

**ARMY**

# CHEMICAL



The Professional Bulletin of the Chemical Corps

Winter 2010

**REVIEW**

HEADQUARTERS, DEPARTMENT OF THE ARMY  
Approved for public release; distribution is unlimited.  
PB 3-10-2

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**Chemical, Biological, Radiological, and Nuclear School**  
**(573) XXX-XXXX**  
**DSN 676-XXXX (563 prefix) or 581-XXXX (596 prefix)**

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**Front cover:** Photograph by U.S. Army Staff Sergeant Brendan Stephens  
**Back cover:** Photographs of the USACBRNS change of command, August 2010, by Mr. Mike Curtis.

*Army Chemical Review (ACR)* (ISSN 0899-7047) is prepared biannually in June and December by the U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS), Fort Leonard Wood, Missouri. *ACR* presents professional information about Chemical Corps functions related to chemical, biological, radiological, and nuclear (CBRN); smoke; flame field expedients; and reconnaissance in combat support. The objectives of *ACR* are to inform, motivate, increase knowledge, improve performance, and provide a forum for the exchange of ideas. This publication presents professional information, but the views expressed herein are those of the authors, not the Department of Defense or its elements. The content does not necessarily reflect the official U.S. Army position and does not change or supersede any information in other U.S. Army publications. The use of news items constitutes neither affirmation of their accuracy nor product endorsement.

Articles to be considered for publication are due 1 March and 1 September. Send submissions by e-mail to <leon.mdota@conus.army.mil>, or send an electronic copy in Microsoft Word on a compact disk and a double-spaced copy of the manuscript to Army Chemical Review, 464 MANSCEN Loop, Building 3201, Suite 2661, Fort Leonard Wood, MO 65473-8926. Due to the limited space per issue, we normally do not print articles that have been published elsewhere.

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PERSONAL SUBSCRIPTIONS are available through the U.S. Government Printing Office, P.O. Box 979050, St. Louis, MO 63197-9000.

UNIT SUBSCRIPTIONS are available by e-mailing <leon.mdota@conus.army.mil>. Please include the complete mailing address (including unit name, street address, and building number) and the number of copies per issue.

POSTMASTER: Send unit address changes to Army Chemical Review, 464 MANSCEN Loop, Building 3201, Suite 2661, Fort Leonard Wood, MO 65473-8926.

By Order of the Secretary of the Army:

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# ARMY

# CHEMICAL



# REVIEW

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Headquarters, Department of the Army

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- |    |                                                                                                                                                                                             |    |                                                                                                                 |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----------------------------------------------------------------------------------------------------------------|
| 2  | <b>Chief of Chemical</b>                                                                                                                                                                    | 25 | <b>349th Chemical Company Trains With New Equipment</b><br><i>by Sergeant Amanda Solitario</i>                  |
| 3  | <b>Regimental Command Sergeant Major</b>                                                                                                                                                    | 26 | <b>CBRN Training for Future Sustainment</b><br><i>by Sergeant First Class Dawn Lorraine Robinson</i>            |
| 4  | <b>USACBRNS Change of Command</b><br><i>by Ms. Emily Athens</i>                                                                                                                             | 27 | <b>48th Chemical Brigade Off-Site</b><br><i>by Major Andrew "Jack" Morgan</i>                                   |
| 5  | <b>Electromagnetic Threats to the National Power Grid</b><br><i>by Mr. Robert Pfeffer</i>                                                                                                   | 28 | <b>2010 Chemical Corps Regimental Week</b><br><i>by Ms. Kerstin Lopez</i>                                       |
| 10 | <b>East Versus West</b><br><i>by Major Dexter Davis</i>                                                                                                                                     | 29 | <b>71st Chemical Company ARC Receives Recertification</b><br><i>by Private First Class Marcus Fichtl</i>        |
| 13 | <b>CBRN Soldiers Welcome CROWS Training</b><br><i>by Ms. Kerstin Lopez</i>                                                                                                                  | 30 | <b>Doctrine Update</b>                                                                                          |
| 14 | <b>Rapid Acquisition of Commercial Chemical, Biological, and Radiological Detection and Analytical Equipment: Implications for Training and Education</b><br><i>by Mr. Peter G. Schulze</i> | 32 | <b>83d Chemical Battalion Honors Their Veterans</b><br><i>by Captain Heather McColl Morgan</i>                  |
| 17 | <b>90th Chemical Mortar Battalion Reunion</b><br><i>by Mr. Kip Lindberg</i>                                                                                                                 | 33 | <b>New Soldiers Are Put to the Test</b><br><i>by Sergeant First Class J.B. Jaso III</i>                         |
| 18 | <b>U.S. Responses to Egalitarian and Traditionalist Insurgencies</b><br><i>by Major Dexter Davis</i>                                                                                        | 34 | <b>Reserve Component Update</b>                                                                                 |
| 19 | <b>Maintenance Is the Key to Technical Escort Unit's Readiness</b><br><i>by Sergeant First Class J.B. Jaso III</i>                                                                          | 36 | <b>22d Chemical Battalion Technical Escort Team Competition</b><br><i>by Sergeant First Class J.B. Jaso III</i> |
| 20 | <b>Lethal Confines: Searching for Silent Killers in a Prison</b><br><i>by Captain Darrin Haas</i>                                                                                           | 37 | <b>2010 Honorees of the U.S. Army Chemical Corps</b><br><i>by Ms. Christy Lindberg</i>                          |
| 22 | <b>A Wonderful Marriage</b><br><i>by Captain Nicholas Bell</i>                                                                                                                              | 42 | <b>2011 CCRA Nominations for Hall of Fame and Distinguished Member of the Corps</b>                             |
| 23 | <b>Army CBRN Warrant Officer Program Takes Off</b><br><i>by Mr. R.J. Oriez</i>                                                                                                              | 42 | <b>86th Chemical Mortar Battalion Reunion</b>                                                                   |
| 24 | <b>Soldiers Help Advance Chemical Technology</b><br><i>by Sergeant Heather Denby</i>                                                                                                        | 43 | <b>Army Chemical Review Writer's Guide</b>                                                                      |
|    |                                                                                                                                                                                             | 44 | <b>Publication and Subscription Order Form</b>                                                                  |
|    |                                                                                                                                                                                             | 45 | <b>Soldier's Creed</b>                                                                                          |

