Army Chemical Review

The Professional Bulletin of the Chemical Corps

Winter 2017

I AM COMPETENT

I am a member of a team of teams with the exceptional training skills of a warrior and CBRN expert. I have the skills and tools to rule the battlefield through the elements. I will protect our comrades in arms and our Nation from the threat of weapons of mass destruction.

I AM BRAVE

I have the courage to do what is right, even when no one is looking, and to face my enemies wherever they hide.

I AM READY

I am accountable to myself, my Family, and my unit at all times. It is my obligation to exercise my mind and body to ensure I am physically, mentally, and spiritually fit. I will ensure the CBRN readiness of my unit to fight tonight in any environment.

I AM ON POINT

I am on point for the Nation. My duties require me to face the deadliest of threats, and I will do so head-on.

I AM A DRAGON SOLDIER.
I RULE THE BATTLE THROUGH THE ELEMENTS.

HEADQUARTERS, DEPARTMENT OF THE ARMY
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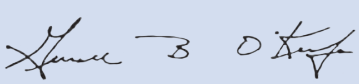

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1723404

Army Chemical Review

The Professional Bulletin of the Chemical Corps

PB 3-17-2, Winter 2017

Chief of Chemical and Commandant,
U.S. Army Chemical, Biological, Radiological, and Nuclear School

Colonel (Promotable) Andy Munera

I am humbled to have this opportunity to serve as your 30th Chief of Chemical and honored to continue serving alongside Dragon Soldiers who sacrifice so much in the defense of our great Nation. I look forward to our journey together as we develop and implement solutions to ensure that the United States and our allies and partners are not attacked or coerced by adversaries possessing weapons of mass destruction.

During my tenure as commandant, my intent is to transform the Army culture to view the presence of chemical, biological, radiological, and nuclear (CBRN) hazards on the battlefield as a unique opportunity to seize, retain, and exploit the initiative. To generate change, the main effort of the U.S. Army Chemical, Biological, Nuclear, and Radiological School (USACBRNS) will be to focus on developing CBRN combined arms solutions to ensure that the Army is ready for today and modernized in the future to win in large-scale combat operations against peer threats in CBRN environments. Across doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF), we will focus on developing solutions that enable the force to retain freedom of action by creating capabilities to assess, protect, and mitigate CBRN hazards at a distance and in stride without degradation to operations.

The CBRN threat is as great as it has ever been. Potential adversaries continue to improve their CBRN capabilities and delivery systems. Our next adversary will likely have more capability than we have experienced in recent combat operations. We must be prepared to support a combined arms maneuver element to defeat a peer competitor in a highly contested and lethal environment. We must train leaders to understand how our forces operate in a multi-domain (land, air, maritime, space, information, and cyberspace) extended battlefield.

Together, we must develop Dragon Soldiers and leaders with the right tools and skills to enable expeditionary movement and maneuver, counter weapons of mass destruction, and defend the homeland. I also ask for your help in developing a Chemical Corps filled with technically competent, values-based professionals. Our Soldiers and leaders will embody the attributes of a Dragon Soldier and remain competent, brave, ready, and on point for the Nation.

We will accelerate the review of every USACBRNS course to ensure that we are preparing our Corps for this future environment. Our institutional training and education will ensure that we retain our technical competence and that CBRN staffs and units are enabled to fully integrate into any operation. Institutional training will focus on our core competencies (assess, protect, and mitigate).

I also call on leaders to transform our CBRN staffs. After years of being used for non-CBRN tasks, it is time to refocus our efforts on CBRN defense and countering weapons of mass destruction. CBRN staffs at all levels must be experts in our field, providing timely risk-based advice to leaders. We must seek out every opportunity to professionally develop subordinate staffs. We must enable our force to effectively maintain our CBRN defense equipment and train for combined arms maneuver in a CBRN environment, as these are two of the most critical missions of our CBRN staffs at every echelon.

Talent management is the cornerstone that facilitates success. Our institutional training and education, combined with unit training and personal professional development, provide our force with qualified professionals. We need to place competent and confident CBRN leaders in key billets to support operational readiness and force modernization. We also seek to provide operationally focused broadening opportunities.

I am proud of the capabilities our Corps can provide to maneuver commanders and those responsible for the defense of the homeland. We have completed our force design update, and we will finish the fielding of the Nuclear Biological and Chemical Reconnaissance Variant Stryker and dismounted reconnaissance sets, kits, and outfits in the near future, continuing to expand current capabilities. The Chemical Corps has never had as much capability as we have today. Optimizing current capability will require a focused effort from leaders at all levels. Coordination across all three components will remain critical to leverage new capabilities, increase our capacity through close teamwork, and identify lessons learned from new organizations and equipment that will be used to shape the future force.

(Continued on page 5)

Chemical Corps Command Sergeant Major

Command Sergeant Major Henney M. Hodgkins

Greetings! Serving as your Chemical Corps Command Sergeant Major over the last 18 months has truly been an honor and a pleasure. I have thoroughly enjoyed visiting with Soldiers and leaders at echelons from Army service component commands to unit levels. Each engagement expanded my knowledge of the daily challenges that Dragon Soldiers encounter in accomplishing the mission and ensuring that the Army is ready to fight and win in a chemical, biological, radiological, and nuclear (CBRN) environment as part of large-scale combat operations.

The *NCO 2020 Strategy* was derived from data collected from numerous surveys, Army Inspector General Inspection results, Center for Army Leadership Annual Survey of Army Leadership findings, and noncommissioned officer (NCO) solariums hosted by the Sergeant Major of the Army over the years. These documents, which highlight the importance for the NCO Corps to fundamentally change and evolve the NCO Education System in order to meet the growing challenges of an uncertain future.[1] There is no indication that the operational tempo will change in the near future. Therefore, it is extremely important that we as NCOs know and understand the *Army Leader Development Strategy 2013*, the *NCO 2020 Strategy*, and our specified roles as they pertain to the technical, tactical, and individual readiness of our Soldiers.[2,3] Our Soldiers want to train, follow effective leaders, and be held accountable for their actions.

The atrophy of core competencies within our NCO cohort has instigated a synchronized effort within the U.S. Army Training and Doctrine Command (TRADOC) to improve our skills, knowledge, and attributes. The Chief of Staff of the Army's No. 1 priority is readiness; therefore, it is incumbent upon us to continuously assess threats posed by our adversaries and ensure that our professional military education maintains the rigor needed to ensure combat success. The Directorate of Training and Leader Development, U.S. Army Chemical, Biological, Radiological, and Nuclear School, is working two initiatives specifically focused on the holistic development of our NCOs. The first is the necessary inclusion of leader core competencies back into all facets of the NCO Education System to ensure "a comprehensive leader development system that links training, education, and experiences spanning the operational, institutional, and self-development learning domains."[4] Why leader core competencies? According to the Center for Army Leadership Annual Survey of Army Leadership, the problem is that the Army lacks a standardized and relevant common core curriculum for NCO professional military education. As we evaluated the Army learning areas of Army leadership, the Army profession, mission command, human dimension, and professional competence, it was apparent that specific learning outcomes must be achieved if we are to remain relevant by way of distance learning platforms and resident training. As we implement these efforts, we are taking a deliberate approach to ensure that lesson plans for the leader core competencies are interwoven into the current program of instruction to enhance our technical and operational abilities and to facilitate the need for leaders to remain agile and adaptive. Additionally, our teaching method should focus on cultivating our NCOs' ability to instruct and facilitate training rather than just repeat what is in a lesson plan. These changes will further develop our NCOs as we focus on the complexity and uncertainty of large-scale combat operations (See Figure 1, page 4).

In conjunction with guidance received from the commander of the U.S. Army Combined Arms Center, we are currently working on establishing partnerships with continuing education degree programs for Chemical Corps Soldiers. The Directorate of Training and Leader Development is working with colleges and universities to go beyond Army continuing education recommendations when awarding credits based on CBRN courses (curriculum). The intent is to have institutions of higher learning recognize the rigorous and technical subjects at which our Soldiers excel and give credit where credit is due.

On 28 June 2018, the Chemical Corps will celebrate its 100th anniversary. To commemorate this significant event, I would like to announce that on behalf of myself; the Chief of Chemical and Commandant, Colonel (Promotable) Antonio V. Munera; and the Chemical Corps Chief Warrant Officer, Chief Warrant Officer Two Jesse S. Deberry, we are reestablishing the Best CBRN Warrior Competition at Fort Leonard Wood, Missouri. The competition will be held 19–23 June 2018. The intent of this event is to recognize Dragon Soldiers whose mental agility and physical fitness surpass that of their peers during an intense 3-day event. Temporary duty caps limit us to 22 teams (two personnel per team per installation). Because of limited funding, sponsors, coaches, and unit representatives will not be allowed to attend. A set time will be established to allow installations to register their team. Once the deadline for registration expires, attendance will be open on a first-come, first-served basis; therefore, allowing installations with multiple major commands to have more than one team. The 100th

Figure 1. Leader Core Competencies Learning Outcomes

Army Learning Areas	General Learning Outcomes	Leader Core Competencies
Army Leadership and the Army Profession	• Soldiers and civilians proficient in leader attributes and competencies • Soldiers and civilians model characteristics of the Army profession	**Leadership** • Army Leader Requirements Model • Leader development/team building • Character development/Army ethics • Counseling/coaching/mentoring • Conflict management
Mission Command	• Soldiers and civilians demonstrate proficiency in mission command philosophy • Soldiers and civilians demonstrate proficiency in mission command leader and commander tasks • Soldiers and civilians demonstrate proficiency in mission command staff tasks • Soldiers and civilians demonstrate proficiency in mission command systems	**Operations** • Mission command philosophy/systems • Troop leading procedures • Military decision-making process • Plans, orders, and overlays • Operational art and design
Human Dimension	• Soldiers and civilians demonstrate a capacity in creative and critical thinking • Soldiers and civilians demonstrate proficiency in communication skills • Soldiers and civilians demonstrate proficiency in cultural awareness & cross-cultural competencies in the strategic environment of 2025 and Beyond • Soldiers and civilians pursue comprehensive fitness/resiliency and performance enhancement skills • Soldiers and civilians pursue lifelong learning, self assessment, and goal setting	**Communications** • Written and oral communication • Military briefings • Critical thinking/problem solving • Effective listening • Military history **Readiness** • Soldier for Life • Comprehensive Soldier fitness • Physical readiness • Army programs • Financial readiness **Training Management** • 8-Step training model • Plan and give a class • Training management system • Individual to collective tasks/METL • Conduct training meeting
Professional Competence	• Soldiers and civilians demonstrate proficiency in Army and Joint doctrine • Soldiers and civilians support policies, programs, and processes • Soldiers and civilians are technically and tactically competent	**Program Management** • CSDP/property accountability • Maintenance/inspections • Information management • Army doctrine/policies • Fundamentals of management

Learning Continuum-Soldier Competencies Subcommittee (December 2015)

Bloom's Taxonomy

BLC
- ✓ Understand
- ✓ Apply

ALC
- ✓ Understand
- ✓ Apply

SLC
- ✓ Apply
- ✓ Analyze

MLC
- ✓ Analyze
- ✓ Evaluate

SMC
- ✓ Analyze
- ✓ Evaluate

Legend:

CSDP-Command Supply Discipline Program

METL-Mission-essential task list

BLC-Basic Leaders Course

ALC-Advanced Leaders Course

SLC-Senior Leaders Course

MLC-Master Leader Course

SMC-Sergeants Major Course

Anniversary Best CBRN Warrior Competition will consist of a physical endurance assessment, a written test, hands-on warrior tasks and battle drills, weapons qualification, land navigation course, an obstacle course, and sensitive-site exploitation. This competition is open to Regular Army, Army National Guard, and U.S. Army Reserve Soldiers.

Until next time, please be safe and continue to do great things for our Corps!

Endnotes:

[1]U.S. Army Training and Doctrine Command, *NCO 2020 Strategy*, 4 December 2015, <http://www.tradoc.army.mil/FrontPageContent/Docs/NCO2020.pdf>, accessed on 4 October 2017.

[2]TRADOC, *Army Leader Development Strategy 2013*, <http://usacac.army.mil/sites/default/files/documents/cal/ALDS5June%202013Record.pdf>, accessed on 4 October 2017.

[3]*NCO 2020 Strategy*.

[4]Ibid.

Reference:

Training Circular 7-22.7, *Noncommissioned Officer Guide*, 7 April 2015.

Elementis regamus proelium!

("Chief of Chemical and Commandant . . . ," continued from page 2)

Our team is developing the capabilities that the Chemical Corps will require in 2040 and beyond. We are staying closely linked with our maneuver partners as we develop the future Chemical Corps. Support to maneuver will always be a focus for our Corps. We will set our Corps on a path that ensures that we are prepared to support maneuver forces anywhere in the world and defend the homeland. Future capability development will allow our formations to:

- Assess hazards at a distance.
- Protect the force to preserve freedom of action.
- Mitigate hazards in stride.

Force modernization will focus on the development of CBRN integrated early warning, integral protection, and the modernization of contamination mitigation. My team is already writing a conceptual framework for future integrated early warning systems that will enhance decision making and reduce risk, and we are working with partners to make incremental technology advancements to close existing capability gaps. Next-generation decontamination is also a critical force modernization focus area. Upgrading existing terrain, fixed sites, equipment, and personnel decontamination capabilities is important to our future.

Focusing on operational readiness, force modernization, and personnel is not new to the Chemical Corps. On 28 June 2018, the Chemical Corps will turn 100 years old. We will take time to mark this significant milestone and honor those who have come before us. Not only is this a celebration of those who ensured the security of our Nation for the last century, it is an opportunity for us to shape the future of CBRN defense and countering weapons of mass destruction. The Chemical Corps at 100 Years: Honoring the Past—Preparing for the Future!

Elementis regamus proelium!

Chemical Corps Chief Warrant Officer

Greetings Dragon Soldiers! I would first like to welcome our newly branch-qualified chemical, biological, radiological, and nuclear (CBRN) technicians into the warrant officer cohort! They are:

- Warrant Officer One Bryon Duncan.
- Warrant Officer One John Hendricks.
- Warrant Officer One Michael Kumke.
- Warrant Officer One Brian Moore.
- Warrant Officer One Daniel Thomas.
- Warrant Officer One Charles Turner.
- Warrant Officer One Brandi Walstead.

These warrant officers have already exhibited great potential, and I'm excited to see what they contribute to the future of our great Corps.

Chief Warrant Officer Two Jesse S. Deberry

As the Chemical Corps approaches its 100th year, the Corps is facing some unique challenges and undergoing changes in force structure, training, and equipping to meet these challenges. The Army is transitioning from a counterinsurgency based force to a force able to fight and win during large scale, autonomous operations. The Chemical Corps mission will be to enable freedom of maneuver across the countering weapons of mass destruction mission spectrum.

To prepare, train, and develop CBRN warrant officers to be the Army's premier technical experts in CBRN countering weapons of mass destruction operations and systems integration, I have developed a strategy based on the following tenets:

- Accessions.
- Leadership development/talent management.
- Enabling of maneuver.

Accessions

The selection of a best-qualified applicant is an arduous and competitive process. Every selection counts, and every attrition adversely affects the readiness of our units. Future warrant officer selection will involve a comprehensive analysis of an applicant's skill sets, ability to self-start, experience, military and civilian education, diversity in assignments, and special certifications or skill sets. The fiscal year (FY) 2018 Warrant Officer Selection Board prerequisites updates will include a mandatory letter of recommendation from a CBRN warrant officer serving in a battalion position or above and the addition of civil support team, team chief (Army National Guard only) chemical reconnaissance detachment, or team leader as leadership positions considered for selection. Lastly, FY 18 CBRN warrant officer accessions will increase from six to 10 possible applicants.

Leader Development/Talent Management

Leader development is instrumental in preparing CBRN warrant officers to perform optimally at future positions of greater responsibility. Improvements to CBRN warrant officer leader development will include 740A Critical Site Selection Boards, which will be conducted every 36 months (or as there are major changes to doctrine, organizations, or equipment) to ensure that operational readiness and rigor are maintained in warrant officer initial military education and professional military education. As mentioned in earlier *Army Chemical Review* articles, the U.S. Army Chemical, Biological, Radiological, and Nuclear School is partnering with industry to provide training-with-industry (TWI) opportunities for officers, warrant officers, and noncommissioned officers (late FY 18–FY 19). Leveraging TWI opportunities will assist in bolstering CBRN warrant officers' technical expertise and keep pace with emerging technologies. The goal of this tenet is to develop CBRN warrant officers to function optimally.

Next, talent management for CBRN warrant officers is a multiechelon effort conducted by the U.S. Army Human Resource Command (HRC), Fort Knox, Kentucky; unit commanders; and the Chemical Corps chief warrant officer for positions at division level and above. Lastly, develop future CBRN warrant officer positions through force management to address operational requirements and technical gaps within Army organizations. The goal is to assign proven and best-qualified warrant officers to critical positions in order to enhance CBRN capability.

Enabling of Maneuver

This tenet is a combination of the previous tenets. CBRN warrant officers will be developed, trained, and capable technical experts that drive commander's decisions by integrating and operating emerging warning and reporting technologies and providing in-depth CBRN information preparation of the battlefield, enhancing CBRN readiness through training certification and periodic readiness checks, providing oversight to CBRN system maintainers, and providing advanced troubleshooting of CBRN systems.

Conclusion

I'm proud to be called a Dragon Solider because of what you do and accomplish each and every day. Thank you for your continued support and dedication! I look forward to visiting your installations in the near future.

