Chemical Corps Regimental Association, *<http://www.chemical-corps.org/cms/ history/ cml-corps.html>*, accessed on 25 October 2011.

[6]Ibid.

[7]James A. Romano, Jr. et al., editors, *Chemical Warfare Agents: Chemistry, Pharmacology, Toxicology, and Therapeutics*, CRC Press, Boca Raton, Florida, 2008.

[8]"Timeline: A Nuclear Crisis Unfolds In Japan," *National Public Radio*, 1 May 2011, *<http://www.npr.org/2011/04/04 /134798724/timeline-a-nuclear-risis-unfolds-in-japan>*, accessed on 25 October 2011.

At the time this article was written, Captain McKay was a student in the CBRN Captain's Career Course at Fort Leonard Wood, Missouri. She is now the commander of the 12th Chemical Company, 18th Combat Sustainment Support Battalion, Schweinfurt Germany. Captain McKay holds a bacheor's degree from the U.S. Military Academy, West Point, New York, and is currently working toward a master's degree in engineering management from the University of Missouri Science and Technology, Rolla, Missouri.

Combat Support Roles for USF-I CBRN Soldiers

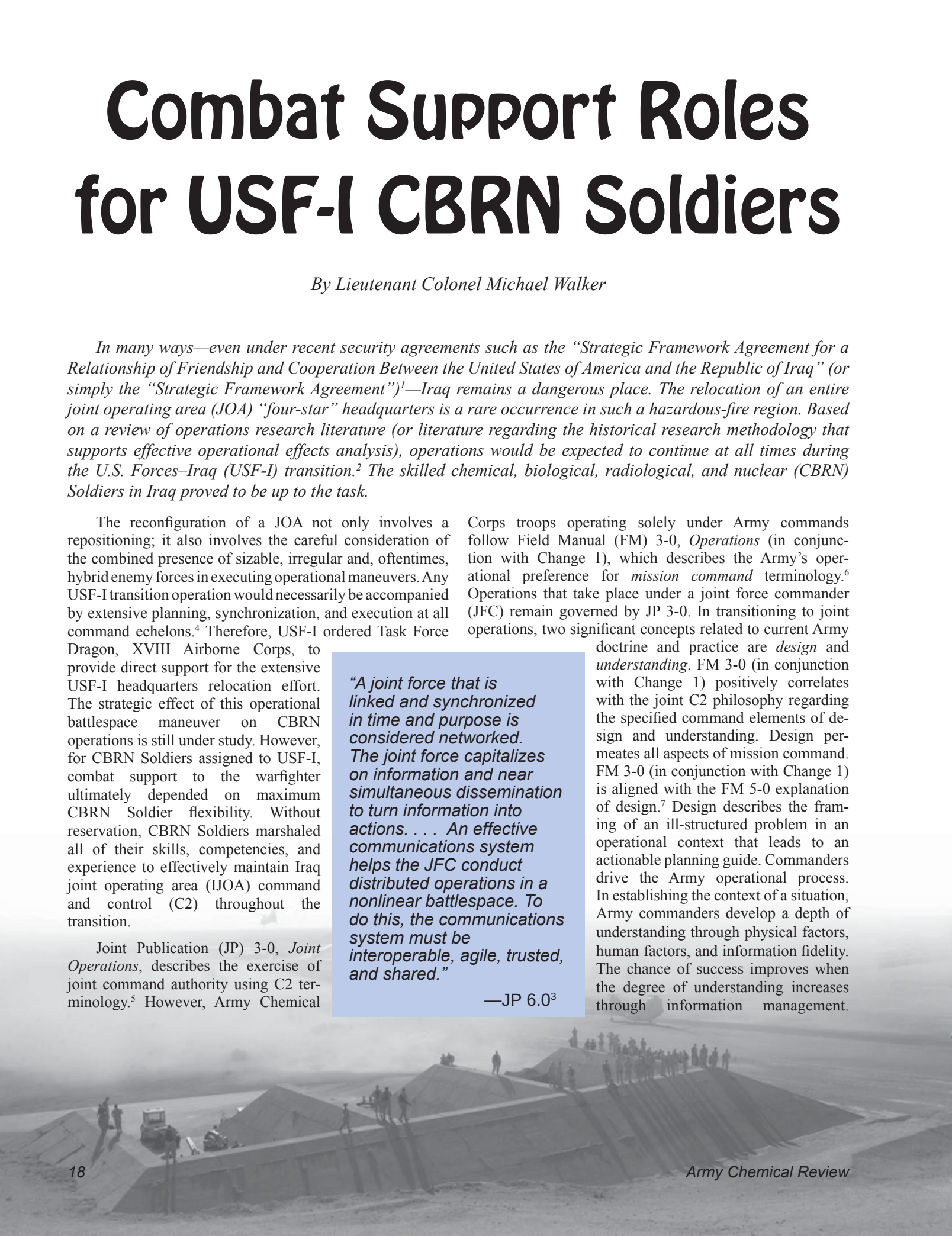
By Lieutenant Colonel Michael Walker

In many ways—even under recent security agreements such as the "Strategic Framework Agreement for a Relationship of Friendship and Cooperation Between the United States of America and the Republic of Iraq" (or simply the "Strategic Framework Agreement")[1]—Iraq remains a dangerous place. The relocation of an entire joint operating area (JOA) "four-star" headquarters is a rare occurrence in such a hazardous-fire region. Based on a review of operations research literature (or literature regarding the historical research methodology that supports effective operational effects analysis), operations would be expected to continue at all times during the U.S. Forces–Iraq (USF-I) transition.[2] The skilled chemical, biological, radiological, and nuclear (CBRN) Soldiers in Iraq proved to be up to the task.

The reconfiguration of a JOA not only involves a repositioning; it also involves the careful consideration of the combined presence of sizable, irregular and, oftentimes, hybrid enemy forces in executing operational maneuvers. Any USF-I transition operation would necessarily be accompanied by extensive planning, synchronization, and execution at all command echelons.[4] Therefore, USF-I ordered Task Force Dragon, XVIII Airborne Corps, to provide direct support for the extensive USF-I headquarters relocation effort. The strategic effect of this operational battlespace maneuver on CBRN operations is still under study. However, for CBRN Soldiers assigned to USF-I, combat support to the warfighter ultimately depended on maximum CBRN Soldier flexibility. Without reservation, CBRN Soldiers marshaled all of their skills, competencies, and experience to effectively maintain Iraq joint operating area (IJOA) command and control (C2) throughout the transition.

Joint Publication (JP) 3-0, *Joint Operations*, describes the exercise of joint command authority using C2 terminology.[5] However, Army Chemical Corps troops operating solely under Army commands follow Field Manual (FM) 3-0, *Operations* (in conjunction with Change 1), which describes the Army's operational preference for *mission command* terminology.[6] Operations that take place under a joint force commander (JFC) remain governed by JP 3-0. In transitioning to joint operations, two significant concepts related to current Army doctrine and practice are *design* and *understanding*. FM 3-0 (in conjunction with Change 1) positively correlates with the joint C2 philosophy regarding the specified command elements of design and understanding. Design permeates all aspects of mission command. FM 3-0 (in conjunction with Change 1) is aligned with the FM 5-0 explanation of design.[7] Design describes the framing of an ill-structured problem in an operational context that leads to an actionable planning guide. Commanders drive the Army operational process. In establishing the context of a situation, Army commanders develop a depth of understanding through physical factors, human factors, and information fidelity. The chance of success improves when the degree of understanding increases through information management.

> *"A joint force that is linked and synchronized in time and purpose is considered networked. The joint force capitalizes on information and near simultaneous dissemination to turn information into actions. . . . An effective communications system helps the JFC conduct distributed operations in a nonlinear battlespace. To do this, the communications system must be interoperable, agile, trusted, and shared."*
>
> —JP 6.0[3]



Knowledge management enhances situational understanding and information relevance in the joint command dimension. The encompassing C2 tasks of "Communicate and maintain the status of information" and "Coordinate, synchronize and, when appropriate, integrate joint operations with the operations and activities of interorganizational partners" are included in JP 3-0.[8]

The USF-I IJOA consists of the U.S. Division (USD)–North, USD–Center, and USD–South; therefore, a synchronization of effort is required. These U.S. Army divisions and other units of the command execute the joint commander's directives. During the repositioning of the JOA, CBRN Soldiers faced the enormous task of CBRN logistics planning and execution in each of the USDs. Supporting CBRN units and individuals were challenged by the high level of uncertainty accompanying the mission.

Three major factors are at work in the background of CBRN operations in the IJOA—the extreme weather conditions of Iraq, the natural resources available for conducting specified CBRN missions, and the large-scale information and communications systems necessary to maintain effective C2 of CBRN forces. The weather of Iraq is of particular interest to the CBRN Soldier. The northern part of the country is the cooler, more elevated region where terrain features support greater amounts and more frequent instances of vegetation. The central and southern portions of the country are extremely hot, very expansive, and largely inhospitable desert areas; the high temperatures and accompanying low humidity exist nearly year-round. The overall persistency of toxic industrial chemicals and potential battlefield chemicals is generally reduced by the heat of Iraq's deserts, with the soil type acting as an additional persistency assessment planning factor. Prevailing winds differ regionally within Iraq, requiring the reexamination and reevaluation of the CBRN operating environment upon movement through, and to, different locations. The imminent threat of Iran's potential nuclear capabilities lies to the east of Iraq. The diffusion of battlefield smoke generation operations would likely provide greater obscuration and concealment effects in the more vegetated areas of northern Iraq than in the south.

On the subject of unit integrity during deployment: "Cyberspace superiority may enable freedom of action throughout the operational area. Early superiority in the information environment also is vital in joint operations. It degrades the enemy's C2 while allowing the JFC to maximize friendly C2 capabilities. Superiority in the information environment also allows the JFC to better understand the enemy's intentions, capabilities, and actions . . ."

—JP 3-0[12]

The eight military mission areas for combating weapons of mass destruction listed in JP 3-40, *Combating Weapons of Mass Destruction,*[9] are derived from the *National Military Strategy for Combating Weapons of Mass Destruction*, which depicts strategic communications as influential in carrying out the military mission areas.[10] The Joint Staff Operations Directorate (J-3), USF-I Joint Operations Center, maintains a CBRN protection function, and distinguished USF-I staff positions are frequently filled by CBRN officers and noncommissioned officers. The USF-I CBRN staff advises the J-3 and, ultimately, the JOA commander regarding matters that require CBRN subject matter expertise, such as consequence management.[11] Perishable CBRN stock, individual protective equipment, and Office of the Surgeon General-related CBRN medical supplies require administrative oversight. Various theater level CBRN actions, such as the maintenance and movement of prepositioned CBRN stock for replenishment of the entire IJOA, illustrate the level of responsibility entrusted to CBRN leadership.

One of the most recent developments to directly affect the conduct of CBRN operations involves the concept and application of network-centric warfare (NCW). The NCW concept extends well beyond the mind-set of a localized, insular CBRN network. After a decade of operations in Iraq, there is little doubt that the emergence of a robust communication platform capability (and the accompanying power of information) enables spectacular battlefield effects. As USF-I conducted an operational maneuver for the entire IJOA during the July 2011 headquarters relocation, the question of how to continue the integration of interrelated command functions at current NCW levels surfaced. The issue of the security of battlefield systems presented another problem. Personnel from primary staff offices initially joined forces to provide physical security for the stand-up of the new USF-I headquarters and to achieve operating capability on a demanding timeline. The Joint Staff Intelligence Directorate (J-2) frequently worked in ad hoc fashion with the Joint Staff Logistics Directorate (J-4) (or the J-3 in conjunction with the J-4) to accomplish organizational objectives. The roles of officers and noncommissioned officers sometimes overlapped when

key tasks required more effort than was feasible under normal circumstances.

Like other command entities, C2 for USF-I is a means of communication, and it is a cross-cutting enabler for many command and staff functions. In general, for every increase in communication power, a proportionate increase in C2 takes place across all eight combating weapons of mass destruction military mission areas. However, USF-I headquarters is atypical; USF-I C2 is defined by a variety of C2 communication types, including a staggering amount of minimum network capacity. This variety is necessary for CBRN NCW to "pull" information requirements from intelligence, transportation, and logistics sources. Accordingly, the rates and levels of fidelity of CBRN "push" communications are affected by communication degradation and outages. Although C2 enables battle-wise CBRN decision making at the team level, the command is not concerned with the substances of technology as the ultimate end; rather, the command is concerned with technology enablement merely as a facilitator to an end in order to better serve others.

In carrying the fight to the enemy, effective CBRN command depends on striking the right balance between "gizmo-ology" and an understanding of the common Soldier's humanity. With regard to the debate surrounding the dramatic new levels of C2 available to warfighters, General William S. Wallace (Retired) considers *NCW* to be a descriptive and helpful term; however, he believes that the United Kingdom's use of the term *network-enabled command* is more appropriate.[13] Under U.S. military terminology, network capability is bifurcated into the fields of NCW and "network-centric operations." NCW is present at the tactical, strategic, and operational levels of warfare; network-centric operations is a great enabler for the performance of CBRN garrison, maritime, and routine daily operations. General Wallace's reservations about excessively focusing on the "gizmo-ology" factor of C2 systems at the expense of the human dimension of command weighed heavily on USF-I relocation planners. USF-I basically transformed what was a barren piece of desert with barely enough resources to sustain life into a bustling, fully operational, technical ecstasy. C2 serves as an embellishment to—not a replacement for—the commander's presence. However, critical communication capability remained a high priority throughout the course of the USF-I transition process.

In addition to their combat support roles, CBRN Soldiers frequently consider CBRN logistics and related force protection requirements for Department of Defense (DOD) civilians and civilian contractors who are colocated in the many hazardous-fire areas of Iraq. The issues of multiservice support (which is characteristic of joint operations) and interagency roles are challenges facing Chemical Corps operations in Iraq—now and into the future. Exotic command relationships within the IJOA only serve to add an element of complexity to an otherwise straightforward CBRN decisionmaking process. By committing CBRN combat support forces to USF-I operational maneuvers, CBRN Soldiers are undergoing a test in flexibility.

Endnotes:

[1]"Strategic Framework Agreement for a Relationship of Friendship and Cooperation Between the United States of America and the Republic of Iraq," U.S. State Department, 17 November 2008, *<http://www.state.gov/documents/organization/122076.pdf>*, accessed on 7 October 2011.

[2]U.S. Army Center of Military History (CMH) Publication (Pub) 70-102-1, *History of Operations Research in the United States Army, Volume 1: 1942–1962*, Charles R. Shrader, 2006, *<http://www.history.army.mil/html/books/hist_op_research/index.html>*, accessed on 7 October 2011.

[3]JP 6-0, *Joint Communications System,* 10 June 2010.

[4]"Agreement Between the United States of America and the Republic of Iraq on the Withdrawal of United States Forces From Iraq and the Organization of Their Activities During Their Temporary Presence in Iraq," U.S. State Department, 17 November 2008, *<http://www.state.gov/documents/organization/122074.pdf>*, accessed on 7 October 2011.

[5]JP 3-0, *Joint Operations*, 11 August 2011.

[6]FM 3-0 *Operations,* 27 February 2008 (in conjunction with Change 1, 22 February 2011).

[7]FM 5-0, *The Operations Process*, 26 March 2010.

[8]JP 3-0, 11 August 2011.

[9]JP 3-40, *Combating Weapons of Mass Destruction*, 10 June 2009.

[10]*National Military Strategy to Combat Weapons of Mass Destruction,* Chairman of the Joint Chiefs of Staff, Washington, D.C., 13 February 2006.

[11]JP 3-41, *Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives Consequence Management,* 2 October 2006.

[12]JP 3-0, 11 August 2011.

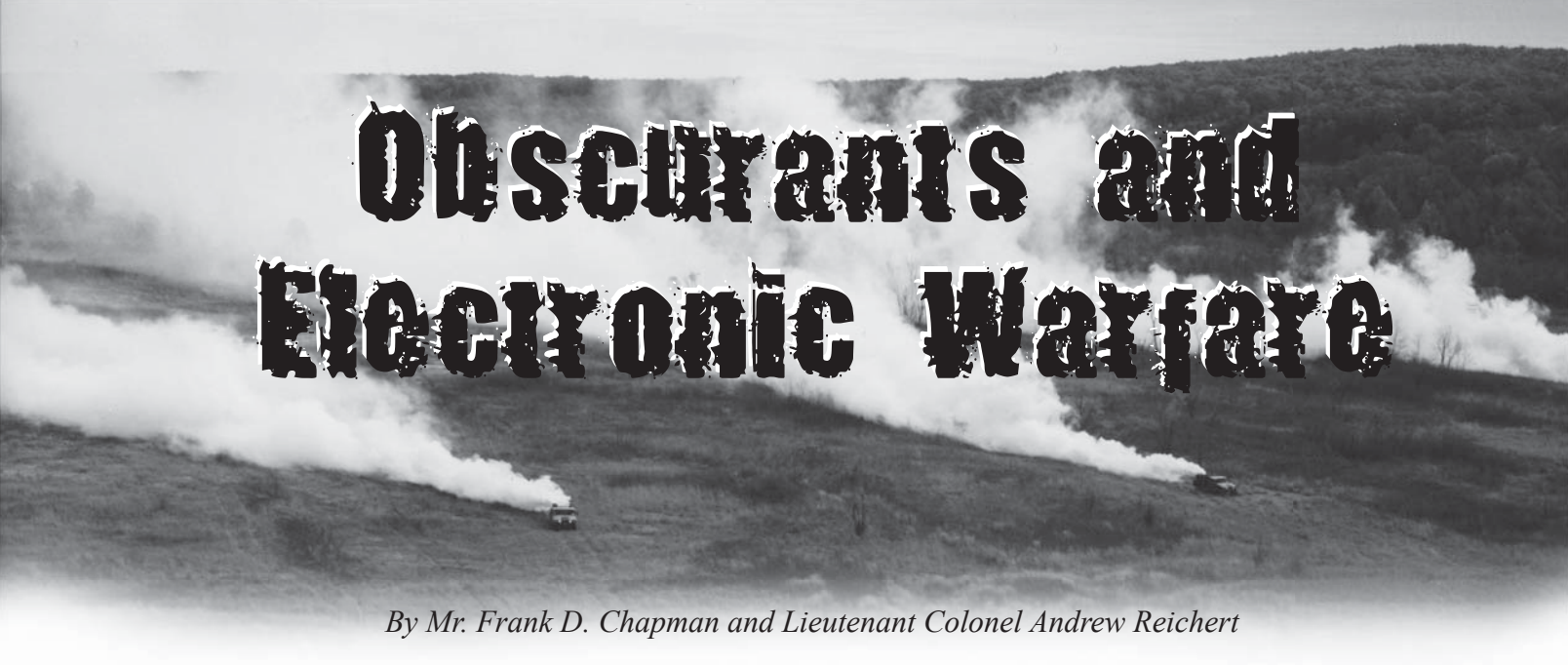
[13]William S. Wallace, "Network-Enabled Battle Command," *Rusi Defence Systems*, Spring, 2005.

