ARMY CHEMICAL REVIEW

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Summer 2010

SHAPING THE COMBATING WMD ENTERPRISE

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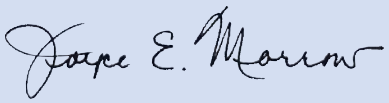

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ARMY CHEMICAL REVIEW

THE PROFESSIONAL BULLETIN OF THE CHEMICAL CORPS
Headquarters, Department of the Army

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Summer 2010

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

Brigadier General Leslie C. Smith

Army Chemical Review is dedicated to all Dragon Soldiers and friends of the U.S. Army Chemical Corps and Regiment. Thank you for taking the time to read this professional bulletin.

In June 2010, we will celebrate the 92d anniversary of the Chemical Corps and, in partnership with the National Defense Industrial Association, hold our annual Regimental Week and Joint Chemical, Biological, Radiological, and Nuclear (CBRN) Conference. (See page 18 for a complete schedule of events.) This year's theme is "Shaping the Combating WMD Enterprise." We are projecting one of the largest conferences to date, with keynote speakers from the Office of the Secretary of Defense and the U.S. Army, various scientific and academic experts, two panels that include representatives of the institutional and operational capabilities of the Department of Defense, and more than 150 vendors. We are also opening the conference to young audiences to help build as much interest as possible in the disciplines of science, technology, engineering, and math among our future leaders. Regimental events will include a revised and updated Dragon's Peak Competition for CBRN warriors. Not only will the competitors' physical stamina be tested, but their mission area will be expanded to include the execution of CBRN operations in a live, toxic training area and the First Lieutenant Joseph Terry CBRN Responder Training Facility.

Throughout the past year, Regimental Command Sergeant Major Ted Lopez and I have visited multiple locations. Formations continue to prepare for operations in Iraq and Afghanistan, and U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS) mobile training teams continue to provide support for those deployments. For the first time, an Iraqi army officer is scheduled to attend a USACBRNS course. And the Iraqi Chief of Chemical is scheduled to attend Regimental Week and participate in the 92d Chemical Corps Anniversary. In addition, our teams are executing lab operations in support of the counter improvised explosive device mission in Afghanistan and conducting numerous other support and stability missions throughout the theater of operations. From operations in support of exercises in the Republic of Singapore to advice and assistance teams in two theaters, our Dragon warriors continue to excel. Thank you for what you do each day.

The 20th Support Command (Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives), 48th Chemical Brigade, 415th Chemical Brigade, and 52d Ordnance Group (Explosive Ordnance Disposal) provided world-class support to U.S. Forces Korea and Exercise Key Resolve by executing weapons of mass destruction (WMD) elimination and counter improvised explosive device operations in theater. Well done! The Republic of Korea remains a valuable CBRN defense and capabilities partner, and we had the opportunity to renew those partnerships with the Republic of Korea Chemical, Biological, and Radiological Defense Command and USACBRNS.

I also had the opportunity to participate in the Joint Staff Capstone Course at the National Defense University, Fort Lesley J. McNair, Washington, D.C., from 25 January to 5 March 2010. This course provided great insight on the challenges and opportunities facing our Nation and on the distinct role that the Army and our Corps play in the Nation's defense.

This will be my last article as the 25th Chief of Chemical and commandant of the USACBRNS. My family and I have thoroughly enjoyed the time we have spent at Fort Leonard Wood, Missouri, and I have enjoyed my visits to your locations. Our teams would not have been successful without the support of the entire CBRN/combating WMD community, of which there are too many names to mention. I would, however, like to recognize two stalwart leaders here at the USACBRNS—Colonel Greg Olson (assistant commandant) and Sergeant Major Gwendolyn Evans (personnel proponency sergeant major). Due to the efforts of these individuals, our Corps, Army, and Nation are more prepared than ever; we look forward to their continued participation in retirement.

I look forward to continuing to work with each of you as I join the 20th Support Command (Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives) this summer. Regards, CBRN Dragon 6.

DRAGONS RULE!!!

ELEMENTIS, REGAMUS, PROELIUM

Greetings to all Dragon Warriors!

Command Sergeant Major Ted A. Lopez

Warriors: The commandant and I are very proud of the hard work you do for our Nation each and every day. You dedicate your lives to the welfare of this great Nation, and your efforts do not go unnoticed.

Although we have completed the "Year of the NCO," the Chemical Corps has many other initiatives on which we continue to build. I am very concerned that we are not getting our NCOs into NCO academies in a timely manner. I need the help of our leaders to get chemical, biological, radiological, and nuclear (CBRN) NCOs to the Advanced Leader's Course and Senior Leader's Course; we can't afford a backlog in professional development.

During the past six months, I have had the opportunity to visit CBRN warriors all over the world. One constant that I encountered is the warriors' drive to improve their units. I spent some time with the CBRN warriors who are serving in the great U.S. Army Pacific organization. I observed how they have integrated their assets and training to support consequence management missions. And Tanya and I participated in some great community activities and social events with our CBRN families. We are so proud to serve with them. While visiting our great team at Dugway Proving Ground, Utah, I saw the "graduate level" of our profession. I encourage everyone to get out to Dugway Proving Ground and take a look at this great training facility. During my visit to Fort Carson, Colorado, I spent a day with the Dismounted Reconnaissance Mobile Training Team, which was training a reconnaissance platoon for deployment. (Team: If you have a mobile training team requirement, please contact Ms. Barbara Kilthau at (573) 596-4928 or <*barbara.kilthau@us.army.mil*>; we will make the training happen.)

During the past six months, I have had the opportunity to visit CBRN warriors all over the world. One constant that I encountered is the warriors' drive to improve their units.

While visiting Fort Hood, Texas, I attended a great company change-of-command ceremony hosted by the 2d Chemical Battalion. The commandant and I just returned from a visit with the 20th Support Command (Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives), which was participating in a joint exercise with other Services and our Republic of Korea counterparts. We visited with the 48th Chemical Brigade and are very proud of how well they are doing.

I also had the opportunity to attend the annual Civil Support Team/Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives Materials Enhanced Response Force Package Commander's and First Sergeant's Conference. What a great event! Our teammates are doing a great job of supporting the consequence management mission in each state. I spoke with the first sergeants and updated them on what we are doing in the Corps.

In the last few months, CBRN training has drastically improved. This improvement is due to the current threat and to the desire of engaged leaders to get the best from our CBRN warriors. Please continue your efforts to improve your foxhole; we want to get better each and every day.

I look forward to seeing all of you during Regimental Week, which will be held at Fort Leonard Wood, Missouri, 21–25 June 2010. We will conduct the first team-oriented CBRN Warrior Competition during Dragon's Peak. The competition will focus on the technical side of our profession. I am very anxious to see how various teams from across the Chemical Corps do in this difficult competition.

I am very proud of all of our Civilians, Retirees, Families, Friends, and the CBRN Warriors. The commandant and I see the future of the Corps as challenging and inspiring.

Warriors: Again, thank you for what you do each and every single day. Be safe, and invest in the Corps.

CCMRF: The Title 10 Initial-Entry Force

By Mr. Mark T. Anderson and Mr. Matthew K. McLaughlin

"The gravest danger our Nation faces lies at the crossroads of radicalism and technology. Our enemies have openly declared that they are seeking weapons of mass destruction [WMDs], and evidence indicates that they are doing so with determination. The United States will not allow these efforts to succeed…"[1]

—George W. Bush
43d U.S. President

Deliberate and inadvertent WMD incidents pose significant, foreseeable challenges to the security of the American people. But beyond simply "putting boots on the ground," the Department of Defense (DOD) can provide substantial command and control (C2), logistical, and technical resources in response to requests for federal assistance. Historically, such responses have been organized on an ad hoc basis, with no specific units committed to homeland consequence management (CM) missions. However, national-level reviews of our ability to respond to WMD and other disasters eventually led to important legislation enacted in the mid-1990s. This article details the Title 10 initial-entry force—the chemical, biological, radiological, nuclear, and high-yield explosives consequence management response force (CCMRF).[2] At the time of this writing, a significant reconfiguration of the CCMRF is anticipated as a result of the 2010 Quadrennial Defense Review. Those developmental changes will reflect the lessons learned in fielding this new capability.

Background

A terrorist attack or an accidental chemical, biological, radiological, nuclear, and high-yield explosives (CBRNE) incident could have catastrophic results that may overwhelm the response capacity of civil authorities. Recognizing this, Congress enacted the *Defense Against Weapons of Mass Destruction Act of 1996*, which directs the President to enhance federal government capabilities to prevent and respond to CBRNE incidents. These required capabilities are codified in two sections of the U.S. Code (USC). First, 50 USC §2313 directs DOD to provide federal, state, and local CBRNE assistance and establishes the Assistant Secretary of Defense for Homeland Defense and America's Security Affairs as the lead for coordinating DOD efforts. Second, 50 USC §2314 directs DOD to develop and maintain at least one terrorism rapid-response team to help federal, state, and local officials respond to CBRNE incidents.

The need for timely, specialized, effective responses to a CBRNE event, combined with the expectations put forth under the *National Response Framework* and federal law, point to a clear need for a well-orchestrated military CM response. There are several layered components of DOD support to civil authorities. A CCMRF capability is employed at the request of the Department of Homeland Security or other designated lead agency when the effects of a CBRNE incident exceed state and local capabilities. State capabilities include—

- Army National Guard (ARNG) weapons of mass destruction–civil support teams (WMD–CSTs), which identify CBRNE hazards and provide response advice.
- ARNG chemical, biological, radiological, nuclear, and high-yield explosives enhanced response force packages (CERFPs), which provide medical support, casualty search and extraction, and casualty decontamination support.

Mission

According to the Report on Activities and Programs for Countering Proliferation and NBC Terrorism, "The mission of CCMRFs is to provide CBRNE [CM] support, as approved by the Secretary of Defense or as directed by the President, in response to deliberate or inadvertent CBRNE incidents."[3] To meet this mission, CCMRFs are composed of forces with specialized CBRNE training and equipment and general-purpose forces that are trained to operate in a CBRNE environment. The CCMRF role in the overall response to a major CM event is illustrated in Figure 1. The CCMRFs deploy rapidly, assist local civil responders and other state assets in determining the limits of the hazard, provide medical and technical advice, and pave the way for the identification and arrival of follow-on federal military response assets.

Current Configuration

Each CCMRF mission is executed by a joint task force that is composed of Regular Army and Reserve Component units, other service capabilities, and interagency augmentation, numbering about 4,700 personnel. The current fielding plan incrementally sources three separate CCMRFs to provide the capability to respond to multiple CBRNE events. Each CCMRF

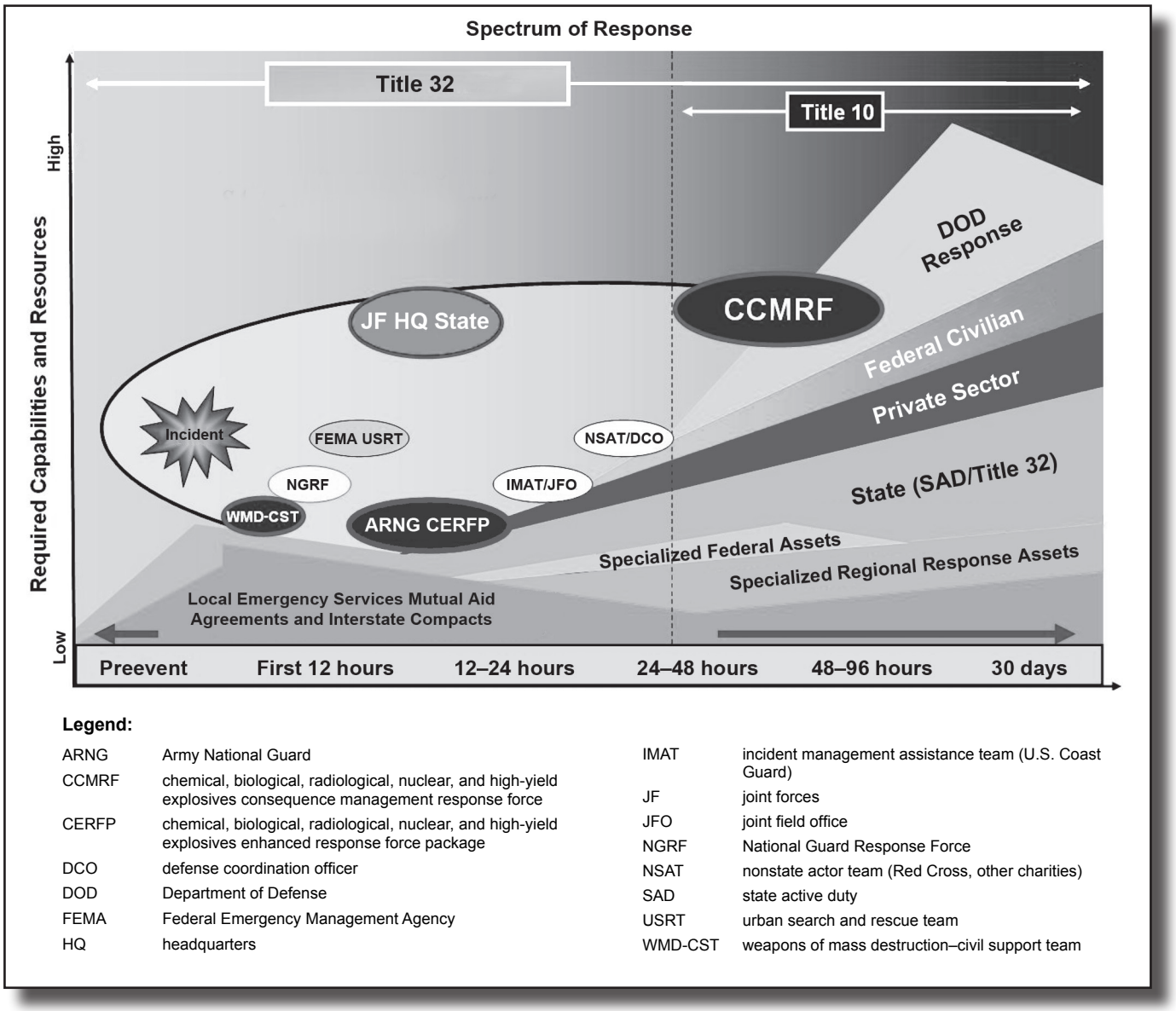

Figure 1. CCMRF role in response to a major CM event

is organized into a joint task force (JTF) headquarters, brigade level operations task force (Task Force Operations), brigade level aviation task force (Task Force Aviation), and brigade level medical task force (Task Force Medical).

A CCMRF is designed to provide a wide range of capabilities, to include—

- Incident assessment.
- C2.
- Search and rescue.
- Medical assistance.
- Decontamination.
- Transportation (aerial and ground).
- Mortuary affairs.
- General logistical support.

The modular, scalable design of the task force is key to its effectiveness. For smaller events, the design allows for the deployment of only those capabilities that are actually required. For larger events, the robust C2 structure enables the CCMRF to fill its intended role as the lead element of a DOD response. The CCMRF response structure for a major CBRNE incident is provided in Figure 2, page 6.

Employment and Capabilities

If requested, CCMRFs are employed by the U.S. Army Northern Command in support of the Department of Homeland Security or other designated lead federal agency. Although each CCMRF contains forces for its own security, response to civil disturbances is not part of the CCMRF mission set and DOD adheres to the "Posse Comitatus Act." The mobilization of Reserve Component forces

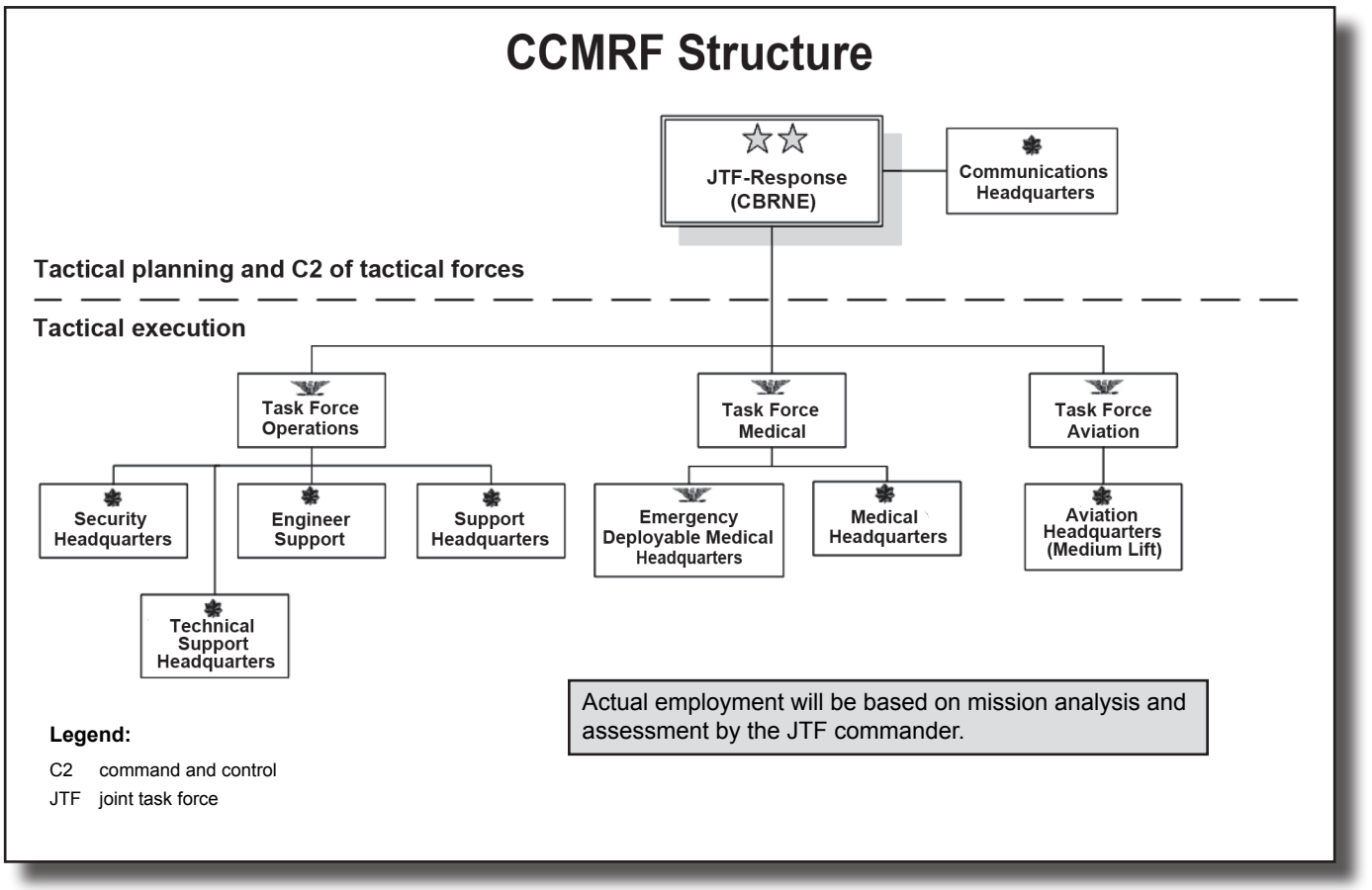

Figure 2. CCMRF response structure for a major CBRNE incident

within CCMRFs is predicated upon legal authority in specific sections of the USC.

The CCMRF's primary role when responding to a CBRNE event is to augment the CM efforts of civil responders by providing complementary and reinforcing capabilities when the effects of the event exceed state civilian and NG capabilities, including—

- Hazard assessment.
- Robust C2.
- Comprehensive decontamination of personnel and equipment.
- Handling and disposal of hazmat.
- Air and land transportation.
- Aerial medical evacuation.
- Mortuary affairs.
- General logistical support to provide extended operations (sustainment).

CCMRF 1 units, which are primarily Regular Army units, were assigned to the U.S. Army Northern Command on 1 October 2008. CCMRF 2 and CCMRF 3 units, to be composed primarily of Reserve Component units, will assume missions in the next few years. CCMRF forces are organized into force packages (FPs), which deploy in phases in response to a CBRNE event. The FPs include—

- **FP1.** Offers C2 and advanced-echelon elements, assessment capabilities, and initial-response elements, including CBRNE reconnaissance (detection and identification of CBRNE hazards) and initial decontamination and medical response capabilities.
- **FP2.** Reinforces FP1 capabilities and adds transportation, logistical support, security, and public affairs capabilities.
- **FP3.** Provides additional reinforcement—particularly for transportation and logistics missions—and adds a mortuary affairs capability.

Maneuver Support Perspective

Much of the specialized capability of the CCMRF is concentrated in Task Force Operations. While Task Force Medical and Task Force Aviation act largely within their normal, doctrinally designated mission areas, Task Force Operations addresses requirements that are more specific to a CBRNE incident in support of a CM mission.

Technical support forces include units that provide mass casualty decontamination and CBRNE reconnaissance

(which are CBRNE core capabilities) and technical rescue. Engineers, particularly in the 21M (firefighter) military occupational specialty, are best-suited for technical rescue. In addition to military training requirements, unit members require training according to various National Fire Protection Association (NFPA) codes and standards or Title 29, Code of Federal Regulations (CFR), guidelines to work effectively with their civilian counterparts. The U.S. Army Maneuver Support Center of Excellence (MSCoE) at Fort Leonard Wood, Missouri, is best-suited to provide these capabilities.

A similar situation prevails with the security units assigned to the CCMRF mission. The security of sensitive military equipment—probably in an urban environment, among a presumably friendly (if understandably upset) populace—is required. The CCMRF's mission is not to deploy nonlethal capabilities during civil control, but to interoperate effectively with civil law enforcement authorities. Only the military police core competencies include support to civil law enforcement.

The result is a Task Force Operations that is similar to a combat support force. Specifically, it is a combination of maneuver support and logistics forces, with specialized requirements concentrated in the maneuver support arena. While a brigade combat team or other brigade level C2 element could effectively serve as the Task Force Operations headquarters element, the maneuver enhancement brigade (MEB) is uniquely suited for the command of engineer, military police, and CBRNE units. The MEB command structure and operational employment concept, which include CM as a core part of the mission set, provide an optimized capability for this requirement. By rapidly establishing a substantial JTF command structure on the ground, the CCMRF ensures that DOD can respond to requests for follow-on forces with confidence that assigned units will be effectively integrated into the response.

The Deputy Secretary of Defense directed the Secretary of the Army to lead DOD efforts to improve military support for response to incidents involving WMD. The U.S. Army Training and Doctrine Command (TRADOC) and MSCoE took responsibility for the core functions of requirements determination, doctrine development, organizational design, and training development and execution for the CBRNE CM programs on 10 May 2001. These were further amplified on 9 June 2001. Army Regulation (AR) 5-22 identifies MSCoE as the force modernization proponent for CBRNE CM. MSCoE functions include—

- Developing and documenting concepts.
- Developing doctrine.
- Developing organizational design.
- Determining materiel requirements.
- Developing training programs.
- Developing training support requirements.
- Developing manpower requirements (except as provided in AR 600-3).
- Coordinating proponent initiatives with user units.

In 2007, a Government Accountability Office audit listed a number of major problems with the readiness of CBRNE units, particularly those designated to support the CCMRF program. The report questioned whether these "… units would be able to respond effectively to significant wartime or terrorist CBRNE events…" and doubted the Army's plans to improve this condition.[4] However, the Army did not concur and described the actions it has taken, including the development of—

- Concepts and doctrine.
- Organizational design.
- Training and leadership standards.
- Joint capability.