I recommend the following as suggested reading for warrant officers:

- Stanley A. McChrystal, et al., *Team of Teams: New Rules of Engagement for a Complex World*, Portfolio/Penguin, New York, 2015, ISBN: 978-0-698-17851-9.
- Elbert Hubbard, *A Message to Garcia*, Sublime Books, 1899, ISBN: 978-1-61720-215-5.

References:

The Army Warrant Officer 2025 Strategy in Support of Force 2025 and Beyond, 2016, <http://www.tradoc.army.mil/tpubs/misc/WO2025_Strategy_20160329.pdf>, accessed on 4 October 2017.

U.S. Army–Marine Corps White Paper, "Multi-Domain Battle: Combined Arms for the 21st Century," 18 January 2017, <https://ccc.amedd.army.mil/PolicyPositions/Multi-Domain%20Battle%20-%20Combined%20Arms%20for%20the%2021st%20Century.pdf>, accessed on 4 October 2017.

U.S. Army Training and Doctrine Command Pamphlet 350-70-1, *Training Development in Support of the Operational Domain*, 24 February 2012.

Elementis regamus proelium!

BUILDING JOINT INTEROPERABILITY THROUGH SISTER SERVICE SCHOOLS

By Captain James T. Farrell

During a course on leadership held at the Expeditionary Warfare School (EWS), Marine Corps Base Quantico, Virginia, students were asked what leadership looked like and were directed to draw a picture on a notecard depicting what leadership meant to them. The majority of us drew the most common graphic response, a person interacting with other people to achieve a common purpose. However, in the joint combined class of more than 250 junior officers, one student's drawing stood out as particularly symbolic.

A Brazilian naval officer drew a lighthouse with a guiding light that cuts through the fog and mist and informs ship crews of danger so that they may complete their mission. This response was one that I would not have thought of on my own; this illustrates the benefits of joint and combined education. The metaphorical answer that he developed nests with the current Army definition of leadership, but provides a unique perspective based on his experience. Army Doctrine Publication 6-22, *Army Leadership*, states that "Leadership is the process of influencing people by providing purpose, direction, and motivation to accomplish the mission and improve the organization."[1] The ability of EWS to bring individuals together and create an inter-Service and international educational environment highlights the importance of this institutional education.

EWS is a 40-week resident course designed to create Marine air-ground task force officers.[2] The U.S. Army Chemical Corps has historically sent one officer per year to EWS. While at EWS, students take courses on the Marine Corps foundation and history, doctrine, the Marine Corps planning process, amphibious operations, leadership development, professional communication, small wars, and Marine air-ground task force operations as well as military occupational specialty expansion courses. Training also includes staff rides (Gettysburg, Pennsylvania, and The Battle of Bull Run, Manassas, Virginia) and travel (Washington, D.C.; Norfolk Naval Base, Virginia; Philadelphia, Pennsylvania; the National Museum of the Marine Corps, Triangle, Virginia). Student-led electives are offered and include activities from civil war battlefield study groups, orienteering groups, and sky-diving groups. The EWS student body consists of high-performing U.S. Army, U.S. Marine Corps, U.S. Navy, U.S. Air Force, U.S. Marine Corps Reserve, and international officers. The large student body is divided into conference groups of 10 to 12 students, with representation from maneuver, fires, logistics, intelligence, aviation, communications, inter-Service, and international officers. The Marine Corps selection process, which is based on performance evaluations, determines which Marines attend resident EWS or distance learning EWS, similar to the process used for selection to the U.S. Army Command and General Staff College at Carlisle Barracks, Pennsylvania. Inter-Service and joint Service officers are selected by their respective Service or country based on stellar performance and potential. Marine officers usually attend EWS between their sixth and eighth years of service. Because the Marine Corps sends its officers to EWS later in their careers, Marine officers selected for resident EWS bring greater depth and breadth of experience. The Army usually sends its officers to the Captain's Career Course around the 4-year mark.

As the only chemical, biological, radiological, and nuclear (CBRN) officer in my class, I planned, coordinated, and resourced two CBRN military occupation specialty expansion course trips. The first trip included site visits to the Defense Threat Reduction Agency, Fort Belvoir, Virginia, and the 22d CBRN Battalion, Aberdeen Proving Ground, Maryland. The second trip was to my regimental home, Fort Leonard Wood, Missouri. While at Fort Leonard Wood, I was integrated into a CBRN Captain's Career Course for a week, where I got reintroduced to the Nuclear Biological Chemical Reconnaissance Vehicle and reconnaissance operations. I also participated in briefings from CBRN students and visits from senior CBRN officers. These two opportunities, along with self-study, allowed me to refresh and maintain my CBRN expertise.

(Continued on page 10)

Property Accountability Virtual Playbook: The Right Tool at the Right Time

By Captain Matthew J. Johnson

Improving Property Accountability

In January 2017, the Logistics Training Department, U.S. Army Quartermaster School, Fort Lee, Virginia, began an initiative to create a Property Accountability Virtual Playbook (PAVPB). The playbook is an online, computer-based training resource that promotes property accountability and improves Army readiness.

Army leaders have the responsibility to achieve and sustain Army readiness, ensuring that Soldiers have the right types and quantities of equipment needed to "fight tonight." Department of the Army investigations of excess equipment and financial liability of property loss derived from inventories indicate that the Army is attacking the problem but that challenges remain with Soldier knowledge of property accountability principles.

To address the knowledge gap, the U.S. Army Combined Arms Support Command (CASCOM), Fort Lee, and the Quartermaster School assembled a team of experts spanning several different organizations to design and develop the interactive training product with an overall objective of improving property accountability across the Army. "CASCOM is here to help our units in the field," the Quartermaster General, Brigadier General Rodney D. Fogg, stated. "The Property Accountability Virtual Playbook is the right tool at the right time to help our junior leaders succeed," he added.

Interactive Training

PAVPB is an interactive, virtual, 3D training resource that teaches users about property accountability by demonstrating the proper way to conduct a change-of-command inventory. The target audience for PAVPB is nonlogistician leaders across the Army, from commanders to sub-hand receipt holders.

PAVPB focuses on the change-of-command inventory (a vital inventory that is conducted at the tactical level) to demonstrate proper property accountability techniques.

Users will be able to interact with the PAVPV 3D arms room.

Users will be able to conduct a virtual inventory of several different weapons systems and components.

Users will be able to inventory a 3D-rendered M1126 Stryker infantry carrier vehicle and its components.

A company commander is fully dedicated to property accountability for all equipment in the unit at the time of the inventory. The change-of-command inventory forms the baseline inventory process for inventory types, to include cyclic and sensitive-item inventories. The PAVPB user learns about the people, property, and processes that are encountered during the preinventory, inventory, and postinventory phases of a change-of-command inventory.

Relevant Resources

According to Chief Warrant Officer Five Jonathan O. Yerby, Quartermaster School Regimental Chief Warrant Officer, "Interactive digital media is a force multiplier, and it is how young people learn." PAVPB is a digital training enabler that allows users to participate in interactive inventories of a Stryker armored vehicle, Abrams tank, and three different weapon systems. PAVPB also includes tactics, techniques, and procedures and best practices that have been collected from units and subject matter experts across the Army. It explains the roles of officers, warrant officers, and noncommissioned officers who are involved in the change-of-command process, ensuring property accountability. With the Army transition from the Property Book Unit Supply Enhanced System to the Global Combat Support System–Army (GCSS–Army), PAVPB familiarizes the user with the new GCSS–Army terminology. It also links users to valuable property accountability and Command Supply Discipline Program resources and references to assist those with property responsibility across the Army.

Teamwork and Collaboration

The collective efforts of numerous organizations, including the Maneuver Center of Excellence, Fort Benning, Georgia; the U.S. Army Ordnance School, Fort Lee, Virginia; and the GCSS–Army developers, Midlothian, Virginia, yielded impressive results toward the creation of a final product. Great care was taken to ensure that PAVPB is user-friendly and does not require a common access card. The end product is also intended to be adaptable for mobile versions and touch screen deployment in the future. PAVPB will be published on multiple platforms, including Sustainment One Stop, Army Training Network, and additional public Web sites. After receiving feedback from the field and incorporating the beta testing results, PAVPB was made available across the Army. PAVPB provides Soldiers with a valuable resource that delivers training on property accountability and promotes Army readiness. It can be accessed at <http://www.cascom.army.mil/index.htm>.

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("Building Joint Interoperablility . . . ," continued from page 8)

Department of the Army Pamphlet 600-3, *Officer Professional Development and Career Management*, Chapter 4, outlines Army officer education objectives.[3] It delineates the domains of education between institutional settings, operational assignments, and self-development. EWS is an excellent opportunity for institutional officer education; and combined with self-development time incorporated into the curriculum, it can provide future CBRN officers with an unparalleled educational opportunity. EWS prepares officers for follow-on assignments in company command and staff positions.

I recommend that CBRN officers attending EWS have prior military or other career experience. The selected CBRN officers should be well-developed in CBRN officer-coded positions in order to support and prepare them for positions after EWS. EWS is an excellent professional military education opportunity, and the Chemical Corps should continue to send high-performing CBRN officers who will be excellent representatives of the Chemical Corps and the Army.

Endnotes:

[1]Army Doctrine Publication 6-22, *Army Leadership*, 1 August 2012.

[2]Marine Corps University Web site, "Expeditionary Warfare School," <https://www.usmcu.edu/ews>, accessed on 12 September 2017.

[3]Department of the Army Pamphlet 600-3, *Officer Professional Development and Career Management*, 26 June 2017.

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Sharpening the Spear:
Enabling Special Operations Forces to Counter Weapons of Mass Destruction

By Captain Patrick L. Hamlin and Captain Brian M. Johnson

Introduction

Gone are the days of massive chemical, biological, radiological, and nuclear (CBRN) warfare; infantry assaults; and tanks fighting through the elements. The relevancy of countering weapons of mass destruction (CWMD) lies in interdicting and preventing enemies, whether state-sponsored or independent, from using these weapons. The brigade combat team prepares to fight near-peer opponents, and the tasks of conducting this specific aspect of warfare and type of stability operations lie within a different community of the joint force: special operations forces (SOF). Inside SOF, as if an island unto themselves, CBRN personnel operate around the world, outside of the comfort and support of general-purpose forces (GPF). These personnel must provide their elements with unparalleled support and embody a level of competency, mastery, and expertise that is atypical of the normal operating force.

Going forward, the Chemical Corps must recruit, develop, retain, integrate, and employ CBRN personnel to enable SOF to counter weapons of mass destruction. Three keys in accomplishing this complex task are operationalizing CBRN enablers, retaining personnel, and integrating CBRN into the SOF targeting process.

Operationalizing CBRN Enablers

Operationalizing CBRN enablers for SOF is critical for supporting the mission to combat weapons of mass destruction. This effort directly ties into the foundational activity *develop* within Joint Publication (JP) 3-40, *Countering Weapons of Mass Destruction*.[1] Training not only improves the capability of the CBRN enabler, but also helps to instill trust with the operators within the SOF community. Building technical expertise and tactical proficiency are two primary methods for operationalizing CBRN enablers.

Technical expertise relies on continuing education built from professional military training, additional skill education, and other military skill training. CBRN training should include CBRN professional military education courses, such as the Technical Escort Course, the Dismounted Reconnaissance Course, and the Mass Casualty Decontamination Course. The SOF-specific training courses required to meet special mission requirements include—

- Survival, Evade, Resist, and Escape–C (High Risk).
- Basic Airborne School.
- Jumpmaster School.
- Ranger School.
- Exploitation Analysis Center–Organic.
- Technical Exploitation Course.
- Operator Advanced Course.

Sending CBRN enablers to these technical courses expands their capability to provide high-level analysis, conduct exploitation, and support CWMD operations.

Tactical training, which is just as important as technical training when supporting SOF, encompasses advanced marksmanship skills, close-quarters combat, and airborne operations. Tactical training enhances an enabler's ability to conduct operations alongside the operators they are supporting and increases the trust needed to effectively integrate into SOF organizations. Conducting this training alongside the operators further enhances the impact of the training. This level of training is time-intensive and requires significant funding. Retention of personnel is essential, considering these dynamics, the budgetary constraints of the past, and the current operating environment.

Retaining Personnel

To support the task *retain* and other foundational activities discussed in JP 3-40, the Chemical Corps must consider three factors that govern CBRN inclusion and development into the Army and SOF—CBRN personnel inclusion, satisfaction of key development positions, and long-term development.[2] An example of retaining a commissioned CBRN officer is demonstrated below.

First, the appropriate point of inclusion for a lieutenant who has completed the CBRN Basic Officer Leader's Course to begin service in the SOF community is as a battalion CBRN officer assigned to a Special Forces Group. The officer begins in a role that is appropriately coded and designed to support the lowest Special Forces echelons. A certain degree of unfamiliarity can be quickly overcome and is not immediately detrimental to the assigned organization. In this role, the officer has branch representation at his or her immediate higher echelon in the same unit, unlike other possible entry points into the SOF community. The CBRN officer serves 2 to 4 years in the battalion staff role before departing for the final level of CBRN professional military education, the CBRN Captain's Career Course. The officer further develops an understanding of CBRN threats,

expanded organizational influence, and the national nuances of CWMD during the CBRN Captain's Career Course.

After completing the CBRN Captain's Career Course, CBRN officers serving in the rank of captain should seek command within GPF to build expertise with conventional forces. Because SOF exist to support and have interoperability with GPF, a CBRN officer should bring a developed level of experience. At this point in the CBRN officer's career, return service to the Corps as a company commander brings experience from offensively postured forces utilizing CBRN defense, thus benefiting the total CBRN force and further developing the CBRN officer.

Contingent upon success in the GPF, a CBRN officer who is determined to continue service in SOF should be reassigned to a Special Forces group for a second command of a CBRN reconnaissance detachment, with subsequent assignments pipelined exclusively in SOF. The long-term goal of this career management strategy is to ensure that officers (ultimately serving at the Theater Special Operations Command) have the finest understanding of SOF support, with a reputation built and demonstrated within the community that they globally serve. SOF serve around the world and in every geographic region; CBRN officers rotating between Special Forces groups, the 75th Ranger Regiment, the 160th Special Operations Aviation Regiment, and other organizations can develop a well-roundedness akin to GPF-oriented CBRN officers, while still meeting career requirements.

Although the professional development and leadership requirements for lower-enlisted Soldiers and noncommissioned officers are different, the idea of being able to prioritize assignments and positions is applicable. All CBRN personnel who have demonstrated a willingness to perform, adapt, and succeed need to be retained in order to cultivate ongoing experience, proficiency, and expertise in supporting SOF. Different forces within the SOF community require modifications to the proposed pipeline, such as support to rangers or special operations aviation, but this framework demonstrates the ability for personnel to satisfy key development requirements from Department of the Army (DA) Pamphlet (Pam) 600-3, *Officer Professional Development and Career Management*, and DA Pam 600-25, *U.S. Army Noncommissioned Officer Professional Development Guide*.[3, 4] Ensuring that developed CBRN personnel are in SOF billets increases the probability that appropriate expertise will be integrated into the targeting process.

Integrating CBRN into the SOF Targeting Process

Integrating CBRN personnel into the SOF targeting process is the most complex aspect of supporting CWMD operations. To accomplish this task, CBRN personnel need to create synchronization between their technical and tactical experiences and their understanding of SOF capabilities, access, and placement. The way in which SOF conducts targeting is known as find, fix, finish, exploit, analyze, and disseminate (F3EAD).[5] F3EAD is a system that allows SOF to anticipate and predict enemy operations; identify, locate, and target enemy forces; and perform intelligence exploitation and analysis of captured enemy forces and materiel.[6] Central to the F3EAD process is the functional fusion of operations and intelligence functions throughout the SOF organization.[7] This is where CBRN enablers can truly impact CWMD operations. By incorporating technical expertise and knowledge into all aspects of the targeting process, CBRN personnel can truly support SOF in accomplishing CWMD missions and help identify potential threats before they come to fruition.

Conclusion

Time, opportunity, and utility are converging in today's complex world. CBRN personnel represent experts trained against CBRN threats. Although CWMD operations have been relocated from the U.S. Strategic Command to the U.S. Special Operations Command, skills and personnel historically provided to units and organizations within the U.S. Special Operations Command have and will continue to operate in a different and unique aspect of special operations compared to the traditional missions of GPF peers. Currently, little to no effort is being made to cultivate expertise or build long-term relationships within the SOF community. The personnel who are allocated to these assignments adapt to the unique environment and relatively quickly depart the community—sometimes never to return. It is a waste of potential, experience, and expertise. The Chemical Corps must seek change in the way resources are allocated in order to greater support the Nation's mission requirements and provide a superior level of support to SOF.

Endnotes:

[1]JP 3-40, *Countering Weapons of Mass Destruction*, 31 October 2014, p. I-5.

[2]Ibid.

[3]DA Pam 600-3, *Officer Professional Development and Career Management*, 26 June 2017.

[4]DA Pam 600-25, *U.S. Army Noncommissioned Officer Professional Development Guide*, 11 September 2015.

[5]JP 3-05.5, *Joint Special Operations Targeting and Mission Planning*, 17 May 2012, p. 5-3.

[6]Ibid., p. 5-2.