Reference:

JP 5-0, *Joint Operation Planning*, 11 August 2011.

Editor's Note: At the time this article was written, FM 3-0, *Operations*, was in effect; it has since been superseded by Army Doctrine Publication (ADP) 3-0, *Unified Land Operations*, which was published on 10 October 2011.

Lieutenant Colonel Walker is a CBRN officer serving as the chief of Counter-Malign Iranian Influence, J-35 Future Operations Cell, USF-I. He holds a bachelor's degree in business administration from the University of Montevallo, Alabama, and a master's degree in business administration from Webster University, Washington, D.C.



Obscurants and Electronic Warfare

By Mr. Frank D. Chapman and Lieutenant Colonel Andrew Reichert

Obscurants serve as a key electronic warfare (EW) enabler in the current operational environment and will continue to be used in assisting commanders at all levels with unified land operations.

History of Obscuration and EW

At a time when few of our adversaries were capable of using anything more advanced than visual sensor systems, we used traditional (visual) means of obscuration. However, visual obscurants were of limited value because they defeated our own Soldiers and equipment and restricted our ability to perform information denial missions across the complete electromagnetic spectrum (EMS).

Today, obscuration allows the Army and other Services to defeat the enemy across a broad range of the EMS. The unique current and near-term capability of obscuration to defeat directed-energy systems such as lasers was identified during the Cyber/Electromagnetic (EM) Environment Capabilities-Based Assessment. The Army and joint Department of Defense community now consider obscuration as EW. In the Joint Capabilities-Based Assessment, which was written by the U.S. Strategic Command, obscuration is considered "EW electronic attack" and—although associated with its own task—it is addressed in the context of "conduct electronic deception operations; jam adversary EM capabilities; and protect friendly personnel, equipment systems, information, and facilities from adverse EW effects."

Threat

An increase in the use of, and reliance on, communication, global positioning, and directed-energy devices and systems has caused EMS use to increase at a staggering rate. The growth of technology has resulted in the weaponization of the ultraviolet, visual, infrared (IR), and centimeter wave (CMW)/millimeter wave (MMW) portions of the EMS. All major nations and some minor ones produce and actively market systems that use these areas of the EMS. U.S. forces can now expect to encounter potential adversaries who are equipped with a full range of battlefield weapons systems (and associated optics), ranging from simple systems that require an operator; to visually guided (laser designator) munitions; to intended target sensors; to sophisticated systems that, once engaged, use IR or MMW trackers/seekers for guidance. Increasingly sophisticated battlefield weapons systems equipped with onboard countermeasures will appear in greater numbers on future battlefields. As these advanced systems become more prevalent, they will pose an increasing threat to the survivability of U.S. forces. Many of the systems expected to be encountered by the U.S. Army and joint forces will be man-portable devices that are employed by one- or two-person teams attempting to make precision strikes or to defeat our use of the EMS by employing unconventional warfare. Due to the capabilities and small size of these portable devices, it is extremely difficult to locate and engage them before they are employed.

Future adversaries are also aware of our own reliance on advanced sensors and precision weapons and, in turn, have accelerated their development of advanced obscurants to defeat our use of the EMS. Their capabilities include small- and large-area multispectral obscurants that can defeat our communication and targeting systems and active jammers and eliminate our ability to defeat certain types of improvised explosive devices.

These adversarial threats will persist as technology continues to be developed and we continue to rely on the EMS to defeat hostile forces.

Obscuration, EW, and the EMS

The term *EW* refers to any military action involving the use of EM energy to control the EMS or to attack the adversary. EW consists of offensive and defensive electronic attack (EA), electronic protection, and EW support. The threat posed by modern target acquisition, designation, and guidance sensors has grown rapidly over recent years. The ability to employ obscurants provides the commander with an important ready, able, and deployable force multiplier that can affect the enemy's ability to control or use the EMS at specific times and locations. (See Figure 1, page 22.)

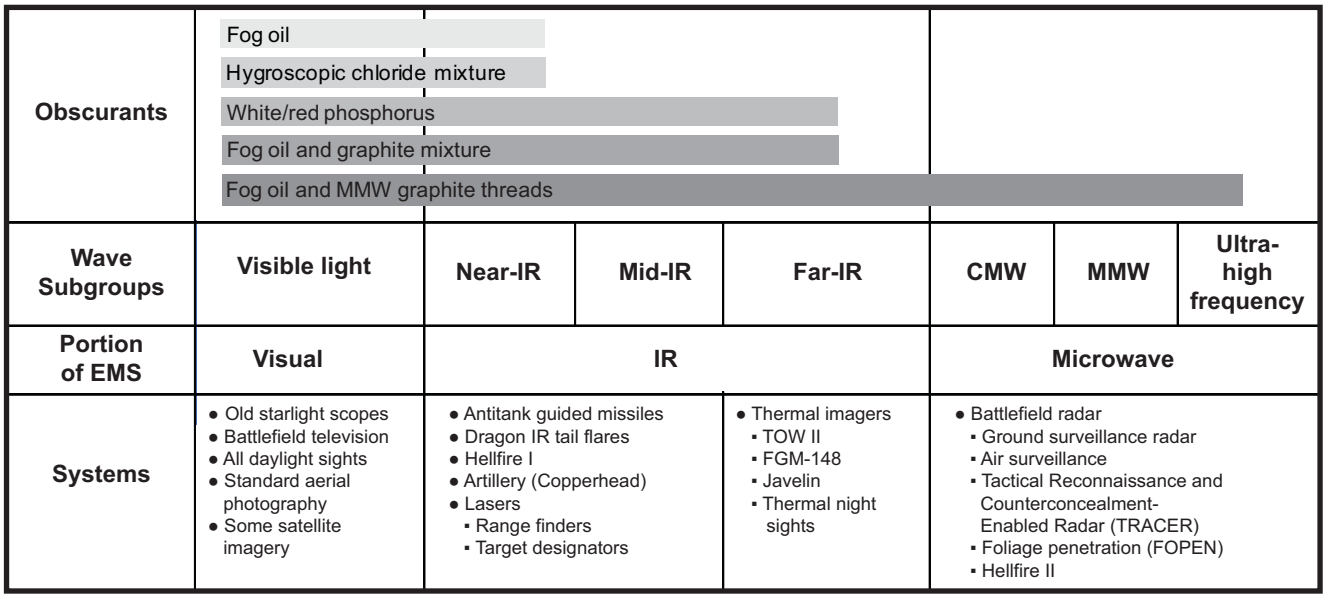


Figure 1. Obscurants and systems used for various portions of the EMS

To ensure the proper employment of obscurants, the effects must be planned and deconflicted properly during the planning phase and continuously throughout the execution phases. The Chemical, Biological, Radiological, and Nuclear (CBRN) Protection Cell and Cyber/EW Cell (comprised of cyber, EW, and EMS operations personnel) are responsible for ensuring the proper employment of obscurants across the operational environment—not only for self-protection, but also to limit or deny the use of the EMS in all aspects of Army and joint operations.

Concept-of-Operation Requirements

There are four doctrinal concept-of-operation requirements—EA (offensive), EA (defensive/on demand), EA (on call), and deception.

EA (Offensive): This refers to the ability to deny information that supports the adversary's efforts to conduct reconnaissance, intelligence, surveillance, and target acquisition (RISTA) or mission command for adversarial operations. Examples of scenarios that provide the commander with this ability include—

- An unmanned aircraft system (UAS) places a selected obscurant over a target area where digital communication wavelengths are used, thus creating a communication blackout for a specified time. (The target could be located in an area where normal weapons could not be used.)
- A UAS places a selected or broadband obscurant over a long front, thereby defeating ground surveillance radar systems (without knowledge of the exact locations of the systems).
- Selected or broadband obscurants are placed along an aerial insertion or exit route to defeat air defense early warning systems and weapons.
- Battery fire is countered by putting obscurants in front of or over the adversary's artillery counterfire detection systems.
- Breaching and gap-crossing operations are planned using artillery- or mortar-delivered multispectral and broadband obscurants for the far side of the gap and, depending on the threat, UASs or unmanned ground vehicles on the breach or gap itself.

EA (Defensive/On Demand): This consists of onboard vehicle systems; hand-controlled munitions; artillery and mortar munitions; manned, large-area systems; and UAS and unmanned ground vehicle systems for rapid employment. The primary mission is to provide immediate, on-demand obscuration from direct and indirect fire, smart munitions, and individual vehicle and personnel observation. This type of obscuration mission requires a 30-second to 25-minute employment timeframe. Examples of scenarios that provide commanders and Soldiers with opportunities to use this ability are—

- Mounted and dismounted urban operations.
- Breaching and obstacle emplacement operations.
- Force-on-force (vehicle versus vehicle or Soldier emplacement) operations.
- Smart weapon attacks from indirect fire or IR/MMW/acoustic minefields.
- Direct fire attacks.
- Ambushes using conventional and advanced weapons and combatants.
- Stealth vehicle penetration of friendly positions.

EA (On Call): This consists of large-area (minimum 1- by 5-kilometer) obscuration with a duration of more than 15 minutes. Commanders and Soldiers use this ability when—

- Employing obscurants directly on or in front of the adversary to deny RISTA or target engagement.
- Providing overhead concealment or protection from RISTA using aircraft, UASs, and space-based sensors.

- Using canopy obscurants to provide overhead protection from direct, indirect, and smart weapons.
- Providing protection from all types of adversarial RISTA and target acquisition systems at river and choke points.
- Protecting high-value targets (aerial ports of debarkation, sea ports of debarkation, ammunition and resupply points) from all types of adversarial RISTA and engagement systems.
- Defeating electromagnetic pulse devices.

Deception: This concept adds new capabilities and also maintains the overall deceptive intent, which is the same as that employed by the warfighter. Informational dominance of the battlefield denies adversaries access to data and also denies them the ability to promptly react to a situation. This, in turn, leads to the complete success of an operation. The ability to employ advanced obscurants by UAS and unmanned ground vehicle allows commanders to—

- Selectively cover far-ranging and in-close ground surveillance systems that could compromise the mission.
- Affect selected mission command and radio communication systems. The mission command network can be degraded, limiting the ability of the adversary to grasp and process required information.
- Force the adversary into making the wrong judgment (when employed with other theater/service assets).

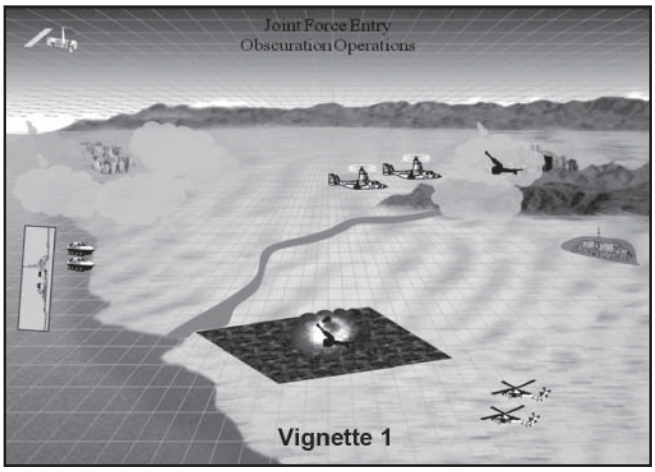
Operational Vignettes

Vignettes 1–3 illustrate how obscuration could be employed in various scenarios. For each of the scenarios, it is assumed that the adversary possesses advanced frequency-agile radios, satellite communications, laser radios, sensors, radar, towed and mechanized air defense systems artillery, short- and long-range missiles (with built-in multisensor capability), and laser-guided armor and antitank weapons—some with "fire and forget" dual seekers. It is also presumed that they will use defensive EA systems, counterbattery radar, advanced portable ground surveillance radar, advanced night vision (ultraviolet/IR) devices, and satellite surveillance systems. Their EW capabilities will include multispectral obscurant systems (visual, IR, MMW), advanced decoys, and Global Positioning System jammers—which they will plan to employ against any real or perceived threat.

Vignette 1: Joint Force Entry (Amphibious Landing) Obscuration Operations

Situation:

- *Army and Marine forces conduct a landing against heavily fortified positions. Naval gunfire, Marine and Navy aircraft, and UASs provide ground support to the landing forces; however, the hostile forces' centralized, hardwired, nonemitting sensor network is survivable against fire encompassing cyber and EW assets, air launch munitions, and artillery systems.*
- *Naval ships arrive at two locations, producing visual obscurants from over-the-horizon distances at various times beginning a couple of days before the attack.*



During these deception missions, the Navy also employs limited offensive EW (including IR and MMW obscurants) and signals to confuse hostile forces with regard to plans. About 2 hours before the landing force arrives, Navy ships and aircraft begin to produce EW effects (including visual obscurant hazes) at both locations. Just before the arrival of the landing force, they begin producing IR and MMW obscurant screens to confuse the hostile forces with regard to the specific landing location.

- *Obscurant-generating systems deploy visual, IR, and MMW obscurants in front of the landing craft to avoid detection and acquisition by hostile weapon systems. Naval gunfire is used to project multispectral obscurants in precise locations on the beaches for short periods of duration to allow landing forces to amass with sufficient combat power.*
- *As agile friendly forces operate over and behind hostile positions, vertical-lift aircraft and helicopters use hand-tossed, multispectral grenades and missiles and UASs deliver broadband multispectral obscurants to provide screening and limit the enemy's ability to use radio communications. In some cases, an option can be selected to allow the missiles to provide a lethal overpressure/blast on selected targets using the same munitions that provide the broadband obscurants. This allows friendly forces to cut off hostile reinforcements.*
- *The casualty level (less than 5 percent) is manageable enough to allow the landing forces to quickly move inland. Hostile forces attempt to use an IR obscurant to mask their own positions, but are ineffective due to the deception missions, which force them to extend units and obscurants over a larger area. Agile friendly forces rapidly defeat hostile units on the beachhead. Mechanized, large-area, visual, IR, and MMW obscurants may support actions to expand the beachhead enough to protect and enable logistic supply operations, equipment repair, replacement, and storage—thereby relieving pressure on friendly forces. Army artillery uses selectable-effects munitions to conduct a broadband obscuration mission against areas with a large civilian population or a culturally sensitive facility. This is done to limit collateral damage or effect lethal damage (destroying light vehicles and other high-value targets) while limiting the logistical loads required in the initial fight/landing.*

How Obscuration Was Employed:

- *Tightly controlled and integrated uses of joint obscurants prevented the enemy from concentrating units and fire at one location (deception obscurant).*
- *All types of obscurants (visual, IR, MMW, and multispectral) were synchronized and employed without limiting the effectiveness of friendly weapon systems and landing support craft.*
- *MMW systems pierced hostile IR obscurants and allowed smart systems to identify and destroy hostile forces.*
- *Projected and generated obscurants from ships, aircraft, and vehicles were used to maximize obscurant effectiveness and reduce inherent limitations on employment.*
- *Obscuration was employed as a force multiplier in support of the mission.*
- *Obscurant-generating equipment was assigned a high priority in the theater of operation.*
- *Integrated joint obscuration was used to avoid large numbers of casualties and the destruction of equipment after completion of the deception mission.*
- *Selected-effect munitions were used to limit the types of munitions to be landed and to ensure the inability of the enemy to use the local civilian population and cultural facilities to limit the ability to engage enemy forces.*

Vignette 2: Obscuration Operations (Lethal and Nonlethal) for Seizing an Enemy Center of Gravity in Urban Terrain

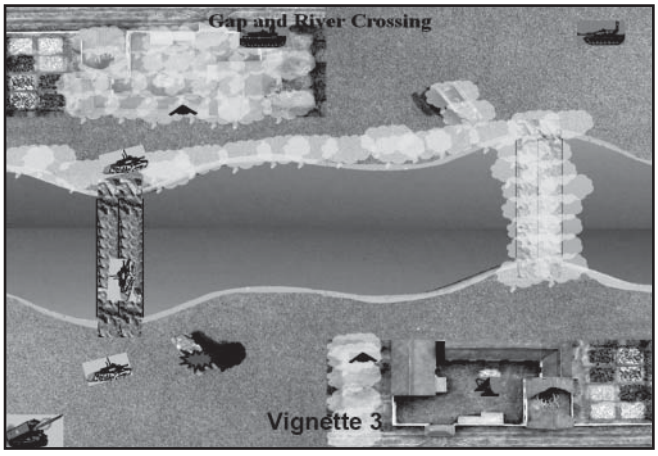
Situation:

- *The Government House is an old, historic site where structural damage has been kept to a minimum.*
- *Deaths to the civilian population must be avoided to the extent possible.*
- *Joint obscuration is employed to shield Army and Marine assault forces from enemy observation as they approach the objective (the Government House).*
- *Projected obscuration (mortar-delivered and unmanned, vehicle-delivered) enables assault forces to more rapidly maneuver through alleys and intersections that are covered by enemy observation and fire.*
- *The use of joint obscuration in support of lethal and nonlethal weapons capabilities enables assault forces to clear the axis of advance, secure the facilities, and block access to the secured objective—all with fewer enemy and civilian casualties.*

How Obscuration Was Employed:

- *Obscuration, though not a nonlethal effect, was included in this study.*
- *Obscuration was essential to the success of the lethal and nonlethal missions through the shielding of assault forces from enemy observation as they approached the Government House.*
- *Projected obscuration delivered by mortars and unmanned vehicles enabled forces to maneuver through alleys and intersections that were covered by enemy observation and fire more safely and rapidly than when only organic smoke grenades and the Light Vehicle Obscuration Smoke System were employed.*
- *Projected multispectral obscuration was a key means used to impair and defeat enemy target acquisition capabilities.*
- *Models demonstrated that forces were able to accomplish the mission more often when using obscurants and nonlethal capabilities than when using nonlethal capabilities only.*
- *The attacking force suffered major causalities when using nonlethal weapons alone, and facilities could not be kept secure after capture. The mission could not be completed without resorting to lethal capabilities.*

Vignette 3. Gap and River Breaching and Crossing Operations



Situation:

- *The division is tasked to capture weapons of mass destruction facilities and to stop munitions/bulk materials from being hidden or transferred to another nation.*
- *The division is made up of three brigade combat teams, one maneuver enhancement brigade, and allocated support from corps-assigned artillery for this mission.*
- *Along the routes capable of supporting heavy armored vehicles, there are three bridges and several potential crossings where bridges could be placed.*
- *The commander decides to bypass the bridges until one of the brigade combat teams can secure both sides of the river, eliminating hostile forces and their fire.*

The commander opts, instead, to have the maneuver enhancement brigade engineers emplace two ribbon bridges.