Concepts and Doctrine. Operational concepts and doctrine must serve as the foundation for the employment of the asset. Field Manual (FM) 3-11.22 includes the employment of the CCMRF mission in a broader civil support role. The MSCoE is responsible for the development of tactical-level CBRNE operations doctrine (multi-Service or Army) and provides support for joint doctrine development. The fundamental difference is the level of military operations addressed in the doctrine. Critical publications include Joint Publication (JP) 3-41 and FM 3-11.21.

Organizational Design. The MEB is the only organization in the Army with C2 of CM forces in the standard requirements code of the tables of organization and equipment, making CM a specified mission capability. Other organizational design issues, particularly those regarding CBRNE units, are continuously under review.

Training and Leadership Standards. The Army needed a training and leader development foundation for the program. From 1999 to 2006, units relied on the standards promulgated in National Fire Protection Association (NFPA) 450, NFPA 472, NFPA 1006, and NFPA 1670. However, these were not sufficient for the full spectrum response, nor did they address the military aspects of the mission. In 2006, the U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS) at Fort Leonard Wood established the Mass Casualty Decontamination Course and the Chemical, Biological, Radiological, and Nuclear (CBRN) Responder Course as mandatory prerequisites for all Chemical Regiment Soldiers slated to assume the CCMRF mission. Three weeks of this beneficial training accomplishes what once took months to complete. Soldiers and Airmen who attend the CBRN Responder Course now receive certifications compatible with, and recognized by, their civilian counterparts.

The U.S. Army Engineer School at Fort Leonard Wood is currently reviewing training requirements for casualty extraction, search, and rescue. This technical rescue skill set currently resides in only one Regular Army engineer company and in select ARNG units. Other TRADOC centers of excellence

and schools and the U.S. Army Medical Department Center and School, San Antonio, Texas, have been tasked to conduct a similar review for medical, C2, and intelligence fusion tasks. This review is to be completed in time for the Fiscal Year 2012–2017 DOD program objective memorandum cycle.

Joint Capability. The CCMRF is a joint capability. The Joint Staff Force Structure, Resources, and Assessment Directorate (J-8)/Joint Requirements Office for CBRN Defense has developed an initial capabilities document for CBRNE CM. There are also other programs of record for some of the equipment needed for this mission, including hazmat equipment and search-and-rescue gear. However, the operational force continues to procure most of the commercial, off-the-shelf material required for this effort.

Finally, facilities are critical components of training for this mission. Training Circular (TC) 25-1 and TC 25-8 provide little guidance concerning the types of training space required for the CCMRF mission. Several specialty training ranges, such as rubble piles, have been installed around the country for technical rescue training, but there is no means of standardizing the ranges according to the Army mission profile. TRADOC and MSCoE are working on this issue as part of an ongoing doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) assessment of the CCMRF mission. There are world-class facilities at MSCoE to support the generating force portion of this mission.

Conclusion

As directed by the Vice Chief of Staff of the Army, TRADOC—with MSCoE as the office of primary responsibility—and Army stakeholders are following standard Army business practices by—

- Using the Systems Approach to Training.
- Validating training at the Structure and Manning Decision Review.
- Writing requirements documents.
- Reviewing the organizational design.

Today, through the use of communities of practice—coupled with the TRADOC Homeland Defense/Civil Support Integrated Capabilities Development Team—MSCoE is working to resolve most of the issues identified in previous assessments and has established mechanisms for continuous improvement and feedback. Unfortunately, the threats that the Nation faces today make the need for a meaningful CBRNE CM response all too real. Just as with operations overseas and abroad, U.S. forces must be prepared to do everything possible to protect our Nation on the home front. And whether they are part of a CCMRF or under some other paradigm, maneuver support forces will always be at the heart of that response.

Endnotes:

[1]President George W. Bush, *The National Security Strategy of the United States of America*, 17 September 2002.

[2]"Title 10" refers to USC, Title 10, *Armed Forces*.

[3]*Report on Activities and Programs for Countering Proliferation and NBC Terrorism*, Volume 1, Executive Summary, Counterproliferation Program Review Committee, July 2009.

[4]*Chemical and Biological Defense: Management Actions Are Needed to Close the Gap Between Army Chemical Unit Preparedness and Stated National Priorities*, U.S. Government Accountability Office, January 2007.

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NFPA 450, *Guide for Emergency Medical Services and Systems*, 2009 Edition.

NFPA 472, *Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents*, 2008 Edition.

NFPA 1006, *Standard for Technical Rescuer Professional Qualifications*, 2008 Edition.

NFPA 1670, *Standard on Operations and Training for Technical Search and Rescue Incidents*, 2009 Edition.

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Quadrennial Defense Review, DOD, 1 February 2010.

TC 25-1, *Training Land*, 15 March 2004.

TC 25-8, *Training Ranges*, 5 April 2004.

USC, Title 18, *Crimes and Criminal Procedure*, §1385, "Posse Comitatus Act."

USC, Title 50, *War and National Defense*, §2314, "Chemical-Biological Emergency Response Team."

USC, Title 50, *War and National Defense*, §2323, "Nuclear, Chemical, and Biological Emergency Response."

Mr. Anderson is the acting director of the Homeland Defense/Civil Support Office, MSCoE. He holds a bachelor's degree from the University of Illinois and a master's degree in public administration from Jacksonville State University, Alabama. He is a candidate for a doctorate degree in technology management at Indiana State University, with a research interest in leading virtual teams.

Mr. McLaughlin is a military development analyst in the Homeland Defense/Civil Support Office, MSCoE. He serves as the radiological and nuclear subject matter expert and coordinates capabilities development for U.S. Army responses to domestic WMD events. He holds a master's degree in nuclear engineering from the University of Missouri–Rolla (now Missouri University of Science and Technology).

A similar version of this article was printed in the Summer 2009 issue of the Maneuver Support Magazine.

The Transformation of the Chemical Corps:

Bring it Down to Where the Fight Is

By Captain William A. Costello

As U.S. Army chemical, biological, radiological, and nuclear (CBRN) Soldiers, we hear a lot about the "transformation of the Chemical Corps." But as an armor company CBRN noncommissioned officer (NCO), combined arms battalion (CAB) CBRN officer, or Dragon Soldier who spends year after year with a combat arms unit in Iraq or Afghanistan, do you see it? No, I didn't think so.

In the land of combat arms, the CBRN world barely exists. The only time it might rear its ugly head is when a patrol finds a cache of nitric acid or chlorine stashed in an Iraqi building or factory or on an Afghanistan farm. Aside from such a discovery, contact with CBRN-related issues and the "transformation" of the Corps are far from view, seemingly taking place only in new, Regular Army chemical brigades or the U.S. Army CBRN School—or maybe even only on paper.

Given that deployments are always just around the corner for every combat arms unit, it's a challenge for battalion CBRN officers and NCOs to assemble all company CBRN Soldiers in one place, at one time. So, how can this be fixed? It might take a little more emphasis from higher headquarters and a minor reorganization of CBRN personnel in combat arms units—nothing too drastic or too far from reach.

Current Situation

CBRN personnel are arrayed throughout a typical CAB. There is at least one CBRN Soldier in each company and two on staff. This task organization looks great on paper (Table 1). But in the real world, where units are constantly on deployment rotations followed by periods of equipment and personnel reset in conjunction with post detail "ankle biters" such as funeral detail, it's hard to get the most from training. When even one Soldier from such a low-density military occupational specialty (MOS) misses a training event, not only does the event become nearly impossible to perform, but the Soldier who does not participate has a difficult time getting trained to standard. Therefore, although the typical setup works for deployments and field training exercises (FTXs), it is not conducive for training in garrison. How do we fix this?

Let's take a look at how other low-density MOSs within the CAB are structured and managed and how they make effective use of their time. All other CAB specialty MOSs, including medics and fire supporters, are centralized under the headquarters and headquarters company (HHC) and task-organized where they would be most effective upon deployment or during FTXs. It's that simple.

Now, let's take a look at a typical heavy brigade combat team (HBCT) CAB fire support platoon to see how they conduct business:

- All members of the fire support platoon, from officers to enlisted personnel, are located within HHC by modified tables of organization and equipment (MTOEs).
- The battalion effects coordinator and effects NCO plan all training and serve as battalion level voices for the fire supporters to obtain required training and equipment.
- All training is managed by HHC; however, each fire support team develops a working relationship with a maneuver company and is task-organized to that company (or wherever else the commander feels the team is best-suited) during deployments and FTXs.

And this works. Fire supporters receive the vital training and equipment they need while also developing crucial working relationships with the maneuver companies they expect to support during deployments and FTXs. They don't fall "under the radar," and they aren't ignored by higher echelons—as often happens with CBRN personnel, training, and supplies.

Table 1. CBRN personnel arranged by MTOE in a typical HBCT CAB

Unit	Personnel
Battalion staff	1 battalion CBRN officer (O-2) 1 battalion CBRN NCO (E-6)
HHC	1 company CBRN NCO (E-5) 1 decontamination specialist (E-4)
2 rifle companies	2 company CBRN NCOs (E-5)
2 armor companies	2 company CBRN NCOs (E-5)
1 engineer company	1 company CBRN NCO (E-5)
1 forward-support company	1 company CBRN NCO (E-5)
Total number of CBRN personnel: 10	

Proposal

I propose that—in addition to the fire support, medical, and mortar platoons—there should also be a CBRN section in HHC. This would—

- Require no additional personnel or equipment—just a reorganization of the current MTOE.
- Provide more time for training and professional development and warrant more emphasis from higher echelons.

Specifically, all CBRN personnel should be reorganized into a CBRN section that is located under the battalion HHC (Table 2). In addition to their regular staff duties, the battalion CBRN officer would serve as the officer in charge (OIC) of the HHC CBRN section and the battalion CBRN NCO would serve as the noncommissioned officer in charge (NCOIC). At first, these might seem like excessive responsibilities, but in reality, the tasks would go hand in hand and would provide well-deserving leaders with the opportunity to gain the necessary leadership experience that they are often denied by serving in such a small branch. An added benefit of such an arrangement would be that battalion leaders would realize that they are valued as more than just additional staff officers or NCOs to take the brunt of all additional duties known to man. Yes—they could still take on some of these duties, but they would be forced to "distribute the wealth" so that all staff officers and NCOs would be responsible for their fair share of additional duties, including serving as the battalion unit status report representative, unit movement officer, or environmental compliance officer. All enlisted battalion CBRN Soldiers would fall under the new battalion CBRN section. They would train and professionally develop together, but would also develop a working relationship with the company that they would be expected to support during deployments and FTXs. During deployments and FTXs, they would be task-organized to the companies with which they had worked in garrison or moved elsewhere based on the commander's analysis of the best fit—just as with fire support platoons. When working with companies, CBRN personnel would continue to be used just as they are now—working CBRN defense issues and filling company level slots where their assistance is needed. They would, however, maintain the flexibility to be pulled back together as one trained unit under HHC to assist with CBRN-related issues facing the battalion, such as the recovery of a nitric acid cache in the area of operations or the setup of a small decontamination site to handle vehicles that have come into contact with an improvised explosive device composed of a suspected or confirmed blister agent munition.

Table 2. Proposed HBCT CAB CBRN Section in HHC

1 section OIC/battalion CBRN officer (O-2)
1 section NCOIC/battalion CBRN NCO (E-6)
1 decontamination specialist (who works with the section NCOIC) (E-4)
7 company CBRN NCOs (E-5)
Total number of CBRN personnel: 10 (no change from current MTOE)

The reorganization of CBRN personnel in CABs would be a significant advancement in the way training is provided and maintenance, supply, and personnel issues are managed with regard to unit CBRN defense. Such a reorganization would allow brigade CBRN personnel to schedule and assist battalions in establishing centralized training for all brigade CBRN personnel. In an HBCT, this will bring more than thirty CBRN personnel together to practice and train on vital, deployment-related CBRN tasks. In short, the proposed reorganization would provide the opportunity to develop key future leaders in today's ever-transforming Chemical Corps.

Captain Costello is a brigade combat team CBRN officer with the 1st Brigade Combat Team, 1st Cavalry Division, Fort Hood, Texas. He holds a bachelor's degree in criminal justice from Rutgers University, New Brunswick, New Jersey.

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The New CBRN Warrant Officer Program

By Major Tammy R. Alatorre

Following the events of 11 September 2001 and continuing through the current operating environment, the role of the Chemical Corps has evolved from conducting conventional chemical, biological, radiological, and nuclear (CBRN) passive defense to encompassing the full spectrum of operations, including consequence management; weapons of mass destruction–elimination; and toxic industrial chemical, toxic industrial material, and radiological hazards mitigation. The associated increase in technical requirements for the Chemical Corps resulted in a heightened challenge to develop incoming lieutenants. Unit expectations for these new battalion CBRN officers shifted from combined arms tactics and leadership advisor to technical expert for all new technologies developed and fielded to support the expanding missions.

To bridge the technical gap, the U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS) proposed the creation of a new military occupational specialty (MOS)—the CBRN warrant officer. These warrant officers are expected to provide the Army with CBRN technical expertise on existing equipment and new technologies at all levels of command. In establishing the CBRN Warrant Officer Program, the USACBRNS proposed that CBRN officer authorizations be exchanged for CBRN warrant officer positions. This would allow the Chemical Corps to maintain a professional development model for officers, while concurrently creating one for warrant officers.

The implementation of the CBRN Warrant Officer Program requires that 13 percent of the CBRN officer positions be converted to CBRN warrant officer positions (Figure 1). The officer

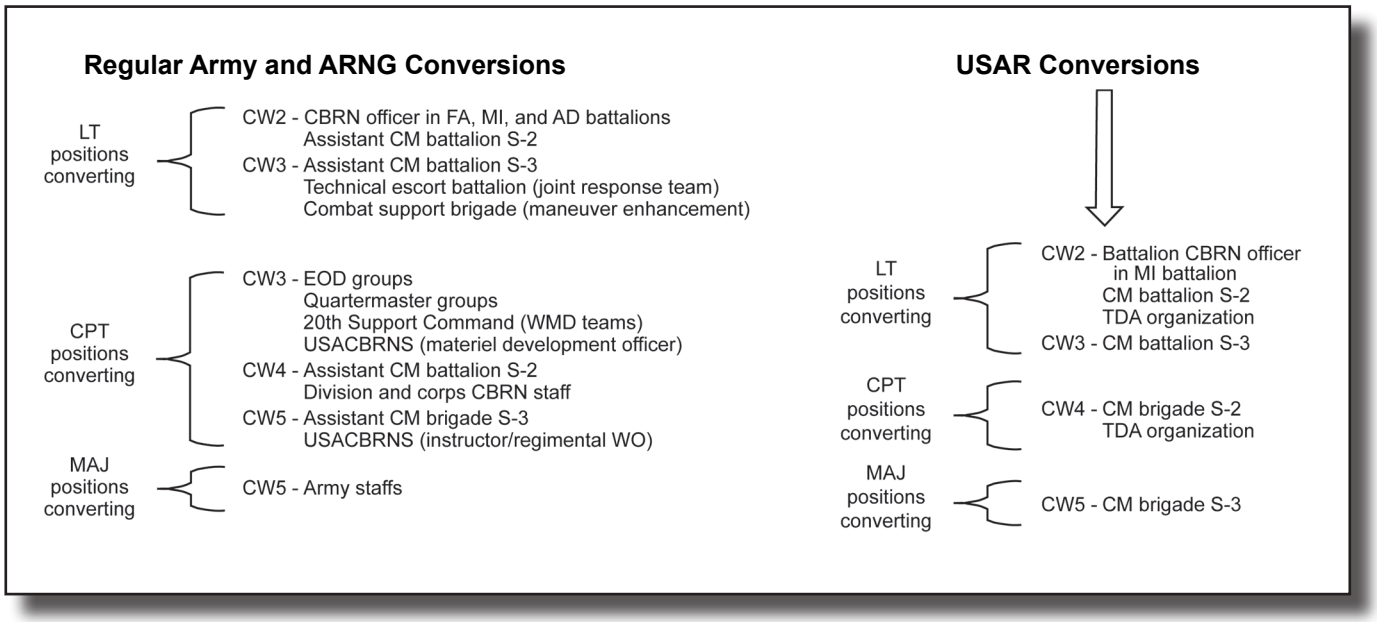


Figure 1. Conversion comparisons

conversions apply to Regular Army and Reserve Component positions, ultimately decreasing the number of branch detail officers by 30–50 percent. The adjustment will provide an increased opportunity for many CBRN lieutenants to serve in platoon leader positions—positions that were previously filled by branch detail officers.

Figure 2 shows the CBRN Warrant Officer Program implementation timeline. Throughout the 5-year implementation period from Fiscal Year (FY) 10 to FY 15, converted Regular Army and Army National Guard (ARNG) lieutenant positions will impact chemical and nonchemical organizations. Beginning in FY 11, field artillery, air defense artillery, and military intelligence battalions will receive their first Chief Warrant Officer Two positions, which will replace the battalion CBRN officer positions. Chemical battalions will also experience this conversion in their assistant intelligence staff officer (S-2) positions. The career progression and developmental plan for CBRN warrant officers holding the rank of Chief Warrant Officer Three to Chief Warrant Officer Five includes positions in explosive ordnance disposal and quartermaster groups, technical escort battalions, combat support brigades (maneuver enhancement), chemical brigades, divisions, corps, Army staffs, and the USACBRNS.

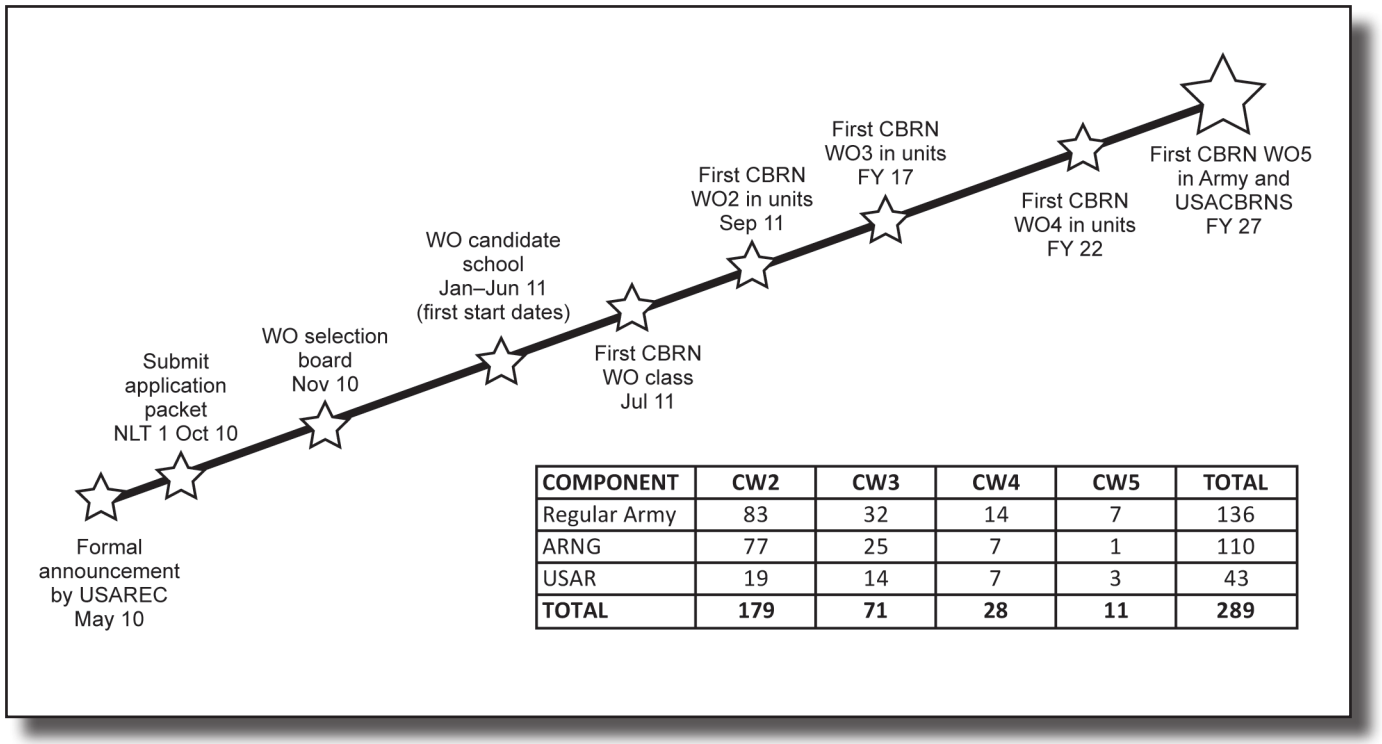
U.S. Army Reserve (USAR) lieutenant conversions, which will take place under a slightly different implementation plan, will impact chemical and table of distribution and allowances (TDA) organizations beginning in FY 11. USAR CBRN warrant officers will predominately remain in chemical organizations; however, USAR CBRN Chief Warrant Officer Three to Chief Warrant Officer Five advisory positions are available in quartermaster groups, maneuver enhancement brigades, and TDA organizations. Currently, there are only nine states (in addition to all of the U.S. territories) that do not have authorized CBRN warrant officer positions. Those states are Alaska, Arizona, Connecticut, Delaware, Maine, Montana, Nevada, New Mexico, and Virginia.

Full implementation of the Army CBRN Warrant Officer Program is projected for FY 27, with the first Chief Warrant Officer Five positions and 289 total combined Army CBRN warrant officers positions designated.

CBRN lieutenant positions in infantry, armor, special forces, and aviation battalions; chemical companies; Stryker brigade combat teams; and brigade combat team reconnaissance platoons are not currently projected to be converted to CBRN warrant officer positions.

The CBRN Warrant Officer Program was officially announced 3 May 2010. Interested Soldiers have until 1 October 2010 to prepare and submit the necessary packets to the warrant officer selection board. The minimum prerequisites for acceptance into the program are as follows:

- Have less than 12 years of active federal service.
- Be a U.S. citizen.



COMPONENT	CW2	CW3	CW4	CW5	TOTAL
Regular Army	83	32	14	7	136
ARNG	77	25	7	1	110
USAR	19	14	7	3	43
TOTAL	**179**	**71**	**28**	**11**	**289**

Figure 2. CBRN Warrant Officer Program implementation timeline

- Possess a high school or general equivalency diploma.
- Be a staff sergeant (E-6) or above and a graduate of the MOS 74D Basic Noncommissioned Officer Course (cannot be waived).
- Hold MOS 74D and have 5 years of experience in that MOS. Time spent in recruiter, drill sergeant, and other nontechnical positions is not considered MOS experience.
- Have a baseline skilled technical (ST) score of 100 (cannot be waived).
- Have 1 year of documented experience as a chemical squad leader or 1 year of documented experience as a CBRN noncommissioned officer at battalion level or higher (Regular Army only).
- Provide his or her official military personnel file (OMPF) that contains hard copies of all noncommissioned officer evaluation reports (NCOERs) and academic evaluation reports (AERs) for the past 10 years. One of the NCOERs must cover time spent as a staff sergeant. Most of the NCOERs must reflect outstanding or exceptional duty performance and indicate that the applicant was rated "among the best" by the rater and "successful" or "superior" by the senior rater.
- Be able to meet all physical requirements outlined in Army Regulation (AR) 40-501, able to take and pass an approved Army Physical Fitness Test (APFT) (standard or alternate) according to Field Manual (FM) 21-20, meet height and weight standards outlined in AR 600-9, and be fully deployable.
- Obtain and submit a letter of recommendation from a company commander or applicable company grade Unified Code of Military Justice authority.
- Obtain and submit a letter of recommendation from a battalion commander or applicable field grade Unified Code of Military Justice authority.

The following requirements pertain specifically to Reserve Component applicants:

- Have 18 months of NCOER-documented leadership experience involving the supervision of Soldiers.
- Be a graduate of the 740A Warrant Officer Basic Course within 2 years of the selection date for federal certification.