[7]Ibid., p. 5-2

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By Captain Jason D. Bryan

On 8 April 2004, Dr. Condoleezza Rice testified before The National Commission on Terrorist Attacks Upon the United States, "Those charged with protecting us from attack have to succeed 100 percent of the time. To inflict devastation on a massive scale, the terrorists only have to succeed once, and we know they are trying every day."[1]

Readiness is a measure of the ability of a military unit to accomplish its assigned mission. The Army takes mission readiness seriously, from tracking training, equipment, and supplies to tracking medical and fitness profiles. Logistics, available spare parts, training, equipment, and morale are key components to readiness. To be successful in our profession of arms, readiness must always be a top priority for commanders at all levels; this includes the readiness of chemical, biological, radiological, and nuclear (CBRN) training and equipment. However, CBRN has been one area where commanders have been willing to assume risk, which could prove to be a crippling decision on the battlefield. CBRN readiness cannot be taken for granted and should not be pushed aside in today's climate, as U.S. forces continue to face unconventional opponents.

Often overlooked, CBRN readiness is vital to mission accomplishment. Deployment train-up is tailored to the mission; therefore, commanders conduct mission analysis to balance the capabilities and needs they must meet. This critical analysis often leaves CBRN training and equipping at the bottom of the list due to a historically low threat of the use of CBRN weapons. Combined Joint Task Force–Operation Inherent Resolve (CJTF-OIR) is an advise-and-assist organization with the mission to support Iraq's elimination of the Islamic State of Iraq and Syria (ISIS). As a result, some commanders assumed risk by not prioritizing CBRN equipping and training for deployment.[2]

In September 2016, ISIS began using chemical weapons and toxic industrial materials as weapons to help achieve its objectives.[3] ISIS conducted indiscriminate chlorine and mustard attacks against partner forces and civilians. ISIS had the funding and the capability to rapidly create and expand a CBRN program with little opposition when it seized Mosul and used Mosul University as a base of CBRN operations.[4] In this city alone, ISIS seized large amounts of chemicals from industrial plants and exploited the talents of the local population to establish chemical and biological programs. In the last few years, ISIS has executed more than 100 suspected chemical attacks on the civilian populace, with an estimated 52 documented chemical attacks according to IHS Conflict Monitor, a London-based intelligence collection and analysis service.[5]

Toxic industrial chemicals have also proven to be effective weapons; they can be easily procured and used as harmful agents. ISIS deliberately set the al Mishraq sulfur plant on fire to provide a movement screen and to deliver toxins to following friendly forces, delay friendly forces, and force friendly forces to dedicate substantial resources to extinguish the fires. The resulting sulfur dioxide (SO^2) smoke posed a serious health risk to anyone downwind, including military forces and civilians. High concentrations of SO^2 continuously pummeled the nearby town of Qayyarah, causing many civilian casualties.[6, 7] CBRN incidents and attacks require increased protective posture, which degrades capabilities and work/rest cycles, limits productivity, and exhausts available individual protective equipment and decontamination resources. Contingency stocks of mask filters needed to be located and shipped to ensure that the protective posture could be maintained.

The location of chemical defense equipment stocks was crucial in this case. CJTF-OIR was able to quickly look across the combined joint operations area and identify locations of excess CBRN stocks using the Chemical Defense Equipment Report. This monthly report provides the commander with a snapshot of equipment quantities, medical chemical defense materiel, and individual protective equipment. CJTF ordered enough individual protective equipment to ensure that units maintained the required amount and established a contingency stock due to the continued use of chemical weapons by ISIS as its footprint in Mosul diminished.

(Continued on page 17)

Improving CBRN Exercise Design Using FEMA Incident Annexes

By Colonel Barrett K. Parker

The old National Planning Scenarios were a goldmine to the Chemical Regiment. Established in 2003 under Homeland Security Presidential Directive (HSPD)-8, *National Preparedness*, 15 well-developed scenarios served as the foundation for the development of homeland security tasks.[1] Our Regiment had significant responsibility for nine of the 15 scenarios for the Army, including the ones involving the 10 kiloton improvised nuclear device, biological attack–aerosol anthrax, chemical attack–nerve agent, and radiological dispersal devices. Exercise planners eagerly used HSPD-8 (which provided a detailed scenario description, planning considerations, and implications) as a scalable baseline. These scenarios still influence exercises today. Most Vibrant Response Exercise participants were affected by the National Planning Scenarios. However, these planning scenarios had one critical flaw: each commodity area had one and only one scenario vignette described, which led to redundant exercises over the years.

While exercises may not have been identical from one year to the next, they certainly "rhymed"—but not anymore. According to Mr. David B. Kang, deputy director of the Response, Planning, and Exercise Division; FEMA Response Directorate; the National Planning Scenarios are now considered legacy and are no longer used by the Federal Emergency Management Agency (FEMA).[2] "We focus our scenario and risk selection based on a blend of the Strategic National Risk Assessment, state and national threat hazard risk assessments, state preparedness reports, and state and local hazard mitigation plans," he stated.[3] Instead, FEMA is in the process of publishing new, robust, and diverse incident annexes.

Developing a new and useful scenario set for the domestic disaster response community has been a long and torturous path. In January 2008, the *National Response Framework* was launched and a limited number of incident annexes were subsequently published. According to the *National Response Framework*, "Incident annexes address the unique aspects of how we respond to seven broad incident categories."[4] The seven annexes initially published were the *Biological Incident Annex*, the *Catastrophic Incident Annex*, the *Cyber Incident Annex*, the *Food and Agriculture Incident Annex*, the *Mass Evacuation Incident Annex,* the *Nuclear/Radiological Incident Annex to the Response and Recovery Federal Interagency Operational Plans*, and the *Terrorism Incident Law Enforcement and Investigation Annex*.[5, 6, 7, 8, 9, 10, 11] Unlike the National Planning Scenarios, which identified a specific weapon or disease of concern and described situational impact, these annexes define responsibilities at the highest levels of federal response.

The *Biological Incident Annex* is typical of the first round of these annexes, and it provides a very basic, abbreviated event overview and concept of operation. The *Biological Incident Annex* focuses on "the actions, roles, and responsibilities associated with response to a human disease outbreak of known or unknown origin requiring federal assistance."[12] Unfortunately, the *Biological Incident Annex*, like all the original incident annexes, was not readily translated into actionable events for exercise planners.

In March 2011, Presidential Policy Directive (PPD)-8, *National Preparedness*, replaced HSPD-8.[13,14] PPD-8 drove a series of National Planning Scenario updates and reorganizations under the National Planning System, integrating planning across all levels of government and private and nonprofit sectors. (See Figure 1.) Key capabilities can be mixed and matched, as needed, to provide an agile, resilient, and flexible approach to prevent, protect, mitigate, respond, and recover from disasters. Federal interagency operational plans for the four mission areas of protection, response, recovery, and mitigation have been released and are available at <https://www.fema.gov/media-library/assets/documents/120091>. Of critical interest to the Chemical Corps is the *Response Federal Interagency Operational Plan* and the *Recovery Federal Interagency Operational Plan*.[15, 16] These two federal interagency operational plans jointly host the new incident annexes.

Incident-specific annexes will be included in future *Response Federal Interagency Operational Plan* updates. These annexes will expand concepts to better describe missions, policies, responsibilities, and coordination processes across incident management and emergency response operations for a wide spectrum of potential notice or no-notice incidents, which require specialized or unique responses. Incident-specific annexes from the National Response

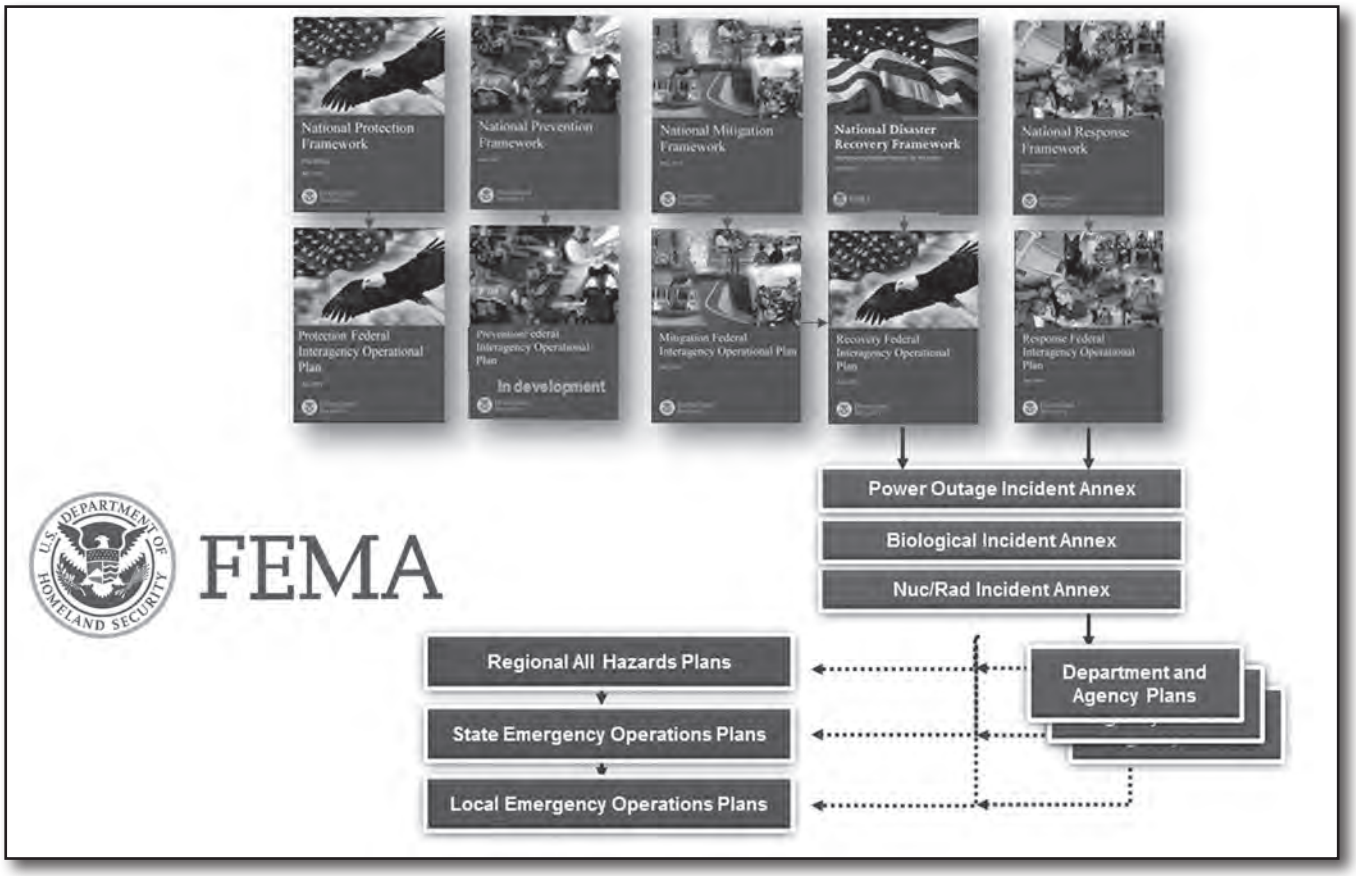

Figure 1. The National Planning System implemented

Framework will remain in effect until they are incorporated into an update to the *Response Federal Interagency Operational Plan*."[17]

The first incident annex, the *Nuclear/Radiological Incident Annex to the Response and Recovery Federal Interagency Operational Plans*, is a goldmine of information for exercise planners and simulations experts.[18] It is organized as a base document with three branch plans. The base document is applicable to all nuclear/radiological incidents, whereas the branch plans focus on suspected or actual deliberate attacks, inadvertent incidents, and international incidents.

Influenced by recent world-wide events, including the 2011 Fukushima Daiichi nuclear disaster, the incident annex explores a number of different types of radiological and nuclear events, including—

- Improvised nuclear devices.
- Radiological dispersal devices.
- Radiation exposure devices.
- U.S. nuclear facilities.
- Research and test reactors.
- Lost, found, and orphaned radioactive material sources.
- Transportation incidents involving radioactive materials.
- Domestic nuclear weapons accidents.
- International incidents involving nuclear or radioactive material that impact or threaten to impact the United States.

Exercise designers can choose from a potpourri of existing training exercises to tailor a training event so that it is best-suited to customer needs and stated learning objectives. With a broad variety of events available, exercise participants' interest is maintained by fresh scenarios beyond just a changing venue. More importantly, by employing a variety of scenarios, leaders are trained to perform in an unknown and complex environment. The *Nuclear/Radiological Incident Annex to the Response and Recovery Federal Interagency Operational Plans* is a tool capable of assisting in breaking the cycle of repetitive exercises in the nuclear and radiation areas. This tool will help ensure that Soldiers experience unexpected and volatile situations during exercises, which offers the best preparation opportunities for real-world incidents.

Exercise designers can also vary the size or complexity of an exercise and address suspected or actual deliberate attacks, inadvertent incidents, and international incidents that may affect the United States. The incident annex also includes planning assumptions that could be varied by customer interest, such as pre-incident preparedness, public anxiety, and lack of awareness. This combination of variables is key and essential to exploring branches and sequels in a simulations environment.

Deeper exploration of selected scenarios occurs in the three branches of the annex. For example, Branch 1 includes detailed descriptions of the facts, planning assumptions, and critical considerations for a variety of incidents, including

An Air Force radiation assesment team checks radiation for personnel. (Photograph credit: Yasuo Osakabe, 374th Airlift Wing, Public Affairs)

an improvised nuclear device attack, explosive radiological dispersal device, radiological exposure device, hostile action on a nuclear power plant, attack on a nuclear material transport, and attack on a nuclear weapons facility.[19] Similar scenario discussion occurs as part of the other two branches as well.

Perhaps the most useful feature of the *Nuclear/Radiological Incident Annex to the Response and Recovery Federal Interagency Operational Plans* is a listing and explanation of available tools, such as the radiation emergency medical manager, preliminary remediation goals calculator, and the more obscure incident waste assessment and tonnage estimator. Sample damage and recommended evacuation plots are included to ensure that planners generally know what "right looks like."

The document is also fully referenced to the authoritative source documents. For example, it states that "Response teams should not enter affected areas until radiation levels in these areas can be accurately determined and readily monitored, and personnel must receive pre-entry briefings (in addition to any other required training) before entering such areas" and cites Title 29 of the Code of Federal Regulations (Section 1910.120), *Hazardous Waste Operations and Emergency Response*. [20, 21]

The *Nuclear/Radiological Incident Annex to the Response and Recovery Federal Interagency Operational Plans* is just the first incident annex that has the potential to positively impact the Chemical Regiment's training events and simulations. The *Biological Incident Annex to the Response and Recovery Federal Interagency Operational Plans*, released in January 2017, rescinded *The Biological Incident Annex*.[22, 23] The current annex is similar in form and function to the *Nuclear/Radiological Incident Annex to the Response and Recovery Federal Interagency Operational Plans*. The *Biological Incident Annex to the Response and Recovery Federal Interagency Operational Plans* is 134 pages long and "applies to the federal response to all suspected or confirmed biological incidents, including naturally occurring and intentional acts. It incorporates national capabilities and requirements that are fully executable during a biological incident anywhere in the U.S. or U.S. territories, including those originating abroad that have the potential to spread among the U.S. population."[24] Unlike the *Nuclear/Radiological Incident Annex to the Response and Recovery Federal Interagency Operational Plans,* the *Biological Incident Annex to the Response and Recovery Federal Interagency Operational Plans* is not available on the FEMA public Web site. A copy of the new annex can be obtained for official use by contacting the FEMA Response, Planning, and Exercise Division at (202) 646-2723.

While the annex does not cover toxins or animal and plant diseases, it does have a broad list of potential events of interest to the Department of Defense and our Regiment in particular. These include the response and recovery (consequence management for human disease) of naturally occurring and intentional domestic diseases and those internationally occurring diseases with potential domestic impact.

Several other annexes are being developed, including a power outage incident annex, a federal evacuation support annex, and a national earthquake incident annex. Of special interest to our Regiment are annexes for chemical attack incidents and infectious disease incidents planned for the 2019–2020 timeframe.

Our homeland has never faced a greater diversity of natural and man-made threats. New FEMA incident annexes offer a gifted insight into many of them. While it is impossible to train to support all of these hazards, we can train to provide a force that is flexible and talented enough to supply whatever is needed in any given situation. Engaging our Regiment with a diversity of challenging and realistic homeland response scenarios is the best insurance against an unknown, complex, and ambiguous future.

Endnotes:

[1]HSPD-8, *National Preparedness*, 17 December 2003.

[2]David B. Kang, "National Planning Scenarios and the Incident Annexes to the Response and Recovery FIOP," e-mail message, 19 May 2017.

[3]Ibid.

[4]U.S. Department of Homeland Security, *National Response Framework*, p. 4, <https://www.fema.gov/media-library/assets/documents/32230>, accessed on 18 October 2017.

[5]U.S. Department of Homeland Security, *Biological Incident Annex*, August 2008, <https://www.fema.gov/media-library/assets/documents/25550>, accessed on 18 October 2017.

[6]U.S. Department of Homeland Security, *Catastrophic Incident Annex*, November 2008, <https://www.fema.gov/media-library/assets/documents/25546>, accessed on 18 October 2017.

[7]U.S. Department of Homeland Security, *Cyber Incident Annex*, December 2004, <https://www.fema.gov/media-library/assets/documents/25556>, accessed on 18 October 2017.

[8]U.S. Department of Homeland Security, *Food and Agriculture Incident Annex*, August 2008, <https://www.fema.gov/media-library/assets/documents/25552>, accessed on 18 October 2017.