- *With support from the CBRN Protection and Cyber/EM Cells, the commander plans to conduct deception missions, including the use of projected multispectral obscurants and sound devices around the two ribbon bridges, which are capable of handling division vehicles. He also plans to use large-area V obscurants at the two bridge sites to obscure the vehicles transporting the bridges to be emplaced. In addition, aircraft will drop visual, IR, and MMW obscurants at these sites across the river to defeat any long-range observation systems and to appear to be part of deception operations, which also include two other sites along the river.*
- *After the first platoon crosses and establishes protection across the river, large-area obscuration vehicles cross and employ multispectral obscurants. This allows division forces to rapidly cross the river and secure the three major bridges. The commander then rapidly sends the forces down the route to secure the weapons of mass destruction sites.*

How Obscuration Was Employed:

- *Tightly controlled and integrated uses of joint obscurants prevented the enemy from concentrating units and fire at one location (deception obscurant).*
- *All types of obscurants (visual, IR, MMW, and multispectral) were synchronized and employed without limiting the effectiveness of friendly weapon systems and landing support craft.*
- *MMW systems pierced hostile IR obscurants and allowed smart systems to identify and destroy hostile forces.*
- *Projected and generated obscurants from ships, aircraft, and vehicles were used to maximize obscurant effectiveness and reduce inherent limitations on employment.*
- *Obscuration was employed as a force multiplier in support of the mission.*
- *Obscurant-generating equipment was assigned a high priority in the theater of operation.*
- *Integrated joint obscuration was used to avoid large numbers of casualties and the destruction of equipment after completion of the deception mission.*
- *Selected-effect munitions were used to limit the types of munitions to be landed and to ensure the inability of the enemy to use the local civilian population and cultural facilities to limit the ability to engage enemy forces.*

Recommendations

The following courses of action are recommended:

- Develop and refine obscurant doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) requirements and solutions jointly. These initiatives are urgently required to ensure that Soldiers, Marines, Sailors, Airmen, and Coast Guardsmen survive against the more capable weapons and sensors that the future force must face and defeat.
- Establish a joint CBRN/cyber/EW obscurant requirements group to—
  - Develop and approve the integration of doctrine and training for joint obscurant operations based on an analysis of the EW capabilities of obscurants.
  - Develop and approve materiel requirements for necessary joint obscurant operational capabilities that involve true broadband obscurants.
  - Develop long-range standoff obscurants that can be selected to provide a broadband or enhanced blast capability.
  - Refine individual and collective tasks, programs of instruction, and training; integrate training into combat training centers and unit exercises; and ensure joint refinement.
  - Ensure that leaders understand how efforts institutionalized in professional military education should be synchronized.
  - Conduct an organizational review to ensure that the alignment of units and systems meets future requirements.
- Ensure that approved simulations include the modeling of obscurants to support the joint warfighter at all levels, from tactical to strategic.
- Commission and sponsor a joint, obscuration-focused warfighting experiment to—
  - Maximize visual, IR, MMW, and advanced (broadband) obscurant that is value-added against weapon and RISTA systems.
  - Determine and define requirements for passive and active obscurant systems to improve the survivability of critical, high-value communication systems; detection systems; electronic jammers; and weapon systems.

Future Concept of Operations

From 2016 through 2020 and beyond, obscurant missions carried out in support of EW should be conducted under the four doctrinal concept-of-operation requirements. These concept requirements address new, unparalleled capabilities for controlling or defeating the EMS. Through the use of new, advanced obscurants, commanders are now uniquely able to select not only the time and location for obscurant use, but also the windows of opportunity that will allow friendly—but not adversarial—systems to penetrate the obscurant cloud.

Mr. Chapman is a military analyst with the Concepts, Organization, and Doctrine Division; Capabilities Development Integration Directorate; Maneuver Support Center of Excellence, Fort Leonard Wood, Missouri.

Lieutenant Colonel Reichert is the chief of CBRN Doctrine; Concepts, Organization, and Doctrine Division; Capabilities Development Integration Directorate; Maneuver Support Center of Excellence, Fort Leonard Wood. He holds a bachelor's degree from McMurry University, Abilene, Texas, and a master's degree in environmental management from Webster University.

DOCTRINE UPDATE

U.S. Army Maneuver Support Center of Excellence
Capabilities Development Integration Directorate
Concepts, Organization, and Doctrine Development Division

Publication Number	Title	Date	Description
		Current Publications	
ATTP 3-11.23	Multiservice Tactics, Techniques, and Procedures for Weapons of Mass Destruction Elimination Operations	10 Dec 10	A multiservice tactics, techniques, and procedures (MTTP) manual that provides the tactical doctrine and associated tactics, techniques, and procedures (TTP) that each Service provides in support of the joint weapons of mass destruction–elimination (WMD-E) mission area in an effort to operate systematically to locate, secure, disable, and/or destroy a state or nonstate actor's weapons of mass destruction (WMD) programs and related capabilities. **Status**: Current. Will be redesignated as TM 3-11.23.
ATTP 3-11.36 MCRP 3-37B NTTP 3-11.34 AFTTP 3-2.70	Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Aspects of Command and Control	12 Jul 10 C1 28 Feb 11	An MTTP manual that provides commanders, staffs, key agencies, and Service members with a key reference for understanding, characterizing, and managing chemical, biological, radiological, and nuclear (CBRN) threats and hazards in a particular operational environment. **Status:** Current. Will be redesignated as TM 3-11.36.
FM 3-11 MCWP 3-37.1 NWP 3-11 AFTTP(I) 3-2.42	Multiservice Doctrine for Chemical, Biological, Radiological, and Nuclear Operations	1 Jul 11	This is the CBRN keystone manual. This revision represents a critical doctrinal shift from nuclear, biological, and chemical (reactive mode covering WMD only) to CBRN operations (proactive mode covering the full range of CBRN threats and hazards). It implements the three strategic pillars of the *National Strategy to Combat Weapons of Mass Destruction*—nonproliferation, counterproliferation, and consequence management. **Status**: Current.
FM 3-11.3 MCRP 3-37.2A NTTP 3-11.25 AFTTP(I) 3-2.56	Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Contamination Avoidance	2 Feb 06 C1 20 Apr 09	An MTTP manual for CBRN contamination avoidance. It provides commanders, staffs, key agencies, and Service members with a key reference for planning and conducting CBRN avoidance and contains the tools that CBRN defense personnel need to implement active and passive CBRN avoidance measures. It also supports decisionmaking. **Status**: Under revision fiscal year (FY) 2012. Will be redesignated as TM 3-11.32.
FM 3-11.4 MCWP 3-37.2 NTTP 3-11.27 AFTTP(I) 3-2.46	Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical (NBC) Protection	2 Jun 03 C1 31 Dec 09	An MTTP manual that establishes principles for CBRN protection and addresses individual and collective protection considerations for the protection of the force and civilian personnel. **Status**: Under revision FY 12. Will be consolidated with TM 3-11.32.
FM 3-11.5 MCWP 3-37.3 NTTP 3-1.26 AFTTP(I) 3-2.60	Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Decontamination	4 Apr 06	An MTTP manual that defines the roles of military units and staffs involved in the preparation, planning, and execution of decontamination operations. It addresses the requirement for different decontamination techniques. The manual focuses on the need for all U.S. forces to be prepared to fight and win in a CBRN-contaminated environment. It also addresses homeland security support required from the Department of Defense (DOD). **Status**: Under revision FY 12. Will be consolidated with TM 3-11.32.
FM 3-11.9 MCRP 3-37.1B NTRP 3-11.32 AFTTP(I) 3-2.55	Potential Military Chemical/ Biological Agents and Compounds	10 Jan 05	A manual that provides commanders and staffs with general information and technical data concerning chemical and biological agents and other compounds of military interest, such as toxic industrial chemicals. **Status**: Under revision FY 12. Will be redesignated as TM 3-11.91.
FM 3-11.11 MCRP 3-3.7.2	Flame, Riot Control Agent, and Herbicide Operations	19 Aug 96 C1 10 Mar 03	A manual that describes the TTP for employing flame weapons, riot control agents, and herbicides during peacetime and combat. The distribution of this manual is restricted due to the sensitive nature of the information contained in it. **Status**: Current. Will be redesignated as TM 3-11.92.
FM 3-11.19 MCWP 3-37.4 NTTP 3-11.29 AFTTP(I) 3-2.44	Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical Reconnaissance	30 Jul 04 C1 31 Dec 08	An MTTP that provides tactical-level guidance and consideration for multiservice forces that are conducting CBRN reconnaissance and surveillance in all operational environments. It covers the full range of CBRN hazards by better addressing toxic industrial materials. It also expands TTP for dismounted CBRN reconnaissance and addresses CBRN sampling and sample management. The new name will be *Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Reconnasissance and Surveillance.* **Status**: Under revision FY 12. Will be combined with and supersede FM 3-11.86. Will be redesignated as TM 3-11.37.

DOCTRINE UPDATE

U.S. Army Maneuver Support Center of Excellence
Capabilities Development Integration Directorate
Concepts, Organization, and Doctrine Development Division

Publication Number	Title	Date	Description
Current Publications (Continued)			
FM 3-11.20	Technical Escort Battalion Operations	29 Aug 07	An Army-only manual that provides the TTP for the employment of technical escort battalions. The distribution of this manual is restricted due to the sensitive nature of the information contained in it. **Status**: Under revision FY 12. Will be redesignated as ATP 3-11.24.
FM 3-11.21 MCRP 3-37.2C NTTP 3-11.24 AFTTP(I) 3-2.37	Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Consequence Management Operations	1 Apr 08	An MTTP designed for CBRN responders who plan and conduct domestic, foreign, or DOD-led consequence management operations. DOD personnel who respond to a CBRN incident may be responsible for CBRN consequence management planning and may be required to execute plans during full spectrum operations. **Status**: Current. Will be redesignated as TM 3-11.41.
FM 3-11.22	Weapons of Mass Destruction–Civil Support Team Operations	10 Dec 07 C1 31 Mar 09	A dual-service (Army and Air Force) manual that provides suggested doctrinal TTP for use by WMD–civil support teams. The revision updates the manual to incorporate the expanded mission of WMD–civil support teams, including responses to toxic industrial materials releases and natural or man-made disasters that could result in the loss of life or destruction of property in the United States. It also addresses expanded response areas in which the teams are required to conduct their missions, including maritime and urban areas and confined spaces. **Status**: Under revision FY 12. Will be redesignated as ATP 3-11.46.
FM 3-11.34 MCWP 3-37.5 NTTP 3-11.23 AFTTP(I) 3-2.33	Multiservice Tactics, Techniques, and Procedures for Installation CBRN Defense	6 Nov 07	An MTTP that focuses on installation emergency management rather than CBRN installation defense. It will address all hazards—not just CBRN hazards. The revision is the result of newly published DOD policy and instruction and a front-end analysis of the DOD CBRN Defense Program led by the J-8/Joint Requirements Office. The new name will be *Multiservice Tactics, Techniques, and Procedures for Installation Emergency Management.* **Status**: Under revision FY 12. Will be redesignated as TM 3-11.42.
FM 3-11.50	Battlefield Obscuration	31 Dec 08	An Army-only manual that provides TTP to plan obscuration operations and employ obscurants during or in support of full spectrum military operations at the tactical through operational levels of war. **Status**: Current. Will be redesignated as ATP 3-11.50.
FM 3-11.86 MCWP 3.37.1C NTTP 3-11.31 AFTTP(I) 3-2.52	Multiservice Tactics, Techniques, and Procedures for Biological Surveillance	4 Oct 04	An MTTP manual for planning and conducting biological surveillance operations to monitor, detect, sample, identify, report, package, and evacuate samples of biological warfare agents. **Status**: Under revision FY 12. Will be consolidated with TM 3-11.37.
FMI 3-90.10	Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives Operational Headquarters	24 Jan 08	An Army-only manual that provides the basic doctrine for the employment of a chemical, biological, radiological, nuclear, and high-yield explosives operational headquarters to conduct tactical-level, WMD-E operations or transition to a joint task force-capable headquarters for WMD-E operations to support campaigns and civil authorities. **Status**: Under revision FY 12. This is a Maneuver Support Center of Excellence manual, which will be redesignated as an ATP.
***Note.* Current CBRN publications can be accessed and downloaded in electronic format from the Reimer Digital Library at *<http://www.adtdl.army.mil/>*, CBRN Knowledge Network (CKN) at *<http://www.us.army.mil/suite/portal.do?p=409522>*, or Maneuver Support Knowledge Network (MSKN) at *<http://www.us.army.mil/suite/page/275589>*.**			
Emerging Publications			
ATP 3-11.47 AFTTP 3-2.79	Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives Emergency Response Force Package (CERFP) and Homeland Response Force (HRF) Operations	4th Qtr, FY 12	A dual-service ATP that provides the tactical doctrine and associated TTP for conducting CERFP and HRF operations. This manual contains TTP associated with consequence management operations that involve State Active Duty, Title 32, and Title 10 response. A recommendation has been made to the U.S. Army Training and Doctrine Command to encompass CERFP and HRF missions in this manual. **Status:** Under development FY 12.
***Note.* CBRN draft publications can be accessed and downloaded in electronic format from CKN at *<https://www.us.army.mil/suite/portal.do?$p=409522>* or MSKN at *<https://www.us.army.mil/suite/page/275589>*.**			

A Chemical Corps First: Command Sergeant Major Selected To Serve at the Four-Star Level

By Ms. Anne Marek

Command Sergeant Major Patrick Z. Alston, former command senior enlisted leader of the Defense Threat Reduction Agency (DTRA) and U.S. Strategic Command Center for Combating Weapons of Mass Destruction (SCC-WMD), was selected as the new command senior enlisted leader of the U.S. Strategic Command (USSTRATCOM). Command Sergeant Major Alston is the first U.S. Army Chemical Corps command sergeant major to work for a four-star commander.

Serving at the four-star level ". . . was something that I never strived for and something I thought I'd never have the opportunity to do," said Command Sergeant Major Alston. "It's just unheard of for a Chemical guy to make it to the four-star level—much less at one of the 10 COCOMs [combatant commands]. COCOMs are historically combat arms guys. To be a non-combat arms guy and make it to a COCOM level—it is really, really a distinct privilege."

According to Alston, the selection of a Chemical Corps Soldier for this post indicates how much the military has changed from the time of the Cold War when the U.S. adversaries were large, known, fixed countries. "Those days are gone; now we're fighting terrorists," he said. "You really don't know who the enemy is. You don't know where the enemy is coming from. I think selecting individuals that are not traditional command sergeants major does send a message to the world that the times are changing, our policies and procedures are changing, our engagements are changing, and that what the President has preached—that the greatest threat to our country is a terrorist with some type of weapon of mass destruction—lines up to this selection."

Having served as the senior enlisted leader of DTRA/SCC-WMD since 2008, Command Sergeant Major Alston offers an enlisted perspective on operational issues and missions in the global effort to counter and eliminate weapons of mass destruction. "Command Sergeant Major Alston's selection for this position is a true reflection of his leadership ability, judgment, hard work, many contributions and 'can do' reputation," said Mr. Ken Myers, director of DTRA/SCC-WMD. "No one has a background that is better suited for the USSTRATCOM position than Command Sergeant Major Alston."

Only two enlisted positions—Sergeant Major of the Army and Senior Enlisted Advisor to the Chairman—are senior to the position that Alston now holds at USSTRATCOM. According to Command Sergeant Major Alston, that thought is a bit overwhelming, "but you have to stay grounded. And you have to remember that it's only by the grace of God that you were able to move to that level. He saw something in you to say, 'You are ready for this,' and then you have to use that in a positive aspect. You really have to use this opportunity to reach back and help others."

Ms. Marek is a writer-editor with the Public Affairs Office, DTRA/SCC-WMD, Washington, D.C.

First Class Graduates From CBRN Warrant Officer Course

Article and photograph by Mr. Robert Johnson

When 14 Army warrant officers recently graduated from the 9-week Chemical, Biological, Radiological, and Nuclear (CBRN) Warrant Officer Basic Course, the total number of CBRN warrant officers in the Army increased to 14.

"This is the first class ever of Army Chemical, Biological, Radiological, and Nuclear warrant officers," said Marine Chief Warrant Officer Five Domah Diggs, director of the CBRN Defense School, Fort Leonard Wood, Missouri. "These 14 Army [warrant officers] represent the very first in the Army, and they will graduate with seven Marine warrant officers in their class."

The 14 Army warrant officers understand the importance of being the very first warrant officers of the career field. "We know that we will be looked upon to set the standards and the expectations of the job when we get to our units," said Warrant Officer Matthew Chrisman. "It will be a lot of pressure on us because no one [in the Army] has ever had a [CBRN] warrant officer assigned to their unit. We literally are going to create our roles in the units."

According to Mr. Tom Crow, personnel development specialist for the U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS), the Army CBRN warrant officer was a vision of Brigadier General Stanley Lillie, former commandant of USACBRNS. "This day has been about 6 years in the making," Mr. Crow said. "[Brigadier] General Lillie wanted a technical person in the field. He felt the warrant officer was the best approach to the increasingly technical aspects of the chemical field. Officers and noncommissioned officers had to focus on their leadership skills as well as the tactical side, and the warrant officer could focus on the technical aspects of the Chemical Corps."

"In addition to having that technician with the unit, the [CBRN] warrant officer will decrease the necessity of branch-detailing lieutenants into the Chemical Corps," Crow added. (Branch-detailing refers to the practice of assigning Soldiers to the Corps for a couple of years before sending them back to their basic branch for the remainder of their careers.)