In addition to the stated application requirements, preferred qualifications include the following:

- Have 2 years of NCOER-documented experience in a supervisory position (Regular Army only).
- Have 1 year of documented experience as a chemical squad leader or 1 year of documented experience as a CBRN noncommissioned officer at battalion level or higher (Reserve Component only).
- Possess an associate's or higher degree with an academic major of math, science, or engineering.

Each warrant officer nomination packet must include basic application information and supporting documentation. The standard submission requirements are listed in Table 1.

U.S. Army Warrant Officer Program application procedures for Regular Army Soldiers are outlined in Figure 3 (page 14). Regular Army Soldiers interested in applying for the program must contact their local recruiter, who will forward the completed application packet to the U.S. Army Recruiting

Table 1. Standard submission requirements for nomination packets

Board Packet		Supporting Documents	
1.	Checklist (MILPO/PSB letter or S-1)	9.	Official photo
2.	DA Form 61 *(Application for Appointment)*	10.	Security clearance (Joint Personnel Adjudication System printout)
3.	Letters of recommendation	11.	USAREC Form 1932 *(Results of Medical Examination)*
4.	Resumé	12.	DA Form 160-R *(Application for Active Duty)*
5.	Enlisted record brief	13.	Statement of understanding
6.	OMPF (past 10 years of NCOERs and/or AERs, in order from newest to oldest)	14.	Waivers Moral–HRC Prerequisite–proponent Age and AFS–G-1 APFT–G-3
7.	College transcripts	15.	Conditional release
8.	DA Form 6256 *(Alternate Flight Aptitude Selection Test [AFAST] Battery Scoring Worksheet).* (This form is for MOS 153A only.)		

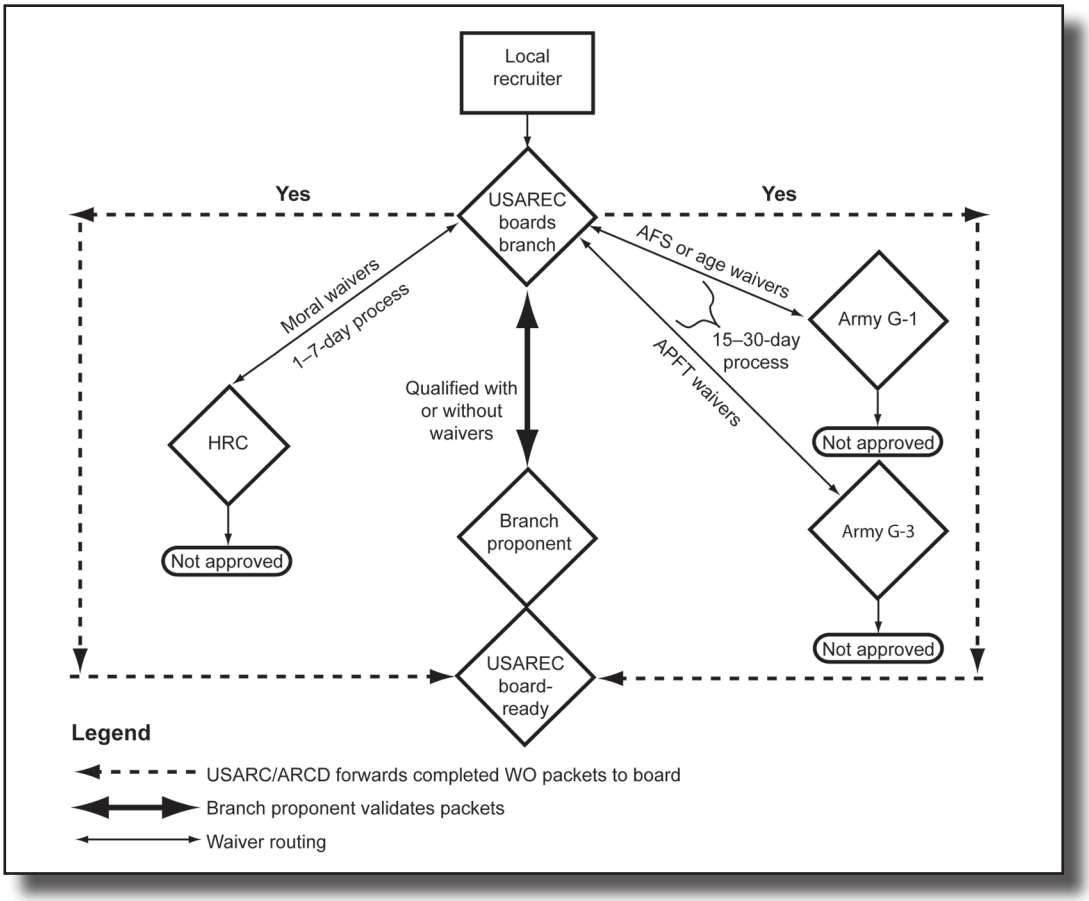


Figure 3. Regular Army warrant officer application process

Command (USAREC) boards branch for screening. The USAREC board, in turn, will forward the application packet to the USACBRNS, where the Personnel Development Office (PDO) will review the packet and determine the validity of the stated branch qualifications. If waivers are required, the USAREC board will also forward the application to the appropriate external agency for confirmation. Applicants who request waivers are encouraged to submit their packets early to allow for additional processing time. Moral waivers, which are processed by the Human Resources Command (HRC), require 1 to 7 days for a determination. Active federal service and age waivers are processed by the Army Assistant Chief of Staff, Personnel (G-1), while APFT waivers are processed by the Army Assistant Chief of Staff, Operations (G-3). A 15–30 day processing time is required by both agencies. Once branch validation has been obtained and waivers have been approved, the warrant officer application packet is ready for consideration by the Warrant Officer Selection Board.

The USAR submission process is slightly different (see Figure 4). The first step is to contact the appropriate Army Reserve Career Division (ARCD) Special (SPC) Missions Accessions Career Counselor. The ARCD SPC Mission points of contact for the various geographic regions are provided in Figure 5. The ARCD SPC Accessions Career Counselor will forward the completed warrant officer application packet to the USAREC boards branch for screening. The USAREC board, in turn, will forward the application packet to the USACBRNS, where the PDO (in conjunction with the ARNG and USAR deputy assistant commandants [DACs]), will review the packet and determine the validity of the stated branch qualifications (see Figure 4). If waivers are required, the USAREC board will also forward the application to the appropriate external agency for confirmation. Requested waivers follow the same submission process and timeline as those of the Regular Army. Once branch validation has been obtained and waivers have been approved, the warrant officer application packet is ready for consideration by the Warrant Officer Selection Board.

ARNG CBRN warrant officer applications will be processed by individual states (Figure 6, page 16). ARNG Soldiers who are interested in applying for the Warrant Officer Program must first contact their state warrant officer strength manager, who will forward the completed application packet to the USACBRNS ARNG DAC. The ARNG DAC will review the packet and determine the validity of the stated branch qualifications. If the branch qualifications are validated, the application packet will be sent back to the state warrant officer strength manager for further processing, including the forwarding of requests for waivers, if necessary. As with Regular

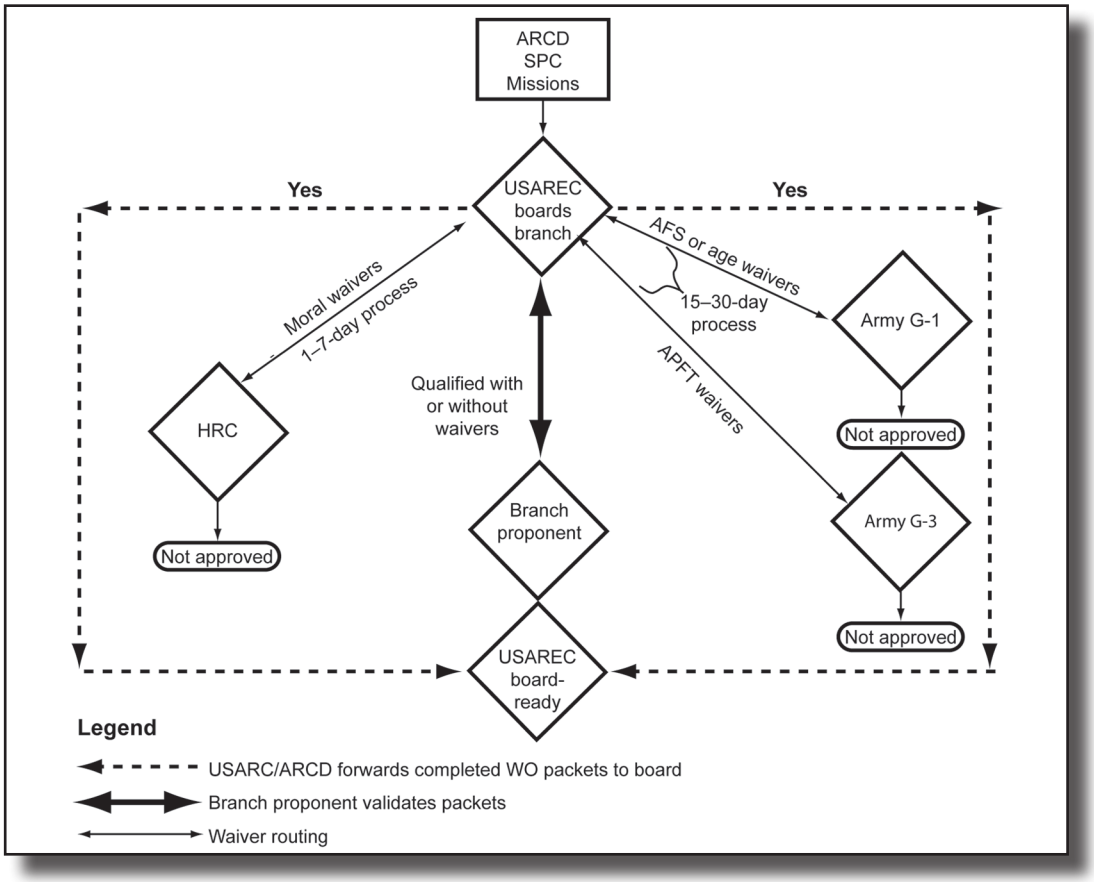


Figure 4. USAR warrant officer application process

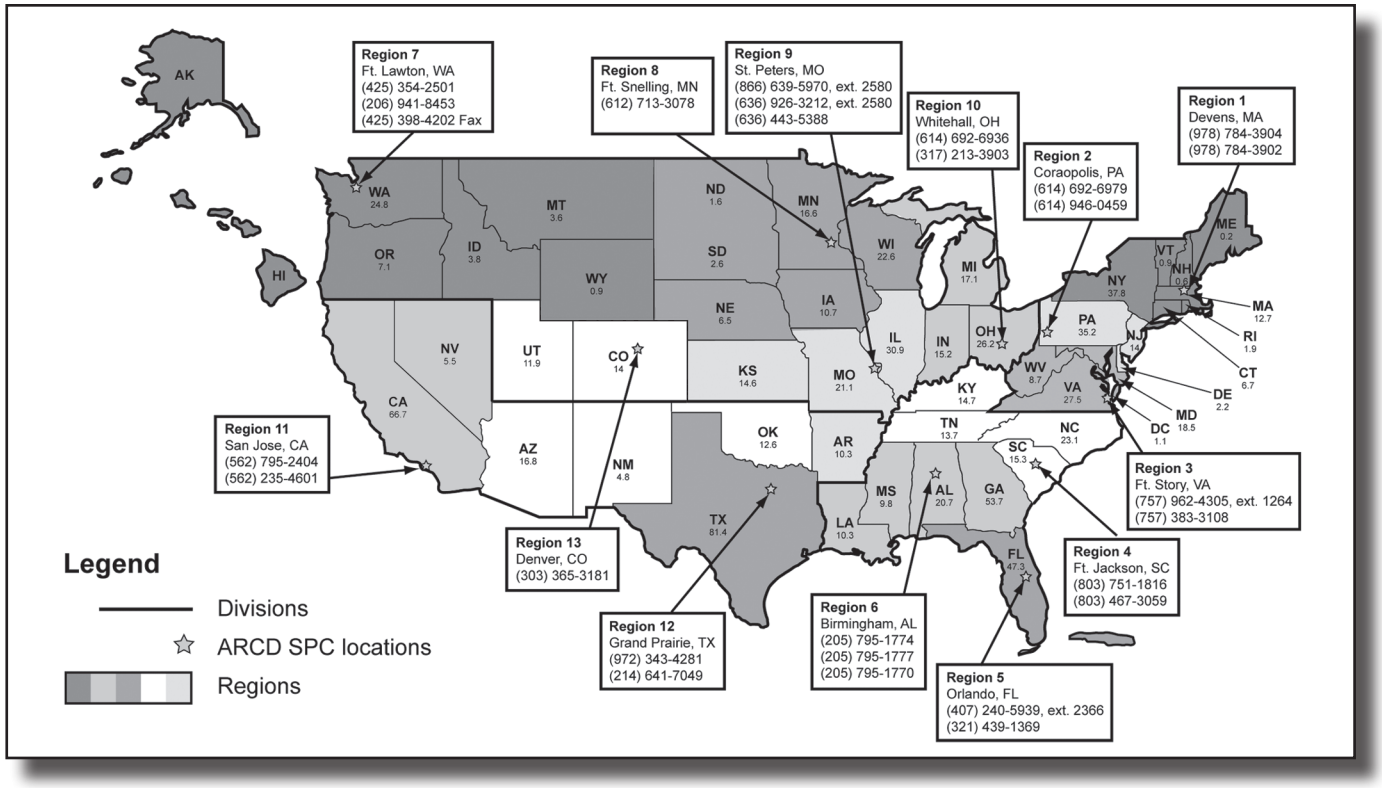


Figure 5. ARCD SPC Missions contact information

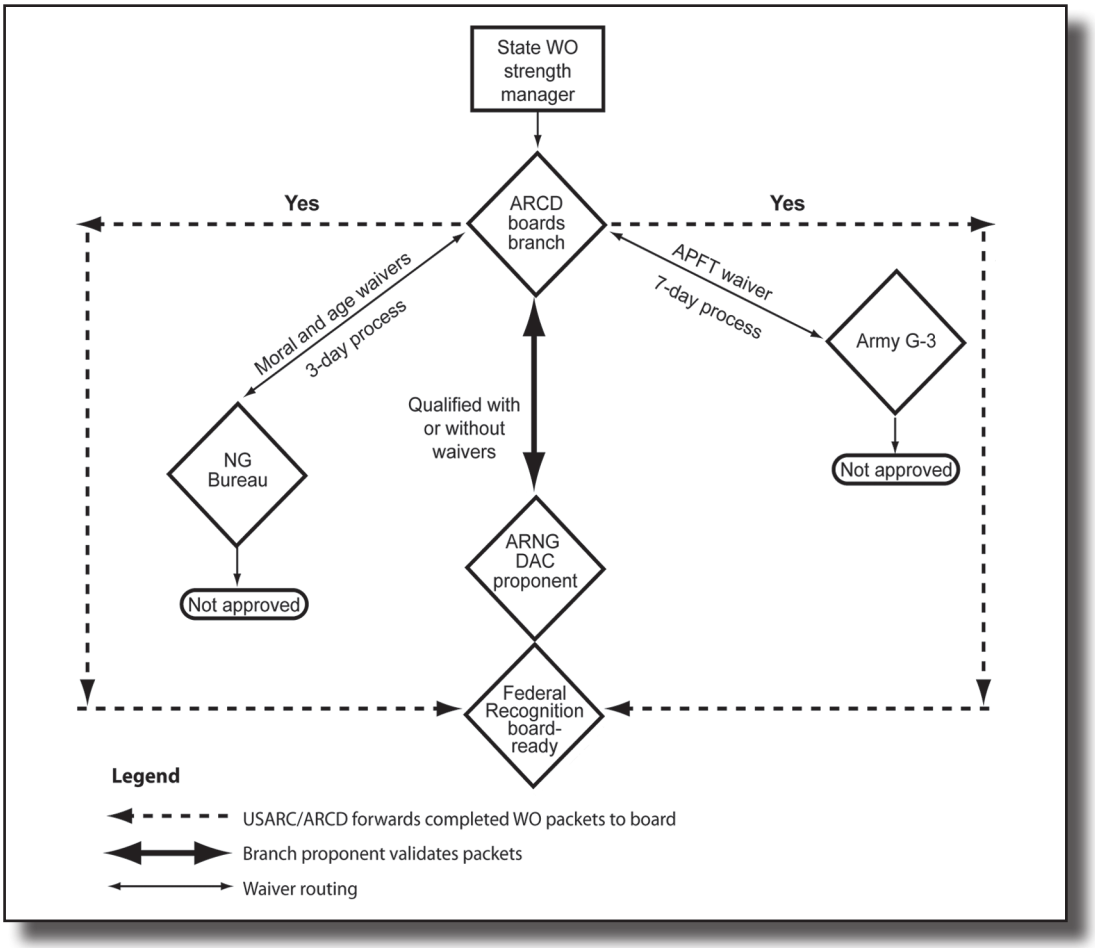


Figure 6. ARNG warrant officer application process

Army and USAR APFT waivers, ARNG APFT waivers are processed by the Army G-3. However, ARNG moral and age waivers are processed by the National Guard Bureau. Once branch validation has been obtained and waivers have been approved, the warrant officer application packet is sent to the state Federal Recognition Board. Guidelines for holding warrant officer boards vary from state to state; however, schedules can be obtained from state warrant officer strength managers.

Army warrant officers will attend a 9-week CBRN warrant officer training course. The first CBRN warrant officer class will be conducted at Fort Leonard Wood, Missouri, in July 2011. The USACBRNS Directorate of Training and Leader Development ensured that programs of instruction met the demands of emerging CBRN technologies.

More information about the CBRN warrant officer application process is available at <*http://www.usarec.army.mil/hq/warrant/index.htm*>. For more information about the CBRN Warrant Officer Program, visit the USACBRNS Web site at <*http://www.wood.army.mil/wood_cms/usacbrns.shtml*> or contact the USACBRNS PDO:

Major Tammy R. Alatorre, (573) 563-7691 or <*tammy.russo@us.army.mil*>.

Sergeant Major Gwendolyn Evans, (573) 563-3637 or <*gwendolyn.evans@us.army.mil*>.

Mr. Tom Crow, (573) 563-7723 or <*thomas.crow@us.army.mil*>.

References:

AR 40-501, *Standards of Medical Fitness*, 14 December 2007.

AR 600-9, *The Army Weight Control Program*, 27 November 2006.

FM 21-20, *Physical Fitness Training*, 30 September 1992.

Major Alatorre is the chief of PDO, USACBRNS, Fort Leonard Wood. She holds a bachelor's degree in chemistry from Saint Mary's University, San Antonio, Texas, and a master's degree in procurement and acquisition from Webster University.

Adding a Little Kick: The 22d Chemical Battalion Takes Physical Fitness to a New Level

By Ms. Chanel S. Weaver

At 6:15 a.m., sounds on the Edgewood Area of Aberdeen Proving Ground, Maryland, are few, but distinct. A bird chirps to signal the start of the new day. A car moves along Magnolia Road—its occupant undoubtedly on his way to work. And on a side street, a first lieutenant's authoritative voice can be heard shouting into the predawn air. "Everybody, listen up!" she says—her voice as loud as necessary to get her Soldiers' attention. Then, she delivers a safety briefing to the Soldiers of A Company, 22d Chemical Battalion (Technical Escort), as they prepare for a workout.

Physical and mental fitness have long been pillars of the U.S. Army. Like many other Army units, A Company is committed to physical fitness; so it is no surprise that they gathered for an early morning workout. But this was no ordinary workout. Two A Company teams were preparing to compete in a two-mile race—while dressed in full personal protective equipment (PPE) (chemical suits, gas masks, gloves, and boots). In addition, this workout required that the participants stop and respond to a simulated chemical situation every quarter mile.

The workout, referred to as "Responder's Challenge," was organized by the lieutenant—a battalion team leader. "We wanted to combine physical fitness and combat-focused training and test the ability of each team to conduct chemical response," she said.

The mission of the 22d Chemical Battalion is to provide chemical, biological, radiological, nuclear, and high-yield explosives (CBRNE) response in support of military operations and civil authorities. And the unit is no stranger to deployment; members of the command have mobilized to Iraq and Afghanistan numerous times in support of the War on Terrorism.

The clock begins, and the first team races toward the quarter-mile point, where they find a casualty (mannequin) lying on the road. They load the victim on a litter and run the next quarter mile. At the half-mile point, they treat a victim who has been exposed to a nerve agent; they safely cut away the victim's outer clothing. As they continue, they stop to seal a chemical leak, drop off a chemical round, take samples, and transport hazmat—all jobs that they routinely perform as CBRNE warriors. Before reaching the finish line, they must pause to answer a technical question posed by a staff sergeant. They receive an all clear as they finish the course.

As the perspiration-drenched first team begins to remove their PPE, they are reminded that nothing in the Army is accomplished alone. "Help your buddy out!" the staff sergeant yells; and the Soldiers help each other remove their PPE. Catching his breath, one participant said, "The training was good. The scenarios were realistic and caused you to 'think on your feet.'"

The first team, which was comprised of A Company veterans, finished the course in 48 minutes; the second team, comprised mainly of new members of the unit, lost by 5 minutes.

As the sun rose a little higher in the sky and traffic in the area began to pick up, the Soldiers agreed that their success that morning was due to their dedication and perseverance. According to one participant, "You've got to . . . go deep and pull out everything that's inside of you."

Ms. Weaver is a public affairs specialist with the 20th Support Command (CBRNE), Aberdeen Proving Ground. She holds a bachelor's degree in communications from Hood College, Frederick, Maryland.

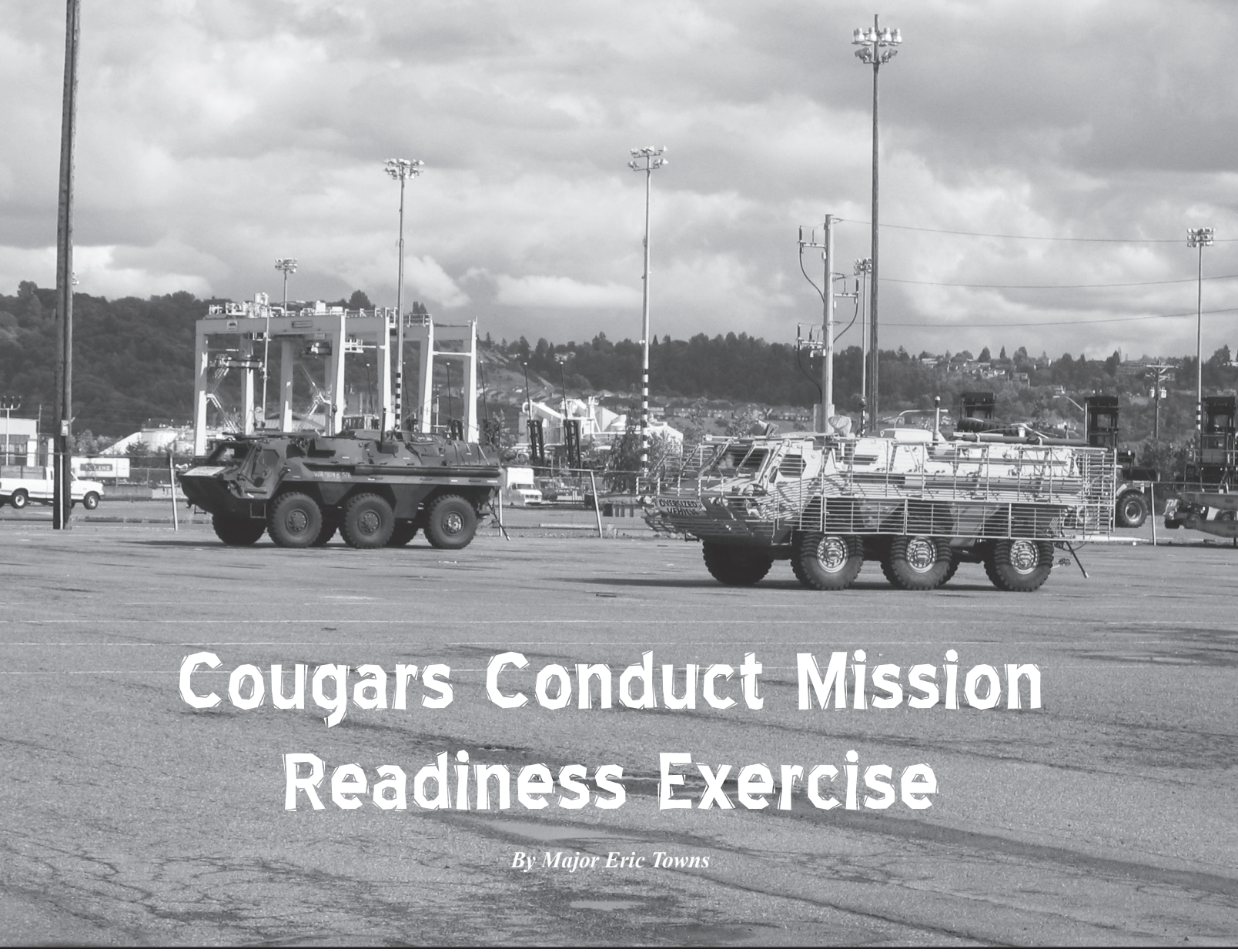
Regimental Week and NDIA JCBRN Conference Agenda

The 2010 U.S. Army Chemical Corps Regimental Week and National Defense Industrial Association (NDIA) Joint Chemical, Biological, Radiological, and Nuclear (JCBRN) Conference will be conducted at Fort Leonard Wood, Missouri, in June. The following schedule is provided for planning purposes, but is subject to change due to ongoing operational commitments. For additional information and last-minute changes, please visit the U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS) public Web site at <*http://www.wood.army.mil/cbrns/*>.