[9]U.S. Department of Homeland Security, *Mass Evacuation Incident Annex*, June 2008, <https://www.fema.gov/media-library/assets/documents/25548>, accessed on 18 October 2017.

[10]U.S. Department of Homeland Security, *Nuclear/Radiological Incident Annex to the Response and Recovery Federal Interagency Operational Plans*, October 2016, <https://www.fema.gov/media-library/assets/documents/25554>, accessed on 18 October 2017.

[11]U.S. Department of Homeland Security, *Terrorism Incident Law Enforcement and Investigation Annex*, December 2004, <https://www.fema.gov/media-library/assets/documents/25560>, accessed on 18 October 2017.

[12]*Biological Incident Annex*, p. BIO-1.

[13]PPD-8, *National Preparedness*, 30 March 2011.

[14]HSPD-8.

[15]U.S. Department of Homeland Security, *Response Federal Interagency Operational Plan*, Second Edition, August 2016, <https://www.fema.gov/media-library/assets/documents/120091>, accessed on 18 October 2017.

[16]U.S. Department of Homeland Security, *Recovery Federal Interagency Operational Plan*, Second Edition, August 2016, <https://www.fema.gov/media-library/assets/documents/120091>, accessed on 18 October 2017.

[17]*Response Federal Interagency Operational Plan*, p. 7.

[18]*Nuclear/Radiological Incident Annex to the Response and Recovery Federal Interagency Operational Plans*.

[19]Ibid.

[20]Ibid., p. 7.

[21]Title 29, Code of Federal Regulations 1910.120, *Hazardous Waste Operations and Emergency Response*.

[22]U.S. Department of Homeland Security, *Biological Incident Annex to the Response and Recovery Federal Interagency Operational Plans*, January 2017, p. 4.

[23]*Biological Incident Annex*.

[24]*Biological Incident Annex to the Response and Recovery Federal Interagency Operational Plans*, p. 4.

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("It Only Takes Once," continued from page 13)

One CBRN attack or incident will cripple an untrained and ill-prepared unit. It might seem that managing CBRN equipment is not important, but there is much that a CBRN Soldier can offer to the unit. Unit level CBRN Soldiers are responsible for ensuring that the unit is trained. They can encourage the commander to go beyond the 2-chlorobenzalmalononitrile (CS) gas chamber and protective mask range qualifications. Any training event can be an opportunity! No matter the unit, training must be performed in Joint Service Lightweight Integrated Suit Technology. A CBRN incident can be simulated into most training scenarios.

Commanders must reconsider assuming risk for CBRN readiness in the future. Similar to the sulfur fires at al Mishraq, just one incident makes a big differernce. It is important to ensure that units are trained and equipped to operate in CBRN environments, and it is our job as CBRN Soldiers to advise the commander on all things related to CBRN, to include the importance of readiness and the way in which CBRN Soldiers affect the overall mission.

Endnotes:

[1]The White House, Office of the Press Secretary, "National Security Advisor Dr. Condoleezza Rice Opening Remarks, The National Commission on Terrorist Attacks Upon the United States," 8 April 2004, <https://9-11commission.gov/hearings/hearing9/rice_statement.pdf>, accessed on 17 August 2017.

[2]Combined Joint Task Force, "Operation Inherent Resolve Fact Sheet," <http://www.inherentresolve.mil/Portals/14/Documents/Mission/Mission.pdf?ver=2016-03-23-091705-717>, accessed on 17 August 2017.

[3]Spencer Ackerman, "Islamic State Fired Crude Chemical Weapons on U.S. Troops—Pentagon," *The Guardian*, 21 September 2016, <https://www.theguardian.com/world/2016/sep/22/islamic-state-fired-crude-chemical-weapons-on-us-troops-pentagon>, accessed on 17 August 2017.

[4]Russia Today Web site, "ISIS Bomb and Chemical Weapons 'Research Center' in Mosul Barely Targeted in U.S. Strikes," 2 April 2016, <https://www.rt.com/news/338086-isis-chemical-lab-mosul/>, accessed on 17 August 2017.

[5]IHS Web site, <https://cdn.ihs.com/www/images/I-S-Chem-2376x2317.jpg>, accessed on 17 August 2017.

[6]Elizabeth McLaughlin, "Sulfur Dioxide Plume Moving Across Iraq, Satellite Images Show," *ABC News*, 27 October 2016, <http://abcnews.go.com/International/satellite-images-show-sulfur-dioxide-plume-moving-iraq/story?id=43099715>, accessed on 17 August 2017.

[7]Babak Dehghanpisheh, "Burning Sulfur Near Mosul Sends Hundreds to Hospital, U.S. Troops Don Masks," *Reuters*, 22 October 2016, <http://www.reuters.com/article/us-mideast-crisis-iraq-chemicals-idUSKCN12M08G?il=0>, accessed on 17 August 2017.

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The Key to the Chemical Corps Future: The Palletized Loading System

By Captain Zachary R. Scott

During fiscal years 2016 and 2017, the 51st Chemical, Biological, Radiological, and Nuclear (CBRN) Company, Fort Stewart, Georgia, participated in several training exercises, demonstrating how the Palletized Loading System (PLS) is the greatest combat multiplier a CBRN company has received in recent years. The PLS hauls as much equipment as two to three light medium tactical vehicles (LMTVs), and when employed correctly, can potentially make CBRN companies more self-sustaining and self-securing.

Due to the large assortment of equipment and tools required to accomplish CBRN missions, effectively and efficiently transporting this equipment becomes a mission-essential task. Prior to the PLS, each unit would load equipment on a plethora of LMTVs, trailers, and Humvees and drive to each target with a not-so-inconspicuous baggage train. By using the PLS, equipment can now be loaded in the same containers in which it is normally stored (eliminating the time needed for pack out), easily transported to any point on the battlefield, and dropped wherever there is a target to be exploited.

Having a PLS in each hazard assessment platoon (HAP) and headquarters is crucial when executing the Department of the Army mission due to the requirement of transporting dismounted reconnaissance sets, kits, and outfits. The PLS also becomes invaluable while executing the Defense CBRN Response Force mission; mass casualty decontamination equipment needs to be transported quickly and efficiently.

During Guardian Response 2017, the 51st CBRN Company successfully used three PLS systems. The 51st CBRN Company dropped flat racks, opened all container doors, and had all equipment on the ground within 30 minutes of the flat racks being dropped. Simply numbering the containers and having a senior noncommissioned officer direct the unloading allows all general-purpose forces to assist without creating chaos. This was more efficient than loading LMTVs with all the equipment because once on-site, the time and energy needed to arrange and maneuver 10 LMTVs in a small area becomes an inefficient and confusing process compared to simply dropping two flat racks.

The Chemical Corps should think of the PLS as the Navy thinks of aircraft carriers. Aircraft carriers do not have large weapon systems, but they enable airplanes to drop thousands of pounds of munitions on the enemy. Fleets are shaped around an aircraft carrier because that single ship brings more to the fight than any other group of ships combined. Similarly, although not as flashy, the PLS carries more to the CBRN fight than LMTVs or Humvees. The effectiveness of a CBRN company is tied to the transportation and efficient unloading of equipment, which is often bulky, heavy, and unwieldy. Taking one PLS with a trailer will save labor when unloading and be safer (containers will be on the ground versus the back of an LMTV) and more efficient (six points of entry on a PLS versus one point of entry on an LMTV).

Sadly, many CBRN companies have not embraced the PLS. CBRN Soldiers should be trained to drive the PLS during advanced individual training because an adept PLS driver can make or break a CBRN mission. Some dissenters may bring up the fact that a PLS cannot go everywhere that an LMTV can, but logistical companies have used these vehicles for years and they are able to easily traverse most terrain. Many of the issues mentioned in regard to using the PLS can be solved with a confident and knowledgeable PLS driver. Commanders are often informed that the PLS cannot do certain things, but this is often simply because the operator isn't aware of the full capabilities of the PLS.

Our branch relies on moving technical equipment to the target on time and as efficiently as possible, avoiding the creation of too large a footprint once the objective is reached in order to reduce security concerns. The PLS greatly reduces the number of LMTVs required on each mission and saves time once the unit arrives at the objective.

Looking farther down the road, the Chemical Corps could restructure its modified table of organization and equipment to provide line companies with more Humvee gun trucks and reduce LMTVs since using a PLS makes them unnecessary. This would give each HAP four gun trucks, enabling them to effectively defend themselves across the battlefield. Most combat arms battalions are reluctant to have an attached

(Continued on page 20)

Air Awareness for Soldiers: Contaminant Fate and Transport

By Specialist Michael K. Forlife

With so many avenues in which chemical agents can take effect, it is necessary to examine defensive procedures for each mode of transport. A Soldier's gas mask provides chemical defense against the airborne mode of transport. Army doctrine has defined a standard for the use of, and operations surrounding, the gas mask—encompassing how much time a Soldier has to put it on, how the Soldier should put it on, and the limits of its capabilities. Appropriate training and execution of this standard provide Soldiers with confidence in their abilities to defend themselves, but it is equally important to stress the need for preventative surveillance, detection, and reconnaissance—especially with attention to the topic of time.

Gas mask standards have been forged by history and supported by research. Field testing an alarmed perimeter of a chemical agent detector provides a basis for estimation of chemical agent transport and exposure. In practice, the time a Soldier has to don a gas mask can be drastically altered by circumstance. Proximity from a chemical agent release, atmospheric conditions in the region of effect, and the volatility of the chemical agent are all factors in the time a Soldier actually has to don a gas mask. Estimations based on operationally specific intelligence need to be developed and distributed accordingly in order to produce an effective value as a guideline. Any baseline estimations of chemical agent activity in a given ideal must also be adjusted based on live observations of local environments (to include weather and terrain) and plotted in real time to truly arrive at an exact value for the time window of safety.

Plotting this information to represent actual and dynamic scenarios is no simple task. In the world of science, models and theories are commonly developed as ideal situations and adjusted for the variances of reality. In military defense, protocols are commonly developed based on worst-case risk scenarios and adjusted for operational effectiveness. Both approaches are appropriate for their defined goals. The topic generally referred to as contaminant fate and transport in environmental science deals with the same truths as chemical agent dispersion. For the case of a chemical, biological, radiological, and nuclear (CBRN) Soldier, the contaminant is not simply an environmental risk, but a potentially fatal toxin with unforgivable outcomes. This becomes increasingly relevant when it becomes apparent how far from the ideal estimate a real-world circumstance may be and how difficult it is to plot these adjustments in real time.

An example of one such ideal model used in plotting contaminant fate and transport is the Gaussian dispersion model, developed for modeling air pollution. The base model assumes a plume of contaminated air originating from a point source release that is dispersed by one-directional wind and diffusion. A basic equation for a contaminant plume with Gaussian distribution is provided in the U. S. Environmental Protection Agency publication, *Workbook of Atmospheric Dispersion Estimates*, among many other air modeling publications.[1] (See Figure 1.)

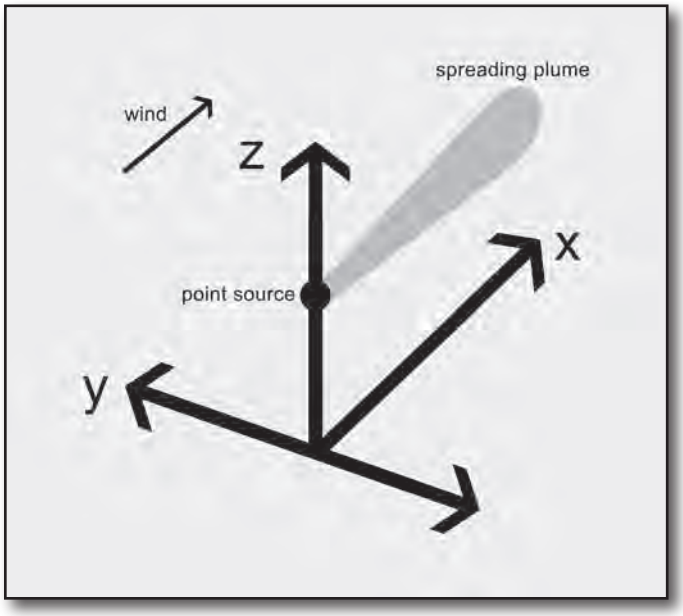

Figure 1. Gaussian distributions

This base model can then be further adjusted for crosswind and many other real-world circumstances. The change of wind over time, chemical volatility, chemical decay, and air density are a few of the many relevant adjustments to be taken into account. The model and derived Gaussian plume solutions rely on many assumptions, each with their own set of mathematics. (See "The Mathematics of Atmospheric Dispersion Modeling."[2]) These assumptions are the reason the models represent ideal situations and ideal conditions. Modeling based on specifics is a necessary practice when forming a common operational picture of a base of operations and projecting potential risk. The modeling then undergos applied statistical analysis and is matched with a confidence

level for the margin of error that is acceptable to maintain the effectiveness of data within a given amount of risk.

The real-world calculation determining where a chemical agent will go and how much time will pass before it reaches a Soldier is difficult to achieve and requires computing in time-critical situations. Even the possession of location-based climate intelligence can prove to be limiting when considering the small-scale fluctuations of weather itself; these fluctuations are exceptionally relevant to the circumstances of any type of CBRN attack. Two Soldiers patrolling along nearby but separate routes could have completely different windows of time for donning their masks. The Chemical Corps motto, "Elementis regamus proelium" ("Let us rule the battle by means of the elements"), can only be embodied and brought to life by gaining control over the elements. That control is an ongoing pursuit of the Corps and science as a whole; but in the meantime, it is important to recognize the battlefield of elemental control in concert with the battlefield of unit movement and defense.

Leaders tasked with chemical defense must understand that the best way to protect Soldiers is to prevent a release from occurring. Ongoing surveillance, detection, and reconnaissance are the only means to ensure an upper hand on prevention. Advanced methods of these practices, which cannot be discussed here, can serve multiple purposes and benefit various aspects of military operations. In the long run, methods expected to be used by special operations must move to qualified personnel in the operational Army. Before larger changes take effect, standardized Soldier training must be supplemented with knowledge and the messages of air awareness, time-critical action, and prevention. The time standard for putting on a mask must be adjusted for the common operational picture of each location, and it must be accepted that the actual time can either be greater than or less than the standard. The knowledge and awareness of air transport keeps Soldiers on their toes and at the ready, with a firm fighting stance to don their gas masks as quickly as possible, regardless of the given time standard.

Endnotes:

[1]D. Bruce Turner, *Workbook of Atmospheric Dispersion Estimates*, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina, 1970, <https://www.epa.gov/nscep>, accessed on 13 September 2017.

[2]John M. Stockie, "The Mathematics of Atmospheric Dispersion Modeling," *Society for Industrial and Applied Mathematics*, Vol. 53, No. 2, 2011, pp. 349–372.

Specialist Forlife is a CBRN specialist in the 95th Chemical Company at Joint Base Elmendorf–Richardson, Alaska. He holds a bachelor's degree in anthropology (with minors in psychology and philosophy) from Queens College, New York, and a master's degree in environmental engineering and science from Johns Hopkins University, Maryland. He is pursuing a second master's degree in applied physics at Johns Hopkins University.

("The Key to the Chemical Corps Future . . . ," continued from page 18)

CBRN company, but if each HAP had four fewer LMTVs and three additional Humvee gun trucks, a CBRN company could potentially have, at a minimum, eight Humvee gun trucks and four nuclear biological chemical reconnaissance vehicles to pull security for their own formation. Combat arms battalions could also use a HAP as a multifaceted quick reactionary force able to respond to kinetic and CBRN attacks. HAPs could be attached to individual battalions with the ability to defend themselves and conduct dismounted CBRN reconnaissance and decontamination operations.

This may be a 20-year plan, but with the way the world looks now, the Chemical Corps needs to think far into the future and find a way to become a combat multiplier to the combat arms branches again. The PLS is the heart of an efficient company operation, but many leaders do not give it a chance. The CBRN companies that have used the PLS time and time again have reaped the rewards. When Soldiers become used to operating the vehicle, it becomes completely integrated into operations. Planning for and using the PLS to its full capability would enable the Chemical Corps to shift from simply being able to provide one or two services (CBRN reconnaissance and decontamination) to being able to provide a quick reactionary force and security when moving from location to location.

The PLS has improved the way the 51st CBRN Company conducts quick reactionary force operations and mission-essential tasks. Using the PLS, the 51st is now a more efficient and productive unit. If more CBRN companies started using the PLS regularly, fewer LMTVs would be required and the ability to hit targets on time and efficiently exploit them would increase dramatically. The Chemical Corps needs to shape formations around the PLS; our future success depends on the ability to operate and employ the PLS effectively.

Captain Scott is the former commander of the 51st CBRN Company, 83d Chemical Battalion, Fort Stewart, Georgia. He holds a bachelor's degree in military history from the U.S. Military Academy–West Point, New York.

IRTD at Fort Leonard Wood Adds Additional Certification

By Mr. Stephen Standifird

Army National Guard students who attend the Civil Support Skills Course at the First Lieutenant Joseph Terry Incident Response Training Facility, Fort Leonard Wood, Missouri, now leave with more than a graduation certificate.

The course master instructor said that the U.S. Army Chemical, Biological, Radiological and Nuclear School coordinated with the Center for Domestic Preparedness, the Federal Emergency Management Agency, and the Federal Bureau of Investigation (FBI) to enhance the course so that students graduating receive certification and a higher level of credentials. The process began almost 3 years ago when the FBI requested that military teams be taught more about evidence collection and how to assist in crime scene analysis.