Colonel David Wilcox, former commander of the 3d Chemical Brigade, was the guest speaker at the CBRN Warrant Officer Basic Course graduation ceremony. He spoke to the graduates about their potential impact in the field and what will be expected of them. He also advised them to seek out the top CBRN officer and noncommissioned officer of the unit and the senior warrant officer on the installation to learn about expectations.

"You can define your role in the unit, but you must realize that we won't ask you if you know technical aspects of the job. We expect you to know the technical aspects of the job," Colonel Wilcox said. "Being the first—there will be adjustments. You have to blaze the way."

The warrant officers' attendance at the CBRN Warrant Officer Basic Course followed their earlier graduation from the Warrant Officer Candidate Course at Fort Rucker, Alabama, in the spring. The Warrant Officer Candidate Course is a 4- or 6-week course, depending upon rank.

According to Mr. Crow, most of the warrant officers who graduated from the first CBRN Warrant Officer Basic Course will be assigned to artillery and chemical battalions.

The USACBRNS will maintain contact with the new graduates and gather feedback regarding their initial tours to improve the curriculum for follow-on classes and to capture history in the making. "And who doesn't want to be part of history?" Warrant Officer Chrisman asked. "We're making it, today."

Mr. Johnson is the managing editor of the Fort Leonard Wood Guidon.

Members of the first class of Army CBRN warrant officers and their noncommissioned officer leaders

Chemical Corps Celebrates 93 Years of Service

Article and photographs by Ms. Amy Newcomb

The U.S. Army Chemical Corps Regiment celebrated its 93d anniversary during this year's Regimental Week, held at Fort Leonard Wood, Missouri, 13–23 June 2011. The Chemical Corps Regimental Association sponsored the 11-day celebration to promote esprit de corps and pride in the Regiment's heritage. The theme for the event was "The CBRN Profession—Enterprise of Experts."

"It is important and appropriate that we take time in our warfighting efforts to pay respect and homage to our Regiment by reflecting on our history, by celebrating our contributions and accomplishments, and by remembering those who have made the ultimate sacrifice," said Colonel Vance P. Visser, commandant of the U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS).

The celebration began with the Best Chemical, Biological, Radiological, and Nuclear (CBRN) Warrior Competition, which was conducted 13–18 June. Teams of warriors competed in several events, and the winners were announced at the Green Dragon Ball on 18 June. The team of Specialist Brandon Shissler, 83d Chemical Battalion, Fort Polk, Louisiana, and Specialist Jason Meffley, 101st Chemical Company, Fort Bragg, North Carolina, won the competition.

The Best CBRN Warrior Competition tests Soldiers' CBRN skills.

Colonel Visser addresses the conference.

In conjunction with the Best CBRN Warrior Competition, the International CBRN Commandant's and Commander's Conference was held 15–18 June. Senior leaders from 13 nations participated in the conference, where they exchanged information and expertise on countering present and future CBRN threats and risks; identifying best practices with respect to material development, tactics, procedures, training, and education; identifying areas or projects of common interest; and familiarizing those present with other nations' CBRN capabilities. The main topics of this year's conference were training, training facilities, and the possibility of cross-facility training across international borders. Following the competition and conference, the second week of the celebration kicked off with a golf tournament, which was held on 20 June.

A nonproliferation and counterproliferation briefing was held on 21 June. Several keynote speakers, including Major General David Quantock, commander of the Maneuver Support Center of Excellence; Colonel Visser; Vice Admiral Cecil Haney, deputy commander of the U.S. Strategic Command; and Mr. Ronnie Faircloth, associate director for operations, Defense Threat Reduction Agency, addressed the attendees. Major General Quantock discussed many issues, including the support of current operations, development and integration of concepts and capabilities, leader development, training of warriors and supporting branches, care of people, and assurance of quality of life. Vice Admiral Haney spoke about domestic consequence management, emphasizing the need to safely and effectively deter nuclear attacks, partner with other combatant commands, respond to challenges in space, build cyberspace capabilities and capacity, prepare for uncertainty, and reduce the occurrence of suprises. Mr. Faircloth presented the foreign consequence management portion of the brief, addressing the issues of international training, the development of global resilience for stable governments, and allied planning.

Additional events, such as a Hall of Fame and Distinguished Members of the Corps induction ceremony, followed on 21 June. The Hall of Fame, which was established in 1989, is the highest form of recognition awarded by the Regiment. Lieutenant Sidney Diamond was inducted into the Hall of Fame. The Distinguished Members of the Corps Award was established in 1991 to recognize those who have personally and professionally provided extraordinary service to the Corps and who have set a vision for what the Corps is and should be. Mr. Garo "Charles" Baronian and Mr. Jean Reed were inducted into the Distinguished Members of the Corps (see page 32).

On 22 June, an "Honor to Our Fallen" sunrise service was held in remembrance of fallen Dragon Soldiers. The hallowed ground of Memorial Grove was chosen as the location for the service. "We come here to remember the selfless acts of those Dragon Soldiers who have gone before [us]. We come here to remember that there is a price for the freedoms that our citizens enjoy and the liberty we provide those around the world when we come to their assistance," said Colonel Visser. "Remember, [these Dragon Soldiers] come from families just like ours—from places that are all too familiar to each one of us." A Domestic and Foreign Chemical Panel was also conducted on 22 June.

More than 40 vendors participated in a chemical equipment, training, and defense display 21–22 June.

Regimental Week ended on 23 June with the Warfighter Seminar and the presentation of the Sibert Award, which is awarded to the top-performing, company-size CBRN Regular Army, Army National Guard, and U.S. Army Reserve units. The Regular Army Sibert Award was presented to Company A, 22d Chemical Battalion, Aberdeen Proving Ground, Maryland; the Army National Guard award went to the 637th Chemical Company, Kettering, Ohio; and Headquarters and Headquarters Company, 415th Chemical Brigade, Greenville, South Carolina, received the Sibert Award for the U.S. Army Reserve. Each of these units achieved the highest standards in unit training, maintenance, discipline, safety, reenlistments, awards, and overall organizational excellence.

Ms. Newcomb is a member of the Fort Leonard Wood Guidon *staff.*

2011 Honorees of the U.S. Army Chemical Corps

Compiled by Ms. Christy Lindberg

Hall of Fame Inductee

The U.S. Army Chemical Corps Hall of Fame award is the highest form of recognition offered by the Regiment. This coveted award honors those who have made landmark contributions to the overall history and traditions of the Chemical Corps or continue to work in ways that benefit the Corps. These individuals have distinguished themselves through advances in science and technology, a lifetime of service and devotion to the Corps, or gallantry in battle. The ranks of the Hall of Fame are inundated with scientists who tirelessly worked to protect the force through innovations and with Soldiers who exemplified the tenets of courage and honor. The following individual was inducted into the Hall of Fame on 21 June 2011.

First Lieutenant Sidney Diamond

Sidney Diamond was born to Russian Jewish immigrants on 11 April 1922 in Bronx, New York, where he was raised. As a boy, Diamond participated in the Boy Scouts of America and later became an assistant scoutmaster. He attended Stuyvesant High School—a school for intellectually gifted boys. Upon his graduation in 1939, Diamond entered the City College of New York, where he studied chemical engineering and joined the Alpha Phi Omega fraternity.[1]

Although Diamond had followed the normal course of most boys his age, his destiny was to be determined by colliding world powers and the bloodiest wars in history. With the Japanese bombing of Pearl Harbor, Hawaii, on 7 December 1941, more than 2,300 American troops were killed. The next day, the United States declared war on Japan and Sidney Diamond's life changed forever. Like most Americans, Diamond felt a sense of duty to his country. On 24 April 1942, he entered the U.S. Army as a private at Fort Dix, New Jersey. Upon completing basic training on 10 May 1942, Private Diamond joined the Chemical Warfare Service at Edgewood Arsenal, Maryland. He trained with Company G, 2d Chemical Warfare Service Training Battalion. Private Diamond was excited to be a part of a new Army service, where he felt his education in chemical engineering would prove useful. The following excerpt is from a letter that Private Diamond wrote to his fiancée, Ms. Estelle Spero:

Hello Sweet,

. . . Can't express my elation and satisfaction with the new post . . . Everyone makes it a point of behaving like a gentleman and Soldier. Persons here are proud of the Service they're in. The Chemical Warfare Service is a comparatively new branch of the Army. Corporal informs us that it's merely a year and a half old. It acts its age: young, vibrant, enthusiastic, courageous and, above all, eager! . . . [2]

In July 1942, Private Diamond applied to Officer Candidate School. He was accepted in August and trained as a chemical officer until mid-November. He was then assigned as a platoon leader, D Company, 82d Chemical Battalion, Fort Bliss, Texas. The 82d, which was on orders to deploy, trained for deployment in Shreveport, Louisiana, and at Camp Swift, Texas. In June 1943, the unit left for San Francisco, California, where Lieutenant Diamond was attached to the 1st Battalion, 160th Infantry Regiment, 40th Division—a 4.2-inch mortar unit.[3]

On 27 June 1943, the unit left San Francisco for Nouméa, New Caledonia, in the Southwest Pacific. In October 1943, they resumed training at Guadalcanal in the Solomon Islands; and on 15 January 1944, they entered World War II at Empress Augusta Bay, Bougainville, Solomon Islands. On 18 January, the troops were greeted by Japanese bombers. Under Lieutenant Colonel Stratta, commander of the 1st Battalion, Lieutenant Diamond led his platoon in attacks to clear parallel ridges to the west in the Zambales Mountains above Clark Field in the Philippines. On 29 January 1945, Lieutenant Diamond, who was serving as a forward observer, successfully directed mortar fire during the initial stages of the action, killing and wounding what appeared to be a reinforced platoon of Japanese. To bring fire upon other enemy positions, Lieutenant Diamond—with heroic disregard for his own safety—made his way (alone and under intense hostile machine gun, mortar, and rifle fire) to a position 150 yards beyond friendly lines. Despite the continued heavy fire, Diamond remained in this position, skillfully directing mortars to destroy many Japanese troops and strongpoints—until he was killed by an enemy shell. He was posthumously awarded the Silver Star for his actions.

During the time he spent on active duty, Lieutenant Diamond wrote more than 525 letters to Ms. Spero. These letters have been preserved in a collection at the Gilder Lehrman Institute of American History in New York; some of them have been printed in the book entitled *An Alcove in the Heart: WWII Letters of Sidney Diamond to Estelle Spero*. The letters, which are filled with humor and heartache, serve as an excellent record of the trials and tribulations faced by Soldiers in training and combat—including their feelings of ambivalence toward family and country. The letters also preserve the memory of a young Chemical Corps.

Upon learning of Lieutenant Diamond's death, Ms. Spero wrote:

> *I cherish the memory of Sidney Diamond. He lives on in that alcove of the heart he asked me to reserve for him. I think often, with love and pain, of the young man who gave himself to fight in support of the country in whose principles he deeply believed.*

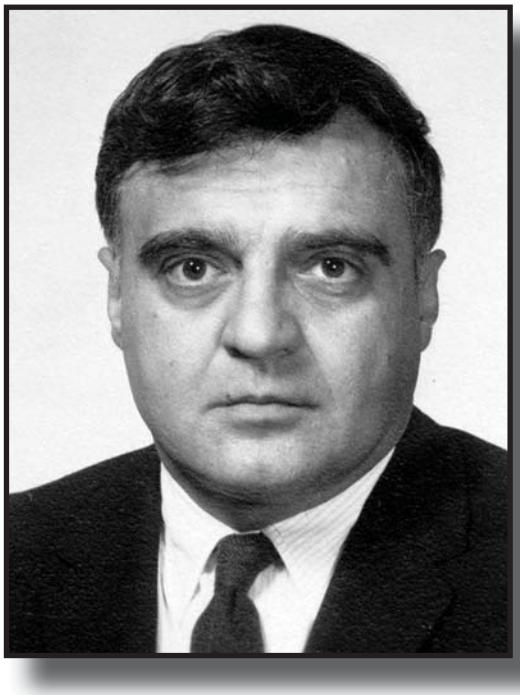
Lieutenant Diamond is an excellent example of a Soldier who contributed to the long, proud, heroic history that is part of our chemical, biological, radiological, and nuclear legacy. We face the battle with duty and honor, dedicating our lives to our country.

Note. Lieutenant Diamond's biography, which was written by Captain Kristy Moore, was originally published in the Summer 2011 issue of *Army Chemical Review*.[4]

Distinguished Members of the Chemical Corps Inductees

Two names were added to the list of outstanding individuals serving the U.S. Army Chemical Corps. The award of the Distinguished Member of the Chemical Corps title signifies that these individuals have not only contributed a lifetime of service in the Corps, but also support the Chief of Chemical in implementing his vision of what the Corps is and where it is going in the future. The following individuals were inducted into the 2011 Distinguished Members of the Chemical Corps on 21 June 2011.

Mr. Garo "Charles" Baronian



Garo "Charles" Baronian was born on 13 May 1930 in Providence, Rhode Island. He earned a bachelor's degree in chemical engineering from the University of Rhode Island and has been involved with various aspects of the chemical weapons disposal program for the past 42 years.

Mr. Baronian served in the U.S. Army at Edgewood Arsenal, Aberdeen Proving Ground, Maryland, for 2 years before beginning a career in civil service. In 1972, he worked in the Edgewood Demilitarization/Disposal Office; and in 1973, he moved to the Office of the Program Manager for Demilitarization of Chemical Materiel. Mr. Baronian was named Deputy Program Manager for Chemical Demilitarization in 1975. In that capacity, he was responsible for the disposal or destruction of obsolete or unwanted lethal chemical munitions through ocean dumping, incineration, and alternative technologies.

During the 1980s, Mr. Baronian was involved in the evaluation and selection of destruction technologies and the conception and construction of the Chemical Demilitarization Training Facility in the Edgewood Area, from which the first class of operators graduated in 1993. Other notable accomplishments include Mr. Baronian's involvement in establishing the first full-scale incinerator outside the continental United States (the Johnston Atoll Chemical Agent Disposal System on Johnston Island in the

Pacific Ocean) and the first incinerator within the continental United States (the Tooele Chemical Agent Disposal Facility, Deseret Chemical Depot, Utah).

In the summer of 1994—after an honorable and distinguished career in the design, production, and destruction of chemical and biological weapons systems—Mr. Baronian retired from federal service. And with more than 35 years of experience as a chemical engineer executive serving in senior management positions with responsibility for hazmat logistics and the disposal of hazardous and nonhazardous waste, he now works as a consultant.

Mr. Baronian's publications include the "History and Program Rationales of the Demilitarization Program" (in the book entitled *Alternative Technologies for the Destruction of Chemical Agents and Munitions*) and "Destruction of the U.S. Chemical Stockpile" (in the *Chemical Weapons Convention Bulletin*). His awards include the Department of Defense Distinguished Civilian Service Award and the Meritorious Civilian Service Medal.

Mr. Baronian's foresight has been instrumental in allowing the U.S. Army Chemical Materials Agency to successfully destroy more than 85 percent of the U.S. chemical agent stockpile since U.S. ratification of the Convention on the Prohibition of the Development, Production, Stockpiling, and Use of Chemical Weapons and on Their Destruction (commonly referred to as the Chemical Weapons Convention) in April 1997. Due to his wisdom and devotion, the agency had destroyed more than 2.3 million munitions and 26,000 tons of agent as of March 2011. Today, Mr. Baronian is regarded as one of the world's leading authorities on destruction technologies for hazardous chemical warfare weapons.

Mr. Jean Reed

Jean Reed was born on 25 July 1939 in Muskogee, Oklahoma. Following his graduation from the University of Oklahoma—where he earned a bachelor's degree in physics (with distinction)—in 1960, Reed was commissioned as a second lieutenant in the field artillery. His 30-year military career included combat tours and assignments in line field artillery units, research and development organizations, and the Army Staff.

Reed served as commander of the Fire Support Armaments Center (a major Army research, development, and engineering laboratory); deputy commander of VII Corps Artillery; program manager and assistant director for weapons technology at the Defense Advanced Research Projects Agency (where he was responsible for the Assault Breaker and Tank Breaker Weapon Demonstration Programs, which were subsequently fielded as the Army Tactical Missile System and the Javelin Medium Antiarmor Weapon System, respectively); Deputy Assistant to the Secretary of Defense for Nuclear, Biological, and Chemical Programs at the Army Materiel Command; and commander of a field artillery battalion and a field artillery battery. He served two tours in Vietnam and two tours in Germany. In August 1990, Reed retired from the U.S. Army at the rank of colonel.

For 15 years, Mr. Reed served as a professional staff member of the Committee on Armed Services, U.S. House of Representatives, where he was assigned principal responsibility for staff oversight of Navy research and development, defense-wide science and technology, chemical and biological defense, and chemical weapons demilitarization programs. He was a principal member of the committee's staff team on the Persian Gulf War. He was also a principal staff member for the committee's special inquiry into the chemical and biological threat, and he coauthored the inquiry report entitled "Countering the Chemical and Biological Weapons Threat in the Post-Soviet World," which was published in February 1993.[5] On 27 December 2005, Mr. Reed was appointed to the Senior Executive Service. He is currently the Deputy Assistant to the Secretary of Defense for Chemical and Biological Defense/Chemical Demilitarization in the Office of the Assistant to the Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs. In this position, Mr. Reed is responsible for the oversight of chemical and biological defense programs throughout the Department of Defense as well as the destruction of the U.S. stockpile of lethal chemical agents and munitions.

In addition to his bachelor's degree, Reed earned a master's degree in physics from the University of Oklahoma (in 1963) and completed post-graduate work in physics (from 1970 to 1971) at Georgetown University, Washington, D.C. He is also a graduate of the National War College of the United States, the U.S. Army War College, and the U.S. Army Command and General Staff College, where he earned a master's degree in military art and science. He was a research fellow at the

(Continued on page 38)

2012 CCRA Nominations for Hall of Fame and Distinguished Member of the Corps

Nominations are being accepted for the 2012 Chemical Corps Regimental Association (CCRA) Hall of Fame and Distinguished Member of the Corps honors.