Time	Event	Location
Monday, 21 June 2010		
0700–0800	Golf Tournament Registration	Piney Valley Golf Course
0800–1400	Golf Tournament	Piney Valley Golf Course
1400–1600	Golf Tournament Barbecue/Awards Ceremony	Piney Valley Golf Course
1600–1800	Regimental Review/Change of Commandant Ceremony Key Leader Rehearsal	Gammon Field
Tuesday, 22 June 2010		
0530–0800	Regimental Review/Change of Commandant Ceremony Full Dress Rehearsal	Gammon Field
0800–0830	General Officer/Colonel/Command Sergeant Major/Sergeant Major Conference and Combating Weapons of Mass Destruction Community of Interest Registration	Pershing Community Center
0830–1200	General Officer/Colonel/Command Sergeant Major/Sergeant Major and Combating Weapons of Mass Destruction Community of Interest Tour of Training Facilities	Pershing Community Center
1200–1300	General Officer/Colonel/Command Sergeant Major/Sergeant Major Conference and Combating Weapons of Mass Destruction Community of Interest Luncheon	Pershing Community Center
1300–1530	General Officer/Colonel/Command Sergeant Major/Sergeant Major Conference	Pershing Community Center
1300–1530	Combating Weapons of Mass Destruction Community of Interest Meeting (by invitation only)	To be determined
1600–1700	Colonel Olson Retirement Ceremony	Engineer Regimental Room
1600–1900	NDIA JCBRN Conference Registration	Exhibit Pavilion
1830–2100	General Officer/VIP Dinner (by invitation only)	To be determined
1830–2100	Regimental Command Sergeant Major Icebreaker (by invitation only)	To be determined
Wednesday, 23 June 2010		
0730–0845	Regimental Review and Change of Commandant Ceremony	Gammon Field
0730–0900	Registration and Continental Breakfast	Exhibit Pavilion
0730–1830	Exhibits Open	Exhibit Pavilion
0900–0930	Opening Ceremonies/Welcome	Abrams Theater
0900–1130	NDIA JCBRN Conference	Abrams Theater
1130–1330	Lunch	Exhibit Pavilion
1330–1630	NDIA JCBRN Conference	Abrams Theater

Time	Event	Location
Wednesday, 23 June 2010 (continued)		
1700–1830	NDIA Reception	Exhibit Pavilion
1900–2000	Hall of Fame Reception	Pershing Community Center
Thursday, 24 June 2010		
0600–0700	“Honor to Our Fallen” Sunrise Service	Memorial Grove
0700–0815	Chemical Corps Regimental Association (CCRA) Corporate Breakfast	Pershing Community Center
0730–0900	Registration and Continental Breakfast	Exhibit Pavilion
0730–1530	Exhibits Open	Exhibit Pavilion
0900	Opening Comments	Abrams Theater
0900–1145	NDIA JCBRN Conference	Abrams Theater
1145	Closing Comments	Abrams Theater
1145–1330	Lunch	Exhibit Pavilion
1300–1530	International Symposium on Spectral Sensing Research Conference	Abrams Theater
1600–1700	Hall of Fame/Disinguished Members of the Corps Induction Ceremony	Abrams Theater
1900–2200	CCRA Members’ Barbecue Social	St. Robert American Legion
Friday, 25 June 2010		
0530–0700	Regimental Run	Gammon Field
0730–1600	Combined Warfighter Seminar	Lincoln Hall Auditorium
1730–2400	Green Dragon Ball	Nutter Field House

Scenes from the 2009 Regimental Week



Cougars Conduct Mission Readiness Exercise

By Major Eric Towns

The Port of Tacoma on Commencement Bay in Southern Puget Sound, Washington, was the stage for the culminating event of the September 2009 mission readiness exercise for the 62d Chemical Company "Cougars," 23d Chemical Battalion, Fort Lewis, Washington. The port served as the "North Westlandian Seaport of Debarkation (SPOD)" during the exercise.

Twenty-four hours before this event, a simulated foreign ship had docked, discharging at least one leaking container. Since then, workers at the North Westlandian SPOD had been complaining of headaches and nausea. The Cougars, who were at "Camp Eagle" (located 25 miles away), were called upon to determine the extent of contamination and eliminate the hazard if possible.

As the sun rose over Mt. Rainier, four Cougar platoons closed in on the port—1st Platoon was the first to arrive. Using two M93 Fox chemical, biological, radiological, and nuclear (CBRN) reconnaissance vehicles, they determined the presence of a hazard in the area where the containers had been moved.

The company commander ordered the decontamination platoon to begin terrain decontamination operations using Falcon Fixed-Site Decontamination Systems (FSDSs) and to establish a water resupply point in support of the FSDSs. The Soldiers who were manning the FSDS spray bars and deck guns launched into action and methodically emplaced the decontaminant on the contaminated area of the container yard.

The hazardous response platoon then began executing their battle drills. Their job was to determine from which container(s) the contaminant was leaking, presumptively identify the contaminant, and obtain samples for further analysis. The platoon leader simultaneously orchestrated the setup of the personnel decontamination station, the suiting of the initial-entry party (IEP), and the preparation of the rescue team. She then ordered the IEP to systematically search six containers that were identified on the ship's manifest. Within 45 minutes, the IEP had detected the presence of a contaminant in two of the containers. Shortly thereafter, a casualty was reported and the rescue team

sprung into action. The casualty was doffed, decontaminated, and treated. Next, the sampling team collected and transloaded the samples. The hazardous response platoon teams were then processed through the personnel decontamination station.

Once the specific containers had been identified, the FSDS operators unrolled their hoses and applied a decontaminant to the interiors and exteriors of the affected containers.

Following the FSDS terrain and fixed-site decontamination and a final Fox survey to confirm the absence of contamination, it was time to conduct decontamination operations on these vehicles and personnel. The 3d Platoon had previously established a detailed equipment decontamination line for the decontamination of vehicles. And in lieu of a standard detailed troop decontamination line, the decontamination of personnel was performed at the personnel decontamination station that had been established by the hazardous response platoon.

After downrange personnel and equipment were decontaminated, close-out operations were conducted and detailed equipment decontamination personnel were processed through the personnel decontamination station. Finally, the personnel decontamination station was closed, final monitoring was conducted, and clothing and equipment were removed from the last of the personnel.

The 62d Chemical Company Cougars proved their ability to perform directed, mission-essential tasks, and the company commander demonstrated his ability to command and control complex CBRN operations.

Editor's Note. *The 62d Chemical Company is currently providing consequence management support to the U.S. Central Command area of operations in Kuwait.*

Major Towns is the executive officer, 23d Chemical Battalion. He holds a bachelor's degree in biology from Boston University and a master's degree in administration from Central Michigan University.

International and U.S. Officials Meet and Tour Anniston Chemical Storage and Disposal Areas

By Michael B. Abrams

The Turkish ambassador to the United Nations in Geneva, Ambassador Ahmet Üzümcü, traveled to Anniston, Alabama, for a series of briefings and a tour of the Anniston Chemical Activity (ANCA) storage facilities and Anniston Chemical Agent Disposal Facility (ANCDF). The 17 February 2010 visit was organized to help the ambassador prepare for his upcoming posting as the Director-General of the Organisation for the Prohibition of Chemical Weapons (OPCW) on 25 July 2010. The current OPCW Director-General, Ambassador Rogelio Pfirter (who will step down on 24 July 2010, following two 4-year terms as the Director-General) accompanied Üzümcü on the trip. The OPCW is charged with overseeing the Convention on the Prohibition of the Development, Production, Stockpiling, and Use of Chemical Weapons and on Their Destruction (commonly known as the Chemical Weapons Convention)—an international treaty that bans the production, storage, and use of chemical warfare materiel.

Top American officials described U.S. storage and disposal mission objectives and accomplishments in a series of briefings. Briefings were led by personnel from the U.S. Army Chemical Materials Agency (CMA); U.S. Army Element, Assembled Chemical Weapons Alternatives (who discussed disposal plans for chemical stockpiles in Colorado and Kentucky); and ANCA and ANCDF (who described Anniston storage and disposal missions, respectively).

U.S. disposal operations began in earnest on Johnston Atoll in the Pacific Ocean in June 1990. Since then, the stockpiles located there and at Aberdeen Proving Ground, Maryland, and Newport, Indiana, have been destroyed. New disposal facilities are under construction at Blue Grass Army Depot, Kentucky, and Pueblo Chemical Depot, Colorado. And stockpiles in Alabama, Arkansas, Oregon, and Utah are currently undergoing reduction. At one time, 7 percent of the original U.S. stockpile was stored at Anniston Army Depot; that local stockpile has been reduced by more than 72 percent since disposal operations began there in August 2003.

One of the main priorities of the ANCA civilian executive assistant, Mr. Jesse E. Brown III, and the relatively small ANCA team is the safe storage of the remaining chemical munitions stockpile at Anniston. Mr. Brown informed the visitors that the ANCA stockpile is "properly stored and secured" and that there is "100 percent accountability," as required by the Chemical Weapons Convention. He also indicated that the selection of Anniston as the host of the OPCW visit is a sign of the respect that the CMA, Army, and Department of Defense (DOD) have for the stockpile and demilitarization work being conducted there. He said, "I think the visitors observed that the [United States] is working diligently to destroy the stockpile here at Anniston and [were] assured by the DOD and Army representatives present that funding [is] not an issue with respect to completing the mission."

The CMA director, Mr. Conrad F. Whyne, was one of the U.S. officials on hand to brief and escort the OPCW leadership. He indicated that his primary objective for the trip was to ensure that the incoming OPCW Director-General was fully aware of the U.S. successes, future challenges, and deep commitment

to doing everything possible to remain in compliance with the Chemical Weapons Convention.

Üzümcü's diplomatic career began in 1976. His biography indicates that he has vast experience in multilateral diplomacy; he is also widely considered to be an expert in political-military affairs and disarmament and proliferation issues.

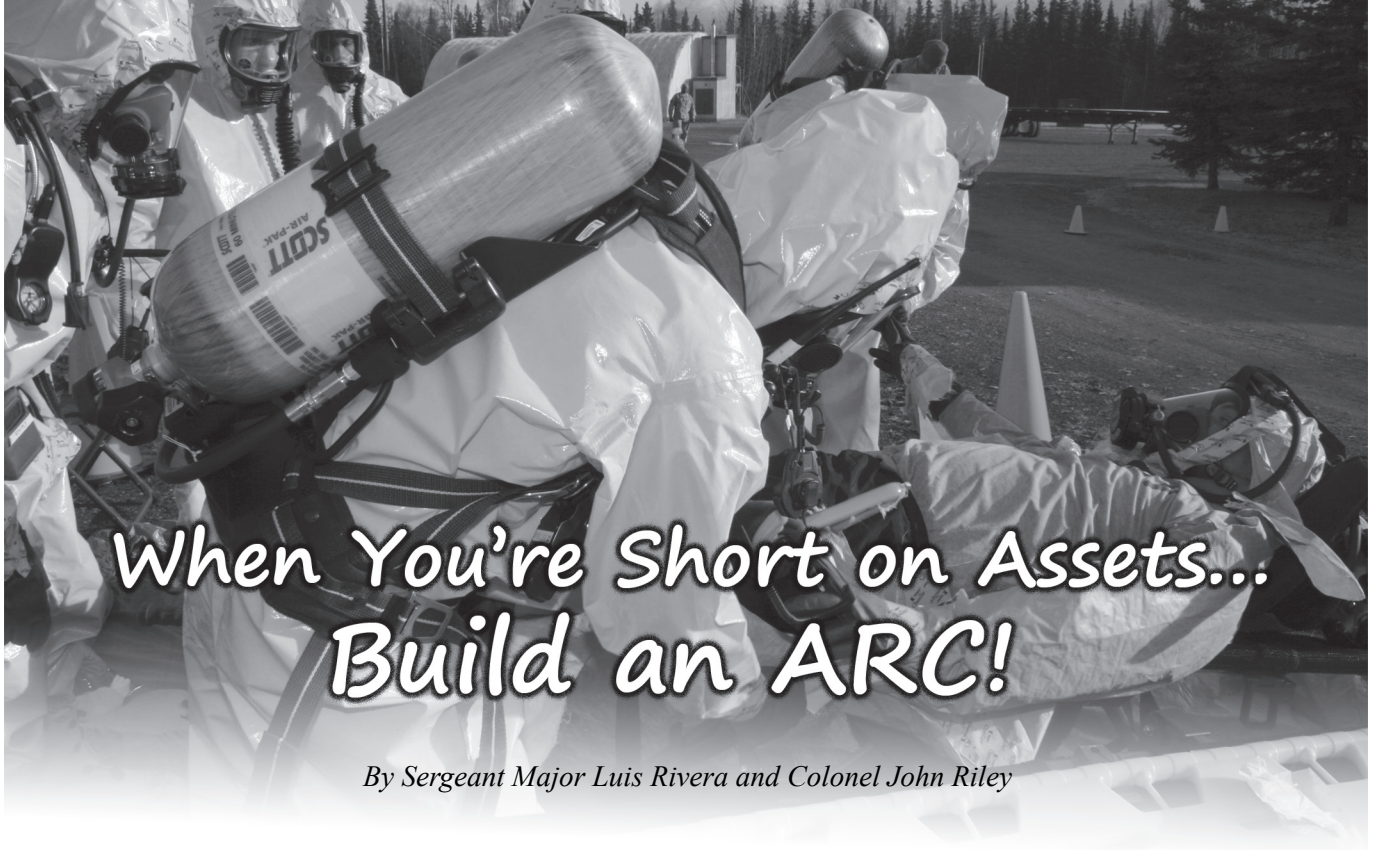
With regard to the upcoming April 2012 extended international treaty deadline for the destruction of all chemical munitions and production facilities, Üzümcü said, "We are approaching the deadline. We are approaching this transitional phase. I have to work very closely with the state's parties and try to achieve consensus on all . . . issues." He went on to explain, "The [OPCW] works on the basis of the principle of consensus, which is good. Several other international organizations work on the security issues; I believe that [the OPCW] should work on this basis because it takes time to reach consensus. But once you reach such a decision, it becomes much easier to implement it. So I'll work very closely with these parties."

Üzümcü acknowledged the challenges associated with the international position. "Future [OPCW] tasks will focus more on nonproliferation activities, inspections of chemical industrial sites, and so on. Therefore, it's quite challenging," he said.

In looking back over his eight years as the OPCW Director-General, Pfirter said, "…hopefully, we have today an organization that is clearly seen as very efficient. I believe that was not decidedly the case when I arrived in 2002. So, I take some pride in having worked well with all my colleagues in making of this . . . unique international organization which is seen by many as the way that it should be in the service of peace and security. I'm also happy to see that in the time I have been here, a significant number of countries have joined [the OPCW] so that today we can call it truly universal. We have made enormous progress in that, and that is crucial to the ultimate success of the treaty." And about the international treaty, Pfirter said "Progress has been made in the treaty. The treaty is a very complete instrument. It is about destroying chemical weapons. In fact, today we have reached the stage where the [United States] has destroyed over 70 percent and Russia 45 percent [to] 46 percent. These are major accomplishments, and we owe it to the countries and to the peoples in the world, how efficient they have been. Certainly that's behind the ultimate success story of this organization."

To learn more about U.S. chemical munitions storage and disposal programs, please visit the CMA Web site at <*http://www.cma.army.mil*> and the U.S. Army Element, Assembled Chemical Weapons Alternatives Web site at <*http://www.pmacwa.army.mil/*>.

Mr. Abrams is a public affairs officer for the ANCA and ANCDF, Anniston Army Depot. He holds a bachelor's degree in radio-television from Southern Illinois University–Carbondale.



When You're Short on Assets... Build an ARC!

By Sergeant Major Luis Rivera and Colonel John Riley

The U.S. Army Pacific (USARPAC) has long been faced with the following fundamental facts that make the execution of many of their missions difficult:

- The USARPAC theater is the most geographically dispersed theater in the Army.
- It takes considerable time for support assets from the mainland to reach U.S. forces in the Pacific.

These facts became strikingly obvious to the USARPAC Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives (CBRNE) Division in 2007, as the Joint Staff moved forward with plans to resource chemical, biological, radiological, and nuclear consequence management response forces (CCMRFs) within the continental United States. Since there was no plan to resource such an asset in the Pacific, the USARPAC staff developed a number of initiatives that addressed the response to possible CBRNE events in the Pacific using immediately available assets, while at the same time, waiting for additional assistance. In addition to equipping and training federal firefighters to fill some of the technical response roles in Japan, Hawaii, and Alaska, the USARPAC CBRNE Division developed another approach: Build an ARC.

The active response chemical, biological, radiological, and nuclear (ARC) team is USARPAC's solution to the requirement for a theater-deployable, Regular Army asset that is capable of conducting chemical, biological, radiological, and nuclear (CBRN) surveys, monitoring, sampling, and identification. Patterned closely after the Army National Guard weapons of mass destruction–civil support teams, ARC teams are manned with Military Occupational Specialty 74D CBRN Soldiers who are graduates of the Civil Support Skills Course or the Dismounted Reconnaissance Course. The ARC team equipment set contains the best available CBRN equipment, including substance identification instruments, self-contained breathing apparatus, and Occupational Safety and Health Administration Level A personal protective equipment.[1] As the operational manager for the Chemical, Biological, Radiological, and Nuclear Unmanned Ground Reconnaissance Program, USARPAC provided robotic CBRN reconnaissance platforms to the ARC teams in the 71st Chemical Company (Hawaii) and 95th Chemical Company (Alaska). With its suite of sensors, the Chemical, Biological, Radiological, and Nuclear Unmanned Ground Vehicle (CUGV) robot can collect chemical air samples and detect oxygen levels, explosive limits, volatile organic compounds, gamma radiation, toxic industrial chemicals, and chemical warfare agents. The CUGV enables ARC teams to

Members of the 71st Chemical Company ARC team receive a preoperations briefing during training at Barber's Point, Hawaii.

quickly deploy onboard cameras and sensors into an objective area to establish the "hot zone" and send any pertinent data to the ARC command post. ARC team leaders can share that data and real-time images of the incident scene with the incident commander within minutes of arriving on the scene of an event.

The 71st Chemical Company "Tropic ARC" Team completed their USARPAC CBRNE Division theater certification in June 2009 and have been decisively engaged ever since. According to one Tropic ARC team member, "The ARC Team involves hard, but great, cross-training—especially with different Hawaiian state and federal agencies. As an ARC team member, I see the Army CBRN specialist moving forward in a different and positive point of view." During the past year, the Tropic ARC Team—alongside the 93d Weapons of Mass Destruction–Civil Support Team (Hawaii) and civilian first responders on the islands of Oahu, Hawaii, and Kauai—participated in multiple, complex training exercises, ranging from civil defense scenarios to real-time air monitoring of Kiluea Volcano. The team also participated in the comprehensive Joint Response Hawaii 2009 Exercise at Schofield Barracks, in which external evaluators validated the ability of first responders and the U.S. Army Garrison Emergency Operations Center to integrate Department of Defense (DOD) incident management operations under a common organizational structure during a combined response to a simulated CBRN incident. In preparation for this exercise, the ARC team conducted numerous joint training missions with the 74th and 706th Ordnance Companies (Explosive Ordnance Disposal [EOD]). The training enabled the ARC and EOD teams to work together in assessing and sampling an incident scene.

The Tropic ARC Team deployed to the Republic of Singapore in December 2009 to demonstrate their capabilities alongside members of the Singapore Army's Chemical, Biological, Radiological, and Explosives Defence Group. Teamed with members of the 74th Ordnance Company, the 71st Chemical Company Soldiers spent two weeks in Singapore

A Soldier operates a CUGV robot during a bilateral-capabilities demonstration in the Republic of Singapore.

The 95th Chemical Company ARC team members conduct monitoring during a site survey.

training with their fellow CBRN and ordnance Soldiers. The Hawaii-based Soldiers found their Singaporean partners to be similarly trained in surveying and sampling techniques, and the nations had nearly identical robotic platforms supporting the CBRN and EOD missions.

An "Arctic ARC" Team has also been formed in the 95th Chemical Company. The team received equipment and initial training in October 2009. Ten Soldiers attended the Dismounted Reconnaissance Course held at Fort Leonard Wood, Missouri, in January 2010. The Arctic ARC Team, which is expected to be certified for operations by USARPAC by Summer 2010, has been invited to participate in the 2010 Arctic Edge Exercise. This year's exercise is designed to focus on an earthquake affecting Alaska, and the overarching goal is to improve Alaska's ability to manage disruption from natural disasters. This exercise will allow 95th Chemical Company Soldiers to gain experience in working with civil authorities at a CBRN consequence management event.

Endnote:

[1]Occupational Safety and Health Administration Level A personal protective equipment includes a positive-pressure, full facepiece, self-contained breathing apparatus or positive-pressure, supplied-air respirator with escape self-contained breathing apparatus; totally encapsulating chemical-protective suit; coveralls; long underwear; outer, chemical-resistant gloves; inner, chemical-resistant gloves; chemical-resistant boots with steel toe and shank; hard hat; and disposable protective suit, gloves, and boots.

Sergeant Major Rivera is the CBRNE Division sergeant major, Operational Protection Directorate, USARPAC, Fort Shafter, Hawaii. He is a graduate of the Civil Support Skills Course and is qualified in incident command. He is also working toward a bachelor's degree in homeland defense and homeland security.

Colonel Riley is the CBRNE Division Chief, Operational Protection Directorate, USARPAC. He holds a bachelor's degree in English from The Citadel–The Military College of South Carolina and a master's degree in international relations from Troy State University, Fort Bragg, North Carolina.