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



**Colonel Vance P. Visser**

### *Greetings, Dragon Soldiers!*

During a 10 August 2010 ceremony held at Fort Leonard Wood, Missouri, I was honored to assume the title of 26th Chief of Chemical and Commandant of the U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS) from Brigadier General Leslie C. Smith, who served in that position for two years before moving on to become the commander of the 20th Support Command (Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives), Aberdeen Proving Ground, Maryland. During his visits to the field and to training locations at Fort Leonard Wood—the Home of the Chemical Regiment—Brigadier General Smith positively impacted thousands of Dragon Soldiers and their Families. Under his leadership, we realized an improvement in our Corps and its capabilities. When the occasion arises, please thank him and his wife Vanedra for their selfless contributions to our Corps.

I am thrilled to join the great USACBRNS team at the Maneuver Support Center of Excellence. The excellent leadership team did an outstanding job of managing the transition period between commandants. I wish to thank Colonel Bret Van Camp, the assistant commandant, for his superior service during the interim period and for everything he did to ensure a seamless transition. We are, indeed, blessed with other exceptional leaders as well—Dragon Soldiers like Command Sergeant Major Ted Lopez, Regimental Command Sergeant Major; Colonel Dave Wilcox, Commander, 3d Chemical Brigade; Command Sergeant Major Sheridan Richardson, Command Sergeant Major, 3d Chemical Brigade; and a host of others—all focused on taking care of our Dragon Soldiers and their Families.

After nine years of persistent conflict, our Army, the U.S. Army Training and Doctrine Command, and the USACBRNS are simultaneously undergoing a transition period as we continue combat operations. I intend to seize this opportunity to publish a Chemical Regiment Vision, Strategy, and Campaign Plan to synchronize our efforts in the chemical, biological, radiological, and nuclear (CBRN) mission arena. These products will be available by the end of the first quarter, fiscal year 2011 (31 December 2010). Similar USACBRNS products will be published by the end of the second quarter, fiscal year 2011 (31 March 2011). During the coming months, we will share our thoughts and seek to mine the full intellectual capacity of our CBRN leaders to ensure that we successfully guide our efforts into the future. I am anxious to hear from all of you.

*After nine years of persistent conflict, our Army, the U.S. Army Training and Doctrine Command, and the USACBRNS are simultaneously undergoing a transition period as we continue combat operations. I intend to seize this opportunity to publish a Chemical Regiment Vision, Strategy, and Campaign Plan to synchronize our efforts in the chemical, biological, radiological, and nuclear (CBRN) mission arena.*

I was deeply touched by two special ceremonies held at our Chemical Corps Memorial Grove at Fort Leonard Wood recently. Our newest Basic Officer Leader Course (Course 05-10) and Advanced Individual Training (Class 019-10) graduates were honored at the Regimental Induction Ceremony. At the conclusion of the ceremony, the Dragon Soldiers received Regimental crests and took their respective places in the CBRN force. Then, World War II veterans of the 90th Chemical Mortar Battalion were honored at a memorial ceremony (see page 17). At the conclusion of that ceremony, each veteran was awarded the Order of the Dragon. Both ceremonies connected attendees, young and old alike, in a unique way—together as Dragon Soldiers who give **all for the Corps**. I invite each of you to visit Fort Leonard Wood—to witness firsthand the exceptional things that are happening here at the Home of the Chemical Regiment. I look forward to serving with each of you in this new capacity.

*Elementis, Regamus, Proelium!*

## Regimental Command Sergeant Major

What a great year the Chemical Corps is having! We are so proud of our chemical, biological, radiological, and nuclear (CBRN) warriors who are performing worldwide missions in support of our Nation.

This year's Best CBRN Warrior Competition, held at Fort Leonard Wood, Missouri, was one of the greatest ever. Eighteen two-Soldier teams from across the world competed in one of the most technically skilled competitions ever executed by our Corps. These CBRN warriors stepped up and took the challenge of conducting self-contained breathing apparatus radiological, biological, and nuclear operations; sensitive-site exploitation; decontamination; detection; site surveys of clandestine labs; and toxic industrial chemical protection and detection equipment operations in a live environment at the Chemical Defense Training Facility. They also donned self-contained breathing apparatuses and performed timed hazmat operations, such as the containerization of storage tanker leaks, at the First Lieutenant Joseph Terry CBRN Responder Training Facility. In addition, Army physical fitness tests, physical endurance courses, task-oriented land navigation, and reflexive firing were conducted in conjunction with the technical phases of the competition. I am so proud of the competitors!

I am also very proud of the great folks who contributed to the conduct of the Best CBRN Warrior Competition. There are so many who executed the testing that I could not possibly name all of them, but between the U.S. Army CBRN School, 3d Chemical Brigade, and Soldiers and NCOs from the 48th CBRN Brigade, it was a great competition.