The master instructor said that, following some deliberations with the Center for Domestic Preparedness, the Federal Emergency Management Agency, and FBI, the course evolved. "This course is far and above what the Army requires," he explained, "and now exceeds the course the FBI teaches."

According to the master instructor, the additional training was necessary because civil support teams (CSTs) are often the first responders during a chemical, biological, radiological, and nuclear (CBRN) incident and they need to know how to approach and make records in what could potentially be a crime scene.

The 56-day training course covers site entry, observation, evidence and sample collection, and documentation. This course is required as the initial qualification to serve on a CST, said the deputy commander of the 47th CST, Mississippi, who is currently attending the Civil Support Skills Course. He explained that this training is paramount to successfully serving with a team during an incident.

The operations officer of the 92d CST, Nevada, agreed, adding that it is important to have the civilian training equivalency before going into an incident to verify the capabilities of the team for all agencies responding in an incident.

So far, the Incident Response Training Department (IRTD) has certified 150 students under the new requirements. The CSTs are made up of Army National Guard units designed to support civil authorities in responding to a CBRN incident. There are 58 full-time teams, with at least one in each state; Washington, D.C.; Puerto Rico; Guam; and the U.S. Virgin Islands and a U.S. Army Reserve team in Germany.

Mr. Standifird is the Deputy Director, Public Affairs Office, Fort Leonard Wood, Missouri.

The master instructor for the Civil Support Skills Course provides feedback to a student. (Photo credit: Mr. Stephen Standifird)

2017 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. These individuals have distinguished themselves through advances in science and technology, a lifetime of service and devotion to the Corps, or gallantry in battle. One individual, First Lieutenant Andre Nichole Laus, was inducted to the Hall of Fame on 28 June 2017.

Andre Nichole Laus was born in Paris, France, in 1915. His father, Abdon F. Laus Jr., served in the French Army in World War I and immigrated with his family to the United States in 1918, where he was a musician for the Boston Symphony Orchestra.

Andre Laus graduated from the Massachusetts Institute of Technology, Cambridge, in 1937 with a chemistry degree. He began work as a chemist in Boston, Massachusetts. He and his wife, Aline, were married in 1942; and their only child, Jacques, was born later that year. Andre Laus was commissioned in the Chemical Warfare Service and served with the 83d Chemical Mortar Battalion.

First Lieutenant Laus took part in the amphibious invasion of Sicily on 10 July 1943, and he was awarded the Silver Star Medal for his actions that day. General Orders No. 64, Headquarters, 1st Infantry Division, 23 November 1943, states, "The President of the United States of America, authorized by Act of Congress, [9 July] 1918, takes pleasure in presenting the Silver Star Medal to First Lieutenant (Chemical Warfare Service) Andre N. Laus (ASN: 0-353944), 83d Chemical Battalion (Motorized), United States Army, for gallantry in action while serving with the 1st Infantry Division."

When the landing craft holding his company was grounded in deep water and heavy surf and was subjected to intense enemy machine gun and coast artillery fire, Lieutenant Laus swam ashore to determine the water depth and beach conditions. He returned to the craft and saved a drowning Soldier's life while guiding his men ashore. His outstanding courage and exemplary leadership were instrumental in the successful landing of his company with minimal casualties.

A little more than a year later, the 3d Chemical Mortar Battalion participated in the invasion of Southern France. In the fighting near Briancon, France, on 29 August 1944, First Lieutenant Laus was again cited for bravery which, unfortunately, cost him his life. General Orders No. 44, Headquarters, Seventh Army, 10 February 1945, Distinguished Service Cross (Posthumous Award), states, "The President of the United States of America takes pleasure in presenting the Distinguished Service Cross (Posthumously) to First Lieutenant (Chemical Warfare Service) Andre N. Laus (ASN: 0-353944), 83d Chemical Battalion (Motorized), United States Army, while serving with Company C, 83d Chemical Mortar Battalion, Chemical Warfare Service, for extraordinary heroism against an armed enemy on [29 August] 1944 near Briancon, France."

When his company defensive position was attacked by a superior enemy force, First Lieutenant Laus climbed through intense machine-gun fire to an exposed position from which he directed effective mortar fire on enemy troops, temporarily halting their advance. Taking advantage of this situation, First Lieutenant Laus obtained a light machine gun and crawled back to his observation post where—despite intense, raking machine-gun and mortar fire—he succeeded in destroying 20 members of the hostile force. When enemy fire finally hit his ammunition belt, causing a jam in the gun, First Lieutenant Laus displayed distinguished bravery, seizing a rifle, and inflicting substantial casualties among the advancing enemy. Ordered by the forces commander to withdraw along a road that was under heavy machine-gun fire, First Lieutenant Laus volunteered to make the initial advance to determine the safety of the road. After advancing about 200 yards, he was killed

by enemy machine-gun fire. Lieutenant Laus' heroic sacrifice and courageous leadership served as a lasting impression to his men, reflecting the finest traditions of the Armed Forces of the United States.

First Lieutenant Andre N. Laus is buried in the Rhone American Cemetery, Draguignan, France.

Distinguished Member of the Chemical Corps Inductee

The award of the Distinguished Member of the Chemical Corps title signifies that an individual has not only contributed a lifetime of service in the Corps, but also supported the Chief of Chemical in implementing the Corps vision. One individual, Colonel Robin K. Byrom (Retired), was inducted into the 2017 Distinguished Members of the Chemical Corps on 28 June 2017.

Colonel Byrom received a Army Reserve commission in April 1978. During a 30-year period, he served in Regular Army and Army Reserve assignments that included all levels of leadership within the Chemical Corps force structure. Assignments included positions in smoke generator, decontamination, and biological detection units as well as positions in training, operations, logistics, and intelligence battalions. He was selected to represent the U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS) as the subject matter expert supporting the U.S. Army Garrison Smoke Generator Operation Test and Evaluation, Eglin Air Force Base, Florida, in July 1990. He served 12 years in command at detachment, company, battalion, and brigade levels. His Regular Army assignments included Operation Desert Shield/Desert Storm, special selection deployments as the Biological Integrated Detection System (BIDS) liaison officer in support of Operation Desert Thunder, Operation Southern Watch/Desert Fox, and Operation Shining Presence. Colonel Byrom also served 17 months in support of Operation Enduring Freedom and Operation Iraqi Freedom and from May 2003 to April 2004 as commander of the 455th Chemical Brigade/Joint Task Force Disablement and Elimination and as garrison commander of Camp Slayer, Baghdad, Iraq.

Byrom had the singular distinction of commanding the first chemical brigade in U.S. Army history to be deployed in support of combat operations. Colonel Byrom's command included Service personnel from the U.S. Army, U.S. Marines, U.S. Navy, and U.S. Air Force; Department of the Army civilians; contractors; coalition forces; and Third Country Nationals. Achievements during this time included support of the Combined Forces Land Combatant commander during combat operations in the Iraq Theater of Operations, mission support to the Iraq Survey Group in the presidentially directed search for weapons of mass destruction, development of the Chemical Force Organization and Nuclear Biological Chemical Defense Plan for Operation Iraqi Freedom, and deployment of four chemical battalions and 26 separate units. Colonel Byrom also provided the personnel for sensitive-site exploitation and mobile exploitation teams that later merged into mobile collection teams—a model that has never previously been attempted.

Colonel Byrom's civilian service included positions of increasing responsibility wherein he achieved many successes. As a training specialist for BIDS, he was recognized by USACBRNS leadership as having unique qualifications in biological defense warfare that could not be replaced. From 1996–2000, he served as the senior subject matter expert for all biological detection systems fielded or under development by the Department of Defense. He was also the recognized USACBRNS institutional resident expert with hundreds of hours of systems training on BIDS, preplanned product improvement (P31) BIDS, Long-Range BIDS, P31 Long-Range BIDS, the Joint Point Biological Detection System, and Portal Shield BIDS. During this period, he deployed to Israel as the BIDS employment and operational subject matter expert and liaison officer in support of the 310th Chemical Company (BIDS) support of Operation Shining Presence.

Byrom then served as a combat developments materiel systems specialist and continued to support multiple materiel developments. In 2005, he was selected as the Joint Combat Developments project manager, serving as Chief, Joint Experimentation and Analysis Division, USACBRNS. In this position, he managed multiple experimentations in coordination with Service experimentation projects in support of the Joint Requirements Office for CBRN Defense, Joint Program Executive Office–CBRN Defense, and was the technical advisor to the deputy director for the Joint Requirements Office for CBRN Defense. He was a key enabler in the Regimental Campaign Plan to develop, evaluate, and integrate CBRN capabilities and concepts, and his experimentation contributions continue to provide input to the Chemical Corps for the Army of 2020.

Colonel Byrom received a bachelor of science degree from Jacksonville State University, Alabama. His awards include the Meritorious Service Medal (4th Award), the Army Commendation Medal with three bronze oak-leaf clusters, the Army Reserve Component Achievement Medal with one silver oak-leaf cluster, and the Ancient Order of the Dragon Award. Colonel Byrom served the Chemical Corps for more than 30 years as a commissioned officer and more than 15 years as a Department of the Army civilian. He was not only a great Soldier and leader but also a loving husband, father, and brother. He passed away suddenly on 21 August 2013, leaving a legacy of exceptional and meritorious service to the Chemical Corps that will continue to be realized for many years to come.

(Continued on page 25)

ECBC Celebrates a Century of Service to the Nation

By Mr. Richard Arndt

A 12-cubic-foot, stainless steel time capsule emblazoned with the logo of the U.S. Army Edgewood Chemical Biological Center (ECBC), Aberdeen Proving Ground, Maryland, shared the stage with federal, state, and local officials and leaders within the Department of Defense Chemical and Biological Defense Program who spoke in celebration of ECBC's 100th anniversary on 15 June 2017. The speakers also presented items to be placed in the time capsule, which will be opened in 50 years, for future generations.

With a crowd of more than 500 invited guests and workforce members assembled beneath a pavilion at ECBC, the acting director, Dr. Eric Moore, Ph.D., noted that while the ECBC mission lies in the research and development of technologies to defend U.S. warfighters from chemical and biological threats, it was the generations of ECBC scientists, engineers, technicians, and support personnel who have written the organization's history.

An ECBC engineer demonstrates layered sensing equipment for Major General Smith.

The ECBC Acting Director speaks during the centennial celebration.

"All of the historical focus on technology is important, but what we're celebrating today, in addition to the technology, is the people," Moore said. "This is really a story about people. All of the equipment and the technology that we talk about—it's the people who make that happen."

Following on that theme, U.S. Army Deputy Inspector General, Major General Leslie C. Smith, the senior Chemical Corps officer, told the audience, "I am in awe of what you do and the role you play in our Nation. When the Nation asks for your help, you deliver."

Another speaker, Dr. Jason Roos, Ph.D., deputy executive officer of the Joint Program Executive Office for Chemical Biological Defense, contributed an M50 protective mask for inclusion in the time capsule. "This mask, and just about every other chemical-biological defense technology we have fielded, was developed in collaboration with ECBC," Roos said.

Other speakers added commanders' coins and proclamations to the time capsule collection. In addition, a collection of technologies developed by ECBC scientists and engineers was also added. The items included the latest generation hand-held chemical agent detector used by Soldiers in the field; a second-generation tactical biological detector; the Joint Service aircrew mask; a newly developed decontamination gel solution known as DeconGel™; a chemical reconnaissance and explosive screening set; samples of forward-looking decontamination molecules called metal organic frameworks; and the ECBC flag that was flown aboard the ship, MV Cape Ray, on which an ECBC team destroyed 600 tons of Syrian-declared chemical warfare material at sea in 2014.

Other dignitaries who delivered remarks at the event included Colonel Raymond K. Compton, chief of staff of the U.S. Army Research, Development, and Engineering Command; Mr. Dale A. Ormond, principal director for research in the Office of the Assistant Secretary of Defense; and Brigadier General William E. King IV, commanding general of the 20th Chemical, Biological, Radiological, Nuclear, and Explosives Command.

Also on display was an artist's rendering of a 10-foot statue of a Soldier in full chemical-biological protective gear standing back-to-back with a scientist. The statue, when complete, will be placed next to the ECBC headquarters building. Moore described the statue as symbolizing the profound partnership between Soldiers and ECBC scientists in protecting the Nation from chemical-biological threats.

At the conclusion of the ceremony, many of the attendees traveled to the ECBC Visitor's Center to see a field-deployable hydrolysis system (identical to the system used by the ECBC team aboard the MV Cape Ray), ECBC's latest chemical-biological surveillance system, and an unmanned drone and unmanned ground vehicle that work in concert with other sensors and a data integration system. The visitors also toured a mobile laboratory used to perform analysis of chemical and biological samples close to their point of collection.

ECBC was created by presidential proclamation in 1917, establishing the Gunpowder Peninsula in Harford County as the Edgewood Arsenal. It quickly became the Nation's principal research and development resource for nonmedical chemical-biological defense. For more information about the ECBC legacy of service to the Nation, please visit the ECBC Web site at <https://www.ecbc.army.mil/100/>.

Mr. Arndt is the public affairs officer for the U.S. Army Edgewood Chemical Biological Center.

("2017 Honorees . . . ," continued from page 23)

Chemical Corps Regimental Honors Program 2018 Nominations for the Hall of Fame

Nominations are being accepted for the 2018 Chemical Corps Regimental Honors Program for the 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 in an exceptional manner 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.

Nominations packets should be sent to—

Commandant

USACBRNS

ATTN: ATSN-CM-H (Regimental Historian)

401 MSCoE Loop, Suite 1041

Fort Leonard Wood, MO 65473-8926

All packets must arrive on or before 28 February 2018. For more information, see the Chemical Corps Regimental Association Web site at <http://www.ccrassn.org>, call 573-563-7339, or e-mail <christy.l.lindberg.civ@mail.mil>.

Ms. Lindberg is the regimental historian at the USACBRNS History Office, Fort Leonard Wood, Missouri.

The Army Soldier Enhancement Program

By Sergeant Major Thomas B. House II (Retired)

The *National Defense Authorization Act for Fiscal Years 1990 and 1991* established the Army Soldier Enhancement Program (SEP) to enhance equipment used by dismounted Army Soldiers using commercial, off-the-shelf; government, off-the-shelf; and nondevelopmental item products.[1] SEP makes use of a "buy, try, and decide" methodology. If the review panel, which convenes twice a year, selects an item, SEP buys and evaluates the item in order to gain firsthand feedback from Soldiers. After evaluating an item for functionality, protection, and lethality, the Army considers issuing the product Army-wide.

With the Army immersed in conflicts around the world, Soldiers need equipment that reflects the best technology—and they need it fast. Before transformation was part of the Army lexicon, the SEP, within the Project Manager Soldier Warrior (a program that supported Soldiers through the acquisition of integrated Soldier systems), promoted transformation of Soldier systems with an accelerated acquisition process that issues better weapons and gear to Soldiers. SEP continues to play a key role in the effort to meet Soldiers' needs. The SEP panel reviews more than 100 proposals every 6 months with the objective of identifying and obtaining items a dismounted Soldier wears or carries in order to further enhance the effectiveness of the Soldier in a tactical environment.

Unlike many military acquisition programs, SEP represents an aggressive effort to identify and procure items that have already been developed and have the potential to substantially improve weapons and support equipment. SEP evaluates products from the warfighting functional areas: fires, mission command, movement and maneuver, sustainability, and protection. Previous SEP items include lighter and more-lethal weapons, weight-reduced and more-comfortable load-bearing equipment, field gear, survivability items, navigational aids, and training capabilities.

Soldier Needs

Soldiers serving in a dismounted role rely heavily on equipment and oftentimes have knowledge of commercial items that can better help them accomplish a mission. SEP provides Soldiers with an avenue to recommend those products directly to the acquisition community. SEP also makes use of themes to help industry leaders and Soldiers focus on items for which combat developers generate requirements. The current goal for SEP is to enhance Soldier mobility by reducing Soldier load. SEP reviews all products submitted, but products that reduce overall weight without increasing bulk or stiffness or compromising current capabilities receive higher priority for consideration and assessment within SEP.

The Program Executive Office Soldier, in coordination with the U.S. Army Training and Doctrine Command (TRADOC) Capability Manager–Soldier, reviews item submissions. A council of colonels meets each February and July to decide if an item is worth evaluating. If the item is approved, SEP funds the evaluation of the item and provides a final report with findings and recommendations. The recommendations could include adopting the item as an Army capability, not adopting the item as an Army capability, using the data/information gained during the evaluation to inform requirements generation, or assigning a National Stock Number (so that units can buy the item as-is).

Some past SEP successes include the M110 semi-automatic sniper system, clip-on sniper night sight, combat shotgun enhancement kit, squad common optic, extreme cold-weather socks, parachute electronic activation device, fuel handler coveralls and gloves, modular ghillie suit, ghillie suit accessory kit upgrade, individual combat shelter, PD-100 Black Hornet (nano unmanned aircraft system), Datron© Scout™ (unmanned aircraft system), InstantEye® (unmanned aircraft system), and the Recon Scout® throwable robot. Current initiatives within SEP include fire control systems, weapons accessories and upgrades, cold-weather clothing and equipment, power charging and scavenger systems, Soldier-borne sensors, and 40-millimeter ammunition upgrades.