The Role of CBRN Officers and NCOs in the Chemical Corps Transformation

By Sergeant First Class Malukisa A. Makumbu and Major Kelso C. Horne III

Imagine that you are working as a chemical, biological, radiological, and nuclear (CBRN) officer or noncommissioned officer (NCO) in a division, brigade, or battalion and you are about to deploy. Your commander says that your CBRN input to the military decisionmaking process (MDMP) is unnecessary. At this point, you respectfully reply, "Sir, I disagree."

This article describes the desired involvement of CBRN officers and NCOs at the staff level. Personnel at this level are on the front lines of the Chemical Corps transformation; therefore, they must be professional, knowledgeable, capable, and confident. Most of all, they must be proud to be members of the Chemical Corps.

As brigade CBRN trainer observers/controllers at the National Training Center (NTC), Fort Irwin, California, we seldom see a CBRN section arrive ready to do their job. At the NTC, CBRN sections are faced with many non-CBRN duties. However, while multitasking is key to leadership, it is imperative that CBRN advisors know their primary jobs (ensuring that their units are prepared to respond to any CBRN situation, intelligently briefing the roles and capabilities of their units, and advising their commanders) and that they provide CBRN input into MDMP and counterinsurgency operations. They must be involved in the right traditional and targeting (cyclic) MDMP meetings, briefings, and staff working groups. Unfortunately, few CBRN advisors are able to attain this degree of involvement. Consequently, the desired level of CBRN integration into operations does not often exist.

Although there is only a slim chance that our enemies will use conventional chemical weapons against us, that possibility must be considered. However, our focus should be placed on the unconventional ways that our enemies might target us. For example, we should concentrate on improvised explosive devices that could contain chemicals. We should also direct our attention to releases other than attacks, which might involve toxic industrial chemical, toxic industrial biological, or toxic industrial radiological materials. As a CBRN advisor, you can assist in these situations by employing available equipment and capabilities to identify and categorize the materials. You can inventory the materials and periodically monitor the sites to ensure that they remain inaccessible to the enemy. You must be aware of the possible consequences of breaches in site security (ranging from a loss of use of facilities, to military and civilian casualties due to exposure to contamination) and be able to explain them in detail. Ultimately, you can provide advice regarding the area of operations by determining which sites should be protected, which sites require cleanup, and which sites should be destroyed. If you fail to properly advise, you are not doing your job as a CBRN officer or NCO. Finally, you can establish a consequence management plan in the event that an attack or a release other than attack occurs in the operational environment.

The Chemical Corps is technical, complex, and critical to mission planning. The Corps is changing fast, and it takes constant effort to keep current. Through the continued presentation of, attendance at, and participation in courses such as the CBRN Dismounted Reconnaissance Course, Technical Escort Course, and Civil Support Skills Course, the Chemical Branch will remain necessary and the Soldiers in it will continue to be respected subject matter experts. Additional suggestions for Chemical Corps Soldiers to remain up to date and effective include reading new manuals, keeping up with related news topics, and making the most of every learning experience available.

The changes that are taking place in the Chemical Corps are for the better. The Department of Defense is spending money to develop new equipment, build new facilities, and train a new generation of CBRN Soldiers. As a CBRN Soldier, it is important that you are not left behind. Since you may be the "lone CBRN voice" in a unit, it might be difficult to get the message across. But quitting is not the answer; rather, the answer is to exhibit an advanced understanding of the operational environment and to truly know what you are talking about. When it comes to the unit's ability to effectively respond to a CBRN event, all eyes are on you. Therefore, it is imperative that you are familiar with all aspects of your job. History will be the judge of how you performed your duties.

Sergeant First Class Makumbu is a brigade CBRN trainer observer/controller at the NTC. He has served as an instructor for the Basic Noncommissioned Officer's Course (now the Advanced Leader's Course).

Major Horne is a brigade CBRN trainer observer/controller at the NTC. He holds a bachelor's degree in general business from the University of Georgia and a master's degree in general business from the University of Southern Mississippi.

The Dragon's Diet: Force Structure Allocations in the New-Age Army

By Colonel Robert D. Walk

The Green Dragon is insatiable. He constantly hungers for more—more Soldiers, more equipment, and more funding. And the same can be said for every branch in the Army. There are never enough allocations to cover the requirements. While it may seem that allocations are determined through the use of voodoo and the mystic arts, the process actually involves a "not so" simple Army function.

As set forth in the *National Defense Authorization Act*, there are congressional limits on the numbers of Soldiers in each of the Services and Service components. The Army limits for Fiscal Year 2010 are—

- 562,400 for the Regular Army (Component 1).
- 358,200 for the Army National Guard (ARNG) (Component 2).
- 205,000 for the U.S. Army Reserve (USAR) (Component 3).

Within the limits set by Congress, the Army must further delineate the way spaces are allocated among the operating forces, generating forces, and individual accounts. The operating forces, or the "table of organization and equipment (TOE) Army," are generally considered to be the deployable force. The generating forces make up the "table of distribution and allowances Army." Individual accounts are commonly referred to as *trainee, transient, holdee, and student (TTHS)* accounts.

TTHS: Unavailable Dragons

The TTHS account consists of Soldiers who are not available to be placed in units. In general, personnel who are on permanent change of station (PCS) orders to attend training or on temporary duty (TDY) orders en route to a new location are included in the TTHS account. Most of these Soldiers are officers and enlisted personnel who are involved in initial-entry training. However, officers who are students at the U.S. Army War College and sergeants major who are students at the U.S. Army Sergeant's Major Academy are also included in this group. In addition, transients (those on PCS orders between stations) and holdees (those incarcerated or in the hospital) are also in the group. About 13 percent of the Component 1 strength is included in the TTHS account. About 2 percent of Components 2 and 3 strength (primarily initial-entry training Soldiers) are included in this account.

Generating Force: Building Better Dragons

The generating force generates and sustains the operating force. The U.S. Army Training and Doctrine Command (the major Army command of the U.S. Army Chemical, Biological, Radiological, and Nuclear [CBRN] School), is part of the generating force, as are the program managers who develop the material used by Dragon Soldiers. While all three components have generating forces, the Regular Army is required to have a larger generating force than the other two components.[1] The generating force of the Regular Army consists of about 100,000 Soldiers; the Reserve Component generating forces are much smaller. The primary USAR Chemical Corps generating force is the 3d Chemical Brigade, 102d Training Division (Maneuver Support), 80th Training Command (Total Army School System). In addition, USAR personnel also teach Intermediate-Level Education and USAR drilling individual mobilization augmentees teach the Reserve Component Captain's Career Course at the CBRN School. The Reserve Component generating force also includes noncommissioned officer academies.

Operating Force: The Force of Decision or the "Fighting Dragon"

The deployable Army's divisions, brigades, battalions, and companies make up the TOE Army. This is how the Army "earns its pay," and this is where careers are made—or lost. With regard to the Chemical Corps, this group consists of the 48th Chemical Brigade and its subordinate organizations from Component 1; the 31st and 404th Chemical Brigades and other assorted battalions, companies, and detachments from Component 2; and the 415th Chemical Brigade, the USAR Consequence Management Unit, and other assorted battalions, companies, and detachments from Component 3. Yes, there are chemical brigades in the ARNG and USAR! But how are they allocated?

Designing the Dragon: The Force Allocation Process (Simplified)

Based on the *Quadrennial Defense Review (QDR)* and other defense strategic guidance, the Army uses the Total Army Analysis process to determine force structure needs within the various branches. For example, if the Army were to determine that 30,000 Soldiers were needed to fulfill the requirements of the Chemical Corps, the branch would be allocated as—

- 6 brigade headquarters.
- 24 battalion headquarters.
- 15 Biological Integrated Detection System companies.
- 20 combat support companies.
- 4 wheeled smoke companies.
- 4 mechanized smoke companies.
- 6 technical-escort companies.
- 10 assorted detachments.

The total of 30,000 would also include Soldiers assigned to these units and CBRN specialists assigned to other branch elements throughout the Army force structure.

It would be great to have 30,000 Regular Army Soldiers in the Chemical Corps—even in our hypothetical example! But the needs of each component must be managed against the needs of the Army; Components 2 and 3 also get their "fair share" of the force structure.

In our example, 8,000 unit and individual Soldiers have historically been applied to Component 1. Increasing this number would mean decreasing the number of personnel in other branches. This cannot be accomplished except by senior Army leaders. Therefore, the Chemical Corps manages about 8,000 spaces, including Soldiers in units that are in other branches (which effectively reduces that number to 6,000 spaces actually managed by the Chemical Corps). However, all is not lost. Through negotiation, the force structure is divided among the various components, and Components 2 and 3 each have about 8,000 chemical spaces allocated between chemical and other units. Because brigades and battalions are highly desirable, they are likely to be divided fairly equal, given that they would require a sufficient number of companies to justify the headquarters. Unfortunately, there are some catches.

First, there is unallocated strength. There are about 8,000 Soldiers applied to each component, for a total of about 24,000. However, the requirement is for 30,000 Soldiers; therefore, 6,000 are unallocated. In the past, this group was referred to as "Component 4," but that term has since fallen out of favor. No matter what it is called, the group represents a requirement that is unfilled unless a component chief decides to accept it at the expense of something else. A case in point involved the ARNG and USAR decision to replace smoke units with other types of units, thereby resulting in the loss of most smoke capabilities.

Second, there are other branch considerations. For example, if the Infantry Branch were directed to eliminate 2,000 positions from within its units, the branch chief might choose to eliminate CBRN spaces in their companies to prevent the loss of so many infantry positions. This would be an Infantry Branch decision, not a Chemical Corps one, although the Chemical Corps loses people.

Third, the Army may change its focus. Based on the *QDR*, Total Army Analysis, and deployment reality, the Army may "tax" certain branches for force structure so that building might take place elsewhere. For example, there was once a Coast Artillery Branch that was quite powerful. After World War II, there was no longer a need for the Coast Artillery Branch and the Air Defense Artillery Branch was born from its ashes. A branch might also be completely eliminated by scattering its components among other branches. The Chemical Corps narrowly escaped such a fate in the 1970s, when the Army transferred the smoke function to the Corps of Engineers, the chemical ammunition function to the Ordnance Corps, and the decontamination and protection functions to the Quartermaster Corps. It was only the reluctance of Congress and the discovery that the Soviet Union was preparing for a chemical war that prevented the total elimination of the Chemical Corps at that time.

Fourth, component chiefs must make decisions based on the needs of their particular components. For example, if the USAR chemical force structure is not being deployed, the USAR may decide to convert that structure to something that is more relevant to current requirements. Again, the branch pays in personnel for someone else's decision.

The continued existence of the Chemical Corps requires the constant, unavoidable fight for relevancy. The Chief of Chemical and the Chemical Corps must constantly reinvent the branch by finding new ways to support the warfighter.

Endnote:

[1]U.S. Code, Title 10, *Armed Forces,* 5 January 2009.

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Colonel Walk is an active USAR CBRN officer assigned to Headquarters, U.S. Army Training and Doctrine Command, Fort Monroe, Virginia.

The 1918 Influenza: A Historical Vignette

By Captain Eric Marshall

On 6 April 1917, the United States—with an Army of only 110,000 Soldiers—declared war on Germany. Before engaging in combat in the spring of 1918, the Army and Marines recruited or drafted more than 2 million men. This surge of troops from across the geographic and social spectrum created a "tinderbox" for the ignition of influenza, or flu, from cramped, domestic cantonments to the front lines in France. The virus exploded in September 1918, ultimately infecting one third of the Earth's population and killing 10–20 percent of those who were infected. There were 675,000 deaths in the United States alone—more than the number of American combat-related deaths in World War I. In all, 21 million people died worldwide. One of the most horrible characteristics of the disease was that it targeted those in their 20s and 30s, consuming them with exceptional rapidity and resulting in the deaths of 8–10 percent of that group.

A study of the flu pandemic of 1918 provides a sobering lesson on the potential lethality of the H1N1 strain of flu and the particular vulnerability of initial-entry training (IET) Soldiers. Although the alarm of the 2009–2010 flu season has now passed, the historic 1918 event remains germane and, therefore, warrants review. The purpose of this vignette is to use history to provoke military leaders into embracing their responsibilities in the areas of disease prevention, control, and response. All facts and statistics presented in the vignette were drawn from John M. Barry's *The Great Influenza: The Epic Story of the Deadliest Plague in History.*[1]

Origin and Spread

The virus that caused the 1918 pandemic was the H1N1 strain of flu. The virus was saddled with the misnomer of "Spanish Flu," not because it originated in Spain, but because Spain—which was a neutral country during World War I—did not censor its press and was, therefore, the first nation to publically acknowledge the existence of an epidemic. Indeed, most epidemiologists track the origin of the disease to Haskell County, Kansas, where dozens of people on isolated farms across the county were diagnosed with a "severe type" of flu in February 1918. By late March, the intense symptoms disappeared. Due to the sparse population, the disease may well have been confined to Haskell County if it had not been for the war.

Camp Funston (located at Fort Riley, Kansas, about 300 miles from Haskell County) served as the IET site for about 56,000 Army recruits. At the time, this was the Army's second-largest IET site. The facilities were hastily constructed

to train the expected upsurge of Soldiers due to the draft. As a result, the camp's overcrowded barracks were inadequately heated and its hospital was unfinished, under-resourced, and understaffed. And there was a constant flow of recruiting buses between Haskell County and Camp Funston. The flu began to spread. In March 1918, more than 1,100 Camp Funston Soldiers required hospitalization due to the flu—and 38 died. Although this number is high by today's standards, the "relatively mild" form of the virus caused no alarm and the substantial flow of Soldiers from Camp Funston to other American bases and to Europe continued unabated. In total, 24 of 36 Army camps and 50 cities located adjacent to those camps experienced a flu epidemic that spring. This initial wave spread to France, Germany, Great Britain, and Spain. Germany's Erich Ludendorff postponed and, ultimately, abbreviated his last great offensive because of the debilitation of his ranks due to the flu. After several days, the pestilence passed and seemed to disappear; however, the virus itself did not. Massive suffering and decimation were to arrive in the fall.

Viruses are characterized by a phenomenon known as passage—the ability to adapt to the environment. As a virus passes from one person to another, it may undergo rapid mutations that increase its virulence or lethality. If a virus kills too efficiently, it may recede to a more mild form. Therefore, the flu virus commonly occurs in waves—tending more to a stable form until enough fuel is available to be relentlessly consumed.

The second wave of the H1N1 virus began almost simultaneously on three different continents in late August 1918. The virus dispersed uncontrollably—and with a significantly higher death rate—at the major port cities of Boston, Massachusetts; Brest, France; and Freetown, Sierra Leone. On a single day at Camp Devens, which was an IET cantonment located near Boston, 1,543 Soldiers reported illness with the flu. On 22 September, 20 percent of the camp population was on "sick report" and 75 percent of those were hospitalized. As the flu virus continued to spread, the 1,200-bed hospital eventually became incapable of accommodating the 6,000-plus patients (see Figure 1). At one point, the camp averaged about 100 deaths (including doctors and nurses) per day. When pneumonia accompanied the flu, the death toll rose. The camp was not effectively quarantined, and asymptomatic carriers quickly spread the lethal disease to nearby Boston and elsewhere. At Camp Custer, located near Battle Creek, Michigan, 2,800 troops reportedly became ill with the flu in a single day.

Camp Grant, near Rockford, Illinois, was another training base where the capacity was exceeded. On 21 September, the camp commander—ignoring ample warnings against overcrowding—permitted Soldiers to move from overflow tents into the barracks, where they would be warmer and more comfortable. Within six days, 4,102 Soldiers required hospitalization due to the flu and pneumonia. Training ceased, and personnel focused on the logistics associated with handling so much sickness and death. Ten barracks were converted into hospitals to accommodate the growing number of patients; and by 8 October, more than 452 Soldiers had died. On the day of the first reported death at Camp Grant, a train carrying 3,108 Soldiers departed the camp en route to Camp Hancock, located near Augusta, Georgia. Ten percent of those Soldiers eventually died.

Of course, civilians throughout the country and world were also affected by the second wave of flu. Crowded factories, high-traffic port cities, shortages of doctors and nurses, and a press that was reluctant to publish negative material all contributed to another tinderbox in the civilian sector. On 1 October, in Philadelphia, Pennsylvania—just three days after a huge parade to encourage the purchase of war bonds—the flu claimed 117 people; the number of fatalities was more than 700 within 2 weeks. In San Antonio, Texas, 53 percent of the population became infected. New Orleans, Louisiana; San Francisco, California; Los Angeles, California; and New York City, New York, were all dealt heavy blows by the disease—as were cities in Great Britain, France, India, China, Japan, Ethiopia, Australia, and the Pacific Islands. Entire villages of people in Alaska and southern Africa perished. Historians often compare the effects of the 1918 flu to the Black Death of the 1300s. Although the Black Death was responsible for killing a larger proportion of the population (more than one-third of Europeans throughout a century), the 1918 flu resulted in more total deaths in only 10 weeks. In fact, the flu killed more people in 1918 than Acquired Immune Deficiency Syndrome (AIDS) has in 24 years.[2]

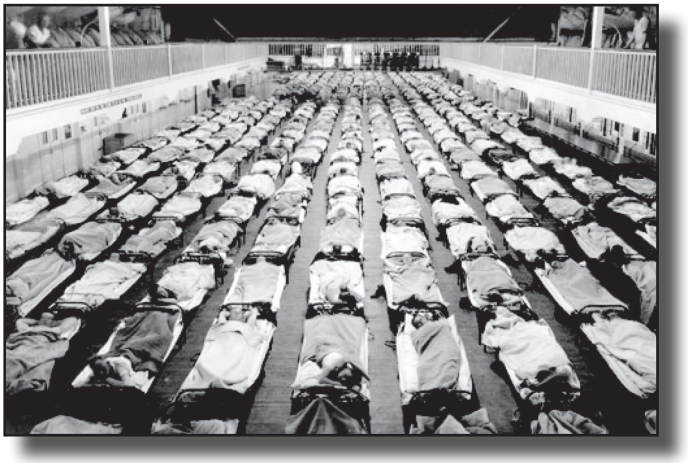


Figure 1. Severe overcrowding in the hospital at Camp Devens

Pathology

A discussion of the virology (various strains, mutation tendencies, and symptoms) of the flu and the human body's immune response to the virus is beyond the scope of this article. The vast majority of those infected by the 1918 H1N1 virus eventually recovered; however, when the virus did kill, it killed via three modes. First, the viral flu alone was capable of rapidly devouring enough lung cells to block the flow of oxygen, possibly resulting in death within hours. Second, the H1N1 strain could cause Acute Respiratory Distress Syndrome (ARDS) (also known as viral pneumonia), possibly resulting in the brutal death of the host over a span of two to four days. Third, as is often still the case, the flu may have been accompanied by bacterial pneumonia; most of these victims were probably killed via secondary complications within two to three weeks.

The most germane mode of death for military populations involves the development of ARDS. When the flu virus arrives in the lungs, white blood cells attack en masse, emitting proteins called *cytokines*, which raise the body's temperature and stimulate the marrow to produce more white blood cells (hence, the fever and aching bones associated with the common flu). If the immune system is unable to defeat the virus before it gains a firm foothold in the epithelial cells of the lungs, white blood cells continue to swarm, creating a "cytokine storm," which has a toxic effect on the alveoli and capillaries. This, in turn, compromises the lung's ability to exchange oxygen. Eventually, the virtual burning of lung tissue causes ARDS, which leads to rapid, irreversible organ decay and death. With the H1N1 strain, the more robust the immune system, the greater the cytokine storm and the more likely the disease will result in a fatality. This explains why otherwise healthy individuals ranging from 15 to 45 years of age are targeted by the H1N1 virus and why IET units face exceptional risks during H1N1 epidemics (see Figure 2).

The Cure

No cure for the flu has ever been found. Dr. George Soper, the chief 1918 influenza investigator at the time (and later director of the American Cancer Society), concluded that the only effective measure against the flu in Army camps was the isolation of individual victims or entire commands. He explained that these efforts "failed when and where they were carelessly applied," and that they "did some good when rigidly carried out." According to Soper, nothing else changed the destructive course of the disease—except its own natural attenuation over time. Therefore, it was leadership that made the difference in how an organization handled the flu epidemic. Leaders could heed medical warnings and take appropriate action, or they could treat disease prevention and response as though they were someone else's mission.

U.S. Army Training and Doctrine (TRADOC) Regulation 350-6 prudently indicates that the primary responsibility for preventing communicable diseases in the IET community rests with the individual. Good personal hygiene habits and deliberate sanitization absolutely reduce the survivability of viruses that are typically passed via water droplets and can remain on hard surfaces for several days. However, IET leaders must provide Soldiers with appropriate instruction and enforce the thorough cleansing of linens and living environments. Ultimately, IET leaders must thoughtfully consider all potential illness transmission hazards within their span of influence and accept ownership of preventive medicine as an essential aspect of their mission.

Endnote:

[1]John M. Barry, *The Great Influenza: The Epic Story of the Deadliest Plague in History*, Penguin Group, New York, 2005.

[2]This statement was made based on data that was available in 2005.

Reference:

TRADOC Regulation 350-6, *Enlisted Initial-Entry Training Policies and Administration*, 1 July 2009.

Captain Marshall is the company commander, Basic Combat Training Company B, 1-48 Infantry Battalion, 3d Chemical Brigade, Fort Leonard Wood, Missouri. He is a graduate of the U.S. Air Force Academy, Colorado Springs, Colorado.