*What a great year the Chemical Corps is having! We are so proud of our chemical, biological, radiological, and nuclear (CBRN) warriors who are performing worldwide missions in support of our Nation.*

I recently had the opportunity and privilege of conducting battlefield circulation in Kuwait, where I spent time with soldiers from the Kuwaiti Army and National Guard. I spoke with their leaders and viewed equipment displays. The highlight of my trip was spending time with the mighty 62d CBRN Company and Army Central Command staff officers. The warriors of the 62d CBRN Company are making our Nation proud by carrying out their mission.

We conducted our 2d Annual International CBRN Defense Command Sergeants Major and Sergeants Major Conference in November 2010. The focus of the conference was to engage in professional dialogue with our joint, interagency, intergovernmental, and multinational partners and to share our experience and expertise in the Combating Weapons of Mass Destruction Enterprise. This was a great opportunity to build relationships with our strategic partners in the CBRN Defense community.

Our warriors are conducting so many missions in support of our Nation; I thank all of you. I'm very proud of our retirees, civilians, and families; without you, we could not make it even one day. You all sacrifice so much to support our great Nation. I'm proud to serve our great Corps. Be safe, and invest in the Corps.



**Command Sergeant Major  
Ted A. Lopez**

**Army  
Values**

**Loyalty • Duty • Respect  
Selfless Service • Honor  
Integrity • Personal Courage**



# USACBRNS Change of Command

*By Ms. Emily Athens*



The U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS), Fort Leonard Wood, Missouri, hailed Colonel Vance “Phil” Visser as he assumed command during a ceremony held on 10 August 2010.


Colonel Visser, who joins the community with his wife, Sherri, and their six children, previously served as the deputy director of the CJ3 (Future Plans and Operations), Multinational Forces–Iraq, and the deputy director of the J33 (Current Operations), U.S. Forces–Iraq. He replaced Brigadier General Leslie Smith, who departed on 23 June to take command of the 20th Support Command (Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives), Aberdeen Proving Ground, Maryland.

“I cannot think of a more qualified officer to follow in General Smith’s very large footsteps. As an expert in the CBRN [chemical, biological, radiological, and nuclear] field, Phil brings the right combination of knowledge, leadership, and experience to this very important position,” said the reviewing officer for the ceremony, Major General David Quantock, commander of the Maneuver Support Center of Excellence, Fort Leonard Wood.

With a diverse audience of key community leaders, distinguished guests, officers, noncommissioned officers, families, friends, and Soldiers of the USACBRNS, Colonel Visser accepted and passed the unit colors as a tangible symbol of his assumption of responsibility.

Major General Quantock welcomed Colonel Visser to the USACBRNS team, dubbing him as a warrior, professional, and 21st-century leader. “I am confident under the leadership of Phil and Colonel Brett Van Camp [assistant commandant of USACBRNS] that the CBRN School will continue to build on the important mission of the school and defend our Nation at home and abroad,” he said.

Upon accepting his new role as commander, Visser thanked his family, friends, and the many civilian and military dignitaries in attendance, while promising to uphold the esteemed reputation of the USACBRNS. “It is a special privilege to join the team here at Fort Leonard Wood and to serve with you as commandant of the USACBRNS. I look forward to partnering with our fellow commandants in service here as we train Soldiers, Sailors, Airmen, and Marines for their respective roles in today’s joint operational environment—more specifically, as we ready the joint forces to address the myriad of CBRN threats and challenges of the future,” Colonel Visser said. “I’m excited to be here and ready to go to work, so let’s get busy.”

The ceremony concluded with Visser honoring those Soldiers who are serving in harm’s way and the 399th Army Band playing the Chemical Corps and Army songs. 



**Colonel Visser speaks at the change-of-command ceremony.**

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



# Electromagnetic Threats to the National Power Grid

By Mr. Robert Pfeffer

**Editor's Note:** *This article reflects the findings and opinions of the author and is not meant to identify the position of the Department of Defense (DOD), Federal Energy Regulatory Commission (FERC), or electric power industry. First, the article describes a typical power grid. Next, it identifies the basic elements of the national power grid (NPG). Then, it identifies potential NPG vulnerabilities and discusses the importance of protection options for specific types of electromagnetic (EM) threats. The vulnerability of the NPG is also discussed from a political standpoint.*

The NPG is now so fundamental to U.S. infrastructure that, without it, the national economy would collapse and the health of the civilian population would be at risk. This scenario is possible, given that the NPG is vulnerable to several natural threats and an ever-growing number of man-made ones. Damage to key nodes in just a single region could take months—even years—to resolve. During that time, the damaged grid would be unable to provide the power necessary to process and refrigerate food and medicine; pump water, fuel, and sewage; assure the availability of public transportation and communication; maintain bank and stock market records and other critical databases; and provide light, heat, and air conditioning. In other words, society within the region would rapidly disintegrate. If the threat were multiregional, as it clearly could be, a national disaster could result.