SEP Now

For more than 25 years, the SEP has been providing Soldiers with items that help them complete their missions more effectively. Many of these items were recommended to the SEP by Soldiers operating in a dismounted role. Anyone can submit suggestions, and all submissions are processed through the Program Executive Office Soldier Web site at <http://peosoldier.army.mil/SEP>. For more information about SEP, the process, or meeting dates, call (706) 626-8600 or send an e-mail to <thomas.b.house3.ctr@mail.mil>.

Endnote:

[1]House Resolution 2461, *National Defense Authorization Act for Fiscal Years 1990 and 1991*, <https://www.govtrack.us/congress/bills/101/hr2461/text>, accessed on 11 September 2017.

Sergeant Major House (Retired) currently works with the SEP at Fort Benning, Georgia. He served in the Army for 29 years and retired in 2006 as the TRADOC Capabilities Manager–Soldier Sergeant Major. He is a graduate of the U.S. Army Sergeants Major Academy, Fort Bliss, Texas.

EXERCISING AS CBRN

By Staff Sergeant James M. Benecke

During the past 3 years, I worked in Germany as the Defense Threat Reduction Agency noncommissioned officer in charge (NCOIC) of the chemical, biological, radiological, and nuclear (CBRN) military advisory team and then as the NCOIC of the CBRN Preparedness Support Europe Branch. I trained, exercised, and observed military and civilian CBRN, hazmat, and emergency response units and planners from more than 20 countries on three continents. Some countries consider CBRN preparedness a key to safety and security, while others see security as a "check the box" requirement. Regardless of language or region, one thing that remains the same is that no one is ever completely prepared.

The best way to prepare for a CBRN incident is to perform CBRN tasks alongside the elements with which the CBRN unit would respond in a real-world incident. Over the past few years, I have planned, directed, and participated in many exercises at the combatant command, joint task force, and multinational levels. With blue cell (participant) and white cell (planner, observer/controller) experience, I have a unique overall view of large-scale exercises. I have learned what works and what doesn't and the roles and responsibilities of a CBRN subject matter expert (SME). This knowledge is not taught in any school; it is learned by working side-by-side with more experienced CBRN and planning personnel. The purpose of this article is to inform inexperienced CBRN SMEs about large-scale exercise roles and responsibilities.

Performing Dual-Hat Roles

How many CBRN personnel are there in your unit? If you are not assigned to a CBRN unit, there may be one CBRN Soldier at each level (company, battalion) or a 10-man CBRN detachment responsible for a brigade size element. Some elements at the highest levels lack CBRN subject matter expertise—or worse yet, incorrectly use CBRN capabilities. This means that whether planning is a normal CBRN SME duty or not, the CBRN SME will (or should) be involved in the planning of a large-scale exercise and possibly controlling the CBRN scenarios as part of the white cell. Given the limited number of CBRN personnel, the CBRN SME may also need to respond to the incident as a blue player and advise the commander. This can be tricky and often requires restraint in regard to information management.

CBRN SMEs may facilitate CBRN working groups, develop scenarios, and build training sites for exercises that they will also respond to as blue players. This is not ideal, but it is best to work as the commander's advisor and assign other roles to counterparts. Otherwise, the CBRN SME essentially knows all the answers to the test; this is where restraint is needed. Knowledge of the exercise must be filtered to determine what is known based on the current stage of the exercise only.

For example, during a combatant command exercise, I deployed as a CBRN SME to support a joint operations center. I shared an office with a CBRN exercise planner. We attended the same meetings and heard each other's telephone calls. Therefore, I deployed to the exercise knowing the details of the CBRN threat that we would face. However, the scenario played out slowly and only one precursor at a time was discovered over the course of the exercise. It would have been easy for me to inform the commander of the known threat, but it is important to exercise restraint and filter the information, providing only that which is applicable based on what is known at a particular stage of the exercise. This way, the list of potential threats is narrowed as the exercise continues and information is gathered.

Advising Senior Leaders

As the CBRN SME, deploying as an outside element to a command is preferred; serving as an internal CBRN SME for the command can be a hindrance. As an outsider to the command, the CBRN SME can laugh off questions and let the exercise run its course. But how do CBRN SMEs handle superiors and evaluators looking to gain that knowledge? They must do so respectfully and tactfully. They must tread carefully and remind those, even at the highest levels, of the goal of the exercise. Providing information too early may cause the element to seem high-speed to others involved, but the element then loses the experience and knowledge that would be gained by allowing the exercise to naturally run its course and, thus, compromises the integrity and purpose of the exercise. And sometimes the CBRN SME just needs to tell the boss "no."

Sometimes an exercise takes an unexpected turn, and the CBRN SME must know when to react and when to wait things out. In some instances, the SME may be tasked as a member of the blue cell while simultaneously tasked to provide course-correcting information at the proper times as a member of the white cell. This may be the most difficult situation to navigate. As a general rule, when guiding exercise direction, SMEs should interject as minimally as possible.

Involved elements will benefit more from the exercise if they are left to coordinate within their units and with the other units involved. However, because CBRN SMEs may need to ensure that the exercise stays on course, a balancing act must begin. Some questions to consider include—

- Has the element strayed so far off course that it must be pulled back?
- How much time is available to let the element stray off course?
- Will the element learn or benefit from going this direction?
- Will allowing the element to take this course of action move the exercise off track?
- Most importantly, what is the element trying to accomplish?

Before deciding to course-correct a commander, a CBRN SME must know what the commander is trying to accomplish. Therefore, he or she should ask the commander; it is very possible that years of experience and training have given the commander knowledge that the CBRN SME doesn't have. If things seem to be moving off path, clarification from the commander should be sought and information should be weighed. This is a difficult task to accomplish, and experience is the best tool to use when making these decisions. CBRN SMEs who lack the experience should not be afraid to call other white cell players who have that experience and ask their opinions.

Making Exercises Malleable

Strictly from a white cell (planning/directing) point of view, it is important to remember that exercises are, or at least should be, malleable. Training may sometimes be presented in "lock step," where every event is carefully planned to ensure that the unit knows exactly what needs to be completed in order to accomplish the task. An exercise, in contrast, needs to allow for movement or sway; this way, units and team members can use critical thinking skills to react to the situation and apply the knowledge they acquired in training, thus honing their skills in practice.

When building exercise scenarios, CBRN SMEs should focus on what the blue cell must deal with, not on what it should do. To do that, it is important to know who the players are so that there will be enough tasks for the teams to execute during the exercise. If many decontamination-capable elements are available, the exercise should be heavy with decontamination scenarios. If there are not many decontamination elements available, the exercise should have lighter decontamination scenarios. It is better to have too many tasks planned than not enough. Directing staff can always redirect or decide that an area will be out of play, but it is nearly impossible to create a challenging, realistic scenario on the day of execution.

It is also important to avoid stovepipes. The scenarios and sites should be created in such a way to require multiple disciplines to work together toward a common objective. North Atlantic Treaty Organization Euro–Atlantic Disaster Response Coordination Centre exercises usually comprise three general types of units: medical, CBRN, and urban search and rescue (USAR). As a CBRN planner, it is important to coordinate with medical or USAR planners during the planning process to ensure that the exercise requires elements to work not only with similar elements but also with elements that have other capabilities. If a unit works independently only on the same processes that it trains on at home station, then the exercise planner has failed. The integration of disparate elements at the training site does not need to be overly complicated.

One particular scenario was used quite successfully at exercise CRNA GORA-2016 in Montenegro. A simulated car accident during an earthquake forced multiple vehicles and victims off a bridge, onto an embankment, and into the water. This created a challenging USAR and dive team site.

If one of the vehicles had been a hazmat transport vehicle, a CBRN component could have been added, as placing leaking barrels along the shore would require the support of a CBRN team. Also, a CBRN reconnaissance team could enter the site to perform its tasks and discover trapped victims who are unreachable without USAR support. In this situation, if the trapped victims are far enough away from the CBRN exploitable items, two teams could concurrently work two different mission types.

In either of these scenarios, if supporting units are stretched too thin, it is easy for a directing staff member to shut off the scenario by informing the incident commander that the CBRN team discovered that the leaking barrels are not dangerous or that USAR successfully evacuated the victims. This allows the responding team to notice and react to the mixed scenario, while ensuring that the exercise does not stall if supporting units are unable to respond. In contrast, if a CBRN team has no task to perform, it cannot be instructed to deploy to a USAR site and pretend that there are leaking barrels on shore.

Briefing Capabilities and Limitations

From the perspective of blue players participating in large-scale and multinational exercises, it is arguably more important to ensure that CBRN unit capabilities and limitations are fully understood by the unit being supported. The culture of some units dictates a strict one-way (top to bottom) communication channel, which hinders the response as much, if not more, than a language barrier. An element may be instructed to deploy to an incident site that its members know they cannot sufficiently handle. It could be that the element was unable to bring all of their equipment due to customs or transportation requirements, or perhaps the host nation element just has different capabilities. If the unit receiving the orders to deploy is one that has that one-way communication culture embedded into its operation, the unit is unlikely to advise the local emergency management agency (LEMA) or lead element that it cannot handle the task. This results in a unit that hinders rather than helps and expends resources (fuel, water) that may already be limited in an emergency response situation. This vastly

increases the required time to complete the task. The situation will not be resolved until the incapable element arrives on scene and confers with the on-site commander and a call is made to the lead element requesting that a different element complete the task. The new element then needs time to prepare for deployment, receive a situation briefing, and travel to the incident site.

The importance of a proper capabilities and limitations briefing must be emphasized to the lead supporting unit, the host nation, and LEMA. This briefing should thoroughly document and aggregate the capabilities and limitations of all supporting units in order to properly advise the organizing unit on the most efficient use and warn against the improper use of each element. Additionally, the supporting units must brief the LEMA on their capabilities during an exercise. If an element did not bring its decontamination equipment, then LEMA must be informed that it can only perform USAR and will require decontamination support if the situation warrants. Similarly, if an element did not transport a generator, then LEMA must be informed that generator support will be required if the situation warrants.

In the midst of execution, it does not matter what the element can do under the best-case scenario. The capabilities and limitations briefing must be clear because different regions and countries may define and organize differently under the same name or similar titles. A chemical reconnaissance element from Poland may have a very different purpose and, therefore, very different capabilities than a chemical reconnaissance element from Bulgaria. A supporting element's CBRN SME should not simply inform LEMA that the element "performs chemical reconnaissance." Instead, the CBRN SME should be more specific, stating something like, "We can collect up to 10 samples, wet or dry; we have enough supplied air to work in Level A personal protective equipment for 2 hours; we can decontaminate our own people but no one else; or we will require water if we must decontaminate." This prevents LEMA from making assumptions about the tasks that the unit can accomplish based on the host nation understanding of chemical reconnaissance. A full understanding of element capabilities and limitations prevents embarrassing situations in which an element arrives on-scene and must inform the incident commander that it can't help.

Staying Busy in the Joint Operations Center

As an SME for the command element, there is no down time (or at least shouldn't be). An SME responds to questions and requests for information and anticipates requirements, capabilities, and information that may be needed. A large part of being an SME is conducting research. No one expects SMEs to know everything, but they must do their best to know as much as possible. The SME should constantly conduct research based on the most current information available in the operations center. He or she should build relationships and ask for information on update briefings and planning meetings. During large-scale, multidiscipline exercises, most operations center personnel do not know what information the SME needs. The SME must be proactive in finding the information that is available.

The SME should anticipate the questions that may be asked. While working an exercise in Hungary, the element had concerns about the possibility of a chemical reservoir breaching and spilling into a water source. According to U.S. policy, the supported element was not responsible for decontamination, but the CBRN team researched the best way to respond to the incident. When the question was asked, the answer was ready for the element that actually conducted the decontamination. It is impossible to plan for every question; but when asked a question that has not yet been researched, the CBRN SME should say that he or she doesn't know the answer but will find out.

Although a CBRN SME is not expected to know everything, he or she should know how to find answers or who to contact. In one instance, after informing a planning team that a particular substance degrades quickly in heat, I was asked if the on-site element could simply burn down the building. Although I was fairly confident that burning down an otherwise empty building containing a barrel of this substance wouldn't be a problem, the precursors, processes, and other variables present pushed the equation beyond my true capability. I had to inform the element that I would get back to it. It is always better to be right than to be quick.

Staying in the Right Lane

The acting CBRN SMEs must know when to stay in their lane. In the situation above with the barrel in the building, burning down the structure was a viable option from a strictly chemical process point of view. The CBRN SME advises the commander from a CBRN point of view only. Whether or not the suggested course of action can be done legally is for the legal SME to determine. And whether following this course of action would negatively affect the relationship with the host nation is for the international relations SME to conclude. Remember, the commander is the decision maker. The CBRN SME merely relays what should be done (and why), what shouldn't be done (and why), and the CBRN consequences of any planned courses of action.

Gaining Experience

As previously mentioned, the required knowledge is not gained in any school; it is gained working side-by-side with more experienced CBRN and planning personnel. Hopefully, this article will help young CBRN personnel to better understand the often complicated roles of planning and conducting large-scale exercises. Be confident, know the element capabilities and limitations and, most importantly, learn from those around you and improve daily.

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Preparing a Hazard Response Company for Tomorrow's Fight

By Captain Heidi D. Beemer

Adaptable Formations

Since 2001, the wars in Afghanistan and Iraq have taught American military personnel that leaders must reconsider the way in which war is traditionally fought in order to match the ever-changing operational environment of warfare today. General Stanley A. McCrystal writes in his book, *Team of Teams: New Rules of Engagement for a Complex World*, that his task force team in Iraq "struggle[d] to cope with an environment that was fundamentally different from anything . . . planned or trained for. The speed and interdependence of events has produced new dynamics that threatened to overwhelm the time-honored process and culture [the military] has built."[1] As our country's role in the fight for changes in the Middle East moves from destroying the enemy to advising allies, future leaders of the Army are looking toward the next decisive action. As leaders, however, we must realize that the next force-on-force battle will not be the same as previous conflicts. We are in a new age of technology that demands that the next generation of warfighters be adaptable. Understanding and adapting isn't optional; instead, it will differentiate success from failure in the years to come.[2]

The Chemical Corps understood this concept and, in 2015, adapted its Force Design Update (FDU) to match the need for a dynamic force to face future operational threats. The hazard response company was one result of this change. The multifunctional hazard response company provides brigade combat team (BCT) and higher commanders with hazard reconnaissance, surveillance, assessment, and decontamination support.[3] This adaptable company consists of one mounted reconnaissance platoon with four armored reconnaissance vehicles or nuclear biological chemical reconnaissance vehicles and two 30-Soldier hazard assessment platoons capable of concurrently conducting hazard assessment and operational decontamination. The hazard assessment platoon provides the BCT commander with a variety of options to detect, protect against, and mitigate chemical, biological, radiological, and nuclear (CBRN) hazards on the battlefield.[4] Doctrine for the use of these platoons was rewritten so that BCT commanders receive the capability they need when they need it. Depending on the tactical requirements, the BCT may even request the company headquarters for support.

But what happens when the BCT commander doesn't need the company headquarters? What happens when a BCT only requests two nuclear biological chemical reconnaissance vehicles to complement its organic reconnaissance platoon or two decontamination squads to facilitate operational decontamination? Under the new FDU, these are plausible scenarios. BCT commanders can request only the exact assets required to continue the fight in a contaminated CBRN environment.

Divest Control

As a hazard response company commander, my first question would be: Are our junior leaders, platoon leaders, and squad leaders ready for this responsibility? The Army style of leadership is often top-down; orders are given from the top, and subordinates obey and carry out those orders. Decision authority resides with the commander, and the organization complies. In this top-down model, one person actively thinks and addresses issues and the remaining personnel perform duties as instructed. To develop adaptable leaders, we must change this way of thinking. We need to train leaders to act in accordance with the commander's intent, using the information available to execute the mission. The only way to provide adaptable leaders is to divest the commander's control, deconstruct decision authority, and push control and decision authority to the leader who has the information.[5]

To enable subordinate leaders to take control of their formations and provide a BCT commander with CBRN services in the absence of a CBRN commander on the ground, the leaders of these piecemeal formations must have two things: competence and clarity.

Competence

To make the correct decisions, a leader must be technically competent. In the Chemical Corps, this is vital. The dangers of our profession require leaders and Soldiers to have an understanding of chemistry, biology, and physics. CBRN leaders must understand the physical properties of the agents with which they are working as well as the inner workings of the detectors and personal protective equipment needed to best mitigate threats to the forces that they are sent to protect. If we send a squad of dismounted CBRN Soldiers into a laboratory, the Soldiers' understanding of the dangers faced will guide them in making the correct decisions. Competence allows Soldiers to collect the correct information and to pass their knowledge up the chain of command so that decisions can be made across the battlefield.

The Army trains to achieve competence. It is incumbent on the commander to maintain aggressive training programs to ensure that leaders and subordinates are subject matter experts in their field. Apart from rigorous training programs, as leaders, we can ensure that Soldiers are always growing and learning. With a top-down leadership style, leaders revert to instructing subordinates on what to do and when. In a leader-leader model, all Soldiers are encouraged to learn from their training mistakes. They are given the opportunity to try new things and incorporate technical training into tactical drills and events. By assuming risk, organizations can encourage growth in junior leaders to prepare them for control of future missions in which they are the highest-ranking CBRN leaders on the ground.

Clarity

In order for a commander to distribute control, junior leaders must also have clarity. Success hinges on everyone within an organization clearly and completely understanding the role of the organization. In the Army, we also call this commander's intent. The success of the mission is dependent upon leaders making decisions based on pre-established criteria that include what the organization is trying to accomplish. If leaders in an organization understand how the unit fits into the overall mission, why their jobs are important, and what is accepted as "right," they will be able to make informed and optimal decisions.