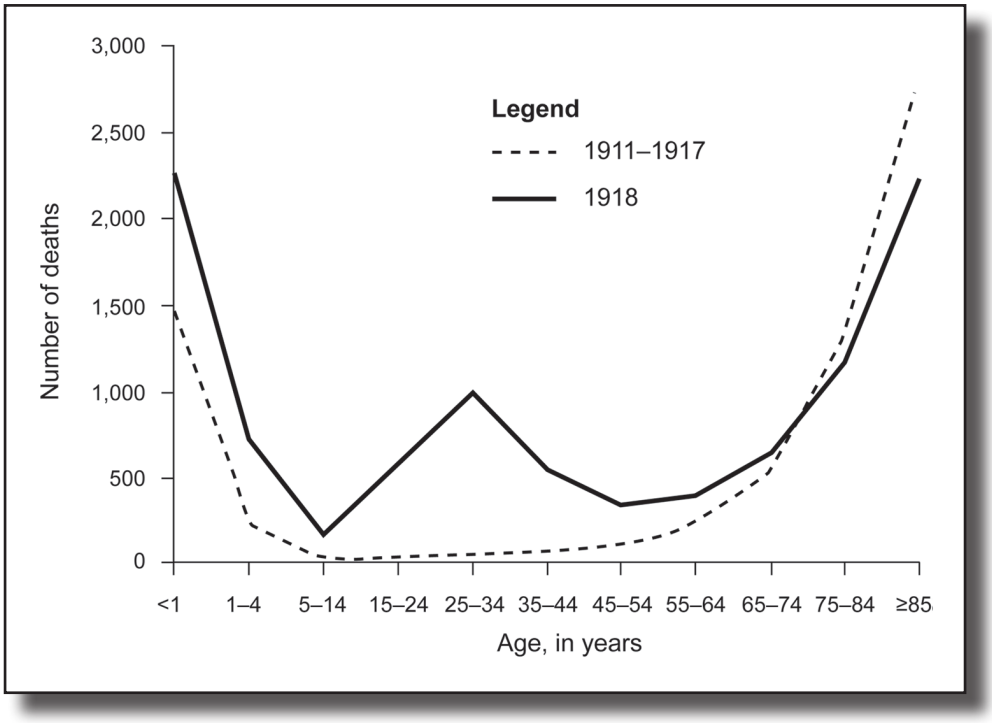
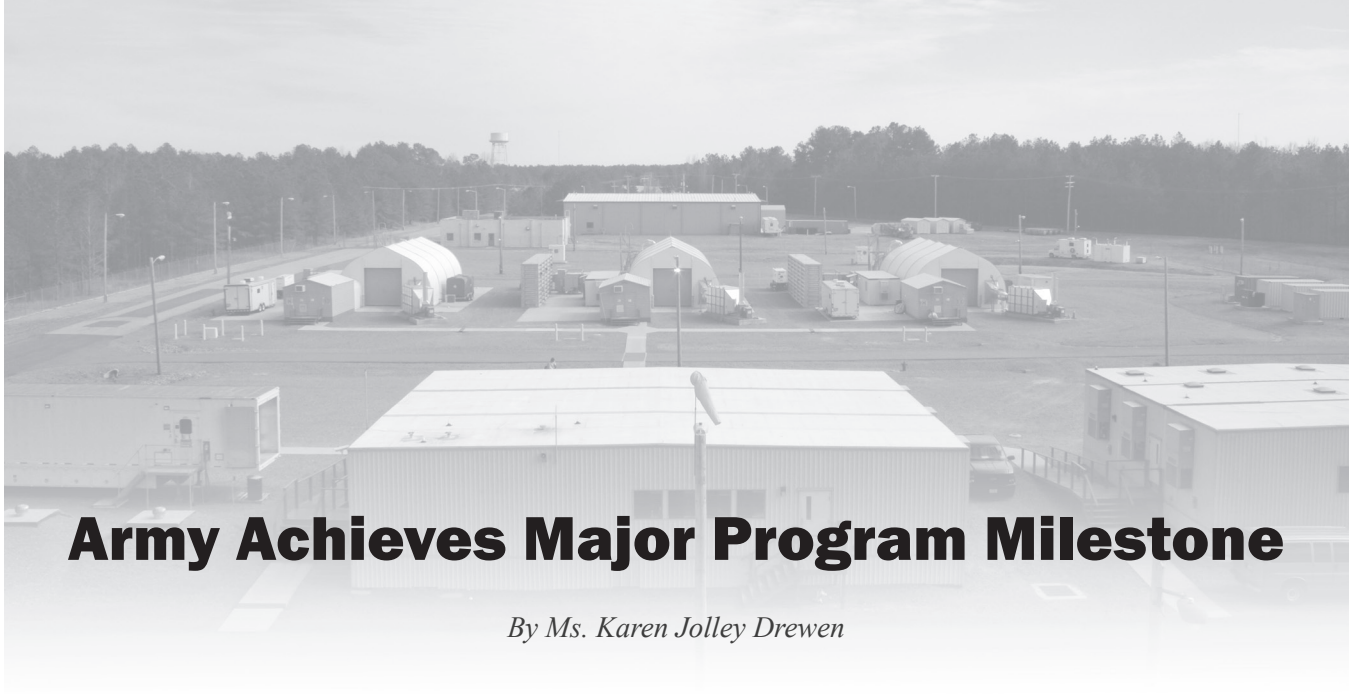


Figure 2. Flu-related death rates according to age

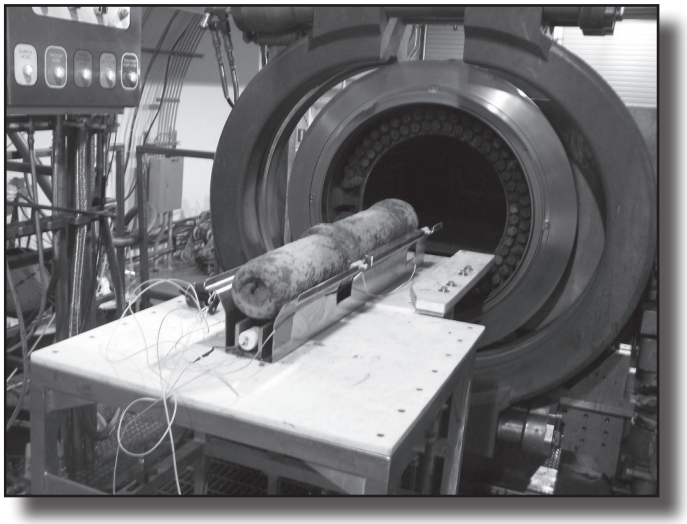


Army Achieves Major Program Milestone

By Ms. Karen Jolley Drewen

The U.S. Army Chemical Materials Agency (CMA) announced that it completed its mission to destroy all nonstockpile materiel that had been declared when the United States entered into the Convention on the Prohibition of the Development, Production, Stockpiling, and Use of Chemical Weapons and on Their Destruction (commonly known as the Chemical Weapons Convention [CWC])—an international treaty mandating the destruction of our Nation's chemical warfare stock. This milestone also marks the destruction of the largest inventory of recovered chemical warfare materiel to date (more than 1,200 munitions) with a stellar safety record.

CMA's Nonstockpile Chemical Materiel Project (NSCMP) began operations at the Pine Bluff Explosive Destruction System (PBEDS) facility, Pine Bluff Arsenal, Arkansas, in June 2006 to destroy items such as 4.2-inch mortars and German Traktor rockets that were captured during World War II. Destruction operations were completed on 14 April 2010.



The PBEDS has been used to destroy more than 1,200 munitions such as this German Traktor rocket.

Munitions were assessed at Pine Bluff before treatment in the PBEDS, which uses a neutralization technology to provide safe, environmentally responsible treatment. Developed as an alternative to open detonation, the transportable explosive destruction systems provide onsite treatment and neutralization of material and prevent the release of vapor, blast, and munition fragments from the process. Operators confirm complete neutralization of the chemical agent by sampling liquid and air before opening the system.

"This milestone underscores our commitment to the CWC," said Mr. Conrad Whyne, CMA director. "This accomplishment could not have been possible without the commitment of all the workers, led by the Nonstockpile Chemical Materiel Project—including Pine Bluff Arsenal; Pine Bluff Chemical Activity; Edgewood Chemical Biological Center; 20th Support Command, Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives (CBRNE) Analytical and Remediation Activity–West; Sandia National Laboratory; Idaho National Laboratory; Science Applications International Corporation; and supporting work forces. Their levels of technical expertise make it possible for us to fulfill our mission while protecting the public, workers, and environment."

The NSCMP research and development team, faced with the unique and diverse inventory of recovered munitions at the PBEDS facility, invented patent-protected processes and cutting-edge vessel enhancements. NSCMP engineers and chemists received a U.S. National Patent for developing a technology that improves the detoxification of lewisite, a World War II-era, German, arsenic-based compound. Before their work, the Army was challenged by the disposal of lewisite and other compounds containing arsenic. System enhancements included the Advanced Fragment Suppression System, which reduces the amount of solid waste that is generated by up to 80 percent, significantly cutting costs and supporting the NSCMP commitment to environmental stewardship.

Ms. Drewen is a public affairs officer with the CMA.

Editor's Note: Congratulations to the winners of the 2009 Chemical Corps Regimental Association (CCRA) Writing Contest! First place was awarded to Major Jared (Jay) Ware for his article entitled "CBRN Hazard Mitigation and Geospatial Data: A Synergistic Approach," second place was awarded to Lieutenant Colonel John D. Shank for his article entitled "Making the Chemical Corps Vision a Reality," and third place was awarded to Major Jason G. Anderson for his article entitled "CBRN Transformation in the IBCT: Too Little Too Late?" Colonel Jeffrey P. Lee's article entitled "Reflections on the 'Doughboy' Experience of Chemical Warfare" was awarded honorable mention.

Articles submitted for the contest were judged on a 100-point scale, with up to 40 points awarded for writing clarity, 30 points for relevance to Chemical, Biological, Radiological, and Nuclear (CBRN) Soldiers, 20 points for general accuracy, and 10 points for originality. In addition to the place titles, the winning authors also received monetary awards—$500 for first place, $300 for second place, and $150 for third place.

The first- and third-place articles were previously published in the Summer 2008 issue of *Army Chemical Review* (available online at <*http://www.wood.army.mil/chmdsd/Summer08toc.htm*>). The second-place and honorable-mention articles are hereby published with only minor edits for clarity and to address security concerns.

Making the Chemical Corps Vision a Reality

By Lieutenant Colonel John D. Shank

I believe that, for the Chemical Corps to be able to realize the commandant's vision (see page 53), the Corps needs to develop a written Chemical Corps vision implementation operation order (OPORD). The Corps vision needs a companion document to help make the vision a reality. This OPORD would lay out the actions needed to achieve the vision, specify the roles and responsibilities of the various partners, and identify key events which would cause us to have to review the vision to make sure that any new, national-level guidance has been incorporated.

Historically, the U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS) commandant writes a vision of where he believes the Chemical Corps should go in the future and what capabilities it should provide to the Army. Down through the years, commandants have led the effort to help the Corps achieve that vision by fulfilling their mission and doing their part to protect our Soldiers and the Nation. The commandants have been in the strategic position to be able to look across the Army and see where advancements could be made and maneuver the Corps to capitalize on those opportunities.

The current Chemical Corps vision has gone through a long maturation process but needs a written OPORD that clearly articulates for everyone, from the commandant on down to the most junior chemical, biological, radiological, and nuclear (CBRN) Soldier, how we as a Corps will achieve it. Brigadier General Leslie Smith, the USACBRNS commandant, asked during a video conference in the beginning of December 2009 the open-ended question, "Are we achieving the goals we want to achieve?" If Brigadier General Smith had answered his own question instead of leaving it for the audience to contemplate, I believe he would have said that we have only been partially successful in achieving the vision so far. In discussions with senior leaders of the Chemical Corps, both prior to and after the video conference, Brigadier General Smith has continued asking probing questions to elicit ideas on other ways to help the Corps achieve a higher level of results. I believe that a written OPORD will help make that vision a reality.

Why an OPORD?

Why should the Chemical Corps expend the time, resources, or energy developing an implementation OPORD? After all, the commandant knows what he wants to achieve already and doesn't need another document to tell him what he already knows. While it is true that the commandant has a vision to lead the Corps forward, he also needs the input and expertise from multiple sources to be able to help the Corps achieve his

vision. Brigadier General Smith would be the first to tell you that the vision is something for "us" to achieve, not just "him." It is also important that everyone in the community of interest that will help us achieve the vision have a clear understanding of not only the end state, but how we plan to get there. A written OPORD educates as well as informs and allows others to see the role they can play in implementing the vision. The following are some of the reasons that the Chemical Corps would benefit from a written CBRN vision implementation OPORD:

- It would demonstrate our ability as a Corps to think strategically, write comprehensively, and articulate our ideas effectively. At its essence, a comprehensive, written OPORD is the U.S. Army's way of doing business and a characteristic that separates the U.S. military from the militaries of many other nations.
- It would help ensure that our plans are nested with the Army vision and mission. The Army has Title 10, U.S. Code, responsibilities laid out in federal law; and the Chemical Corps plays a key role in helping the Army and the Department of Defense (DOD) fulfill those responsibilities. Our Corps' plans must conform to and fully support the national-level, combating weapons of mass destruction (CWMD) guidance and other key documents. The *National Security Strategy, National Military Strategy*, and *National Military Strategy to Combat Weapons of Mass Destruction (NMS-CWMD)* all discuss the dangers of weapons of mass destruction (WMD) and the importance to our country that proactive measures are taken to reduce the threat and position us to be better prepared to respond to a WMD incident throughout the world. The Army has the preponderance of CBRN forces and detection and protection capabilities in the DOD and must remain at the forefront of DOD's efforts to protect our forces and the Nation.
- The Army Chemical Corps isn't the only organization with part of the CWMD mission, and our efforts need to be nested with the actions of those other organizations. There are several other DOD and Army organizations that have part of the CWMD mission. Organizations like the Joint Program Executive Office for CWMD, Defense Threat Reduction Agency, U.S. Army Chemical and Nuclear Agency, and Defense Nuclear Weapons School also have part of the CWMD mission and responsibilities, are funded separately, and do not work for the chief of the Chemical Corps.
- The geographic combatant commands (GCCs) and U.S. Strategic Command have developed detailed CWMD OPORDs detailing how they plan to focus their efforts on the eight CWMD mission areas and have found them to be very beneficial. The GCCs found that they were able to identify many aspects of the eight CWMD mission areas that were not being adequately addressed. The GCCs were also able to educate their subordinate organizations on the eight mission areas and help them begin to think strategically about what they can do in each of those areas. The GCCs continue to go through a spiral development OPORD process that will shed additional light on areas to expand upon in the future.
- Tying our CBRN mission to higher-level documents like *The Army Plan* or the *NMS-CWMD* strengthens our argument for maintaining programs and force structure in both the Regular Army and Reserve Component. Under the Army Force Generation (ARFORGEN) Model, CBRN units have not received deployment credit like combat arms units have, which makes them susceptible to reductions in force structure. We need to identify and highlight CBRN units' unique role in CWMD and the support they can provide to tasks like the Army campaign objective of "Train the Army for Full Spectrum Operations." This will help strengthen the argument for maintaining the Chemical Corps force structure when discussions take place inside the Pentagon about where to take cuts in personnel and units to better support ARFORGEN requirements and the current fight.
- The commandant needs a coalition of the willing (you and me) to implement the vision. He can't do it by himself. The commandant can provide guidance, direction, and motivation, but it will take many individuals working the CWMD problem set from many different locations to achieve the comprehensive success we all seek and our Nation demands. Many people, including non-Chemical-Branch individuals, have a role in helping implement the Chemical Corps vision. Yes, CBRN Soldiers in companies and battalions have a key role to play, but so do others that you might not immediately think about—like commanders and leaders at all levels (regardless of branch), industry representatives, congressional leaders, contractors, and even military retirees who are still serving in positions that could help support the implementation of the commandant's vision. A written CBRN vision implementation OPORD would help form that multifaceted coalition by laying out the roles and responsibilities of each suborganization and individual.

The Next Steps: Three Key Aspects of the OPORD

The first key facet of the OPORD that needs to be considered and developed is to determine who we need to influence. As noted previously, many of the people and organizations that will help implement the vision do not work directly for the commandant. The commandant is in a position to develop a relationship with and influence key organizations and persuade them to help advocate CWMD initiatives to the Department of the Army (DA) and DOD. This advocacy by other powerful organizations within the DOD will greatly improve

the Corps' ability to protect and even expand our CWMD programs, budgets, and personnel positions. For example, the Maneuver Center of Excellence at Fort Benning, Georgia, and the Fires Center of Excellence at Fort Sill, Oklahoma, have a lot of influence inside the Pentagon. These organizations could be great advocates for our CWMD programs if we could convince them that our CWMD initiatives were beneficial to their organizations, the Army, and the Nation. This relationship **must** be cultivated. Most of the senior decisionmakers in the Pentagon are combat arms officers and will more easily be persuaded if there is broad support and agreement from multiple Centers of Excellence.

Another group of people that the Corps needs to develop a strong working relationship with is at the combatant command (COCOM) level. The COCOM commanders have a lot of influence inside the Pentagon. One of the ways COCOMs identify their greatest capability gaps and concerns is through their integrated priority list (IPL). Brigadier General Smith's staff should work with the COCOM CBRN officers to identify what the COCOMs see as their greatest CWMD shortfalls. They can then work together to craft a strong statement about these capability gaps and make recommendations to mitigate those gaps. The synergy of this coordinated effort will invariably make the CWMD IPL justification stronger than if the COCOM CBRN officer wrote it by himself. This will improve his ability to get his CWMD issue through the staffing process and help it be identified as one of the COCOM's top priorities. Being one of the top IPL items is one of the keys to receiving action and funding from the DOD. The commandant's staff can share this information and coordinate their efforts with the other COCOM CBRN officers to try to get other COCOMs to identify this issue as one of their top IPL items. Then, when it comes into the Pentagon, there will be even more justification for DA and DOD to address the COCOM commander's concerns and fund initiatives to fill these CWMD capability gaps.

The second key facet that needs to be incorporated into the OPORD is to determine how and when to use our influence. Personnel and budget decisions flow from our national-level priorities as identified in key policy documents. Some of those key documents include the *Quadrennial Defense Review (QDR), Guidance for the Employment of the Force (GEF), FY 12–17 Program Objective Memorandum (POM)* guidance, *The Army Plan (TAP), National Security Strategy (NSS)*, and *NMS-CWMD*. In an OPORD, the Chemical Corps needs to take into consideration the timeline these documents will be on, from their first draft until publication. The Corps should try to have someone work with the staff writers to help craft strong CWMD themes and messages and influence what comes out in the final version of these documents. For example, just because the Chemical Corps is not the primary author of the *NSS* or *NMS-CWMD* does not mean that it shouldn't develop a relationship with the offices that do write them and offer to provide assistance in writing the documents. Making sure that these national-level documents articulate the imperative for a strong DOD and Army CWMD capability will make it easier for the Corps to achieve the commandant's vision and help the Army fulfill its Title 10 responsibilities.

Part of determining how and when to exert our influence is to assess how effective we are at getting our ideas and language incorporated into those national-level documents. Have we been only minimally, partially, or (hopefully) very effective in our influence? Influence is a continual process, but must be exerted early. It is much easier to influence decisionmakers and get them to agree to insert strong CWMD ideas during the early stages of document development. A deliberate process to assess our effectiveness will help keep us focused and ensure that CWMD initiatives remain a DA and national priority.

The third key facet that needs to be incorporated into the OPORD is for us to identify the decision points (new information or decisions) which would necessitate a review of the Chemical Corps vision and implementation OPORD. In the next year, each of the previously mentioned, higher-level documents (*QDR*, *GEF*, *POM*, *TAP*, *NSS*, and *NMS-CWMD*) will be revised and republished. These documents may shift how the DA looks at the CWMD issue and the guidance it gives. Any major CWMD policy changes or guidance coming out of these documents should necessitate such a review.

Final Thoughts

The U.S. Army Chemical Corps is an integral part of today's Army. We provide a valuable capability to the Army, DOD, and our Nation as we focus on protecting the force and CWMD. The American people are counting on us, and we will not let them down. A written implementation OPORD will help ensure that the Chemical Corps achieves its vision. The only thing left to do now is to begin writing . . .

Lieutenant Colonel Shank is a CBRN system synchronization officer with the Full Dimension Protection Division, U.S. Army Deputy Chief of Staff for Resource Management (G-8). He holds a bachelor's degree in biology from Wheaton College, Illinois, and a master's degree from the Command and General Staff College, Fort Leavenworth, Kansas.

Reflections on the "Doughboy" Experience of Chemical Warfare

By Colonel Jeffrey P. Lee

The pristine American military cemeteries in the Meuse-Argonne and in St. Mihiel, France, and verdant wheat fields surrounding them do not adequately reflect the tragedy or horrors of "The Great War" some nine decades ago—especially when it comes to chemical warfare. Nor do these battlefields even hint at the difficult attempts to eliminate forever this category of weapons ever since their most widespread use by both the Central and Allied Powers.

Although the history of chemical warfare nine decades ago is interesting, a legitimate question is the relevance of gas warfare today—especially for the United States. World War I marked the first use of gas or chemical warfare in modern times on a wide and unprecedented scale. The Germans conducted the first large-scale attack using chemical weapons at Ypres, Belgium, in April 1915. The British followed suit in September of the same year. An estimated 89,000 soldiers (from all nations) died from gas exposure, and another 1.24 million were afflicted as nonfatal casualties.[1] This represents only about 2 to 4 percent of the total war casualties among a staggering figure of over 9.7 million military who died during the conflict.[2]

It could have been worse. Rapid advances in personal protection and chemical agent detection in the last two years of the war all lessened chemical weapons' potential impact. Tactical challenges employing gas, particularly the weather, also reduced chemical weapons' impact. Even using gas against your opponent necessitated extensive precautions due to the instances the gas drifted back on your own forces.[3]

Although the losses and casualties caused by chemical weapons were horrific, it is not widely known that it would have been far worse without expedient measures undertaken during the war. Chemical warfare beleaguered all units—large and small, friendly and enemy. A telling example is the case of a company of engineers with the U.S. 1st Infantry Division. Using an American veteran's personal diary of his exploits with E Company, 1st Engineers (today the 1st Engineer Battalion,1st Infantry Division), and using a book long out of print (*A History of the First U.S. Engineers, 1st U.S. Division*), one can trace many of the tumultuous events of the years 1917–1919 for a small but typical group of Americans.[4] These references suggest that, despite the mutual fear of chemical attacks, "gas" was used frequently, albeit with difficulty, by both sides in an attempt to break the stalemate of trench warfare.[5] There are numerous excellent books on this topic, but see in particular *The Poisonous Cloud: Chemical Warfare in the First World War* by Ludwig Fritz Haber and *Gas and Flame in Modern Warfare* by Major S.J.M. Auld.[6, 7]

The experience of the 1st Engineers is representative of many American units during World War I. The 1st Engineers suffered 817 total casualties and 88 killed in action. A third of these included 294 casualties as a result of the historical idiom "Gassed in Action" or "G.I.A."[8] The nonfatal casualties, those exposed to gas, were certainly debilitated and evacuated to field hospitals, primarily in the rear, to recuperate if at all possible.[9, 10] Chemical warfare certainly had an impact on operations, but advances in mask design and training by 1918 provided a modicum of protection for these Soldiers as evidenced in even personal accounts.[11]

St. Mihiel American Cemetery and Memorial in France containing the graves of 4,153 American military dead from World War I. (Photo: Mr. Claude Ludi)

An excerpt from a veteran's diary concerning training prior to battle essentially sums the incessant preparation by the Americans to protect against gas attack:

> *One of the things drummed into our minds by our French and British instructors was gas. In fact, so much so that we all had the impression—one whiff, and you were dead. This mental attitude has become most annoying. One of the duties of the sentries is to give the alarm in case of gas attack. This is done by winding overgrown Klaxon horns and banging on empty brass shell cases. Some of these dugouts and bombproofs are a trifle high in odor on account of their former occupants, so added to our other discomforts is the questionable pleasure of being awakened several times every night by some green sentry smelling somebody's feet and turning in a gas alarm. We then sit up for several hours with our masks on until somebody gets courage enough to take a sniff, our noses half pinched off by the nose clips of our masks. This had become such a nightly occurrence [that] we finally reached the stage where we woke up, took a sniff, and went back to sleep again.*
>
> *—Private Russell M. Lee*[12]

The 1st Engineers saw extensive service from Cantigny, France (where the American Allied Expeditionary Force was tested in combat for the first time in May 1918), all the way to Germany (where the American Army served as an army of occupation immediately after the war). Today, any battlefield tour will reveal numerous monuments and plaques honoring American sacrifice. In September 1918, the 1st Engineers, as part of the overall American offensive, broke the German salient at St. Mihiel, which they had held for four years of bitter trench warfare—including gas attacks by both sides. The salient had threatened the entire region between Verdun and Nancy, France, and interrupted the main railroad line from Paris to the east. Then, the entire weight of American forces was shifted to the Meuse-Argonne offensive, which began on 26 September and ended on 11 November 1918 when the Armistice was signed. Nearly 1,500 Americans from all units were casualties as a result of chemical warfare during that last offensive alone.[13] Testament is found nearby. The largest American military cemetery in Europe is not from World War II or found in Normandy, as popular culture might lead us to believe, but at the Meuse-Argonne American Cemetery and Memorial in France, where 14,246 of our World War I military dead are buried.

Sketch from the diary of Private Russell M. Lee. The handwriting on the back states, "Return of a Patrol October 28, 1918. Note: Man in lower corner had just been hit by a stray rifle shot."