But is the NPG too big to fail? This simple question does not have a simple answer. The Nation has been at war with unconventional enemies who have already attacked military and civilian personnel, businesses, and religious structures worldwide. They generally do not fight in uniform—preferring, instead, to blend in with the civilian population and operate as terrorists. Their first major attack against civilian property and people on U.S. soil occurred more than 15 years ago, with the bombing of the World Trade Center in New York on 26 February 1993. This attack was followed by others against U.S. targets worldwide—

- **4 October 1993:** U.S. troops gunned down in Somalia.
- **26 June 1996:** U.S. Airmen bombed in Saudi Arabia.
- **7 August 1998:** U.S. Embassies bombed in Africa.
- **12 October 2000:** U.S. Ship Cole bombed in a Yemeni harbor.
- **11 September 2001:** World Trade Center brought down by two hijacked U.S. aircraft in New York; Pentagon

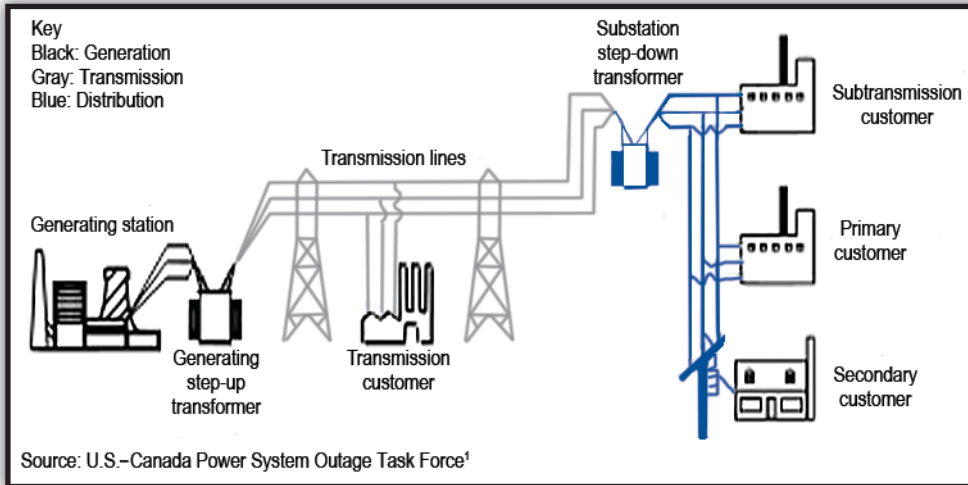
damaged by a hijacked U.S. aircraft in Washington, D.C.; and the deliberate crash of a hijacked U.S. aircraft in Pennsylvania.

Since 11 September 2001, terrorist leaders have continued to wage war against military and civilian targets. Therefore, it is reasonable to assume that fundamental elements of our infrastructure, such as the NPG, will remain high-priority targets.

Because the NPG is so massive and potentially vulnerable, it would not be practical to protect the entire NPG against every possible threat. A risk assessment identifying the most serious natural and man-made threats and the most vulnerable NPG elements represents a more reasonable alternative. Based on the risk assessment, protection options and their costs can be developed to protect only those portions of the NPG that support the minimum-essential services to military and civilian personnel until the damaged portion of the grid can be repaired and brought back on line.

## Power Grids

A power grid is an enormous power generation, transmission, and distribution system. It could consist of coal, hydroelectric, natural gas, and nuclear power plants that generate medium-voltage (1–100 kilovolts [kVs]) electric power and send it to nearby step-up transformer substations. High-voltage transmission lines then take the stepped-up, now high-voltage (greater than 230 kV) electric power and pass it long distances to step-down transmission substations or distribution centers with collocated substations. These substations reduce (or step down) the voltage and redistribute the electric power via aboveground or belowground, medium-voltage or low-voltage (less than 1 kV) lines to end users such as military facilities, homes, and businesses. A typical grid is illustrated in Figure 1, page 6.



**Figure 1. Typical Power Grid**

In its simplest form, a power grid does not store the power it generates; rather, all generated power is immediately distributed throughout the system. For example, electricity obtained from a wall socket is generated less than a millisecond before it is actually used. This means that power plants must constantly generate an enormous amount of power to accommodate grid losses and power usage spikes. These grid conversion and transmission losses could be substantial; for power generation plants that have high combustion and heat losses due to the use of older boilers and turbines, as little as one-third of the total power produced might eventually be delivered to the user.

### The NPG

The term “NPG” is commonly used to refer to the U.S. power grid—probably the world’s largest network. The NPG consists of about 10,000 independently owned and operated power generation plants, about 157,000 miles of high-voltage transmission lines, and hundreds of thousands of miles of lower-voltage lines running from distribution substations to individual users’ meters. Although this network is not owned by the U.S. government, it is a national monopoly that is regulated by the government. This means that the government has the authority to regulate electric power as a commodity and to ensure network reliability.

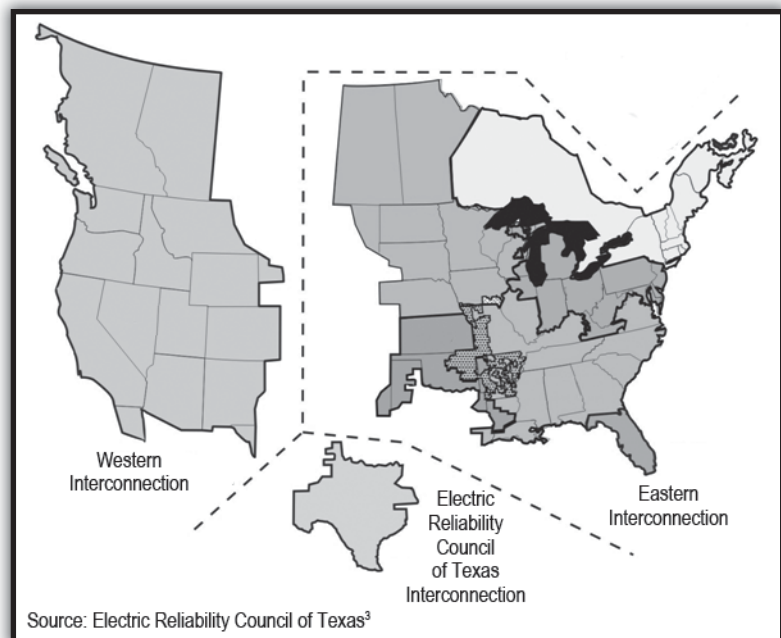
The NPG has expanded through the years to accommodate an increasing population with a growing appetite for electrical energy. Today, 40 percent of the energy consumed in the United States is used by the NPG to produce electricity. (In 1940, it was 10 percent; in 1970, it was 25 percent.)<sup>2</sup> The NPG now consists of a patchwork of old and new power plants, transmission lines, and distribution centers tied together to form the following separate, but interdependent, networks—Eastern Interconnection,

Western Interconnection, and Electric Reliability Council of Texas Interconnection (see Figure 2).