Clarity can be emphasized in many different ways. Many leaders post guiding principles and state that they are the expectations of the organization. These principles often go unnoticed and don't always become an integral part of the unit daily operations. One way of increasing clarity is to develop principles that ultimately provide guidance on decisions. Once established, Soldiers and leaders can use these principles when deciding between two courses of action. The key is to develop these principles with the leaders of the organization. Getting buy-in from the organization allows leaders to feel invested in the principles. Leaders then use these principles as the language of the organization. Awards are given to Soldiers who use these principles; the *Uniform Code of Military Justice* is used when Soldiers fail to comply.[6] Every Soldier can make the correct decisions when they are made within the confines of the guiding principles, which results in clarity for the entire formation. Providing clarity and a unified purpose within the formation prepares CBRN leaders to make appropriate decisions in the absence of direct-line supervisors.

Way Forward

The top-down leadership model fails when commanders are not on the ground with the leaders who have the appropriate information to make the informed decisions. As General McCrystal learned, the operational context of a mission can change so quickly that by the time the leader at the top of the chain is notified to make a decision to act, the opportunity to exploit is already gone.

As leaders, we cannot be afraid to relinquish control to subordinate leaders. We cannot wait until our leaders are "competent enough" before allowing them control of their platoons or squads. We must provide them with a clear task and purpose, affording them the opportunity to make mistakes and grow.

This leader-leader concept, which is close to the definition of mission command, is not new. However, a fundamental shift must occur to implement this practice. Commanders need to actively prepare junior leaders to take on the responsibility of making the right decisions at the right time. Mission command must be implemented at the lowest level within our Corps, and subordinate leaders should be trusted to facilitate growth. Small teams should be expected to act independently when attached to a BCT; it is our responsibility, at the lowest level, to develop adaptable leaders who are capable of making decisions within the intent of the commander above them.

Endnotes:

[1]Stanley A. McChrystal, et al., *Team of Teams: New Rules of Engagement for a Complex World*, Portfolio Penguin, New York, 2015, p. 2.

[2]Ibid., p. 4.

[3]James P. Harwell, "The CBRN FDU: Building the Future Force Today," *Army Chemical Review*, Summer 2015, p. 18.

[4]Ibid., p. 19.

[5]L. David Marquet, *Turn the Ship Around! A True Story of Turning Followers into Leaders*, Portfolio Penguin, New York, 2012.

[6]Title 10, U.S. Code, Subtitle A, Part II, Chapter 47, *Uniform Code of Military Justice.*

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The New FM 3-0 and its Impact on CBRN Operations

By Mrs. Sharon M. McCann

On 4 October 2017, Colonel (Promotable) Antonio V. Munera, the U.S. Army Chemical, Biological, Radiological, and Nuclear School Commandant, presented his 90-day assessment of the Chemical Corps at a leader professional development session at Fort Leonard Wood, Missouri. He also used this leader professional development session to introduce the new Field Manual (FM) 3-0, *Operations*.[1]

FM 3-0 presents a change in culture of Army operations that will have an impact across all domains (doctrine, organization, training, materiel, leadership and education, personnel, and facilities) and across the Chemical Corps. FM 3-0 focuses on large-scale combat operations and adjusts the operational framework to include multiple domains (air, land, maritime, space, and cyberspace). The new FM 3-0 will influence the revision of FM 3-11, *Multiservice Doctrine for Chemical, Biological, Radiological, and Nuclear Operations*, this upcoming fiscal year.[2]

Colonel (Promotable) Munera tasked all leaders to read FM 3-0 through the lens of a chemical, biological, radiological, and nuclear (CBRN) leader in order to understand how to preserve combat power through the execution of CBRN capabilities and tasks.

Endnotes:

[1]FM 3-0, *Operations*, 6 October 2017.

[2]FM 3-11, *Multiservice Doctrine for Chemical, Biological, Radiological, and Nuclear Operations*, 1 July 2011.

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Publication of ATP 3-90.40

Army Techniques Publication (ATP) 3-90.40 was published on 29 June 2017. It provides doctrine on how to conduct the countering weapons of mass destruction (CWMD) mission as combined arms teams. It is primarily oriented toward the brigade combat team and below. This manual provides tactical-level commanders, staff, and key agency personnel with a primary reference for planning, synchronizing, integrating, and executing combined arms CWMD. It is a product of lessons learned and observations collected from the challenges faced during the execution of weapons of mass destruction elimination. The need for this doctrine was identified through the realization that CWMD is not a chemical, biological, radiological, and nuclear (CBRN) mission enabled by maneuver forces; rather, it is a military operation conducted by combined arms teams and enabled by CBRN, explosive ordnance disposal, and other technical elements.

The chapters within ATP 3-90.40 provide the following information:

- Chapter 1 provides an introduction to the fundamentals and important terms associated with CWMD executed as combined arms teams.
- Chapter 2 discusses planning considerations for the conduct of CWMD operations.
- Chapter 3 focuses on the control portion of Activity 3 of the CWMD construct.
- Chapter 4 focuses on the defeat, disable, and dispose portion of Activity 3 of the CWMD construct.
- Chapter 5 discusses the considerations for safeguarding the force and managing consequences, which is Activity 4 of the CWMD construct.

The appendices within ATP 3-90.40 provide the following information:

- Appendix A provides systems and reporting techniques for CWMD operations.
- Appendix B focuses on the disposition of weapons of mass destruction and materials.
- Appendix C provides recommended contents of a target folder.

DOCTRINE UPDATE

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

Number	Title	Date	Status
Joint Publications			
The U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS) is not the proponent for joint publications (JPs). However, the Chemical, Biological, Radiological, and Nuclear (CBRN) Doctrine Branch; Concepts, Organization, and Doctrine Development Division; Capabilities Development Integration Directorate; U.S. Army Maneuver Support Center of Excellence, is often a key stakeholder and sometimes the lead agent for a JP. Five JPs affect the development or revision of tactical-level CBRN publications.			
JP 3-11	*Operations in Chemical, Biological, Radiological, and Nuclear (CBRN) Environments*	4 Oct 13	Under revision. Comments will soon be accepted through the Joint Doctrine Development Tool.
JP 3-11 focuses on maintaining the joint force ability to conduct the range of military operations in a CBRN environment. The revised JP 3-11 will reference a classified appendix on nontraditional agents that will be available on the secure Internet protocol router.			
JP 3-27	*Homeland Defense*	29 Jul 13	Current.
JP 3-27 provides information across the range of military operations (including interorganizational coordination, planning, and mission command) that is required to defeat external threats to, and aggression against, the homeland—or other threats—as directed by the President. JP 3-27 covers the federal and state interagency coordination of roles that are unique to homeland defense and then refers to JP 3-08, *Interorganizational Coordination During Joint Operations*, for more detailed guidance. JP 3-27 also addresses the dual roles of the Army National Guard in federal and state chains of command and explains how those roles affect homeland defense.			
JP 3-28	*Civil Support*	31 Jul 13	Current.
JP 3-28 provides overarching guidelines and principles to assist commanders and staffs in planning, conducting, and assessing defense support of civil authorities (DSCA). It introduces the principle of civilian agencies being in charge of domestic operations that receive military support. It also discusses the unique command relationships and coordinating processes to be used when operating in DSCA capacity. Finally, JP 3-28 discusses selected aspects of supporting and sustaining the joint force during these specific types of operations.			
JP 3-40	*Countering Weapons of Mass Destruction*	31 Oct 14	Current. The August 2017 assessment report recommended a full revision of JP 3-40.
JP 3-40 provides an activities construct for countering weapons of mass destruction (WMD). Tasks to counter specific WMD threats are grouped within the activities of understand the operational environment, threats, and vulnerabilities; cooperate with and support partners; control, defeat, disable, and dispose of WMD threats; and safeguard the force and manage consequences.			
JP 3-41	*Chemical, Biological, Radiological, and Nuclear Response*	9 Sep 16	Current.
The newly published revision of JP 3-41 changes *consequence management* to *CBRN response* to highlight the unique Department of Defense (DOD) response capability and responsibility to minimize the effects of a CBRN incident. It incorporates the new DOD integrated CBRN response enterprise capabilities and joint force matrix and clarifies supporting roles during international CBRN response (previously foreign consequence management).			
Multi-Service Publications			
USACBRNS is the U.S. Army proponent and lead agent for eight tactical-level, multi-Service publications. Seven of the publications are sponsored by the Joint Requirements Office for CBRN Defense (J-8), Joint Chiefs of Staff.			
FM 3-11 MCWP 3-37.1 NWP 3-11 AFTTP 3-2.42	*Multi-Service Doctrine for Chemical, Biological, Radiological, and Nuclear Operations*	1 Jul 11	Under review.
Field Manual (FM) 3-11 is the only FM for which the USACBRNS is the lead agent. The revision of FM 3-11 will focus on integrating the core functions of the Chemical Corps into the large-scale combat operations of the new FM 3-0, *Operations.* FM 3-11 will no longer be multi-Service and will be the keystone doctrine for operations to assess CBRN hazards, protect the force, and mitigate the entire range of CBRN threats, hazards, and effects.			

Number	Title	Date	Status
ATP 3-11.23 MCWP 3-37.7 NTTP 3-11.35 AFTTP 3-2.71	*Multi-Service Tactics, Techniques, and Procedures for Weapons of Mass Destruction Elimination Operations*	1 Nov 13	Current.
Army Techniques Publication (ATP) 3-11.23, describes the WMD–elimination isolation activity as the seam that links the battle handover from a conventional CBRN force conducting the assessment task to the technical CBRN force conducting exploitation and destruction tasks. It educates the reader on performing the entire process from cradle (reconnoitering) to grave (monitoring and redirecting) and on planning, preparing, executing, and assessing considerations throughout.			
ATP 3-11.32 MCWP 3-37.2 NTTP 3-11.37	*Multi-Service Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Passive Defense*	13 May 16	Current.
ATP 3-11.32 contains information for conducting operations; performing tactics, techniques, and procedures (TTP); and understanding how to carry out CBRN passive defense. A complementary technical manual (TM) (TM 3-11.32/MCRP 10-10E.5/NTRP 3-11.25) contains reference material for CBRN warning, reporting, and hazard prediction procedures.			
ATP 3-11.36 MCRP 3-37B NTTP 3-11.34 AFTTP 3-2.70	*Multi-Service Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Aspects of Command and Control*	1 Nov 13	Under revision. The name will change to *Multi-Service Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Planning*.
ATP 3-11.36 includes the doctrinal employment of CBRN capabilities (organizations, personnel, technology, and information) to characterize CBRN threats and hazards, including toxic industrial material, for the commander and the force. This manual also incorporates the joint doctrine elements for combating WMD. It is designed to provide operational- and tactical-level commanders and staffs with capability employment planning data and considerations to shape military operations involving CBRN threats and hazards and operations in CBRN environments.			
ATP 3-11.37 MCWP 3-37.4 NTTP 3-11.29 AFTTP 3-2.44	*Multi-Service Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Reconnaissance and Surveillance*	25 Mar 13	Current. Change 1 published April 2017 includes changes to Appendix J.
ATP 3-11.37 establishes forms, modes, and methods of (and tasks for) CBRN reconnaissance and surveillance. It also establishes four new CBRN hazard identification levels that have been accepted by combatant commanders and the medical community for environmental samples and clinical specimens. These hazard identification levels allow the conventional force to provide the commander with sample identification at higher levels of confidence. This, in turn, allows the commander to make timely, higher-level decisions that enhance force protection, improve mission accomplishment, and result in resource savings. ATP 3-11.37 establishes a sample management process and educates Soldiers on the protocols of the process, from sample collection through transfer. Finally, it instructs Soldiers on dismounted reconnaissance operations in urban environments.			
ATP 3-11.41 MCRP 3-37.2C NTTP 3-11.24 AFTTP(I) 3-2.37	*Multi-Service Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Consequence Management Operations*	30 Jul 15	Current. Update will be made in the near future to incorporate changes from the new JP 3-41.
ATP 3-11.41 provides commanders, staffs, key agencies, and military members with a key reference for planning and conducting CBRN consequence management. This publication provides a reference for planning, resourcing, and executing CBRN consequence management in support of domestic or foreign agencies responding to a CBRN incident. The principal audience for this multi-Service publication consists of CBRN responders who plan and conduct CBRN consequence management operations in domestic, foreign, or theater operational environments, to include military installations.			
ATP 3-11.46 AFTTP 3-2.81	*Weapons of Mass Destruction–Civil Support Team Operations*	20 May 14	Current.
ATP 3-11.46 serves as the foundation for WMD–Civil Support Team (CST) doctrine. ATP 3-11.46 will be revised to incorporate changes in doctrine from updated JP 3-11, JP 3-28, and JP 3-41 and explain how the WMD-CST concept of operations is integrated into the CBRN Response Enterprise (CRE) structure.			
ATP 3-11.47 AFTTP 3-2.79	*Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives Enhanced Response Force Package (CERFP) and Homeland Response Force (HRF) Operations*	26 Apr 13	Current.
ATP 3-11.47 contains detailed tactical doctrine and TTP and sets the foundation for the tactical employment of the CERFP and HRF. It will be consolidated into a multi-Service CRE manual, incorporating revisions of JP 3-41, ATP 3-11.41, and ATP 3-11.46 in the near future.			

Number	Title	Date	Status
Army-Only Publications			
USACBRNS is the U.S. Army proponent for five tactical-level, Army-only publications.			
ATP 3-11.24	*Technical Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives (CBRNE) Force Employment*	6 May 14	Current.
ATP 3-11.24 describes how CBRNE forces support combatant commanders through every phase of operations conducted in-theater and in the homeland. This is important in educating those who are outside the CBRN community with regard to the true capabilities of the technical CBRNE force. The appendixes include information about specific technical CBRNE force missions, organizations, capabilities, and employment considerations.			
ATP 3-11.50	*Battlefield Obscuration*	15 May 14	Current.
ATP 3-11.50 provides TTP to plan obscuration operations and employ obscurants during, or in support of, unified land military operations at the tactical through operational levels of war. A change will be published in the near future to address the change in capabilities, including the removal of reference to CBRN obscuration units.			
ATP 3-90.40	*Combined Arms Countering Weapons of Mass Destruction*	29 Jun 17	Current.
ATP 3-90.40 provides tactical-level commanders, staffs, and key agencies with a primary reference for planning, synchronizing, integrating, and executing combined arms countering weapons of mass destruction.			
ATP 3-11.42	*Chemical, Biological, Radiological, and Nuclear Domestic Response*	TBD	Under development.
ATP 3-11.42 will combine guiding principles to multi-Service forces within the CBRN Response Enterprise (CRE) and conducting domestic CBRN response operations in support of Department of Defense missions and national objectives. It will focus on planning, preparation, and execution at the tactical level.			
ATP 3-37.11	*Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) Command*	TBD	Under development.
ATP 3-37.11 is intended to facilitate the operations and training requirements of the CBRNE command. It will also provide commanders, staffs, key agencies, and Service members with a key reference on the CBRNE command for operational and tactical planning and CBRN and explosive ordnance disposal structure, capabilities, and principles of employment.			
Technical Manuals			
USACBRNS is the proponent and approving authority for three TMs.			
TM 3-11.32 MCRP 10-10E.5 NTRP 311.25 AFTTP 3-2.56	*Multi-Service Reference for Chemical, Biological, Radiological, and Nuclear (CBRN) Warning, Reporting, and Hazard Prediction Procedures*	15 May 17	Current.
TM 3-11.32 provides reference material for CBRN warning messages, incident reporting, and hazard prediction procedures. A change to correct errors and add Air Force designations will be made in FY 18.			
TM 3-11.42 MCWP 3-38.1 NTTP 3-11.36 AFTTP 3-2.82	*Multi-Service Tactics, Techniques, and Procedures for Installation Emergency Management*	23 Jun 14	Current.
TM 3-11.42 addresses the installation commander's response to an incident that takes place on an installation. The scope of this revision has been expanded from CBRN defense to all-hazards installation emergency management, which includes the management of CBRN events. The publication defines the roles of DOD installation commanders and staffs and provides the TTP associated with installation planning and preparedness for, response to, and recovery from all hazards in order to save lives, protect property, and sustain mission readiness.			
TM 3-11.91 MCRP 3-37.1B NTRP 3-11.32 AFTTP 3-2.55	*Chemical, Biological, Radiological, and Nuclear Threats and Hazards*	TBD	Under development. Will revise and supersede FM 3-11.9 and FM 3-11.11.
TM 3-11.91 will serve as a comprehensive manual for information to help understand the CBRN environment. It will include the technical aspects of CBRN threats and hazards, including information about the chemistry of homemade explosives. In addition to the technical information on CBRN threats and hazards, it will also include basic educational information and cover the "so what" and the field behavior of CBRN hazards (including riot control agents and herbicides). The appendixes will contain scientific CBRN data, and the centerpiece of the manual will be the CBRN threats and hazards diagram.			