- **Hall of Fame.** This award is extended to chemical, biological, radiological, and nuclear personnel (living or deceased) who spent their professional careers serving the Chemical Corps or who performed a significant act of heroism. Nominations are open to military and Department of Defense civilian personnel who have been retired from active federal service for at least 2 years. Their service to the Corps must have been extraordinary.
- **Distinguished Member of the Corps.** This award is extended to living or deceased members who served the Corps in their professional lives and continued to serve it in their personal lives. Nominations are limited to personnel who have been retired from active federal service (military and/or civilian) for at least 2 years. Active Army military and current (nonretired) federal civilian personnel are not eligible for the program.

For nomination criteria and submission requirements, see the CCRA Honors Programs Web site at <*http://www.chemical-corps.org/cms/programs.html*>. Nomination packets should be sent to:

Commandant
U.S. Army Chemical, Biological, Radiological, and Nuclear School
Regimental Historian
ATTN: ATSN-CM-H
Fort Leonard Wood, MO 65473-8926

All packets must arrive before **5 April 2012**. For more information, call (573) 563-7339 or e-mail <*david.chuber@us.army.mil*> or <*christy.lindberg@us.army.mil*>.

2012 Regimental Week and CBRN Conference: Save the Date!

The 2012 U.S. Army Chemical Corps Regimental Week and the Chemical Corps Regimental Association (CCRA)-sponsored Joint, Interagency, Intergovernmental, Multinational, Industry, and Academia (JIIM-IA) Chemical, Biological, Radiological, and Nuclear (CBRN) Conference will be held 25–29 June 2012. The theme for the conference is "The CBRN Profession—2020 and Beyond." This theme focuses on the CBRN capabilities, units, Soldiers, and technology required to enable the future force as described in the current or developing Army Capstone and Army Operating Concept. We will engage our strategic thinkers of today and discuss preparations for our next set of challenges. The first-ever joint Best CBRN Warrior Competition will be held 17–22 June 2012. Regimental Week events will include the Green Dragon Ball, a CCRA golf scramble, a Regimental run, the CCRA JIIM-IA CBRN Conference and Exhibition, a Hall of Fame/Distinguished Member of the Corps induction ceremony, an Honor to Our Fallen sunrise service, a CCRA barbeque, a joint program manager session, a Warfighter seminar, and the Sibert Award presentation. Planning is well underway, and we anticipate an even better event than last year. So . . . mark your calendars!

A Town Called "Deseret"

By Ms. Becki Bryant

It was the topography of Rush Valley in Tooele County, Utah, that grabbed the attention of the U.S. Army back in the early 1940s. However, the Army wasn't drawn by the beauty of the area but, rather, its remote location, dry conditions, and geographic location (between the Oquirrh Mountains to the east and the Onaqui Mountains to the west). According to the Army, this was the perfect place to store a portion of the Nation's chemical munitions stockpile. So, with plenty of fanfare, an inauguration ceremony for the new Deseret Chemical Warfare Depot (DCWD) was held there on 11 July 1943.

The DCWD prospered as a U.S. Army stockpile for rockets, bombs, mines, bulk containers, spray tanks, mortars, and projectiles that contained nerve agents (GB, GA, and VX) and blister agents (mustard and lewisite). Through the years, as the DCWD stockpile grew to 44 percent of the Nation's total chemical munitions stockpile, the on-site town of Deseret also grew. It became a thriving community known as "home" to the DCWD workers and their families. Everything that the residents needed—including a post office, bowling alley, nursery, chapel, school, health clinic, and commissary—was available in Deseret.

Mr. Richard Trujillo, who resided on base as a child and later worked at the depot until his retirement in 2004, remembers that "[Deseret] was a great community to live in." According to Trujillo (who is passionate about preserving Deseret through memories and old photos), the main road (now named Stark Road) was once known as First Avenue; the prisoner-of-war camp was known as "Tin Town" (due to the tin structures that housed World War II prisoners from November 1944 to July 1945); and the flagpole, which was constructed of scrap metal, was built by base employees.

Deseret Facts and Statistics

Size: 19,362 acres

Number of buildings: 350

Number of igloos: 208

Area covered by roads: 680,065 square yards

Length of railroad tracks (unused): 42 miles

Number of employees:

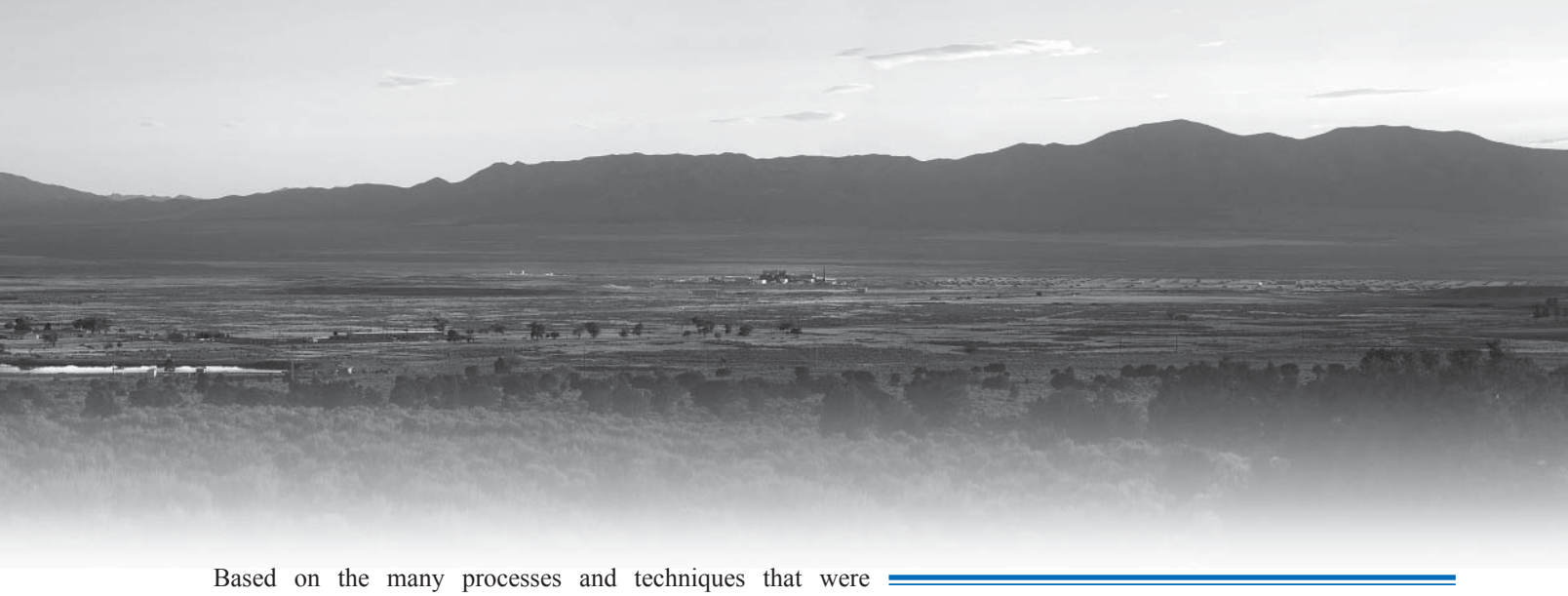
- Department of the Army civilians: 350
- Military: 2
- Contractors: 1,400

Following World War II, Deseret continued to prosper—but not for long. Eventually, as roads and automobiles improved, the town began to dissipate until it was completely abandoned and ultimately torn down in the 1960s.

Chemical agent-filled containers at an outside storage area in 1969

By the 1970s, chemical weapons were aging and the Nation's leaders realized that continued storage posed perhaps the greatest risk of all. As a result, Congress directed the Army to develop safe, environmentally responsible methods of disposing of chemical agent-filled munitions.

To accomplish this hefty goal, the Army again relied on Tooele County, building the Chemical Agent Munitions Disposal System (CAMDS) within the boundaries of the depot. From 1979 until the early 1990s, the CAMDS location served as the primary test and development facility for the Nation's Chemical Weapons Elimination Program. While pioneering numerous chemical demilitarization processes and techniques at the CAMDS facility, the Army also destroyed more than 363,000 pounds of chemical agents and more than 40,000 munitions there.



Based on the many processes and techniques that were developed, the successes that were demonstrated, and the lessons that were learned at the CAMDS facility, plans were made to destroy the outspread arsenal of chemical munitions. To avoid transporting the aging munitions, the Army decided to destroy the chemical weapons at their individual stockpile locations in Anniston, Alabama; Edgewood, Maryland; Newport, Indiana; Pine Bluff, Arkansas; Tooele, Utah; Umatilla, Oregon; Johnson Atoll in the Pacific Ocean; Pueblo, Colorado; and Blue Grass, Kentucky.

Construction of the Tooele Chemical Agent Disposal Facility (TOCDF) at Deseret began in 1989. On 22 August 1996, TOCDF disposal operations started with the destruction of the first GB-filled M55 rocket. Today, the depot (now known as Deseret Chemical Depot [DCD]) and TOCDF continue to work together to destroy what was once the largest and most diverse stockpile of chemical weapons in the Nation. The years have brought numerous challenges, innovative solutions, and accomplishments. As a result, all GB- and VX-filled munitions have been destroyed (thus, reducing the risk to the environment and to the community by more than 99 percent) and mustard disposal efforts—which have been underway since August 2006—are nearly complete.

Two new facilities located within the DCD Area 10 storage yard are also being used to help eliminate the stockpile there. The small quantity of GA and lewisite that is stored in bulk containers is being destroyed by the Area 10 liquid incinerator, while a detonation chamber known as the Detonation of Ammunition in a Vacuum-Integrated Chamber (DAVINCH™) is supplementing plant efforts

Storage igloos at the TOCDF

Did You Know?

- DCD has had several names, including—
  - Deseret Chemical Warfare Depot (1942).
  - Western Chemical Center (1947).
  - Deseret Chemical Depot (1950).
  - Deseret Depot Activity (1955).
  - Tooele Army Depot South Area (1962).
  - Tooele Chemical Activity (1995).
  - Deseret Chemical Depot (1996–present).
- There were originally 42 miles of railroad lines at the depot; approximately 32 miles of track are to be recycled.
- There are a number of historical sites located at DCD:
  - **Johnson Cemetery.** This cemetery contains the remains of several settlers who homesteaded the area in the late 1800s. Thirteen grave plots have been identified; three are marked by headstones.
  - **World War II prisoner-of-war camp.** This camp, which operated from November 1944 to July 1945, was one of 12 locations in Utah where prisoners of war were housed. German and Italian prisoners were held at this particular camp. The site has since been demolished.
  - **Pioneer homesteads.** There are two historical homesteads located on depot property—the Stookey homestead and the Johnson homestead.
- A 1945 railroad car, which was originally part of a train used to transport wounded Soldiers, was brought to the CAMDS facility in the early 1970s where it was used to house backup generators for more than two decades before being donated to the Utah State Railroad Museum in 2008.
- Rainbow Reservoir, which is located on DCD, is open to the public and annually stocked with fish.

to eliminate the remaining 300-plus overpacked, mustard-filled, 4.2-inch mortars and 155-millimeter projectiles.

With the startup of these two new facilities, DCD and TOCDF are on pace to complete disposal operations in time to meet a 2012 international treaty deadline. Most importantly, the deadline will be met without compromising safety for production, making Tooele County—and the world—a much safer place to live.

"The work accomplished by the combined TOCDF and DCD workforce has made the world a safer place," says Colonel Mark B. Pomeroy, commander of DCD. "Complete stockpile elimination will be a tremendous capstone for the rich history of DCD."

Ms. Bryant is a communications specialist with the Tooele Chemical Stockpile Outreach Office, Tooele. She holds a bachelor's degree in journalism from Utah State University.

("2011 Honorees of the U. S. Army Chemical Corps," continued from page 34)

National Defense University and a senior fellow at the Strategic Studies Institute. He is a member of the American Physical Society and the Phi Beta Kappa Society. His monograph, *NATO's Theater Nuclear Forces: A Coherent Strategy for the 1980s*, was published by the National Defense University in 1983.[6]

Mr. Reed's awards include the Secretary of Defense Exceptional Civilian Service Award, the Legion of Merit with three oak-leaf clusters, Bronze Star Medal, Purple Heart, Defense Meritorious Service Medal, Meritorious Service Medal (3d award), Air Medal (4th award), Army Commendation Medal, Republic of Vietnam Gallantry Cross Medal with Gold Star, and Republic of Vietnam Armed Forces Honor Medal–First Class.

Mr. Reed is a champion of the nuclear, biological, and chemical/chemical, biological, radiological, and nuclear defense program and has been instrumental in its development as the model for all current joint programs.

Endnotes:

[1]Estelle Spero Lynch, *An Alcove in the Heart: WWII Letters of Syndey Diamond to Estelle Spero*, Author House, 13 September 2004.

[2]Ibid.

[3]Before the war, the Chemical Warfare Service developed the 4.2-inch mortar, or "automatic howitzer," to throw gas shells; however, it could also provide high-explosive shells for use against tanks and troop concentrations. The mortar, which weighed about 300 pounds, was capable of slamming out an 8-pound shell every 3 seconds ("Army & Navy—Stovepipe Artillery," *Time*, 15 November 1943).

[4]Kristy Moore, "World War II Hero Leaves a Chemical Legacy," *Army Chemical Review*, Summer 2011, <*http://www.wood.army.mil/chmdsd/pdfs/Summer%202011/3-11-1%20w%20insert.pdf*>, accessed on 29 November 2011.

[5]"Countering the Chemical and Biological Weapons Threat in the Post-Soviet World: Report of the Special Inquiry into the Chemical and Biological Threat of the Committee on Armed Services," U.S. House of Representatives, 102d Congress, 2d Session, February 1993.

[6]J.D. Reed, *NATO's Theater Nuclear Forces: A Coherent Strategy for the 1980s*, National Defense University, Washington, D.C., 1983.

References:

Dale Andrade, CMH Pub 72-28, *Luzon: 15 December 1944–4 July 1945*, U.S. Army Center of Military History.

Jack Butler, *Fire, Smoke, and Steel: The Jungle-Fighting 82nd Chemical Mortar Battalion*, 2001, <*http://www.4point2.org/hist-82-p1.htm*>, accessed on 16 August 2011.

Ms. Lindberg is the assistant historian at the U.S. Army Chemical, Biological, Radiological, and Nuclear School History Office, Fort Leonard Wood, Missouri.

Care to Comment?

The *Army Chemical Review* welcomes letters from readers. If you have a comment concerning an article we have published or would like to express your point of view on another subject of interest to chemical, biological, radiological, and nuclear Soldiers, let us hear from you. Your letter must include your complete address and a telephone number. All letters are subject to editing for reasons of space or clarity.

Our mailing and e-mail addresses are—

Army Chemical Review
464 MANSCEN Loop, Building 3201, Suite 2661
Fort Leonard Wood, MO 65473-8926
<*leon.mdotacr@conus.army.mil*>

Enabling the CBRN Force Through Knowledge Management: *One Learns—Everyone Knows*

By Ms. Beverley P. Finley

"If you have an apple and I have an apple and we exchange apples, then you and I will still each have one apple. But if you have an idea and I have an idea and we exchange these ideas, then each of us will have two ideas."

— George Bernard Shaw[1]

How many times have you taken a new job—only to discover a lack of guidance regarding what you are supposed to be doing and how you are supposed to be doing it? You then spend countless hours tediously learning your job from scratch, making contacts, and establishing and meeting timelines. A lot of extra work could be avoided, and a lot of precious time could be saved—if only your predecessors understood the dynamics of knowledge management (KM) and how KM can enhance an organization.

According to Field Manual (FM) 6-01.1, *Knowledge Management Section*, KM is the "art of creating, organizing, applying, and transferring knowledge to facilitate situational understanding and decisionmaking."[2] In layman's terms, it is the practical collection of connections between people, technology, and processes that allows for the best decisions and the best outcomes within a given context.

KM is not a new concept; as Soldiers and civilians, we have practiced it for years. But somewhere along the way, we became obsessed with the idea that "knowledge is power" and that hoarding knowledge is the key to greater success. However, we have learned from recent world events (the 11 September 2001 terrorist attacks on the World Trade Center in New York City, New York, and the Pentagon in Washington, D.C., and the 11 March 2011 Tōhoku earthquake and tsunami in Japan) that we do not have time to "reinvent the wheel," but that we may need to enhance or alter it slightly.

Data is nothing more than a collection of isolated facts or unprocessed signals. Information is created—and further meaning or value imparted—when those facts or signals are placed into some sort of context, relationships are formed, and patterns emerge. Knowledge refers to the realization or understanding of the meaning and value of these relationships and patterns and their implications on an operation. There are two types of knowledge—*explicit knowledge,* which refers to knowledge that is documented with digital or nondigital media (computer files or paper files) and *tacit knowledge,* which refers to comprehension gained through study, practice, experience, and human interaction.

The major components of KM are people, technology, and processes. Together, these components are used to address the questions of: Who does what? With what? And how? The most important of these three components is people. Knowledge is only meaningful, and its benefits are only applicable, to people. Processes—or specific, continuous actions, operations, or series of changes that lead people to an end product—are the next most important component of KM. Technology, the remaining component, encompasses industrial arts, applied science, and engineering. Technological tools can be used to achieve the desired end product or to share information and knowledge.

Regardless of the mission, there are certain things that must be understood and acted upon. There are people with needs, and there are people who have the information or knowledge necessary to fill those needs. Effective communication is required to connect the two. The key to KM is to gather information that is already available and to apply it to the current

need—maybe in a new way that involves new learning methods or stimulates new understanding. According to Colonel Vance P. Visser, commandant of the U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS), our outlining mission is to ". . . support the defense of our Nation and interests at home and/or abroad." To successfully complete our mission, we must have information and knowledge at our fingertips.

We have been using KM since the inception of the Chemical Corps; and it is a critical element in the chemical, biological, radiological, and nuclear (CBRN) world. For example, we have done an excellent job of integrating the CBRN Warning and Reporting System into our daily operations. We need to do the same with a few other technologies and processes.

Endnotes:

[1]*Phi Kappa Phi Journal*, Honor Society of Phi Kappa Phi, March 1952, p. 45.

[2]FM 6-01.1, *Knowledge Management Section*, 29 August 2008.

Ms. Finley is a CBRN Warfighter Forum analyst, Quality Assurance Element, USACBRNS, Fort Leonard Wood, Missouri. She holds a bachelor's degree in history from Drury University, Springfield, Missouri.