In addition to their internal connections, these three networks are also connected to the Canadian and Mexican grids, forming the North American Power Grid. The continued expansion of the grid to meet increasing power needs has resulted in the unintended consequence of slowly increasing grid vulnerability.

### NPG Vulnerability

NPG vulnerability has been studied and documented by numerous DOD and private sector organizations. The Armed Services Committee, U.S. House of Representatives, began studying NPG vulnerability to a specific type of nuclear-generated electromagnetic pulse (EMP) in 2001. Other studies focused on actual regional shutdowns due to several



**Figure 2. NPG Networks**



types of threats, including naturally occurring EMPs and personnel error. The conclusions are all the same: Upgrade the existing NPG, or start over.

Each of the three most recent regional NPG shutdowns was the result of a different threat—a naturally occurring EMP created by multiple lightning strikes on transformers (New York, 1977), a localized solar storm (Quebec, 1989), and an operational control problem (the “Lake Erie Loop,” Midwestern United States, Northeastern United States, and Southern Canada, 2003).

The first two shutdowns were of modest severity, and the loss of power was somewhat controlled. Nevertheless, portions of the grid were down for weeks and the financial cost reached hundreds of millions of dollars. A congressional study indicated that, during the 1-day, 1977 New York City blackout, the damage from looting and vandalism alone was more than \$300 million. The 1989 Quebec solar storm directly cost two large utility companies (Hydro-Quebec in Canada and Public Service Electric and Gas [PSE&G] in New Jersey) an estimated \$30 million. In addition, Hydro-Quebec also spent \$1.2 billion on the installation of protection devices to block future storm-induced currents. In one recent assessment, the Quebec solar energy field strength (about 5 volts/kilometer [V/km]) and duration (several minutes) compared favorably to the late-time field strength and duration characteristics of a nuclear-generated, high-altitude electromagnetic pulse (HEMP).<sup>4</sup> This means that HEMPs are also capable of knocking out portions of the NPG. If natural or nuclear-induced EMPs were to damage some of the key, custom-ordered, 500-kV, 1,200-megavolt-ampere transformers, it would likely take more than a year to replace them, since most of these hand-wound, extra-high-voltage transformers are currently made in China, India, Japan, and Europe.

During the 2003 Lake Erie Loop incident, blackouts occurred in many large cities, including New York City, just a little more than two hours after the first Ohio generating plant shut down and just one hour after controllers noticed a voltage dip and did nothing. “The . . . blackout, although set off by specific chance events, became the logical outcome of these trends. Controllers in Ohio, where the blackout started, were overextended, lacked vital data, and failed to act appropriately on outages that occurred more than an hour before the blackout. When energy shifted from one transmission line to another, overheating caused lines to sag into a tree. The snowballing cascade of shunted power that rippled across the Northeast in seconds would not have happened had the grid not been operating so near to its transmission capacity.”<sup>5</sup> This 2-day blackout left 50 million people without power, contributed to 11 deaths, and cost an estimated \$6 billion.

Some of the more obvious NPG sensitivities that could have widespread social and economic impacts are summarized in Table 1. Those recently receiving the most publicity are EM in nature. Collectively, EM threats have the largest impact on the grid. Most of the five EM sensitivities listed in the table can be resolved through hardware protection, but some (including various forms of cyber attack) are best addressed through software protection.

Consider the specific case of a severe solar storm. Unlike nuclear-generated, HEMP events, which are unpredictable, solar storms are cyclical. Solar activity occurs on an 11-year cycle. Many times during each cycle, the sun ejects a stream of charged particles known as a “coronal mass ejection.” Some coronal mass ejections are recaptured by the sun, while others stream into space. Those that travel toward the Earth in the enhanced solar wind are eventually captured by Earth’s magnetic field and are bent, resulting in the flow of

| Threats              | Generation Node Sensitivities | Transmission Node Sensitivities | Distribution Node Sensitivities    | Local/Regional NPG Threat Impact |
|----------------------|-------------------------------|---------------------------------|------------------------------------|----------------------------------|
| <b>EM Threats</b>    |                               |                                 |                                    |                                  |
| Lightning            | Transformers                  | Lines                           | Transformers                       | Local+                           |
| Solar flares         | Transformers                  | Low sensitivity                 | Transformers                       | Regional+                        |
| HEMP                 | Transformers, C4              | Low sensitivity                 | Transformers, C4                   | Regional+                        |
| IEMI                 | C4                            | No known sensitivity            | N/A                                | Local+                           |
| Cyber attack         | C4                            | None                            | C4                                 | Local+                           |
| <b>Other Threats</b> |                               |                                 |                                    |                                  |
| Operator error       | C4                            | None                            | C4                                 | Local+                           |
| Explosives           | Substations                   | Towers, lines                   | Power poles, civilians             | Local+                           |
| CBRN*                | Facilities, substations       | Towers, lines                   | Facilities, substations, civilians | Local+                           |

Legend:

C4: command, control, communications, and computers

\* In this table, CBRN does not include HEMP.