Despite the passage of time, it is important to draw lessons from this relatively small American unit, its casualties, and current American policy with regard to chemical weapons. Developments in protection against chemical weapons today include the Joint Service Lightweight Integrated Suit Technology, designed to protect up to 24 hours against all known chemical (and biological) agents. The Department of Defense, specifically the Defense Threat Reduction Agency, is conducting research and development of very advanced means to detect threats and protect our forces.[14] In the area of training, even though the experiences highlighted by the 1st Engineers would mock over-preparation, Soldiers knew how to don their gear and react to an alarm (even if false). This training prepared them to conduct military operations despite the fear of gas attack. Today, our U.S. Army Chemical, Biological, Radiological, and Nuclear (CBRN) School is symbolic of the concerted effort to counter the entire range of CBRN threats and builds upon lessons painfully learned over nine decades ago.

Protection and training alone do not fully address the danger of chemical weapons. Despite rigorous 1st Engineer training, for example, one-third of their casualties were attributed to chemical warfare. Even with the state-of-the-art protective gear available in 1918, implementing protective measures, and conducting regular training, chemical warfare still had a dramatic impact on the overall effectiveness and capability of this unit to carry out sustained operations.[15] Dealing with these casualties and sending replacements created huge medical and logistical burdens.[16] A defining lesson from the American experience in World War I is that, ultimately, the United States would change its doctrine and the policy toward the production and use of chemical weapons.

U.S. policy evolved over time from a chemical weapon "no first use" policy as a signatory of the 1925 Geneva Protocol, to its ultimate complete renunciation, and then agreement for their destruction.[17, 18] Even with the end of World War I and the perceived public outcry against such weapons, countries around the globe built huge stockpiles of chemical weapons. The temptation, regardless of justification to use chemical weapons, has been wrestled with by our senior military and political figures ever since. Even the well-admired General G.C. Marshall considered resorting to chemical warfare against

the Japanese during the last stages of World War II.[19, 20] U.S. chemical weapons were even stockpiled in large quantities in Europe until 1990. The deadly legacy of chemical weapons still haunts us today. Only by the elimination of this class of weapons has the world become safer from the potential state use of these weapons.

Great progress is evidenced by the Convention on the Prohibition of the Development, Production, Stockpiling, and Use of Chemical Weapons and on Their Destruction (commonly known as the Chemical Weapons Convention [CWC]) toward the elimination of this threat. A total of 188 nation states are signatories of the CWC. Seven nation states (an unknown state party [believed to be South Korea], Albania, India, Iraq, Libya, the Russian Federation, and the United States of America) have all pledged the destruction of some declared 71,194 metric tons of chemical weapons, including some 8.67 million munition items. The largest declared stockpiles are found in Russia and the United States and appear to be on track for verifiable destruction by 2017. World War I's deadly legacy took some eight decades before being truly confronted by almost all nations. There are a handful of nations who are not yet signatories to the CWC.[21] And there remains today a genuine concern about nonstate actor or terrorist use of chemical weapons.[22] The lessons of 1918 force us to address the chemical weapon threat with a dual approach—protection and elimination!

The young private's World War I recollections and the battlefield experiences of his engineer unit are emblematic of the pragmatic and determined effort to protect our Soldiers. It also remains a tangible goal for the United States to eliminate the threat of such chemical weapons—ironically, almost 100 years hence our first experiences with them. Nation states are almost universally committed to the renunciation of these weapons and of their destruction, but there will always be a need for protection against potential future use. We cannot be as unprepared as those first soldiers in 1915 when facing this threat, and nations must continue to strive to eliminate the existing threat built up ever since.

Endnotes:

[1]Michael Duffy, *Weapons of War—Poison Gas*, 22 August 2009, <*http://firstworldwar.com/weaponry/gas.htm*>, accessed on 15 April 2010.

[2]Ibid. The British were the first to take retaliatory action using chlorine gas on 24 September 1915.

[3]Major S.J.M. Auld, *Gas and Flame in Modern Warfare*, New York, BiblioLife reprint of 1918 original, 2009, pp. 21–22.

[4]*A History of the 1st U.S. Engineers, 1st U.S. Division*, Coblenz, Germany, 1919.

[5]Tim Cook, *No Place to Run: The Canadian Corps and Gas Warfare in the First World War*, University of British Columbia Press, Ottawa, 2000, pp. 3–6.

[6]Ludwig Fritz Haber, *The Poisonous Cloud: Chemical Warfare in the First World War,* Oxford University Press, Oxford, 1986.

[7]Auld, 2009.

[8]*History of the 1st U.S. Engineers, 1st U.S. Division*, 1919, pp. 162–172. A listing of all 1st Engineers who served in World War I—especially if wounded, killed, or gassed—and their hometowns is found here.

[9]*Outlines of Histories of Divisions, U.S. Army, 1917–1919*, Historical Section, U.S. Army War College, Carlisle Barracks, Carlisle, Pennsylvania.

[10]*Report of Medical Department Activities, 1st Division*, on file at Historical Division, Surgeon General's Office, undated, but covers the period 1917–1919.

[11]Auld, 2009, pp. 26–42.

[12]Private Russell M. Lee, *Unofficial Recollections*, E Company, 1st Engineers, a personal diary of experiences during World War I, 1917–1919, unpublished.

[13]*Primary Documents—John J Pershing's Official Report of November 1919 on the Battle of St. Mihiel*, Government Printing Office, Washington, D.C., 1919, pp. 38–44.

[14]Defense Threat Reduction Agency and U.S. STRATCOM Center for Combating WMD Web site, <*http://www.DTRA.mil*>, accessed on 20 April 2010.

[15]Charles E. Heller, *Chemical Warfare in World War I: The American Experience, 1917–1918*, Combat Studies Institute, U.S. Army Command and General Staff College, Fort Leavenworth, Kansas, September 1984, Chapter 5.

[16]*Outlines of Histories of Divisions, U. S. Army*, 1917–1919.

[17]John Ellis van Courtland Moon, "United States Chemical Warfare Policy in World War II: A Captive of Coalition Policy?" *The Journal of Military History*, Vol. 60, No. 3, July 1996, pp. 495–511.

[18]Public Law 102-138, *Chemical and Biological Weapons Control and Warfare Elimination Act of 1991*.

[19]G.C. Marshall, *Marshall Memorandum for Admiral Leahy*, 21 June 1945, G.C. Marshall Papers, Pentagon.

[20]*Memorandum for General Hull, #5-169*, 3 July 1945, <*http://www.marshallfoundation.org*>, accessed on 20 April 2010.

[21]*Draft Report of the OPCW on the Implementation of the Convention on the Prohibition of the Development, Production, Stockpiling, and Use of Chemical Weapons and on Their Destruction in 2008, Fourteenth Session*, Organisation for the Prohibition of Chemical Weapons, The Hague, the Netherlands, 16 July 2009.

[22]Senator Susan M. Collins, Opening Statement, *World at Risk: The Report of the Commission on the Prevention of WMD Proliferation and Terrorism*, Washington, D.C., 11 December 2008, pp. 1–6.

Colonel Lee is a career U.S. Army engineer officer. The veteran to whom he refers is his grandfather, Private Russell M. Lee. Coincidentally, Colonel Lee assisted with the removal of American chemical munitions from Europe by upgrading a railway depot in Miesau, Germany, from 1989 to 1990. Today, he serves as the Defense Threat Reduction Agency chair at the George C. Marshall Center for European Security Studies, Garmisch, Germany, and educates hundreds of future leaders from Europe, Eurasia, and around the globe on WMD threats and programs to counter those threats. Colonel Lee holds a bachelor's degree in geophysical engineering from the Colorado School of Mines and a master's degree from Central Michigan Univeristy. He is also a graduate of numerous professional military education courses.

Monica Helps Chemical Units See Beyond Ammunition Walls

By Mr. R.J. Oriez

Members of the 110th Chemical Battalion place *monica* on a shell during a training exercise.

In today's world, when a suspected chemical munition is encountered, not only must the device be secured and people around it protected, but evidence must also be collected to determine who placed it there. That often requires the munition to be opened.

However, when the 110th Chemical Battalion, Fort Lewis, Washington, gets called to the scene of a suspected chemical munition, they can determine what is inside the round without having to open it. That is where the MK6, or **monica™**, comes in. **Monica** is a relatively new, remote case entry and sampling system that allows the team to drill a hole into the munition and insert a gas-tight, self-sealing probe. A sample can then be safely taken.

Monica is user-friendly, easy to operate, and easy to set up. It can be operated remotely from 300 meters away, so it's very safe. And, **monica** helps catch the "bad guys."

According to Captain Patrick Bradley, the leader of Technical Escort Team 1B, B Company, "With the hole cutting, **monica** allows us to get an intrusive sample. This sample serves better in a court of law."

Captain Bradley further explained that his unit is shifting toward Federal Bureau of Investigation (FBI) methods for collecting and handling forensic evidence. The evidence can now be analyzed using the lab that the unit brings to the site. "We are independent," Bradley said. "We can transfer anywhere we want and set up our own laboratory with our own analytical cell."

After collecting and analyzing a sample, the team packages the round and prepares it for shipment back to Fort Lewis. "That is what we do," Bradley said. "We render it safe and make sure nobody gets hurt."

Members of the 110th Chemical Battalion use *monica* to drill into a shell during a training exercise.

Mr. Oriez is a member of the Fort Leonard Wood Guidon staff.

DOCTRINE UPDATE

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

Publication Number	Title	Date	Description
NEW IN 2010!			
The nomenclature of chemical, biological, radiological, and nuclear (CBRN) doctrinal publications will change in support of the new and ongoing Army doctrinal reengineering efforts to reduce the number of Army field manuals (FMs). The U.S. Army CBRN School will retain one Army FM and adopt the new Army tactics, techniques, and procedures (ATTP) doctrinal designator for other branch-specific manuals. Publications that essentially contain technical doctrine will become general subject technical manuals (GSTMs).			
Current Publications			
FM 3-11 MCWP 3-37.1 NWP 3-11 AFTTP(I) 3-2.42	Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical Defense Operations	10 Mar 03	A multiservice tactics, techniques, and procedures (MTTP) manual that provides commanders and staffs a key reference for the planning and execution of service CBRN defense operations, with focus on the passive-defense component of counterproliferation. The new name will be *Multiservice Doctrine for Chemical, Biological, Radiological, and Nuclear Operations.* **Status**: Under revision Fiscal Year (FY) 2010. Will be retained as an FM.
FM 3-11.3 MCRP 3-37.2A NTTP 3-11.25 AFTTP(I) 3-2.56	Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Contamination Avoidance	2 Feb 06 C1 20 Apr 09	An MTTP manual for conducting CBRN contamination avoidance. **Status**: Current. Will be redesignated as ATTP 3-11.33.
FM 3-11.4 MCWP 3-37.2 NTTP 3-11.27 AFTTP(I) 3-2.46	Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical (NBC) Protection	2 Jun 03 C1 31 Dec 09	An MTTP manual that establishes principles for CBRN protection and addresses individual and collective protection (COLPRO) considerations for the protection of the force and civilian personnel. **Status**: Current. Will be redesignated as ATTP 3-11.34.
FM 3-11.5 MCWP 3-37.3 NTTP 3-1.26 AFTTP(I) 3-2.60	Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Decontamination	4 Apr 06	An MTTP manual that addresses the principles and levels of CBRN decontamination operations in a tactical environment. **Status**: Current. Will be redesignated as ATTP 3-11.35.
FM 3-6 (FM 3-11.6) AFM 105-7 FMFM 7-11-H	Field Behavior of NBC Agents (Including Smoke and Incendiaries)	3 Nov 86	A manual that addresses the battlefield influences of weather and terrain and the use of smoke and obscurants on CBRN operations. The new name will be *Multiservice Tactics, Techniques, and Procedures for Aspects of Chemical, Biological, Radiological, and Nuclear Command and Control.* **Status**: Under revision FY 10. Will supersede FM 3-6, FM 3-11.14, and FM 3-101; will be redesignated as ATTP 3-11.36.
FM 3-11.9 MCRP 3-37.1B NTRP 3-11.32 AFTTP(I) 3-2.55	Potential Military Chemical/ Biological Agents and Compounds	10 Jan 05	A manual that provides commanders and staffs with general information and technical data concerning chemical and biological (CB) agents and other compounds of military interest, such as toxic industrial chemicals (TICs). **Status**: Current. Will be redesignated as GSTM 3-11.91.
FM 3-11.11 MCRP 3-3.7.2	Flame, Riot Control Agent, and Herbicide Operations	19 Aug 96 C1 10 Mar 03	A manual that describes the tactics, techniques, and procedures (TTP) for employing flame weapons, riot control agents (RCAs), and herbicides during peacetime and combat. The distribution of this manual is restricted due to the sensitive nature of the information contained in it. **Status**: Current. Will be redesignated as GSTM 3-11.92.
FM 3-11.14 MCRP 3-37.1A NTTP 3-11.28 AFTTP(I) 3-2.54	Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical Vulnerability Assessment	28 Dec 04	An MTTP manual for conducting CBRN vulnerability assessments; analyzing, managing, and assessing risks; and measuring, mitigating, and reducing vulnerabilities. **Status**: Under revision FY 10. Will be consolidated with FM 3-6.
FM 3-11.19 MCWP 3-37.4 NTTP 3-11.29 AFTTP(I) 3-2.44	Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical Reconnaissance	30 Jul 04 C1 31 Dec 08	An MTTP manual for planning and conducting CBRN reconnaissance operations to detect, define, limit, mark, sample, and identify CBRN and toxic industrial material (TIM) contamination. The new name will be *Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Reconnasissance and Surveillance.* **Status**: Under revision FY 10. Will be combined with and supersede FM 3-11.86; will be redesignated as ATTP 3-11.37.

Note. **Current CBRN publications can be accessed and downloaded in electronic format from the Reimer Digital Library at <*http://www.adtdl.army.mil/*>, CBRN Knowledge Network (CKN) at <*https://www.us.army.mil/suite/portal.do?$p=409522*>, or Maneuver Support Knowledge Network (MSKN) at <*https://www.us.army.mil/suite/page/275589*>.**

DOCTRINE UPDATE

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

Publication Number	Title	Date	Description
Current Publications (Continued)			
FM 3-11.20	Technical Escort Battalion Operations	29 Aug 07	An Army-only manual that provides the TTP for the employment of technical escort battalions. The distribution of this manual is restricted due to the sensitive nature of the information contained in it. **Status**: Current. Will be redesignated as ATTP 3-11.24.
FM 3-11.21 MCRP 3-37.2C NTTP 3-11.24 AFTTP(I) 3-2.37	Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Consequence Management Operations	1 Apr 08	An MTTP manual that provides commanders and staffs a key reference for mitigating the CBRN aspects of consequence management. **Status**: Current. Will be redesignated as ATTP 3-11.41.
FM 3-11.22	Weapons of Mass Destruction–Civil Support Team Operations	10 Dec 07 C1 31 Mar 09	An Army-only manual that provides the suggested doctrinal TTP for use by weapons of mass destruction–civil support teams (WMD-CSTs), which are designed to provide support to local, state, and federal response systems. Change 1 expands the Communication Section and Medical and Analytical Section appendixes. **Status**: Current. Will be redesignated as ATTP 3-11.46.
FM 3-11.34 MCWP 3-37.5 NTTP 3-11.23 AFTTP(I) 3-2.33	Multiservice Tactics, Techniques, and Procedures for Installation CBRN Defense	6 Nov 07	An MTTP manual that provides a reference for planning, resourcing, and executing the CBRN defense of theater fixed sites, ports, and airfields. The new name will be *Multiservice Tactics, Techniques, and Procedures for Installation Emergency Management.* **Status**: Under revision FY 10. Will be redesignated as ATTP 3-11-42.
FM 3-11.50	Battlefield Obscuration	31 Dec 08	An Army-only manual that provides TTP to plan obscuration operations and employ obscurants during or in support of full spectrum military operations at the tactical through operational levels of war. **Status**: Current. Will be redesignated as ATTP 3-11.50.
FM 3-11.86 MCWP 3.37.1C NTTP 3-11.31 AFTTP(I) 3-2.52	Multiservice Tactics, Techniques, and Procedures for Biological Surveillance	4 Oct 04	An MTTP manual for planning and conducting biological surveillance operations to monitor, detect, sample, identify, report, package, and evacuate samples of biological warfare agents. **Status**: Under revision FY 10. Will be consolidated with FM 3-11.19.
FMI 3-90.10	Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives Operational Headquarters	24 Jan 08	An Army-only tactics manual that provides the basic doctrine for the employment of a chemical, biological, radiological, nuclear, and high-yield explosives (CBRNE) operational headquarters to conduct tactical-level weapons of mass destruction elimination (WMD-E) operations or transition to a joint task force-capable headquarters for WMD-E operations to support campaigns and civil authorities. **Status**: Under revision FY 10. This is a Maneuver Support Center of Excellence manual, which will be redesignated as an FM.
***Note.* Current CBRN publications can be accessed and downloaded in electronic format from the Reimer Digital Library at <*http://www.adtdl.army.mil/*>, CKN at <*https://www.us.army.mil/suite/portal.do?$p=409522*>, or MSKN at <*https://www.us.army.mil/suite/page/275589*>.**			
Emerging Publications			
FM 3-11.2	Multiservice Tactics, Techniques, and Procedures for Weapons of Mass Destruction Elimination (WMD-E) Operations	1st Qtr, FY 11	An MTTP manual that provides the tactical doctrine and associated TTP that each Service provides in support of the joint WMD-E mission area in an effort to operate systematically to locate, secure, disable, and/or destroy a state or nonstate actor's WMD programs and related capabilities. **Status**: Under development FY 10. Will be redesignated as ATTP 3-11.23.
ATTP 3-11.47	Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives Emergency Response Force Package (CERFP) Operations	To be determined	An ATTP that provides the tactical doctrine and associated TTP for conducting CERFP operations. **Status:** Under development FY 10.
***Note.* CBRN draft publications can be accessed and downloaded in electronic format from CKN at <*https://www.us.army.mil/suite/portal.do?$p=409522*> or MSKN at <*https://www.us.army.mil/suite/page/275589*>.**			

Dragons in Flight:
The Common CBRN Lineage of the Army and Air Force

By Colonel Robert D. Walk

U.S. Army chemical, biological, radiological, and nuclear (CBRN) specialists and U.S. Air Force (USAF) 3E9 emergency management specialists share a common history. From the beginning of the Chemical Warfare Service (CWS) during World War I, the organization fully supported the fledgling U.S. Army Air Service through its evolution to the U.S. Army Air Corps (USAAC), then to the U.S. Army Air Forces (USAAF), and finally to the USAF, which was created in 1947.

Before World War II

During World War I, CWS scientists developed a special type of aircraft propeller glue in support of the Air Service. The CWS also developed smoke grenades for aerial signaling, smoke generators for aerial camouflage, and firing devices for airplane demolition charges. After World War I, CWS support for the Air Service and, later, the USAAC grew. Chemical officer positions were assigned to major USAAC headquarters; and in 1936, USAAC leaders requested a special Air Forces Gas Defense Course.

Because the CWS mission was to deliver toxic gas to the enemy, experiments with new methods of distribution were continually conducted. Developmental work involved the aircraft delivery of smoke and incendiaries in the form of aerial sprays and bombs.

The CWS began researching aerial screening smoke in the 1920s. After experimenting with various concepts, they delivered an aerial spray tank that was capable of releasing smoke or chemical warfare agents. By 1941, the 30-gallon M10 spray tank had become the standard expendable tank. The M10 was filled with a standard smoke solution of sulphur trioxide and chlorosulfonic acid (a mixture commonly referred to as "FS") or titanium tetrachloride (FM). When released into moist air (which is common in the South Pacific), these compounds reacted to form a dense, white cloud.

An incendiary bomb requirement was signed in 1936. Serious work on the bomb began in 1937, and the 100-pound M47 chemical bomb was adopted in 1940. The M47 was designed to carry any chemical filling, incendiary, or chemical warfare agent. However, good fillings were not available until after 1941, when the CWS assumed responsibility for incendiary bomb development. Also in 1941, the CWS attempted to create "dragon's breath" by developing an aircraft-mounted flamethrower; unfortunately, propeller blasts extinguished the flame.

Unit requirements developed at the General Headquarters (HQ) Air Force (AF), Langley Field, Virginia, in 1939 called for a platoon to be stationed at each air base that performed chemical supply and maintenance functions or conducted chemical warfare defense training. As a result, 134 platoons were activated stateside and more were activated overseas. Aviation chemical companies were created for each air district in 1940; and by the end of 1941, the 7th Chemical Company (Aviation) (CCA)—which was formed to support the Far East Air Force[1] from platoons located at Clark, Nichols, and Iba airfields—was stationed in the Philippine Islands (then a possession of the United States). In addition, the 5th CCA, which supported the Hawaiian Air Force, was located at Hickam Field, Oahu, Hawaii. Consequently, when World War II began, the CWS was already actively supporting the USAAF.

Beginning of World War II

World War II began with Japanese attacks on Hickam, Bellows, and Wheeler Army airfields in Hawaii on 7 December 1941. As the Soldiers of the 5th CCA struggled to defend their airfield against the attacks, they suffered one casualty; however, they also claimed responsibility for shooting down a Japanese aircraft.

The first attacks in the Philippines eliminated the Far East Air Force as a fighting force; so the 7th CCA, which began the war with 3 officers and 185 Soldiers, was left without a mission. Members of the company then trained and fought as infantryman in the 31st Infantry Regiment. Eight of the Soldiers were killed in action before 9 April 1942; the survivors took part in the infamous Bataan Death March. They suffered inhumane conditions at Camp O'Donnell and Cabanatuan prison camps, endured trips to Japan in "hell ships,"[2] and were possible victims of sinister Unit 731[3] chemical and biological warfare tests in Manchuria. Sixty-two 7th CCA Soldiers returned home at the end of the war—a survival rate of about 30 percent.

During World War II

An air chemical officer was assigned to HQ, USAAF, when the organization was formed in 1942. And there was a chemical officer or section placed at every level of command (air force, command, wing). As each Army AF was created, the CWS provided a chemical section; thus, when the 8th AF stood up, so did the 8th AF Chemical Section. Seven officers and nine enlisted men, led by Colonel Crawford Kellogg, arrived in England with the 8th AF in June 1942.

General Henry Harley Arnold, USAAF commander, ordered all USAAF units to prepare and train for a chemical attack early in the war. When the USAAF reached England, they saw how seriously the nation took their defensive measures and followed suit. Overall, USAAF preparations were better than those of the ground forces.

Organization

As the USAAF expanded, the organizational support structure changed. Before the war, the USAAF operated with a fixed-base, service support structure; however, during the war, it became apparent that mobile service support was necessary. In 1942, the Air Service Group and Air Depot Group were fielded to provide this mobile support. The Air Service Group operated with the air combat units, while the Air Depot Group—which provided depot level support—operated farther to the rear. The CWS support to the USAAF was redesigned to accommodate the new groups.

Many new company organizations supported the USAAF Air Service Command. In addition to chemical sections, chemical companies (air operations) (CCAOs), chemical company depots (aviation) (CCDAs), and chemical companies (aviation maintenance) (CCAMs) also fell under ASC control. While three companies make up a battalion, there were no battalion headquarters allocated to support the entire USAAF.

Although CCAs were the primary support units at the beginning of the war, they were replaced by CCAOs when organizational changes were made in mid-1942. In fact, many of the first CCAOs were organized directly from older CCAs. For example, a 3d CCA platoon and several detachments in the Southwest Pacific area served as the nuclei for the formation of the 809th, 892d, 894th, and 895th CCAOs in September 1942.

The CCAO mission was to receive, store, prepare, load, and arm chemical warfare (gas, smoke, and incendiary) munitions for delivery by aircraft. Fifty-four CCAOs were activated during World War II, making them the largest employer of chemical Soldiers outside the chemical mortar battalions. These units were typically assigned to wings, with one platoon per squadron. The unit designation included an "L" (light), "M&H" (medium and heavy), or "D" (dive) signifying the type of wing supported. These CCAO units were in high demand in the Pacific, where incendiaries were used extensively.