Get Your Voice Heard:
Complete Postgraduate Surveys

By Mr. Clyde E. Davison

The U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS) and the Total Army School System, 3d Brigade (Chemical), Fort Leonard Wood, Missouri, are fully accredited training institutions that provide training and professional military education to meet unit, Soldier, and leader competency needs throughout the Chemical Regiment. The arduous accreditation process involved the evaluation of the USACBRNS and 3d Brigade (Chemical) using Army Enterprise Accreditation Standards (currently consisting of 51 separate standards). This ensured that the USACBRNS and 3d Brigade (Chemical) met the required training, training support, and proponent functions necessary to provide relevant and effective training and education.

In addition to the accreditation process, the Quality Assurance Element, USACBRNS, supplies end-of-course questionnaires and conducts online postgraduate surveys to provide USACBRNS students with an opportunity to offer feedback on course instruction, training materials, and course relevance. End-of-course questionnaires are offered to students upon the completion of their courses, and postgraduate surveys (which are gathered by the Quality Assurance Element on a semiannual basis) are offered to graduates and their supervisors 6 to 12 months after graduation. Every student and corresponding supervisor has an opportunity to assist the USACBRNS in the continued effort toward excellence in training and education by completing the end-of-course questionnaires and postgraduate surveys and "getting their voices heard."

In the past, the return rate for postgraduate surveys has been only 3 to 5 percent. Although each of the returned surveys is considered, the small percentage of returns does not effect a substantial change in courseware. In an effort to improve the survey return rate, the number of survey questions has been reduced; the surveys now take only about 10 minutes to complete.

The USACBRNS leadership remains committed to being the world leader in joint, interagency, and multinational chemical, biological, radiological, and nuclear training and education. Colonel Vance P. Visser, commandant of the USACBRNS, wants the student training experience to be a pleasant one; he wants you to want to come back to your professional home. So the next time a postgraduate survey lands in your e-mail inbox, ***don't delete it . . . complete it***—and get your voice heard. Your input, which is vital to the USACBRNS training development process, does make a difference in providing the best training and education possible.

Mr. Davison is the chief of the Quality Assurance Element, USACBRNS. He holds a master's degree in education with an emphasis in instructional technology from Drury University, Springfield, Missouri.

The CBRNWfF

By Ms. Beverley P. Finley

Do you know what the Chemical, Biologial, Radiological, and Nuclear Warfighter Forum (CBRNWfF) is? No?

Well, the CBRNWfF is a U.S. Army Training and Doctrine Command-mandated Web site that was developed as an active, deliberate means of providing knowledge management (KM) support to chemical, biological, radiological, and nuclear (CBRN) communities beyond the periphery. One of the main focuses is on the collaborative versus competitive sharing of knowledge. The CBRNWfF, in conjunction with the Chemical Knowledge Network (CKN) and the Protection Net, functions as a tool used to help achieve the KM goal of enhancing connections at all levels within the CBRN community.

The CBRNWfF can be accessed directly at <*https://www.us.army.mil/suite/page/567452*> or by clicking on the "CKN CBRN Knowledge Network Website" button on the U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS) Web site at <*http://www.wood.army.mil/wood_cms/usacbrns.shtml*> and then clicking on the "USACBRN Warfighters' Forum" link. Access to the secure site requires an Army Knowledge Online user name and password or common access card (CAC) log-in.

Some of the highlights of the site include—

- **CBRN Photo Shop.** The CBRN Photo Shop is the center for sharing CBRN photographs. Warfighters may upload photographs they would like to share and download photographs they would like to have. All uploaded photographs are reviewed and approved by the webmaster before being posted; photographs containing geotags are not posted.
- **The Hot Spot.** The most striking photographs are showcased in the The Hot Spot. The great things that CBRN warfighters are doing should be recorded and shared. However, operations security requirements are always considered and critical information is not compromised.
- **CBRN KM.** Clicking on the "CONNECTED" link (In the CBRN KM: One learns, everyone knows! section) takes the user to the U.S. Army Combined Arms Center Web site, which contains links to *CONNECTED*® (the Army Operational Knowledge Management newsletter), KM tools, and other pertinent KM information.
- **CMWfF Community Documents.** Documents that various school departments wish to share with their constituents are listed in the CMWfF Community Documents area (in the CBRNWfF Knowledge Center section). Information posted in this section is subject to review and approval by the Public Affairs Office, Fort Leonard Wood, Missouri,
- **CBRNWfF Discussion Forums.** While the CBRNWfF discussion forums are not unique to the CBRN Warfighter Forum, they do provide yet another platform for warfighters to discuss unclassified, CBRN-related issues.
- **Request for Information (RFI).** Clicking on the "SUBMIT" link (in the Request for Information [RFI] section) allows the warfighter to submit questions or request information. Questions and requests are automatically forwarded to three individuals—a lessons learned analyst, collector, and CBRNWfF analyst. Requesters receive a response within 72 weekday hours.

The CBRNWfF also contains other links that may be of interest to CBRN warfighters, including—

- ALLIS (CBRN Lessons Learned) (L2I).
- CBRN References.
- CBRN International Front.
- National Counterterrorism Center (NCTC).
- ARMY Home Page.
- Early Bird News.
- Collaboration Tools (Army Training Network [ATN], Joint Knowledge Online, JACKS, milSuite, CALL, CBRN Homepage, CKN, CATC, BCKS, and Defense Connect).
- Latest CBRN Protection Net Forum Posts.
- CBRNWfF Feedback.

Changes that do not violate security or business practice rules can be easily incorporated into the CBRNWfF, so users are encouraged to take advantage of the opportunity to provide feedback. Recommendations for improvement are welcome. The CBRNWfF is the warfighter's Web site. It is yours, mine, and the Regiment's—use it! ***Do not let it die****!*

Ms. Finley is the CBRNWfF analyst in the Quality Assurance Element, USACBRNS, Fort Leonard Wood. She holds a bachelor's degree in history from Drury University, Springfield, Missouri.

Chemical Corps Regimental Room Recognized

By Ms. Melissa Buckley

The Chemical Corps Regimental Room, located next to the Chemical Corps Gallery in the John B. Mahaffey Museum Complex, Fort Leonard Wood, Missouri, was designated as the recipient of the 2011 Outstanding Achievement Award for Excellence from the Army Historical Foundation on 7 July 2011.

The 2011 Outstanding Achievement Award for Excellence was presented in recognition of the reconstruction, staging, promotion, and ongoing use of the Chemical Corps Regimental Room. Room renovations began in 2008 and continue today. The space now boasts dropped ceilings, paneled walls, chandeliers, and stained-glass fixtures. The walls are decorated with more than 130 photographs and other materials that have been reproduced and framed, chronologically illustrating the people and the personalities of the Chemical Corps.

The Chemical Corps Regimental Room provides Soldiers with a historic setting for history and traditions classes, promotions, reenlistments, and retirement ceremonies. "It gives our young [advanced individual training] students and our lieutenants an appreciation for the significance of the Chemical Corps and what they have accomplished," said Colonel Dave Wilcox, commander of the 3d Chemical Brigade, Fort Leonard Wood. "We have a world-class museum and regimental room that is always kept up to date," he added.

The museum complex is open to the public, and admission is free.

Ms. Buckley is a member of the Fort Leonard Wood Guidon *staff.*

MASK WARS

By Colonel Robert D. Walk

In the beginning, U.S. protective gas masks were developed in one location—Edgewood Arsenal, Maryland, the "Eden" of gas mask creation. And the masks were good. Around the world, there were other oases of mask creation, such as Porton Down, Great Britain. But then, in 1937, the U.S. Navy had a disagreement with the mask design titans, and they left the "garden." They (gasp!) had their masks developed and produced by Mine Safety Appliances, another titan of masks located in Pittsburgh, Pennsylvania. Thus, gas mask "Eden" was sundered and gone forever . . . or was it?

As late as the 1980s, each Service still chose and developed its own masks and, despite some interplay, did their own thing. But mask developers, striking from a hidden base in northern Virginia, have since won their first victory against the evil "separate-Service Mask Development Empire." The victory might be fleeting, though, as there are more battles to be won. Not all mask programs are joint, and so the work continues. Pursued by the budgeteers, our gallant mask developers and program managers must ultimately triumph to save money and restore freedom to the gas mask community.

We are involved in a mask war. Unlike the war in Afghanistan, the mask war results in no injury, death, or destruction. It is a war of ideas, contrasting concepts, competing technologies, and trade-offs in a never-ending search for the ultimate mask, which is a mask that allows the user to enter a toxic environment without vision restrictions, labored breathing, heat stress or, of course, exposure to agents. Although technological limitations do not allow for a "perfect" mask, improvements are continually made through the pursuit of perfection. The fields of conflict in the pursuit are the—

- General-purpose mask (GPM).
- Special-purpose mask.
- Aircrew mask.

GPMs

For the GPM field of conflict, the war was over and the victorious mask crowned—the joint Service GPM, or M50 (and M51), is being fielded to the Services. And yet, there is an upstart! Another champion has emerged in the United States, and it is backed by Great Britain.

About 600,000 M50s have been produced to date, with more than 400,000 fielded to the U.S. Marine Corps, Navy, and Air Force. Army fielding is scheduled to begin in 2013. While other masks have been produced in larger quantities, this is the single largest Department of Defense (DOD) mask fielding effort since 1947. The final developer, Avon Protection Systems, Incorporated, is now producing the mask in Cadillac, Michigan; however, since initial production, continual improvements have been made to the mask components and filter to increase system capabilities. An ongoing toxic industrial chemical/material filtration media effort should further increase capabilities. Other accessories will also be adopted through modernization. The extremely low expected ownership cost should save the American taxpayer money over the lifetime of the program.

The basic M50 is a thoroughly modern mask. It is comprised of a single lens mounted binocularly with dual, teardrop-shaped lenses and a bridge over the nose, which improves vision. To ensure low breathing resistance, the dual external filters have ingenious one-way valves so that, if necessary, each filter can be removed and replaced—one at a time—in a contaminated environment. The filters have locking mechanisms to prevent them from loosening during operations and three sealing surfaces to ensure a robust filter-to-mask seal. The filters were designed for minimal interference with weapons firing. The mask comes with a set of filters, a canteen cap, operator cards, an accessory pouch, a clear outsert with pouch, a carrier, and a waterproof bag. All masks have an electronic, three-pin pass-through to accommodate the various electronic communication devices used by the Services. The M51 variant, which is used by armored vehicle crews, consists of the basic M50 facepiece; a hose that connects it to the collective protection of the armored vehicle; a microphone; and a lightweight, rugged, flame-resistant hood. Accessories include a voicemitter amplifier, spectacle inserts, laser (green) outserts, and a sun glare (gray) outsert.

The M50 and M51 masks make use of unique, nonstandard, lug-connecting filters, which replace the world standard 40-millimeter filter connector. There are some concerns, however, with these filter connectors. According to the program managers, the reasons for using these filters include—

- A single filter can be exchanged in a contaminated environment.
- M50 filter connectors (to which M61 filters attach) address DOD Inspector General findings by

correcting issues identified during protection factor testing and by rectifying known maintenance issues.

- The filter creates a better mask profile.

The streamlined, low-profile filters are also mounted closer to the cheek (resulting in better mask balance than that provided by a single, side-mounted canister); and they improve comfort, increase the field of view to more than 85 percent, and enhance downward vision while reducing the risk of compromising seal integrity through breakage during warfighter exertion. And compared to legacy systems, the new design reduces breathing resistance by about 50 percent. Because fiscal concerns may interfere with customers' ability to purchase the nonstandard connector, Avon also offers a commercial variation (the C50), which contains a National Institute for Occupational Safety and Health-approved standard connector attached in lieu of the military filter connector. Either connector will work, but the new locking connector provides a more secure connection, which better protects the Soldier; therefore, it is the better choice.

The United States may consider the M50 to be the ultimate mask; however, some of our allies disagree. Great Britain, in particular, is developing its own, similar mask—the general-service respirator. While we used Great Britain's most experienced mask developer in the development of the M50, they used one of the most respected U.S. mask developers—Scott Safety (which also developed the M95, M98, M110, M120, and AV-3000 masks)—in the development of their mask. Scott Safety has developed a special triseal facepiece that is similar in principle to the M50—in effect, creating a mask within a mask. The mask—which is capable of being swiftly removed when necessary—can be used with any North Atlantic Treaty Organization standard-thread filters and hoses. In addition, Scott Safety has developed a filter connector that is similar to, but supposedly better than, the M50 filter connector. A secondary filter can also be used with the mask. Many excellent, user-repairable items have been incorporated to reduce lifetime ownership costs of the mask.

Special-Purpose Masks

For special military uses, the Joint Program Executive Office for Chemical and Biological Defense (JPEO-CBD) has developed the M53—a truly multipurpose, chemical-biological (CB) protective mask system with enhanced capabilities. The M53 can be used as a standard air-purifying respirator or in conjunction with a powered air blower system and filter or a self-contained breathing apparatus. Standard 40-millimeter filter connectors enable the use of standard hoses to interface with blowers and self-contained breathing apparatuses.

The Marine Corps, Navy, and Coast Guard have documented their requirements for the M53 system. The Army and Air Force should review the M53 capabilities and establish their requirements as well. The Army, in particular, should carefully consider documenting system requirements—especially for special users such as Army

A Soldier wearing an M51 mask in an Abrams tank

National Guard civil support team members and dismounted chemical, biological, radiological, and nuclear (CBRN) reconnaissance elements. The highly capable, very adaptable M53 would make a great single-mask choice, reducing the number and types of masks that must be maintained.

The M50, M51, and M53 are well made, but bulky; and warfighters sometimes need lightweight, easily concealable masks. Consequently, mask developers created the M52 Joint Service Chemical Environment Survivability Mask, which weighs about 1.2 pounds and can be kept in a desk drawer or carried in a commuting backpack. One size fits all, and the mask is disposable, making the M52 an office worker special!

Aircrew Masks

While most Soldiers, Marines, Sailors, and Airmen use the GPM, aircrews require specialized protection that can be adapted to their onboard oxygen systems. This need is currently being met by a bewildering variety of masks, including the M48 (Army Apache), M45 (Army non-Apache), Mask Breathing Unit (MBU)-13 (Air Force), MBU-19 (Air Force), A/P22P-14(V) (several configurations for the Navy and Marine Corps), and others—a logistics nightmare! The Joint Service Aircrew Mask (JSAM) Program was originally established to replace all of these masks with a single-mask system. However, conflicts arising from differing Service and airframe requirements forced the inclusion of variants, creating a family of systems. The family of systems includes the rotary-wing and fixed-wing programs—each with two variants. Oiy!

The overall objectives in the development of various masks within the JSAM family of systems are to—

- Keep long-term costs as low as possible.
- Make no aircraft modifications.
- Provide users with 16 hours of continuous CB protection.
- Provide users with greater comfort and fewer physiological burdens.

- Improve flexibility of use with man-mounted systems.
- Achieve compatibility with aircraft life support equipment for each Service—a particularly significant objective, considering the number and different types of aircraft in use.

There are additional requirements for each individual family of systems program.

Rotary-Wing Program

The rotary-wing program is the most advanced of the JSAM programs. In general, both rotary-wing mask variants consist of a hood with a face ring, or coif, which aircrew members place on their heads under their flight helmets when a CBRN encounter is possible. If necessary, the facepiece can be quickly connected to the coif and blower or simply to the filter. In many ways, the rotary-wing aircrew mask is reminiscent of the equipment of knights of old—with a chain mail coif to which a facepiece is attached.

The Mask Protective Unit (MPU)-5(V)/P is the standard helicopter respirator, and the MPU-6(V)/P is the AH-64 Apache variant. The developmental test readiness review for the MPU-5(V)/P is complete, and the developmental testing/operational testing phase is underway. The MPU-6(V)/P is currently in full-rate production, and fielding began this year; it is the replacement for the M48 mask throughout the Army. Unlike the M48 mask, the MPU-6(V)/P does not require a blower to ensure protection in case of emergency egress. Despite the difficult engineering challenge, the Apache variant was probably the easiest to tackle because the developers needed to please only one Service—the Army. The MPU-5 (V)/P is a bit more of a challenge due to the differing Service requirements. So far, however, Aviation Oxygen and Respiratory (AVOX) Systems, Incorporated, has met the challenge.

Design concerns to be overcome with rotary-wing aircrew masks include fitting the coif under the helmet without causing undue discomfort and enabling quick and easy mask attachment. Because each Service has its own protective headgear, fitting the coif under a specific helmet without changing the helmet presents an engineering challenge.

Fixed-Wing Program

The JSAM fixed-wing program is more complex. Three types of mask configurations are required—one for use before donning a flight jacket, one for use while walking to the aircraft, and one for use during flight. To compound and complicate design considerations, individual Service and international user requirements may conflict with one another. Whew!

There are two variants and one upgrade kit currently under development for the fixed-wing program—MBU-25, which is designed for low g-force (non-pressure-breathing [PBG]) environments (but with a PBG upgrade kit available for high g-force environments) and a mask for the JSAM Joint Strike Fighter (JSF). Masks used by fighters in high g-force environments must be capable of functioning in

M50 GPM

the extreme gravitational conditions created by aircraft maneuvering at high speeds. However, the ability to withstand high g-force environments is not necessarily a requirement for aircrews in other types of aircraft. It may be necessary for some aircrews to use masks at high altitudes, requiring a PBG-for-altitude capability. Despite some early contractual issues, the fixed-wing program is now well underway, with Gentex Corporation serving as the current JPEO-CBD mask developer.