**Table 1. Potential NPG Sensitivities to Various Threats**

charged particles downward toward the lower ionosphere, where they eventually produce a horizontal current flow. As these particles travel downward, they undergo various ionization processes that result in a visible glow. This aura, known as the Northern Lights, can be seen in the northern hemisphere. The phenomenon is similar to the glow that is visible in the upper atmosphere due to the flow of charged particles from a high-altitude nuclear detonation.

The current solar cycle (Number 24, as designated by the sunspot number) is predicted to peak around 2013. While it is impossible to forecast how serious this solar cycle might become, it is reasonable to assume that it or a future solar cycle will produce a storm that could rival or exceed the 1–2 September 1859 storm, which is sometimes referred to as the “Solar Superstorm” or “Carrington Event.” This killer storm was the strongest ever recorded; it has been estimated to be several times stronger than the 1989 Quebec solar storm. And although the 1859 storm caused less damage to the rugged, primitive electrical systems than the 1989 storm caused to electronics and electrical systems in Quebec, it resulted in fires and telegraph system failures throughout North America and Europe. In addition, auroras that were generated by the 1859 storm were visible around the world. The glow in the sky over the Rocky Mountains was so bright that it woke gold miners.

Another major threat to the existing NPG is a cyber attack or other form of information attack. Unlike natural and nuclear-generated EMPs—which cause detectable, catastrophic damage or unacceptable upset to the NPG—an information attack can go undetected for some time. And the number of attacks continues to increase: The Department of Homeland Security documented that cyber attacks against the United States tripled between 2006 and 2008 (Figure 3). Furthermore, some national security officials believe that one or more nations deliberately infiltrated the NPG on 8 April 2009, leaving behind software programs that could be used to disrupt the system.

In the interest of minimizing protection costs, cyber attacks should be treated as other EM threats. To do this, the EM environmental effects and electronic warfare protection communities must work together to develop a unified protection scheme for each new system design. This protection must then be maintained throughout the lifetime of the NPG.

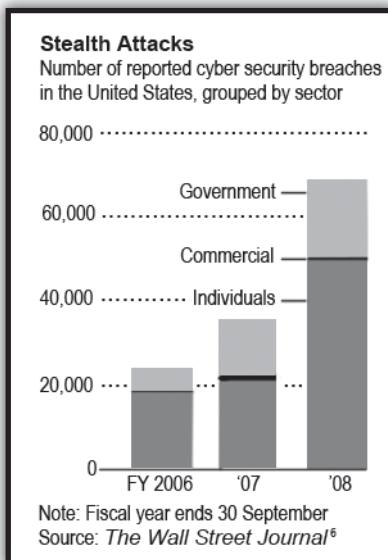
### Political Assessment of NPG Vulnerability

While the vulnerability of the NPG to various threats has long been the subject of technical assessments, it has only recently become a national political issue. EM threats are of particular concern to Congress.

Congress now has the political will to address the NPG vulnerability issue in separate House and Senate bills that explicitly identify the most serious EM threats as cyber attacks, naturally occurring EMPs caused by solar storms and lightning, nonnuclear EMPs (also known as intentional electromagnetic interference [IEMI]), and nuclear EMPs. Congressional members no longer believe that a major EM event *might* materialize; they now agree that it is only a matter of time until such an event brings down the grid. And political support for NPG protection is growing. Bills were pushed forward in the Senate and the House in late 2009. Representative Yvette D. Clarke (Democrat–New York), Chairwoman, Subcommittee on Emerging Threats, Cyber Security, Science and Technology, and Representative Roscoe G. Bartlett (Republican–Maryland), member of the Armed Services Committee, supported House Resolution (H.R.) 2195. Senator Joseph Lieberman (Independent–Connecticut) supported Senate (S.) 946. Both bills propose “To amend the Federal Power Act to provide additional authorities to adequately protect the critical electric infrastructure against cyber attack and for other purposes.”<sup>7</sup> Other EM threats emphasized in the bills include EMP caused by solar storms and nuclear detonations.

The House Energy and Commerce Committee’s Subcommittee on Energy and Environment held a legislative hearing on H.R. 2195 and another bill (H.R. 2165), which were intended to protect the NPG from cyber security threats. This hearing was followed by a classified briefing to members of the Energy and Commerce Committee. Since then, Energy and Commerce Committee staff members have developed a bipartisan discussion draft to amend the Federal Power Act to “. . . give the FERC new authorities to protect the electric grid against cyber security and other threats, as well as from geomagnetic storms created by solar flares.”<sup>8</sup> This bill (H.R. 5026, which passed the Energy and Commerce Committee by a vote of 47–0 on 9 March 2010) is sometimes referred to as the “Grid Reliability and Infrastructure Defense Act” or the “GRID Act.”


Should Congress approve a single bill, the question of how robust the entire NPG—or at least the most critical parts of it—should be will need to be addressed. Several ideas have been proposed, including the redesign of the NPG as a commercial, digital smart grid that is capable of energy storage and regulated by the FERC; however, the cost would be significant. Until a permanent solution is funded, DOD must consider different options to ensure the continued ability to complete critical missions. One of these options involves the isolation of military posts, bases, and facilities from the civilian NPG. This isolation could be achieved with the development and deployment of



**Figure 3. A summary of documented cyber attacks on U.S. assets.**

small (10–25 megawatt [MW] electric), modular nuclear power reactors (NPRs) at each site. This is not a new idea; at one time (about 50 years ago), the U.S. Army installed fixed NPRs to provide electrical power to Fort Belvoir, Virginia, and Fort Greely, Alaska. In addition, mobile NPRs were temporarily used at Sundance, Wyoming; Camp Century in Greenland; and McMurdo Sound in Antarctica. A 10-MW (electric) NPR mounted on a floating barge also provided electricity to the Panama Canal Zone for 8 years (1968–1976).<sup>9</sup> The proper integration of small, secure NPRs into a comprehensive military and civilian EM hardware and software threat protection scheme could protect Army sites from cyber attack and other forms of EM threats.