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])	Once Soldiers are enrolled in Phase I, they will 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 Anthony Anderson at (573) 563-7757 or <anthony.p.anderson10.mil@mail.mil>.
74D10 CBRN Specialist Course (School Code L031)	
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.
74D 2/3/4 CBRN Transition Course (School Code L031)	
This is a three-phase resident course. Soldiers attending the CBRN Transition Course (031-74D2/3/4) must be graduates of a military occupational specialty (MOS) Advanced Leader Course (ALC) or Basic Noncommissioned Officer Course (BNCOC). Soldiers who have not attended ALC or BNCOC must attend the CBRN Specialist Course (031-74D10) to become 74D10 MOS-qualified. Hazmat Awareness Training is now a prerequisite for all courses. The Air Force Civil Engineer Center (AFCEC) Web site no longer contains the training. Training can still be completed at <http://totalforcevlc.golearnportal.org/>. (A common access card [CAC] is required.)	
74D30 CBRN ALC (School Code L031, 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 technician level. Effective 1 October 2014, graduation from Structured Self-Development, Level II, is a prerequisite for attending CBRN ALC.	
74D40 Senior Leader Course (SLC) (School Code L031, Course 031-74D40-C46)	
This is a three-phase resident course conducted at Fort Leonard Wood. Graduation from Structured Self-Development, Level III, is a prerequisite for attending SLC.	
Officer Qualification Training Courses	
CBRN Captain's Career Course (C3) (School Code 031)	
Phase I (Course 4-3-C23 [dL])	This branch-specific distributed learning (dL) phase consists of 108 hours of dL instruction, which must be completed within 60 days before attending Phase II. Unit trainers enroll Soldiers through the Army Training Requirements System (ATTRS). Students receive e-mail instructions from the Army Distributed Learning Program. Hazmat awareness training can be accessed at <http://totalforcevlc.golearnportal.org> 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) U.S. Army Reserve (USAR) Training Development NCO, Master Sergeant Anthony Anderson, at (573) 563-7757 or <anthony.p.anderson10.mil@mail.mil>. The successful completion of Phase I is a prerequisite for Phase II attendance.
Phase II (Course 4-3-C23)	This branch-specific resident phase consists of 2 weeks of training conducted at 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 common-core (CC) phase 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 before attending Phase IV. Those who encounter problems should contact Master Sergeant Anderson at (573) 563-7757 or <anthony.p.anderson10.mil@mail.mil>. The successful completion of Phase III is a prerequisite for Phase IV attendance.
Phase IV (Course 4-3-C23)	This resident phase consists of 2 weeks of training conducted at 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 decision-making process exercise using state-of-the-art battle simulation equipment.

Joint Senior Leader Course (Course 4K-74A/494-F18)
This is a 4-day course for senior leaders focusing on operational- and strategic-level aspects of countering weapons of mass destruction (WMD). 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. You are required to register for the Joint SLC through the Joint SLC action officer, Mr. Brad Sanders at <bradley.w.sanders.ctr@mail.mil> or (573) 528-9491. Registration through ATTRS will not guarantee a seat; prospective students may be bumped from the course.
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 Army Doctrine Publication (ADP) 7-0, *Training Units and Developing Leaders*, concepts 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 command and control chemical, biological, radiological, and nuclear response element (C2CRE); chemical, biological, radiological, nuclear, and explosives enhanced response force package (CERFP); WMD–civil support team (CST); domestic response force; and homeland response force units for MOS qualification.

Table 2. Functional training courses

Mass Casualty Decontamination Course (School Code 031, Course 4K-F25/494-F-30)
This 9-day course is appropriate for CERFP and domestic-response casualty decontamination team members. Students who successfully complete the course receive certification at the operations levels. The Hazmat Awareness course is now a prerequisite for all courses. The AFCEC Web site no longer contains the training. Training can still be completed at <http://totalforcevlc.golearnportal.org/>. (A CAC is required.)
CBRN Responder Course (School Code 031, Course 4K-F24/494-F29)
This 10-day course is appropriate for C2CRE members. All students attending the course must be International Fire Service Accreditation Congress (IFSAC) DOD awareness-certified before arriving. Students who successfully complete the course receive certification at the hazmat 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 WMD-CST members. Students receive advanced training in hazmat technician and incident command and CBRN survey, point reconnaissance, sampling operations, personal protective equipment selection and certification, and decontamination. They also receive 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 IFSAC and DOD. Additional copies of certificates can be obtained at <http://www.dodffcert.com>.

A Soldier who arrives for any resident course without having first completed all appropriate dL requirements will be returned to his or her unit 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 USAR training development 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. An applicant should be an E-6 or E-7, should be qualified (or able to be trained) as an Army basic instructor, and should have completed the appropriate NCO Education System coursework. Interested Soldiers should contact the brigade senior operations NCO, Master Sergeant Jeremy Mann at (860) 570-7114 or <jeremy.a.mann.mil@mail.mil>.

Contact Information

Lieutenant Colonel VACANT (DAC–AR), (573) 563-8050.

Sergeant Major Phillip D. Pennington (CBRN USAR Sergeant Major), (573) 563-4026 or <phillip.d.pennington2.mil@mail.mil>.

Master Sergeant Anthony Anderson (Training Development NCO–AR), (573) 563-7757 or <anthony.p.anderson10.mil@mail.mil>.

Lieutenant Colonel VACANT (DAC–NG), (573) 563-7676.

Master Sergeant Christopher C. Lemley (Proponency NCO–NG), (573) 563-7667 or <christopher.c.lemley.mil@mail.mil>.

Staff Sergeant Walter Espinoza (RC–LNO), (573) 596-3226 or <molina.w.espinoza.mil@mail.mil>

Reference:

ADP 7-0, *Training Units and Developing Leaders*, 23 August 2012.

The Commandant's Reading Program

Compiled by Lieutenant Colonel James P. Harwell

President Harry S. Truman once said, "Not all readers are leaders, but all leaders are readers." Reading should form the foundation of every leader's self-development program. It supplements institutional training and operational experience and provides leaders with knowledge to react to a complex world. The Commandant's Reading Program provides chemical, biological, radiological, and nuclear (CBRN) leaders with the basis for a lifelong self-development program. It supplements other reading lists from the Chief of Staff of the Army to the local unit level, with a particular emphasis on the CBRN profession.

The Commandant's Reading Program is all-inclusive. CBRN leaders should use it as a guide, but should develop their personal programs based on their individual needs, knowledge, and experiences. With each issue of *Army Chemical Review* and Colonel (Promotable) Antonio V. Munera's guidance, the reading program continues to evolve. The reading program helps develop CBRN leaders capable of facing the challenges of the contemporary operating environment.

The CBRN Profession

- Graham T. Allison, *Nuclear Terrorism: The Ultimate Preventable Catastrophe*, Henry Holt and Company, LLC, New York, 2004, ISBN-13: 978-0-8050-7852-7.
- Kurt M. Campbell et al., *The Nuclear Tipping Point: Why States Reconsider Their Nuclear Choices*, Brookings Institution Press, Washington, D.C., 2004, ISBN-13: 978-0-8157-1330-2.
- Charles D. Ferguson and William C. Potter, *The Four Faces of Nuclear Terrorism*, Routledge, Taylor, & Francis Group, New York, 2005, ISBN-13: 978-0-415-94244-1.
- Laurie Garrett, *The Coming Plague: Newly Emerging Diseases in a World Out of Balance*, The Penguin Group, New York, 1994, ISBN-13: 978-0-14-025091-6.
- Richard L. Garwin and Georges Charpak, *Megawatts and Megatons: The Future of Nuclear Power and Nuclear Weapons*, University of Chicago Press, Chicago, 2002, ISBN-13: 978-0-226-28427-9.
- Robert Harris and Jeremy Paxman, *A Higher Form of Killing: The Secret History of Chemical and Biological Warfare*, Random House Publishing Group, 2002, ISBN-13: 978-0-8129-6653-4.
- David E. Hoffman, *The Dead Hand: The Untold Story of the Cold War Arms Race and Its Dangerous Legacy*, Anchor Books, New York, 2009, ISBN-13: 978-0-307-38784-4.
- Gregory D. Koblentz, *Living Weapons: Biological Warfare and International Security*, Cornell University Press, New York, 2009, ISBN-13: 978-0-8014-7752-2.
- William Langewiesche, *The Atomic Bazaar: The Rise of the Nuclear Poor*, Farrar, Straus, and Giroux, New York, 2007, ISBN-13: 978-0-374-10678-2.
- Judith Miller et al., *Germs: Biological Weapons and America's Secret War*, Touchstone, New York, 2002, ISBN-13: 978-0-684-87159-2.
- Michael B. A. Oldstone, *Viruses, Plagues, & History: Past, Present, and Future*, Oxford University Press, New York, 2010, ISBN-13: 978-0-19-532731-1.
- Jonathan B. Tucker, *War of Nerves: Chemical Warfare from World War I to Al-Qaeda*, Anchor Books, New York, 2006, ISBN-13: 978-1-4000-3233-4.

Leadership

- Marcus Aurelius, *The Emperor's Handbook: A New Translation of the Meditations*, Scribner, New York, 2002, ISBN-13: 978-0743233835.
- David Cloud and Greg Jaffe, *The Fourth Star: Four Generals and the Epic Struggle for the Future of the United States Army*, Three Rivers Press, New York, 2009, ISBN-13: 978-0307409072.
- Eliot A. Cohen and John Gooch, *Military Misfortunes: The Anatomy of Failure in War*, Free Press, New York, 1990, ISBN-13: 978-0743280822.
- Epictetus, *Enchiridion*, Dover Publications, New York, 2004, ISBN-13: 978-0486433592.
- Victor Davis Hanson, *The Savior Generals: How Five Great Commanders Saved Wars That Were Lost–From Ancient Greece to Iraq*, Bloomsbury Publishing, New York, 2013, ISBN-13: 978-1608193424.
- John P. Kotter, *Power and Influence*, Free Press, New York, 1985, ISBN-13: 978-1439146798.
- Stanley A. McChrystal, *My Share of the Task: A Memoir,* Portfolio, New York, 2014, ISBN-13: 978-1591846826.
- David Richards, *Taking Command*, Headline, London, 2014, ISBN-13: 978-1472220844.

- Thomas E. Ricks, *The Generals: American Military Command from World War II to Today*, The Penguin Press, New York, 2012, ISBN-13: 978-0143124092.
- James B. Stockdale, *Thoughts of a Philosophical Fighter Pilot*, Hoover Institution Press, California, 1995, ISBN-13: 978-0817993924.
- Martin van Creveld, *Command in War*, Harvard University Press, Massachusetts, 1985, ISBN-13: 978-0674144415.
- Anthony C. Zinni and Tony Koltz, *Before the First Shots Are Fired: How America Can Win or Lose off the Battlefield*, St. Martin's Press, New York, 2014, ISBN-13: 978-1137279385.

Strategy

- Zbigniew Brzezinski, *Strategic Vision: America and the Crisis of Global Power*, Basic Books, New York, 2012, ISBN-13: 978-0465061815.
- Everett C. Dolman, *Pure Strategy: Power and Principle in the Space and Information Age*, Frank Cass, New York, 2005, ISBN-13: 978-0714684987.
- George C. Herring, *From Colony to Superpower: U.S. Foreign Relations Since 1776*, The Oxford History of the United States, Oxford University Press, New York, 2008, ISBN-13: 978-0199765539.
- Robert D. Kaplan, *Asia's Cauldron: The South China Sea and the End of a Stable Pacific*, Random House, New York, 2014, ISBN: 978-0-8129-9432-2.
- Robert D. Kaplan, *The Revenge of Geography: What the Map Tells Us About Coming Conflicts and the Battle Against Fate*, Random House Trade Paperbacks, New York, 2012. ISBN-13: 978-0-8129-8222-0.
- Paul M. Kennedy, *The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500 to 2000*, Random House, New York, 1987, ISBN-13: 978-0679720195.
- Stanley A. McChrystal, et al., *Team of Teams: New Rules of Engagement for a Complex World*, Portfolio, New York, 2015, ISBN-13: 978-0241250839.
- Williamson Murray and Peter R. Mansoor, *Hybrid Warfare: Fighting Complex Opponents from the Ancient World to the Present*, Cambridge University Press, New York, 2012, ISBN-13: 978-1107643338.
- Joseph S. Nye Jr., *The Future of Power,* Public Affairs, New York, 2011, ISBN-13: 978-1610390699.
- Richard H. Shultz and Andrea J. Dew, *Insurgents, Terrorists, and Militias: The Warriors of Contemporary Combat*, Columbia University Press, New York, 2006, ISBN-13: 978-0231129824.
- Thucydides, *The History of the Peloponnesian War*, Penguin Classics, 431 BC, ISBN-13: 978-0140440393.
- Eliot A. Cohen, *The Big Stick: The Limits of Soft Power and the Necessity of Military Force*, Basic Books, New York, 2016, ISBN-13: 978-0465044726.
- George Freidman, *Flashpoints: The Emerging Crisis in Europe*, Anchor Books, New York, 2015, ISBN-13: 978-0307951137.

Army Chemical Review Writer's Guide

Army Chemical Review is a Department of the Army-authenticated publication that contains instructions, guidance, and other materials to continuously improve the professional development of Army chemical, biological, radiological, and nuclear (CBRN) personnel. It also provides a forum for exchanging information and ideas within the Army CBRN community. *Army Chemical Review* includes articles by and about commissioned officers, warrant officers, enlisted Soldiers, Department of the Army civilians, and others. Writers may discuss training, current operations and exercises, doctrine, equipment, history, personal viewpoints, or other areas of general interest to CBRN personnel. Articles may share good ideas and lessons learned or explore better ways of doing things. Shorter, after action type articles and reviews of books on CBRN topics are also welcome.

Articles should be concise, straightforward, and in the active voice. Avoid using acronyms when possible. When used, acronyms must be spelled out and identified at the first use. Also avoid the use of bureaucratic jargon and military buzzwords. Text length should not exceed 2,000 words (about eight double-spaced pages).

Articles submitted to *Army Chemical Review* must be accompanied by a written release from the author's unit or activity security manager before editing can begin. All information contained in an article must be unclassified, nonsensitive, and releasable to the public. It is the author's responsibility to ensure that security is not compromised; information appearing in open sources does not constitute declassification. *Army Chemical Review* is distributed to military units worldwide and is also available for sale by the Government Printing Office. As such, it is readily accessible to nongovernment or foreign individuals and organizations.

Authors are responsible for article accuracy and source documentation. Use endnotes (not footnotes) and references to document sources of quotations, information, and ideas. Limit the number of endnotes to the minimum required for honest acknowledgment. Endnotes and references must contain a complete citation of publication data; for Internet citations, include the date accessed.

Include photographs and/or graphics that illustrate information in the article. Graphics must be accompanied by captions or descriptions; photographs should also be identified with the date, location, unit/personnel, and activity, as applicable. Do not embed photographs in Microsoft® PowerPoint or Word or include photographs or illustrations in the text; instead, send each of them as a separate file. If illustrations are created in PowerPoint, avoid the excessive use of color and shading. Save digital images at a resolution no lower than 200 dpi. Please see the photo guide at <http://www.wood.army.mil/chmdsd/documents/PhotoGuide.pdf> for more information. Copyright concerns and the proliferation of methods used to disseminate art, illustrations, and photographs require that the origin of any graphics be identified. If a graphic is copyrighted, the author must obtain copyright approval and submit it to *Army Chemical Review* with the proposed manuscript. As a general policy, *Army Chemical Review* will not use artwork that cannot be attributed.

Provide a short paragraph that summarizes the content of the article. Also include a short biography, including full name, rank, current unit, job title, and education; U.S. Postal Service mailing address; and a commercial daytime telephone number.

When an article has multiple authors, the primary point of contact should be clearly designated with the initial submission. The designated author will receive all correspondence from *Army Chemical Review* editors and will be responsible for conferring with coauthors concerning revisions before responding to the editors.

Army Chemical Review will notify each author to acknowledge receipt of a manuscript. However, we make no final commitment to publish an article until it has been thoroughly reviewed and, if required, revised to satisfy concerns and conform to publication conventions. We make no guarantee to publish all submitted articles, photographs, or illustrations. If we plan to publish an article, we will notify the author. Therefore, it is important to keep us informed of changes in e-mail addresses and telephone numbers.

Manuscripts submitted to *Army Chemical Review* become government property upon receipt. All articles accepted for publication are subject to grammatical and structural changes as well as editing for length, clarity, and conformity to *Army Chemical Review* style. We will send substantive changes to the author for approval. Authors will receive a courtesy copy of the edited version for review before publication; however, if the author does not respond to *Army Chemical Review* with questions or concerns by a specified suspense date (typically five to seven working days), it will be assumed that the author concurs with all edits and the article will run as is.

Army Chemical Review is published two times a year: June (article deadline is 15 February) and December (article deadline is 15 August). Send submissions by email to <usarmy.leonardwood.mscoe.mbx.mdotacr@mail.mil> or on a CD in Microsoft Word, along with a double-spaced copy of the manuscript, to: Managing Editor, Army Chemical Review, 14010 MSCoE Loop, Building 3201, Suite 2661, Fort Leonard Wood, Missouri 65473-8702.

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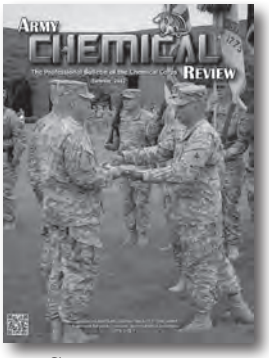

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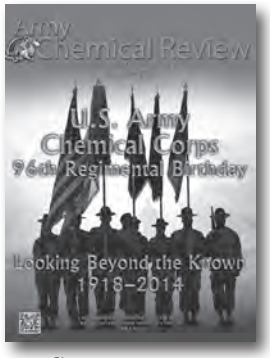

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