Under Table of Organization and Equipment (TOE) 3-457, CCAOs were organized into four platoons and a distribution point, which were modularly designed so that each could operate independently. For example, the 816th CCAO (M&H) (headquartered at Barrackpore, India) supported the China-Burma-India Theater, with platoons providing support for operations at Shamsbernager, India (1st Platoon); Kunming, China (2d Platoon); Dinjan Airfield, India (3d Platoon); and Tezgaon, India (4th Platoon). Each platoon included teams that filled chemical bombs with smoke, incendiaries, and persistent and nonpersistent chemical agents. The distribution point

contained toxic-gas handlers and decontamination apparatus, and the 19 Soldiers stationed there maintained the Class V chemical dump.

Staff Sergeant John Haibach of the 808th CCAO (M&H) (which supported the 9th AF in England and, later, France) wrote of creating incendiary bombs from 55-gallon drums, working with M47A1 chemical bombs, and fuzing high-explosive bombs to support the fight. He also recalled a shortage of rolling stock, which required that all equipment be removed from trucks so that they could be used to transport supplies to forward air bases.

The heavy B-29 incendiary mission load in the Pacific led to the assignment of multiple companies to each XXI Bomber Command wing:

- The 802d CCAO (M&H) and 890th CCAO (M&H) were attached to the 314th Bombardment Wing (BW), North Field, Guam.
- The 812th CCAO (M&H) and 875th CCAO (M&H) were with the 315th BW, Northwest Field, Guam.
- The 805th CCAO (M&H) and 827th CCAO (M&H) were with the 58th BW, West Field, Tinian.
- The 813th CCAO (M&H) and 891st CCAO (M&H) supported the 313th BW, North Field, Tinian.
- The 870th CCAO (M&H) and 887th CCAO (M&H) supported the 73d BW, Isley Field, Saipan.

CCDAs provided chemical supply support to the USAAF. This unglamorous task consisted primarily of issuing chemical supplies, but also included salvage operations and munition filling. CCDA units generally established supply points in the forward area and depots in the rear area. Twenty CCDAs provided significant service during World War II.

At the beginning of the war, the authorized strength of the CCDAs under TOE 3-67 was 184 Soldiers. The CCDAs ended the war with 155 Soldiers assigned to a headquarters unit and three service platoons. Each of the modular service platoons included ammunition, toxic gas, general supply, and administrative sections. The platoons could be detached or pooled to operate one large depot.

Two CCDAs were located under the India-Burma ASC in the China-Burma-India Theater—the 769th CCDA in Calcutta, India, and the 771st CCDA in Ondal, India. The 752d CCDA stored material at North Field, Guam, in support of XXI Bomber Command operations in the Pacific. The 754th CCDA (along with the 756th CCDA, located at Riseley, Bedfordshire, England) operated USAAF Station 517 at Little Heath, Suffolk, England, with a detachment that briefly filled M47A1 incendiary bombs at Warren Wood, Suffolk, in support of the 8th and 9th AFs in England. As the lines moved forward across France, the 761st CCDA operated at Barisley le Cote, France; the 762d CCDA operated at Pierrefonds, France; and the 766th CCDA operated a depot at Reims, France.

CCAMs were designed to perform third-echelon (general support) and fourth-echelon (depot level) maintenance on all USAAF CWS equipment. These units were originally created under TOE 3-47, with a strength of 123 Soldiers (4 officers and 119 enlisted men) and divided into headquarters, repair, and salvage platoons. Five CCAMs operated during World War II. By the end of the war, there were 93 personnel in the HQ gas mask repair and equipment repair platoons.

A 701st CCAM detachment, led by First Lieutenant Howard Beckstrom, was maintaining forward-deployed M47A1 mustard bombs aboard the Steamship (SS) John Harvey when it was destroyed in an air raid in Bari, Italy. Everyone onboard the ship was killed instantly, and there was no one else who was aware of the mustard gas hazard. As a result, hundreds died from exposure to the gas.

Materiel

All USAAF Soldiers were issued gas masks and other associated equipment, including impregnated, chemical-protective clothing. Every vehicle was equipped with a 1½-quart decontamination apparatus, and each squadron was issued the standard, 3-gallon decontamination apparatus. Although power-driven decontamination apparatuses were also to be issued to each squadron, that equipment was always in short supply. The squadrons that had the equipment used it, but not always for its intended purpose. For example, the 315th Bomb Group converted their decontamination trucks into shower facilities.

Research and development in support of the air war proceeded at a

rapid pace. Increased demand for larger aerial smoke screens and curtains resulted in the CWS design of the bomb-bay-mountable, 50-gallon M20 and 30-gallon M21 tanks, from which smoke was forced using a pressurized tank of carbon dioxide. Thousands of these smoke tanks were procured; however, they were not easy to use and, consequently, were discarded in 1944. Other smoke tanks that were designed and produced included the bomb-bay-mounted, 70-gallon M33; wing-mounted, 70-gallon M33A1; and heavy bomber-sized, 200-gallon M40, which could be mounted in a B-17 or B-24. But none were as popular as the 30-gallon M10 smoke tank—at least partially due to its expendability.

The 100-pound M47 was the standard, aerial-delivered, chemical bomb in 1940, but it was improved throughout the war. While the M47 was referred to as a "chemical" bomb, the filling was not limited to chemical warfare agents; the bomb could also be filled with incendiaries. The CWS procured more than 3.5 million M47 series bombs. The USAAF dropped these (generally incendiary-filled) bombs in all theaters of war from Germany to Japan. The need for a good incendiary filling for the M47 prompted the development of "napalm," which is an incendiary named for two of the chemicals used in its composition—**na**phthenic and **palm**itic acids. Full-scale production of napalm began in 1943; and by 1945, the M47A2, which carried napalm, was considered one of the most valuable bombs of the war. Other chemical bombs, ranging in size from 115 to 2,000 pounds, were procured depending upon the expected use.

Another incendiary bomb procured by the CWS was the AN-M50 series, which was modified from a British incendiary bomb. This was a small, 4-pound, magnesium-cased bomblet with a thermite core and a fuze. The bomblet burned at extremely high temperatures for up to 7 minutes. The USAAF and U.S. allies dropped more than 30 million AN-M50s (which were normally dropped in 500-pound clusters) on Europe and more than 10 million on Japan. In anticipation of a possible magnesium shortage, the CWS developed the steel-cased M54 bomb. The M54 was actually used first; the Doolittle B-25 crews, which were launched from the U.S. Ship (USS) Hornet, dropped M54s on Japan in April 1942. The constant availability of M50 bombs rendered the M54 redundant, so it was seldom issued and was declared obsolete in 1945. The 500-pound incendiary M76 bomb was also seldom issued.

The CWS also procured the 6-pound M69 oil bomb. Whereas the M54 burned as it landed, the M69 shot a burning glob of oil. The M69, which was used extensively in the Pacific, wreaked havoc on Japanese wood frame structures. More than 100,000 tons of incendiaries were used in the Pacific.

In addition to the design, development, and procurement of bombs, the CWS also devised fuzes for air-droppable fuel tanks that were filled with napalm or other flammable mixtures. These extremely effective "fire bombs" were used to burn away foliage that covered fighting positions. The USAAF used more than 12,000 of these bombs in Europe, but more than 24,000 were used by all Services in the Pacific campaigns.

Training

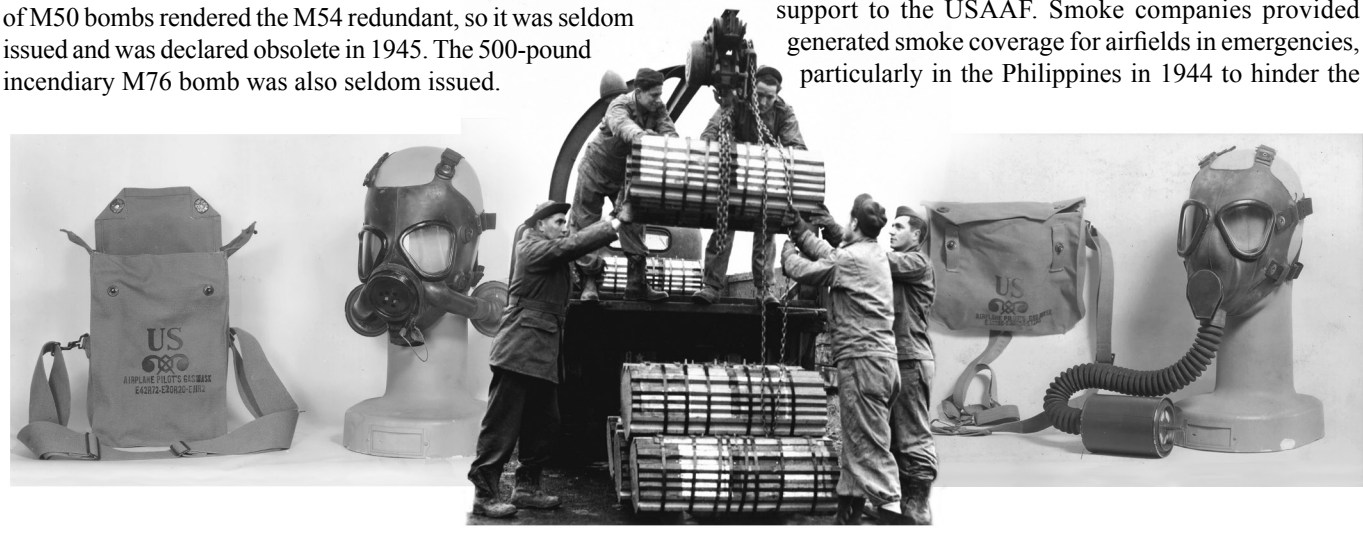
Most specialists were trained at the Chemical Replacement Training Center, Edgewood Arsenal, Maryland, and (later) Camp Sibert, Alabama. In December 1942, the USAAF established a specialized course; and by early 1944, 1,450 chemical enlisted men had completed the course. In 1944, the USAAF Center for Chemical Warfare Training was established at Barksdale Field, Louisiana, under the 3d AF. After the Air Force Training Command was established, the center was moved to Buckley Field, Colorado, in 1945.

Unit gas officers and noncommissioned officers who were not chemical specialists initially attended a four-week class at Edgewood Arsenal. The initial demand for the officer's class was so high that fifteen aviation-focused training classes were conducted from January 1941 to February 1943. After that, diminished requirements resulted in the incorporation of aviation students into regular gas officer classes. In addition, a four-week chemical officer training class, which was designed strictly for officers with pending USAAF assignments, was also offered.

Over time, the USAF chemical specialty has evolved into the 3E9 emergency management career field. Superior airmen who choose this career are trained by Detachment 7, 366th Training Squadron, Fort Leonard Wood, Missouri.

General-Purpose Chemical Unit Support

As necessary, general-purpose chemical units provided support to the USAAF. Smoke companies provided generated smoke coverage for airfields in emergencies, particularly in the Philippines in 1944 to hinder the



accurate Japanese bombing of forward airfields. Chemical laboratory companies provided laboratory support to all who needed it. Chemical decontamination units provided decontamination and bath support. Finally, chemical processing companies provided laundry services and clothing impregnation. This could be considered the same "support to other Services" that the Chemical Corps now provides.

After World War II

The USAF was created by the *National Security Act of 1947*. The separation of the USAAF from the Army meant that much of the support that the CWS had provided to the USAAF was forgotten. However, CBRN protection efforts have been taken up by present-day 3E9 emergency management specialists. The colocation of the U.S. Army and USAF training centers at the U.S. Army Maneuver Support Center of Excellence at Fort Leonard Wood enables the Army and USAF to continue the partnership that began so long ago.

Endnotes

[1]The Far East Air Force was the military aviation arm of the U.S. Army in the Philippines leading up to the beginning of World War II.

[2]A "hell ship" is a ship with very unpleasant living conditions or with a reputation for cruelty among the crew. The term "hell ship" is generally used to refer to Imperial Japanese Navy ships that transported allied prisoners of war from the Philippines, Hong Kong, and Singapore to Japan during World War II.

[3]Unit 731 was a covert biological and chemical warfare research and development unit of the Imperial Japanese Army. The unit conducted lethal experiments on humans during World War II.

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The 355th Chemical Company: Training With the Best to Become the Best

By Captain Herschel H. Flowers

The training scenario is set. It is the day before New Year's Eve in Las Vegas, Nevada. While tens of thousands of people are preparing to party, a small group of highly specialized Soldiers and law enforcement personnel embark on a reconnaissance mission. They want to ensure that the excitement which will soon be taking over the Las Vegas Strip comes only from revelers welcoming the New Year—not from unauthorized personnel or substances positioned beneath The Strip.

Although the 92d Civil Support Team from Nevada and local law enforcement personnel regularly participate in these exercises, U.S. Army Reserve and Army National Guard chemical companies rarely get a chance to experience the fast-paced environments so often encountered by these specialized units. However, four members of the 355th Chemical Company trained with the 92d Civil Support Team during this exercise so that they would be prepared to help out if existing personnel required augmentation. The experience was an invaluable opportunity for the Soldiers to learn from the best in the business.

The four Soldiers of the 355th actively participated in all steps of the exercise, from preparation and equipment preload through the after-action review that was designed to identify areas to be sustained and improved for future missions. Two of the Soldiers served on the primary support team, and the other two served on the rapid intervention team. Both teams worked with local authorities and members of civilian agencies. The emphasis was placed on force protection to allow the Soldiers to become comfortable in working with law enforcement personnel; however, civilian agencies also had the opportunity to become comfortable with the procedures designed to provide security for Soldiers.

When the exercise was complete, the four members of the 355th returned to their unit with a wealth of knowledge that they are now responsible for passing along to their fellow Soldiers. If the unit is called upon to provide vital support during a large-scale incident, they will be ready.

Captain Flowers is a chemical, biological, radiological, and nuclear officer with the Reconnaissance Training Department; Technical Training Division (Reserve Component); U.S. Army Chemical, Biological, Radiological, and Nuclear School; Fort Leonard Wood, Missouri. He holds a bachelor's degree in law and a juris doctorate degree from the University of Costa Rica and a master's degree in international trade law from the University of Amsterdam, the Netherlands.

Care to Comment?

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

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Professional Military Education

The qualification training courses shown in Table 1 are available at Fort Leonard Wood, Missouri.

Table 1. Qualification training courses

Enlisted/Noncommissioned Officer (NCO) Qualification Training Courses (taught by Total Army School System chemical, biological, radiological, and nuclear [CBRN] battalions) (School Code R031)	
74D10 (Transition) Military Occupational Specialty (MOS) Course	
Phase I	Students who have a reservation for Phase II are automatically enrolled in Phase I. They receive e-mail instructions from The Army Distributed Learning (dL) 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 Ms. Karen Campbell, 3d Brigade (Chemical), at (860) 570-7117 or <*karen.a.campbell@usar.army.mil*>.
Phases II and III (74D10R1)	These phases consist of resident training conducted at Fort Leonard Wood, and they may be completed consecutively.
74D Basic Noncommissioned Officer Course (BNCOC)	
This is a four-phase course. Phase I, which is common to all MOSs, is offered as resident training at various locations. Phases II–IV consist of 74D-specific resident training at Fort Leonard Wood.	
Note. *Effective 1 October 2010, BNCOC will be replaced by the Advanced Leader's Course (ALC). All phases of BNCOC must be completed before 1 October 2010. There will be no legacy course offered in Fiscal Year 2011, and no constructive credit will be granted.*	
74D Advanced Noncommissioned Officer Course (ANCOC)	
This is a three-phase course. There is no dL portion; the entire course is provided through classroom instruction at Fort Leonard Wood.	
Note. *Effective 1 October 2010, ANCOC will be replaced by the Senior Leader's Course (SLC). All phases of ANCOC must be completed before 1 October 2010. There will be no legacy course offered in Fiscal Year 2011, and no constructive credit will be granted.*	
Officer Qualification Training Courses (taught by the U.S. Army Chemical, Biological, Radiological, and Nuclear School [USACBRNS])	
Reserve Component (RC) CBRN Captain's Career Course (Course Number 4-3-C23)	
Phase I	This phase is waived until further notice.
Phase II	This branch-specific phase is provided through dL. Enrollment is conducted through the Army Training Requirements and Resources System (ATRRS) at <*https://www.atrrs.army.mil/*>, and the dL is accessed using the Army Learning Management System. Students who encounter problems should contact Major Michael Ballerstein at (573) 563-5018. The successful completion of Phase II is a prerequisite for Phase III attendance.
Phase III	This branch-specific phase consists of two-week resident training conducted at USACBRNS. The focus of this phase is on radiological operations; live, toxic-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.
Phase IV	This common-core phase consists of 59.2 hours of dL instruction. Enrollment is conducted through ATRRS at <*https://www.atrrs.army.mil/*>, and the dL is accessed using the Army Learning Management System. Students who encounter problems should contact Major Michael Ballerstein at (573) 563-5018. The successful completion of Phase IV is a prerequisite for Phase V attendance.
Phase V	This phase consists of two-week resident training conducted at USACBRNS. The focus of this phase is a computer-aided exercise that includes additional Joint Warning and Reporting Network and Maneuver Control System training, culminating in a military decisionmaking process exercise using state-of-the-art battle simulation equipment.
Joint Senior Leader Course (Course Number 4K-74A/494-F18)	
This is a four-day course in which senior leaders are presented with critical CBRN subject matter such as operational- and strategic-level aspects of CBRN defense. Participants also receive toxic-agent training at the Chemical Defense Training Facility. In addition, the Joint Senior Leader Course forum offers a unique opportunity for senior military leaders, civilian government agency leaders, and leaders representing allied and coalition partners to exchange ideas.	
CBRN Precommand Course (Course Number 4K0F4)	
This is a five-day course that prepares Regular Army and RC officers who have been selected for command of a CBRN battalion or brigade or a CBRN position in a division. Each student receives instruction in the application of Field Manual (FM) 7-0 and FM 7-1 concepts to the battalion training management process.	
Note. Additional ATTRS information is available at <*https://www.atrrs.army.mil/*> .	

The courses shown in Table 2 are also taught at Fort Leonard Wood and are required by CBRN consequence management response force; chemical, biological, radiological, nuclear, and high-yield explosives enhanced response force package; and civil support team units and for MOS qualification.

Table 2. Functional training courses

CBRN Defense Course (School Code R031, Course Number 031-NBC)
This twelve-day course, which is conducted by Total Army School System battalions at various locations, is designed to provide Regular Army and RC officers and noncommissioned officers (NCOs) with the knowledge and skills necessary to perform the additional duty of CBRN officer/NCO at company and detachment levels. The course is taught in a combination classroom/field environment and is supplemented with training videotapes. The extensive use of hands-on training ensures that Soldiers master the requisite skills.
Mass Casualty Decontamination Course (School Course Number 031, Course 4K-F25/494-F-30)
This nine-day course is appropriate for chemical, biological, radiological, nuclear, and high-yield explosives enhanced response force package and domestic-response casualty decontamination team members. Students who successfully complete the course receive certification at the hazmat awareness and operations levels.
CBRN Responder Course (School Code 031, Course 4K-F24/494-F29)
This ten-day course is appropriate for CBRN consequence management response force members. Students who successfully complete the course receive certification at the hazmat awareness, operations, and technician levels.
Civil Support Skills Course (School Code 031, Course 4K-F20/494-28)
This eight-week course is typically attended by Army National Guard civil support team members, but members of all Services and components may attend. Students receive advanced training in hazmat technician and incident command and CBRN survey, point reconnaissance, and sampling operations in support of an incident commander at a weapons of mass destruction incident. The course provides specialized training on a variety of military and commercial CBRN detection equipment and self-contained breathing apparatus.
Note. All students who successfully complete hazmat training are awarded certificates issued by the International Fire Service Accreditation Congress and the Department of Defense. Additional copies of certificates can be obtained from <*http://www.dodffcert.com*>.

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

USACBRNS RC Personnel

There are twenty authorized drilling individual mobilization augmentee positions throughout USACBRNS, with twelve officer slots (O-3 through O-5) and eight NCO slots (E-7 through E-9). Some of these slots are currently open. The mission is to expand the USACBRNS training base in the event of full mobilization.

If you are a field grade RC officer and want to transfer into the Chemical Corps, contact the USACBRNS Deputy Assistant Commandant–Reserve Component (DAC-RC) for specific branch qualification information.

Contact Information

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

Major James C. McGuyer (DAC-NG), (573) 563-7676 or <*james.mcguyer@us.army.mil*>.

Master Sergeant Mark Vasquez (USAR Proponency NCO), (573) 563-7757 or <*margarito.vasquez@us.army.mil*>.

Ms. Sandy Meyer (DAC Administrative Assistant), (573) 563-6652 or <*sandy.meyer@us.army.mil*>.

CBRN Soldiers Refine Their Marksmanship Skills

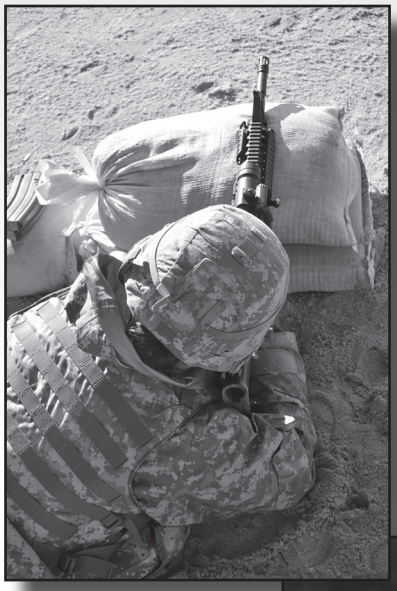
Chemical, biological, radiological, and nuclear (CBRN) Soldiers from Company A, 22d Chemical Battalion (Technical Escort), 48th Chemical Brigade, 20th Support Command, honed their marksmanship skills at Aberdeen Proving Ground, Maryland, on 10 December 2009. Photographs provided by Sergeant First Class John B. Jaso III.

Eyeing the target

Grouping the shots

Shooting the targets

Counting the targets



Firing away

Hitting the targets

Army Chemical Review Writer's Guide

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

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

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

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

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

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Army Chemical Review is published biannually in June and December, and articles are due by 1 March and 1 September. Send submissions by e-mail to <*leon.mdotacr@conus.army.mil*>, or send an electronic copy in Microsoft Word on a compact disk and a double-spaced hard copy of the manuscript to—

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The Chemical Corps Vision

A Corps and Army capable immediately of countering the entire range of CBRN threats and effects to protect our Nation, operating seamlessly with military and civilian partners, while conducting simultaneous operations from civil support to war.

Partnership

Develop an understanding of the key and enabling experts…and an ability to collaborate effectively with them…to include joint, interagency, intergovernmental, and multinational (JIIM)…and civil authorities, either domestically or within host nations abroad.

Capability

A professional U.S. Army Chemical Corps, expertly manned, equipped, and trained… preparing all U.S. Army organizations at all echelons through technical expertise…at the peak of readiness to perform immediately when called upon.

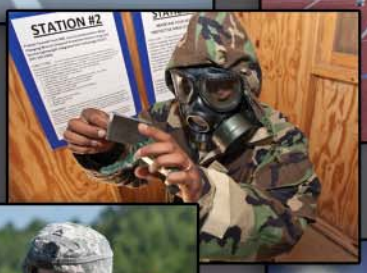
Operational Environment

Execute simultaneous, full spectrum operations (offense, defense, and stability or civil support)…within the homeland and in an operational theater…across the spectrum of conflict, from permissive to hostile environments.

Effect

Proactively execute our role in combating weapons of mass destruction (WMD)…where chemical, biological, radiological, and nuclear (CBRN) are inclusive of traditional weapons and toxic industrial materials…and contribute to the protection warfighting function as it applies to people, equipment, and information.

Dragon's Peak 2009



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