### Conclusion

The technical community and congressional policy makers recognize the vulnerability of the NPG to various threats. Potential weak points have been identified through technical assessments, and protection options have been developed for some of the more serious EM threats. Congressional bills identify cyber attack, severe solar storms, IEMI, and nuclear EMPs as significant EM threats. These threats can only be addressed by integrating hardware and software protection into an overall, end-to-end system design. The integrated protection must then be maintained throughout the lifetime of the NPG. Although the least expensive approach to hardware and software protection involves its inclusion in the original system design, the existing NPG requires a retrofit, which involves the support and participation of many private businesses. Consequently, there must be one civilian organization—possibly the Office of Electric Reliability, FERC—that is responsible for overseeing such a massive protection scheme. 

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<sup>4</sup>William Radasky, John Kappenman, and Robert Pfeffer, “Nuclear and Space Weather Effects on the Electric Power Infrastructure,” *NBC Report*, Fall/Winter 2001, pp. 37–42.

<sup>5</sup>Eric J. Lerner, “What’s Wrong With the Electric Grid?” *The Industrial Physicist*, <<http://www.aip.org/tip/INPHFA/vol-9/iss-5/p8.html>>, accessed on 24 August 2010.

<sup>6</sup>Siobhan Gorman, “Electricity Grid in U.S. Penetrated by Spies,” *The Wall Street Journal*, 8 April 2009, <<http://online.wsj.com/article/SB123914805204099085.html>>, accessed on 24 August 2010.

<sup>7</sup>H.R. 2195: *To amend the Federal Power Act to provide additional authorities to adequately protect the critical electric infrastructure against cyber attack, and for other purposes*, introduced 30 April 2009, and S. 946: *Critical Electric Infrastructure Protection Act of 2009*, introduced 30 April 2009.

<sup>8</sup>“Grid Security Legislation: March 9, 2010 Bipartisan Discussion Draft Summary,” <[http://empcouncil.org/images/upload/media/Grid%20Security%20Discussion%20Draft%20Summary%20\(3-9-10\)\\_1.pdf](http://empcouncil.org/images/upload/media/Grid%20Security%20Discussion%20Draft%20Summary%20(3-9-10)_1.pdf)>, accessed on 24 August 2010.

<sup>9</sup>Robert A. Pfeffer and William A. Macon Jr., “Nuclear Power: An Option for the Army’s Future,” *Army Logistician*, September–October 2001, pp. 4–8.

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# East *versus* West

By Major Dexter Davis

*The events of 11 September 2001 set the stage for a U.S.-led military mission to force regime changes in Afghanistan and, later, in Iraq. In what was initially referred to as “the Global War on Terror,” U.S. forces defeated the Taliban and some al-Qaida in Afghanistan. This was considered a “victory;” and in 2003, war was waged against Iraq. The United States was successful in its ground and air campaign against the Western-style Iraqi military at the onset of the war; however, from 2004 to 2007, insurgent<sup>1</sup> attacks inundated the newly established interim government and smaller U.S. forces. This growth in the strength of insurgents created hostile relations between the Sunni and Shi’a (the two major Islamic denominations), and the potential for civil war began to brew. To combat this threat, U.S. forces employed the military principle and strategies of Antoine-Henri Jomini, which proved to be tactically effective against insurgency groups using Mao Tse-tung’s theory and principles.*

## **Mao Tse-tung’s Theory of Revolutionary Warfare**

Mao Tse-tung’s theory of revolutionary warfare includes the following principles of operation:

- Attack dispersed, isolated enemy forces first. Attack concentrated, strong enemy forces later.
- Take small and medium cities and extensive rural areas first. Take big cities later.
- Make wiping out the enemy’s effective strength our main objective. Do not make holding or seizing a city or place our main objective. Holding or seizing a city or place is the outcome of wiping out the enemy’s effective strength, and often a city or place can be held or seized for good only after it has changed hands a number of times.
- In every battle, concentrate an absolutely superior force (two, three, four, and sometimes even five or six times the enemy’s strength), encircle the enemy forces completely, strive to wipe them out thoroughly, and do not let any escape from the net. In special circumstances, deal crushing blows to the enemy; that is, concentrate all our strength to make a frontal attack and an attack on one or both of his flanks, with the aim of wiping out one part and routing another so that our army can swiftly move its troops to smash other enemy forces. Strive to avoid battles of attrition in which we lose more than we gain—or only break even. In this way, although inferior as a whole (in terms of numbers), we shall be superior in every part and every specific campaign; and this ensures victory in the campaign. As time goes on, we shall become superior as a whole and eventually wipe out the entire enemy.
- Fight no battle unprepared. Fight no battle you are not sure of winning. Make every effort to be well-prepared for each battle. Make every effort to ensure victory in the given set of conditions, as between the enemy and ourselves.
- Give full play to our style of fighting: courage in battle, no fear of sacrifice, no fear of fatigue, and continuous fighting (that is, fighting successive battles in a short time without rest).