The MBU-25 non-PBG mask is designed to provide a common mask that will enable breathing for crew members of F/A-18 fighter jets and other aircraft such as transports (C-17s and C-130s) and tankers (KC-46As). The MBU-25 will provide flame and thermal protection and reduce the heat stress imposed by current masks. It will also be compatible with hoodless CB-protective ensembles such as the Joint Protective Aircrew Ensemble and CWU-66/P. While designated as non-PBG, the MBU-25 will simultaneously provide CB and PBG-for-altitude protection and a PBG capability up to 7.5 g_z.[1]

The MBU-25 with PBG upgrade kit will serve as a common mask for all Service aircrew members in high-performance aircraft such F-15, F-16, and F-22 fighter jets. Although a separate mask (the MBU-26) was a precursor to the MBU-25 with upgrade kit, careful analysis revealed that a modification to the MBU-25 could provide the necessary capabilities at a reduced cost—an important consideration in today's constrained fiscal environment. This was an amazing discovery, given the severe stress imposed on life support systems during high-speed maneuvering and, worse, when the aircrew must eject over water to survive. The MBU-25 mask system was designed for the worst-possible CB conditions, and the MBU-25 with PBG upgrade was designed to ensure aircrew survival in all

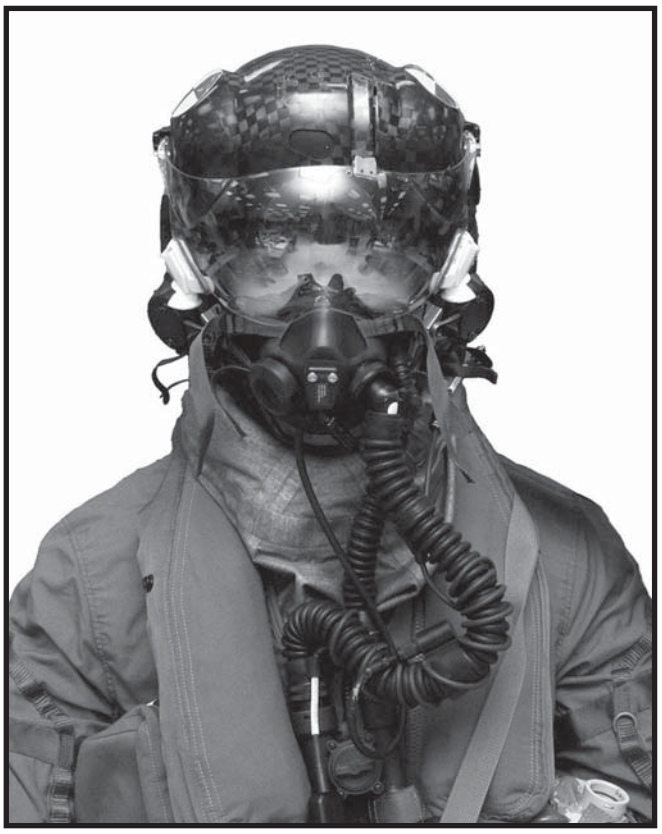
environments—a true tribute to the engineering skills of the JPEO-CBD and their contractors.

The JSF variant is an MBU-25 mask that has been further engineered to meet the requirements of the international JSF program. Many changes have been incorporated into the basic MBU-25. Specifically, the JSAM-JSF will be fully integrated into JSF pilot flight equipment and life support, communication, and helmet-mounted systems. The JSF is still evolving, and the program should be a lively one to complete.

The M53 special-purpose mask is also being used as the basis for the development of a simpler respirator to support aircrews who do not require PBG for high g-force environments. This could ultimately save millions of dollars in procurement, operations, and sustainment costs. The mask has been demonstrated to successfully perform at altitudes of up to 42,000 feet, which would support a significantly large number of aircraft and aircrews.

Conclusion

We are fighting a mask war. At risk are American lives—the lives of people who, for the most part, know nothing of this never-ending war of ideas about the best way to protect them, thereby enabling mission accomplishment. The JPEO-CBD and their contractors are fighting the good fight to provide American Soldiers with the best GPM, the best special-purpose mask, and the best aircrew mask in the world. The struggle will likely continue forever.



JSAM-JSF variant

Two variations of the JSAM family of systems

Endnote:

[1] g_z refers to the vertical component of gravity.

References:

"Aircrew Eye Respiratory Protection: AERP," fact sheet, JPEO-CBD, 11 May 2010, *<https://jacks.jpeocbd.army.mil/jacks/Public/FactSheetProvider.aspx?productId=402>*, accessed on 2 November 2011.

"A/P22P14(V) Respirator Assembly: A/P22P14(V)," fact sheet, JPEO- CBD, 11 May 2010, *<https://jacks.jpeocbd.army.mil/jacks/Public/FactSheetProvider.aspx?productId=403>*, accessed on 2 November 2011.

Christopher Ezelle, "Joint Service Aircrew Mask, MPU-6(V)/P, Apache Variant," *Chem-Bio Defense Magazine*, June 2011.

Christopher Ezelle, "Walk Adjusted 20 Aug," e-mail correspondence, 20 August 2010.

"Joint Service Aircrew Mask, Joint Strike Fighter Variant: JSAM-JSF," fact sheet, JPEO-CBD, 26 July 2010, *<https://jacks.jpeocbd.army.mil/jacks/Public/FactSheetProvider.aspx?productId=469>*, accessed on 2 November 2011.

"Joint Service Aircrew Mask, Rotary Wing Variant: JSAM RW," fact sheet, JPEO-CBD, 8 September 2011, *<https://jacks.jpeocbd.army.mil/jacks/Public/FactSheetProvider.aspx?productId=326>*, accessed on 2 November 2011.

"Joint Service Chemical Environment Survivability Mask: JSCESM," fact sheet, JPEO-CBD, 10 May 2010, *<https://jacks.jpeocbd.army.mil/jacks/Public/FactSheetProvider.aspx?productId=327>*, accessed on 2 November 2011.

"M48 Chemical-Biological Apache Aviator Mask: M48," fact sheet, JPEO-CBD, 10 May 2010, *<https://jacks.jpeocbd.army.mil/jacks/Public/FactSheetProvider.aspx?productId=407>*, accessed on 1 November 2011.

"M50/51 Joint Service General Purpose Mask: JSGPM," fact sheet, JPEO-CBD, 11 May 2010, *<https://jacks.jpeocbd.army.mil/jacks/Public/FactSheetProvider.aspx?productId=328>*, accessed on 2 November 2011.

M53 Chemical-Biological Protective Mask: M53," fact sheet, JPEO-CBD, 26 April 2010, *<https://jacks.jpeocbd.army.mil/jacks/Public/FactSheetProvider.spx?productId=369>*, accessed on 2 November 2011.

Robert D. Walk, "Masks for the Air Service: United States Air Force Masks Through the Decades," *Army Chemical Review*, January–June 2005, *<http://www.wood.army.mil/chmdsd/pdfs/Jan-Jun%202005/Jan-Jun05.pdf>*, accessed on 29 Novembe 2011.

Colonel Walk is an active U.S. Army Reserve CBRN officer assigned to the Center for Combating Weapons of Mass Destruction, U.S. Strategic Command, Fort Belvoir, Virginia.

Exercise "Poet's Corner"—A Multinational Effort to Prevent CBRNE Terrorism

By Lieutenant Colonel Vasilli "Bill" Karatzas and Lieutenant Colonel Michael S. Quinn

Members of the Technical Response Group—which consists of chemical, biological, radiological, nuclear, and high-yield explosives (CBRNE) law enforcement and military representatives from the United States, the United Kingdom, Canada, and Australia—share techniques and procedures, equipment updates, and scientific advances related to preventing and attributing CBRNE terrorism. Technical Response Group members sponsor biennial capabilities exercises (CAPEXs) on a rotational basis.

This year, the United Kingdom's Home Office sponsored the "Poet's Corner" CAPEX. The event, which was hosted by the United Kingdom Police National Chemical, Biological, Radiological, and Nuclear (CBRN) Centre, was conducted at the national Fire Service College at Moreton-in-Marsh, Gloucestershire, England, 21–26 March 2011. With the participation of more than 100 law enforcement and military CBRNE personnel from the United States, the United Kingdom, Canada, and Australia, Exercise Poet's Corner represented the largest CAPEX to date.

The American, British, Canadian, Australian, and New Zealand (ABCA) Armies Program was granted permission to send a team of subject matter experts to observe Exercise Poet's Corner. The ABCA team consisted of representatives from the United States, the United Kingdom, Canada, and New Zealand. The team goal was to observe and report on improvements in national- and coalition-force joint, interagency, intergovernmental, and multinational CBRN sensitive-site exploitation interoperability. Specific objectives were to—

- Observe the execution of Exercise Poet's Corner and develop lessons learned regarding CBRN operations.
- Inform ABCA armies of future capability developments and improvements in CBRN sensitive-site exploitation.
- Coordinate with other capability groups within the ABCA Armies Program to share the information obtained.

Methodology

The focus of Exercise Poet's Corner was on the technical response and forensic collection immediately following a chemical, biological, or radiological incident at an event of interest such as the Olympics, the Fédération Internationale de Football Association World Cup, or a political inauguration. The CAPEX provided an opportunity for participants to—

- Detect the presence of a hazard.
- Defeat a hazard.
- Create a permissive working area.
- Enable fast forensic collection.
- Allow immediate after action reporting.
- Evaluate team performance.

The exercise was comprised of three scenarios, with representatives of participating nations rotating through each

A team member renders-safe a chemical dispersion device.

A team member prepares to x-ray a radiological device.

scenario independently of the other nations. Therefore, each nation had the opportunity to observe the equipment, tactics, techniques, and procedures (TTP) of the other nations. Participating teams were allowed 6.5 hours to complete each of the three scenarios, and national umpires and evaluators provided country-specific injections and arbitration as required.

Scenario Descriptions

Exercise Poet's Corner consisted of the following three scenarios:

- **Biological.** Three days before a scheduled press conference for a major sporting event, law enforcement personnel received reports indicating that a terrorist cell may have obtained unrestricted access to a major laboratory. Two days before the press conference, two custodial cleaners who were employed by a major laboratory became ill and were hospitalized. Medical examination confirmed that the custodians had been exposed to anthrax; one of them subsequently died. On the day of the press conference, responders were dispatched to the laboratory, where they were required to gain access, locate the anthrax source, render-safe the source device, and collect intelligence and forensic evidence. Intelligence gathered from the laboratory indicated a planned attack at the press conference location within several hours. Under this time constraint, responders were required to travel to the venue of the press conference, gain access, locate and render-safe an explosive biological device, and collect forensic evidence. An anthrax simulant was used to provide positive laboratory readings for the scenario.
- **Chemical.** Two terrorists onboard a train were transporting chemical devices in two separate passenger cars when one of the devices broke. The chemical agent was released, and everyone in that passenger car (including the terrorist) was killed. The train stopped in a remote area, and the remaining passengers were evacuated. But upon his departure, the second terrorist (in the second passenger car) left the second chemical device in a backpack on the train. Responders were required to gain access to the car, locate and render-safe the device, identify the suspected agent, and collect forensic evidence. Simulants were used to provide positive detector readings.
- **Radiological.** While attempting to construct a "dirty" bomb, terrorists accidently caused a gas explosion that resulted in the partial collapse of the multistory building where the attempt at bomb construction was taking place. First responders detected a radiological source

and alerted police. CBRN responders were required to locate and identify the source of radiation, render-safe the improvised explosive device, and collect forensic evidence.

Observations

The ABCA team made the following observations with regard to Exercise Poet's Corner:

- **Equipment.** National police and military representatives from all participating nations used the same or similar pieces of commercial- and military-specification detection and identification equipment. The most commonly used equipment included the HazMatID™, HAPSITE® (Gas Chromatography/Mass Spectrometry), AP2Ce chemical war agent detector, improved chemical agent monitor (ICAM), and MultiRAE® gas detector. All teams also used essentially equivalent types of individual protective equipment (ranging from national military versions of chemical-protective overgarments to Level B Tyvek® suits with corresponding hand protection and footwear) during the exercise. The S10 protective mask (or variant) was the most common air-purifying respirator to be used by teams other than those of the United States.
- **Mission command.** National police served in the lead role for all scenarios; all other agencies served in supporting roles. While overall site control was always maintained by the police, area control was sometimes ceded to the supporting agencies for certain mission-specific explosive ordnance disposal functions. Teams from the United States, Canada, and Australia, used similar incident command structures to conduct site operations. The team from the United Kingdom used an incident command structure that, in principle, was similar to those of the other teams; however, there were enough differences in national procedures and terminology that interoperability would have proved challenging.
- **TTP.** Teams from all countries approached each scenario using similar TTP for—
  - Establishing control, structures, organization, and layout.
  - Determining primacy of incident law enforcement command.
  - Performing search and incident operations.
  - Collecting evidence and forensics.
  - Integrating scientific advisers and subject matter experts.
  - Conducting decontamination operations.

Conclusions

Exercise Poet's Corner was a Technical Response Group CAPEX that demonstrated success in the sharing of scientific advancements, equipment updates, and TTP among participating nations. Technical Response Group members conducted the exploitation of CBRNE terrorism events with very few differences.[1] The use of similar equipment and TTP among the various nations not only strengthens confidence, but also sets the stage for potential international interoperability.

Endnote:

[1]Differences were based on national policies and laws such as police/military jurisdiction.

Lieutenant Colonel Karatzas is a CBRN officer assigned to the U.S. Army Chemical, Biological, Radiological, and Nuclear School, Fort Leonard Wood, Missouri. He holds a bachelor's degree in criminal justice from St. John's University, New York City, New York, and a master's degree in environmental management from Webster University.

Lieutenant Colonel Quinn is a CBRN officer assigned to the U.S. Army Nuclear and Combating Weapons of Mass Destruction Agency. He holds a bachelor's degree in chemistry from Auburn University, Auburn, Alabama, and a master's degree in health sciences from Touro University, California.

Groundbreaking at the Terry Facility

By Ms. Amy Newcomb

A 12 July 2011 groundbreaking ceremony was held for the expansion of the Technical Escort Division of the First Lieutenant Joseph Terry Chemical, Biological, Radiological, and Nuclear (CBRN) Responder Training Facility at Fort Leonard Wood, Missouri. The Terry Facility was originally built to train 1,200 Soldiers annually, but 5,000 Soldiers are actually trained there each year. The much-needed expansion, which will allow for the consolidation of all CBRN responder training at Fort Leonard Wood, will take about 18 months to complete. The additional facilities will assist the school with the growth in student population that has been experienced since the course was transferred from the Ordnance Corps in 2004.

Personnel who receive technical escort training provide support to the Department of Defense, U.S. Secret Service, Federal Bureau of Investigation, U.S. Department of State, U.S. Environmental Protection Agency, United Nations, and other national and intelligence chemical and biological munitions communities. They also provide material expertise during peacetime and times of war.

Ms. Newcomb is a member of the Fort Leonard Wood Guidon *staff.*

Professional Military Education

Qualification training courses are listed and described in Table 1.

Table 1. Qualification training courses

Enlisted/Noncommissioned Officer (NCO) Qualification Training Courses	
74D10 Chemical, Biological, Radiological, and Nuclear (CBRN) Specialist Course (School Code 031)	
Phase I (Course 031-74D10 [R] [dL])	Students who have a reservation for Phase II are automatically enrolled in Phase I. They receive e-mail instructions from the Army Distributed Learning Program via Army Knowledge Online (AKO). Students must complete Phase I before reporting for Phase II training. An Army Correspondence Course Program (ACCP) certificate of completion (e-mailed) or other documentation must be presented as proof of Phase I completion during Phase II in-processing. Soldiers who experience problems with Phase I should telephone the ACCP at (800) 275-2872 (Option 3) or (757) 878-3322/3335. If no ACCP representative is available, they should contact Master Sergeant Richard Kennon, 3d Brigade (Chemical), at (860) 570-7115 or *<richard.kennon@us.army.mil>*.
Phases II and III (Course 031-74D10 [R1])	These phases consist of resident training conducted at Fort Leonard Wood, Missouri. Soldiers must have an e-mail printout indicating that they have completed Phase I. Soldiers who fail to provide the printout are returned to their units. Phase II is waived for civil support team members who have already completed the Civil Support Skills Course (CSSC).
Advanced Leader Course (ALC)—Common Core (CC) Distributed Learning (dL) (School Code G400, Course 600-C45)	
This is a 90-day, 60.4-hour, highly facilitated, Web-based, non-military-occupational-specialty-specific course that has replaced only the CC portion of the previous Basic Noncommissioned Officer Course (BNCOC). Unit trainers enroll Soldiers through the Army Training Requirements System (ATTRS). Students receive e-mail registration instructions. Soldiers who fail to register within 15 days prior to the start date are automatically cancelled and considered "No Shows." The next Soldier on the waiting list is granted a confirmed reservation. Soldiers who are classified as "No Shows" or who have been cancelled may be required to wait 24 months to be rescheduled for any phase of ALC. Soldiers must complete the ALC-CC and the three-phase CBRN ALC technical course to be considered an ALC graduate. Soldiers who previously completed BNCOC-CC will receive constructive credit for ALC-CC.	
74D30 CBRN ALC (School Code R031, Course 031-74D30-C45)	
CBRN ALC is a three-phase resident course. Phase I is waived for Soldiers who possess a certificate indicating that they have completed Department of Defense (DOD)-certified hazmat training at the technical level.	
74D40 Senior Leader Course (SLC) (School Code R031, Course 031-74D30-C46)	
This is a three-phase resident course conducted at Fort Leonard Wood.	
Officer Qualification Training Courses	
CBRN Captain's Career Course (C3) (School Code 031)	
Phase I (Course 4-3-C23[dL])	This branch-specific dL phase (formerly Phase II) consists of 108 hours of dL instruction, which must be completed within 60 days before attending Phase II. Unit trainers enroll Soldiers through ATTRS. Students receive e-mail instructions from the Army Distributed Learning Program. Hazmat awareness training can be accessed at *<https://afcesa.csd.disa.mil/kc/login/login.asp>* and completed by students prior to attending Phase II. Students who encounter problems should contact the U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS), CBRN C3 Course Manager, Major John Feero at (573) 563-7397. The successful completion of Phase I (and the CBRN Defense Course [branch transfers]) is a prerequisite for Phase II attendance.
Phase II (Course 4-3-C23)	This branch-specific resident phase (formerly Phase III) consists of 2 weeks of training conducted at the USACBRNS. The focus is on radiological operations, live-agent training, hazmat awareness and operations level training and certification, and the basics of the Joint Warning and Reporting Network used within the Maneuver Control System. The successful completion of Phase II is a prerequisite for enrollment in Phase III.
Phase III (Course 4-3-C23 [dL])	This CC phase (formerly Phase IV) consists of 59.2 hours of dL instruction. Unit trainers enroll Soldiers through ATTRS. Students receive e-mail instructions from the Army Distributed Learning Program. Students must complete Phase III within 60 days of attending Phase IV. Those who encounter problems should contact Major Feero at (573) 563-7397. The successful completion of Phase III is a prerequisite for Phase IV attendance.
Phase IV (Course 4-3-C23)	This resident phase (formerly Phase V) consists of 2 weeks of training conducted at the USACBRNS. The focus is on a computer-aided exercise that includes additional Joint Warning and Reporting Network and Maneuver Control System training, culminating in a military decisionmaking process exercise using state-of-the-art battle simulation equipment.

Joint SLC (Course 4K-74A/494-F18)
This is a 4-day course in which senior leaders are presented with critical CBRN subject matter such as operational- and strategic-level aspects of CBRN defense. Participants also receive toxic-agent training at the Chemical Defense Training Facility. In addition, the Joint SLC forum offers a unique opportunity for senior military leaders, civilian government agency leaders, and leaders representing allied and coalition partners to exchange ideas.
CBRN Precommand Course (Course 4K0F4)
This is a 5-day course that prepares Regular Army and Reserve Component (RC) officers who have been selected for command of a CBRN battalion or brigade or a CBRN position in a division. Each student receives instruction in the application of Field Manual (FM) 7-0, *Training Units and Developing Leaders for Full Spectrum Operations,* a concept to the battalion training management process.
***Note.* Additional information is available at <*https://www.atrrs.army.mil/*>.**

The courses shown in Table 2 are required by CBRN consequence management response force; chemical, biological, radiological, nuclear, and high-yield explosives (CBRNE) enhanced response force package; and civil support team units and for military occupational speciality qualification.

Table 2. Functional training courses

CBRN Defense Course (School Code R031, Course 031-NBC)
This 12-day course, which is conducted by Total Army School System (TASS) battalions at various locations, is designed to provide Regular Army and RC officers and NCOs with the knowledge and skills necessary to perform the additional duty of CBRN officer/NCO at company and detachment levels. The course is taught in a combination classroom/field environment and is supplemented with training videotapes. The extensive use of hands-on training ensures that Soldiers master the requisite skills.
Mass Casualty Decontamination Course (School Code 031, Course 4K-F25/494-F-30)
This 9-day course is appropriate for CBRNE enhanced response force package and domestic-response casualty decontamination team members. Students who successfully complete the course receive certification at the hazmat awareness and operations levels.
CBRN Responder Course (School Code 031, Course 4K-F24/494-F29)
This 10-day course is appropriate for CBRN consequence management response force members. Students who successfully complete the course receive certification at the hazmat awareness, operations, and technician levels.
Civil Support Skills Course (CSSC) (School Code 031, Course 4K-F20/494-28)
This 8-week course is appropriate for Army National Guard civil support team members. Students receive advanced training in hazmat technician and incident command and CBRN survey, point reconnaissance, sampling operations, personal protective equipment selection and certification, decontamination, and specialized training on a variety of military and commercial CBRN detection equipment.
***Note.* All students who successfully complete hazmat training are awarded certificates issued by the International Fire Service Accreditation Congress and DOD. Additional copies of certificates can be obtained at <*http://www.dodffcert.com*>.**

Soldiers who arrive for any resident courses without having first completed all appropriate dL requirements will be returned to their units without action.

USACBRNS RC Personnel

Officers (O-3 through O-5) and NCOs (E-7 through E-9) who are interested in available drilling individual mobilization augmentee positions throughout USACBRNS should contact the U.S. Army Reserve (USAR) Proponency NCO.

Field grade USAR officers who would like to transfer into the Chemical Corps should contact the USACBRNS Deputy Assistant Commandant–Army Reserve (DAC-AR) for specific branch qualification information.

The 3d Brigade (Chemical), 102d Division (Maneuver Support), is currently seeking instructors for various locations. Applicants should be an E-6 or E-7, be qualified (or able to be trained) as Army basic instructors, and have completed the appropriate NCO Education System coursework. Interested Soldiers should contact Master Sergeant Kennon at (860) 570-7115 or <*richard.kennon@us.army.mil*>.

Contact Information

Colonel Jon M. Byrom (DAC-AR), (573) 563-8050 or <*jon.byrom@us.army.mil*>.

Major Javid Heravi (DAC-NG), (573) 563-7676 or <*javid.heravi@us.army.mil*>.

Master Sergeant LaHarold Woodhouse (USAR Proponency NCO), (573) 563-7757 or <*laharold.woodhouse@us.army.mil*>.

Sergeant First Class Joseph Bahr (Army National Guard Proponency NCO), (573) 563-7667 or <*joseph.bahr@us.army.mil*>.

Reference:

FM 7-0, *Training Units and Developing Leaders for Full Spectrum Operations*, 23 February 2011.

4-3 Brigade Special Troops Battalion Employs Special Weapons Exploitation Team

By First Lieutenant Joseph Garcia and Sergeant First Class Terry Blunt

During a recent rotation to Iraq in support of Operation Iraqi Freedom and Operation New Dawn, the Special Weapons Exploitation Team (SWET) platoon, Brigade Special Troops Battalion (BSTB), 4th Infantry Brigade Combat Team, 3d Infantry Division, Fort Stewart, Georgia, was tasked to serve as a weapons intelligence team in Al Anbar Province, Iraq. The platoon performed dedicated weapons intelligence analyses, collected evidence and, on occasion, conducted chemical response missions. They worked closely with the explosive ordnance disposal (EOD) company that was attached to the battalion, creating a chemical, biological, radiological, and nuclear (CBRN)/EOD partnership, which enhanced mission capabilities and effects. As the deployment came to an end, exploitation and response missions gave way to sensitive-site exploitation training efforts in partnership with Iraqi soldiers and police.

As members of the 4-3 BSTB, we would like to share our story with our Dragon brothers and sisters. We feel it is important to convey our realization that, outside the world of unit status reports and staff work, there are still relevant CBRN missions to be performed and there are CBRN platoons working in combat environments and actually making a difference. We are hoping that this knowledge will spur interest in shifting current missions to missions that better complement the needs of the Army and add to the skills we already possess.

During their Operation Iraqi Freedom rotation in 2007, our predecessors from the 82d Airborne Division developed the SWET concept. The first SWET team directly provided their brigade combat team, which was operating in southern Iraq, with sensitive-site exploitation and improvised explosive device (IED) trend analysis capabilities. With no dedicated weapons intelligence team support, this was considered an ideal opportunity for providing dedicated weapons intelligence and evidence collection capabilities to target insurgents and insurgent networks within the operating environment.

Two years ago, during our battalion predeployment site survey visit with the 1st Brigade Combat Team, 82d Airborne Division, our battalion commander decided to retask our chemical reconnaissance platoon, forming what would become a new SWET platoon. The 4-3 BSTB SWET platoon, which was established before the 2010 National Training Center rotation, was tasked to support the maneuver battalions of the 4th Advise and Assist Brigade, 3d Infantry Division, Fort Stewart, Georgia, in Operation Iraqi Freedom/ Operation New Dawn.

In an effort to reorganize the platoon with qualified and trained personnel, nine platoon Soldiers were sent to attend the Weapons Intelligence Course at Fort Huachuca, Arizona. This comprehensive, 6-week course augmented previous training that was designed to prepare the Soldiers for exploitation missions in a combat environment. Shortly after completion of the course, our platoon deployed to Iraq.

The new SWET platoon consisted of one headquarters element, with an officer in charge and a noncommissioned officer in charge, and three SWET teams. The team mission was to collect, assess, and disseminate information gathered on exploitation response missions in the operating environment. Each team was comprised of two to four Soldiers (including one team leader and one or two junior Soldiers) with 74D- or 11-series military occupational specialties. Team members were assigned various roles during crime scene investigation and exploitation missions.

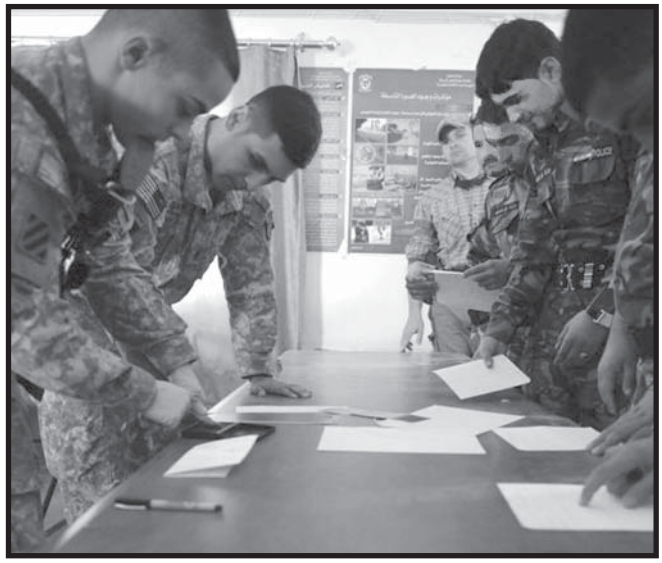
The SWET teams were under the tactical control of our brigade maneuver battalions based at various locations throughout Al Anbar Province. They worked closely with our Iraqi Security Force partners in combined operations and advisory roles. Because the task organization of a SWET mission is not dictated by a modified table of organization

Iraqi soldiers practice vehicle search techniques.

and equipment, flexibility was the key to handling multiple missions in a changing operating environment. As a result, the SWET teams worked with attached EOD teams to provide counter-IED intelligence, collect evidence to better understand explosive-device attacks, and advise the brigade commander regarding IED analysis and exploitation. In addition, the forensic expertise of the platoon proved critical in the targeting and warrant process, playing a pivotal role in the prosecution of cases involving IED cells in Al Anbar Province. During the year-long deployment, the platoon responded to violent extremist network attacks (on short notice and a 24-hour-per-day basis), complemented EOD postblast investigations, and forwarded more than 200 items of evidence (collected from more than 40 response missions) to the Combined Explosive Exploitation Cell for processing.

As the deployment progressed and eventually neared the end, we transferred our operations mission to the EOD teams and focused primarily on our advisory role. We supervised more than 30 joint training events with our Iraqi Security Force partners, providing them with basic sensitive-site exploitation training, including training on scene documentation; evidence collection; latent and known fingerprint collection; postblast analysis; counter-IED tactics, techniques, and procedures; and tactical questioning. The training, which resulted in increased capabilities and professionalism, greatly assisted the Iraqis with their transition toward autonomy and provided them with the skills needed to target violent extremist cells in the province.

The biggest challenge we faced during the deployment was a shortage of dedicated equipment available for conducting chemical response missions. We sometimes borrowed equipment from EOD teams; but this took considerable time, as we were required to wait for hand receipts. If the Chemical Branch elects to take on a future SWET/weapons intelligence team mission set, we recommend that each team be resourced and supplied with its own equipment so that team members can test for biological and industrial hazards. Not only would this reduce response times, but it would also expand downrange capabilities.



Fingerprint training with Iraqi soldiers

The SWET/weapons intelligence team mission provided our brigade commander with value-added, mission-focused, CBRN-relevant support and also demonstrated that CBRN/EOD partnerships enhance the mission.

References:

"4-3 BSTB Special Weapons Exploitation Team (SWET)," standing operating procedure, September 2010.

Center for Army Lessons Learned (CALL) Handbook No. 07-26, *Tactical Site Exploitation and Cache Search Operations,* May 2007.

The Weapons Intelligence Detachment, May 2005.

Iraq Ordnance Identification Guide 2004–06, *Rocket*.

Iraq Ordnance Identification Guide 2004–09, *Pyrotechnic*.

Lieutenant Colonel John Hoefert, "Explosive Ordnance Disposal (EOD) and Special Weapons Exploitation Team (SWET) Operations and Partnered Training Efforts in Al Anbar Province," Lesson of the Day, CALL, U.S. Army, 2010.

4th Infantry Brigade Combat Team (Vanguard) tactical standing operating procedure.

First Lieutenant Garcia is the platoon leader, Chemical Reconnaissance Platoon, 4-3 BSTB. He holds a bachelor's degree in mass communications and journalism from the University of New Mexico.

Sergeant First Class Blunt is the platoon sergeant, Chemical Reconnaissance Platoon, 4-3 BSTB.

Letter to the Editor

I read with interest Captain Chad M. Baker's article entitled "CBRN Officer Versus CBRN Warrant Officer" [in the Summer 2011 issue of *Army Chemical Review*]. Now that time has passed since my original article[1] and the first warrant officers have completed training, I would like to submit some more thoughts about the topic.

First, I applaud Captain Baker for his willingness to take a position contrary to mine. Knowing that he wrote his article for the Captain's Career Course "Write an Article for Publication" assignment, I still applaud his willingness to take a contrary stance and I hope to someday meet him to thank him for his fine article. As he referred to some of my thoughts and those of Chief Warrant Officer Two [now Chief Warrant Officer Three] Charles McKnight on the subject, I must confess to a small bit of pride: I have now become an elder Dragon, er statesman. [Okay, maybe not!]

Second, I applaud *Army Chemical Review* for publishing Captain Baker's article! It is to the credit of the Chief of Chemical, Colonel Vance P. Visser, and the *Army Chemical Review* editorial staff that Captain Baker's article, which is contrary to current Chemical Regimental trends, was allowed to be published. It is imperative that *Army Chemical Review* be used by branch officers to publish their thoughts and to serve as a forum for alternative points of view. I have personally been told that several of my previous articles caused disagreement.

Third, I applaud the first class of chemical, biological, radiological, and nuclear (CBRN) warrant officers. They allowed me the privilege of interrupting their hectic training schedule, and we chatted briefly. I was very impressed by those with whom I spoke. They are all outstanding CBRN Soldiers with solid backgrounds and, without exception, college degrees. All of them were grateful for the opportunity to become the first CBRN warrant officers, and they understood that so much rides on their shoulders. I have absolute faith in their ability!

Finally, some thoughts about the good captain's article. Among the negatives that he noted was the inference that warrant officers would get all the good training, leaving the officers as untrained generalists. I personally don't see that officers will be excluded from technical training, as there will never be a large number of warrant officers and there will always be training available. However, proper professional development planning for officers (and warrant officers) is the key.

As for the thought that CBRN warrant officers will take battalion CBRN officer positions from CBRN officers: Yes, they will. However, there will still be a myriad of these positions left. The primary impact of CBRN warrant officers will be to reduce the number of branch-detailed officers in CBRN officer positions. This should not remove the ability of CBRN officers to learn their trade.

As a soon-to-retire "elder Dragon," I am glad that the Chemical Branch has fine officers such as Captain Baker who are willing to ask "Why?" about decisions made and that we have outstanding CBRN warrant officers helping us keep the Chemical Corps vital! Remember: Change happens, so embrace it!

Elementis, Regamus, Proelium! All Honor and Glory to the Regiment!

Endnote:

[1]Robert Walk and Charles McKnight, "Do We Need a CBRN Operations Warrant Officer Corps?" *Army Chemical Review*, July–December 2007.

—Colonel Robert D. Walk

Army Chemical Review Writer's Guide

Army Chemical Review is a professional-development bulletin designed to provide a forum for exchanging information and ideas within the Army chemical, biological, radiological, and nuclear (CBRN) community. We include articles by and about officers, enlisted Soldiers, warrant officers, Department of the Army civilian employees, and others. Writers may discuss training, current operations and exercises, doctrine, equipment, history, personal viewpoints, or other areas of general interest to CBRN Soldiers. Articles may share good ideas and lessons learned or explore better ways of doing things.

Articles should be concise, straightforward, and in the active voice. If they contain attributable information or quotations not referenced in the text, provide appropriate endnotes. The text length should not exceed 2,000 words (about eight double-spaced pages). Shorter, after-action type articles and reviews of books on CBRN topics are also welcome.

Include photographs (with captions) and/or line diagrams that illustrate information in the article. Please do not insert illustrations or photographs in the text; instead, send each of them as a separate file. Do not embed photographs in Microsoft® PowerPoint or Word. If illustrations are in PowerPoint, avoid using excessive color and shading. Save digital images in a TIF or JPG format at a resolution no lower than 200 dpi. Images copied from a Web site must be accompanied by copyright permission.

Provide a short paragraph that summarizes the content of the article. Also include a short biography (full name, rank, current unit, job title, and education), your mailing address, a fax number, and a commercial daytime telephone number.

Articles submitted to *Army Chemical Review* must include a statement from your local security office stating that the information contained in the article is unclassified, nonsensitive, and releasable to the public. *Army Chemical Review* is distributed to military units worldwide, is offered online at <*http://www.wood.army.mil/chmdsd/default.htm*>, and is available for sale by the Government Printing Office. As such, it is readily accessible to nongovernment and foreign individuals and organizations.

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U.S. Army Chemical Corps

Vision

The Chemical Regiment is a unique, professional corps of chemical, biological, radiological, and nuclear (CBRN) warriors, world renown in countering the entire range of CBRN threats and hazards.

Our versatile Soldiers and leaders are fully networked in the CBRN enterprise and operate in full spectrum, capable formations to protect the Nation.

Values

The Chemical Regiment is an innovative and adaptable force that is dedicated to meeting the CBRN hazmat needs of our Nation. We accomplish this by focusing on three priorities—taking care of our Soldiers, Civilians, and their Families; training as we fight; and maintaining our Regiment.

We are an enduring CBRN team that is committed to the profession of arms, Army values, Warrior Ethos, and the well-being of U.S. citizens.

We instill confidence in our national and international partners by providing credible CBRN technical expertise and remaining responsive and accountable to their needs.

We empower our people to do the right thing by encouraging candor and rewarding initiative. Although our professional CBRN family members are located in different organizations, we work together to accomplish the Chemical Corps mission.

Mission

The Chemical Regiment conducts CBRN operations to protect national interests at home and abroad.

End State

The Chemical Regiment is a professional corps of CBRN warriors—the world leader for CBRN and hazmat operations. It is capable of countering the entire range of CBRN threats and hazards, is equipped with enhanced CBRN capabilities to operate across the full spectrum of conflict, and is fully networked and integrated with the CBRN enterprise to protect the Nation and meet the challenges addressed in national strategies and guidance.

The Chemical Corps Regimental Crest is a combination of the most historically significant symbols of the Chemical Corps. The Chemical Corps colors are displayed on a diagonally divided background of cobalt blue and gold. The war-torn tree trunk in the lower left corner of the crest was taken from the colors of the 1st Gas Regiment and represents the only references available to chemical mortar crews in the no-man's land of World War I. The mythological, chlorine-breathing green dragon in the upper right corner is the standard Chemical Corps symbol with which current chemical, biological, radiological, and nuclear Soldiers most readily identify. It represents the first use of the toxic gas chlorine in combat. The Chemical Corps motto, "Elementis, Regamus, Proelium" (Let us rule the battle through the elements) surrounds the crest.

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