Mao Tse-tung was the communist leader of the People’s Republic of China from the time the republic was established in 1949 until his death in 1976. He was also a Chinese revolutionary, military mastermind, political theorist, and philosopher. In his works, Mao Tse-tung states that “guerilla troops should have a precise conception of the political goal of the struggle and the political organization to be used in attaining that goal. This means that both organization and discipline of guerrilla troops must be at a high level so that they can carry out the political activities that are the life of both the guerilla armies and revolutionary warfare.”<sup>2</sup> According to Mao Tse-tung, the object of war is “to preserve oneself and destroy the enemy.”<sup>3</sup> However, destruction of the enemy (attack) is the primary goal, while self-preservation (defense) is secondary. Only by destroying the enemy in large numbers can one effectively preserve oneself.<sup>4</sup>



- Strive to wipe out the enemy when he is on the move. At the same time, pay attention to the tactics of positional attack and capture enemy-fortified points and cities.
- Resolutely seize all enemy-fortified points and cities that are weakly defended. At opportune moments, seize all enemy-fortified points and cities defended with moderate strength, provided circumstances permit. For strongly defended, enemy-fortified points and cities, wait until conditions are ripe and then take them.
- Replenish our strength with all of the arms and most of the personnel captured from the enemy. Our army's main sources of manpower and materiel are at the front.
- Make good use of the intervals between campaigns to rest, train, and consolidate our troops. Periods of rest, training, and consolidation should not, in general, be very long. And the enemy should, so far as possible, be permitted no breathing space.<sup>5</sup>

These principles were employed by the People's Liberation Army<sup>6</sup> to defeat Chiang Kai-shek in 1949.<sup>7</sup> And, according to Mao Tse-tung, "They are the result of the tempering of the People's Liberation Army in long years of fighting against domestic and foreign enemies. . . . Our strategy and tactics are based on a people's war; no army opposed to the people can use our strategy and tactics."<sup>8</sup>

### **Iraqi Insurgents' Implementation of Mao Tse-tung's Theory**

After the Iraqi army was defeated, it was dismantled by the newly formed provisional government. All former government employees were also released from their jobs. This angered the Iraqis and prompted them to use guerrilla tactics derived from Mao Tse-tung's theory of revolutionary warfare to try to defeat the provisional government and disrupt U.S. military operations from late 2004 to 2007.

Insurgents used improvised explosive devices (IEDs) to ambush U.S. supply points, convoys, and checkpoints. Then, they used the media to show that the newly formed government and U.S. military were unable to provide for the safety and basic needs of Iraqis. Insurgent forces formed "shadow governments" to enforce the Islamic rule of law and provide jobs and basic needs. They stole water and electricity and provided them to the local populace. They paid young men and women to spy on government and U.S. forces and to use IEDs to disrupt their operations. The insurgents became so strong that internal conflicts began to arise. This led to a fight for control of the country, which in turn, led to another U.S. tactical operation in 2007.

### **Jomini's Principle and Strategies**

Antoine-Henri Jomini's Fundamental Principle of War consists of the following maxims:

- To throw, by strategic movements, the mass of an army, successively, upon the decisive points of a theater of war and also upon the communications of the enemy, as much as possible, without compromising one's own.
- To maneuver to engage fractions of the hostile army with the bulk of one's forces.
- To throw the mass of the forces upon the decisive point or upon that portion of the hostile line which is the first importance to overthrow.
- To so arrange that these masses shall not only be thrown upon the decisive point, but that they shall engage at the proper times and with energy.<sup>10</sup>



The greatest military theorist of the 19th century was born from the success of the French Revolution. Antoine-Henri Jomini, a Swiss citizen, joined the French army and observed Napoleon Bonaparte's army transformation as well as his ability to make decisions on the battlefield. Jomini's observations led him to develop his Fundamental Principle of War.<sup>9</sup>

Because he realized that not all military leaders had the genius of Napoleon, Jomini used his own observations of Napoleon to develop strategies that government officials could use to select military leaders. Jomini believed that the most essential qualities of a military leader would always be "a high moral courage capable of great resolutions" and "a physical courage which takes no account of danger."<sup>11</sup> Successful leaders must also understand the Fundamental Principle of War. Commanders should agree with the head of the state upon the character of the war. They must carefully study the theater of war and select the most suitable base of operations, taking into consideration the frontiers of the state and those of its allies.<sup>12</sup>

Once commanders have been chosen, the Fundamental Principle of War should be applied using Grand Tactics,<sup>13</sup> including—

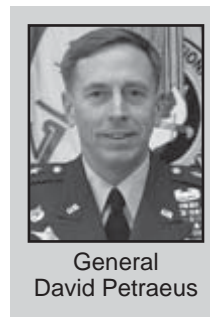
- The choice of positions and defensive lines of battle.
- The offensive in a defensive battle.

- The different orders of battle or the grand maneuvers that are proper for the attack of the enemy's line.
- The collision of two armies on the march or unexpected battles.
- Surprises of armies in the open field.
- The arrangements for leading troops into battle.
- The attack of positions and entrenched camps.<sup>14</sup>

Jomini believed that commanders who followed the Fundamental Principle of War would be victorious. Even today, Jomini's principle lies at the heart of U.S. Army doctrinal operations.

### General Petraeus' Implementation of Jomini's Principle

In 2006, General David Petraeus (who, as a lieutenant general, was the commander of the U.S. Army Combined Arms Center, Fort Leavenworth, Kansas) and General James N. Mattis (who, as a lieutenant general, was the commanding general of the Marine Corps Combat Development Command, Quantico, Virginia) incorporated Jomini's Fundamental Principle of War into field manuals (FMs) that prescribe how tactical units are to defeat an insurgency—specifically, the one that was raging in Iraq. In FM 3-24, they state that it is time to institutionalize Army and Marine Corps knowledge of this long-standing form of conflict. The purpose of the publication is to help prepare Army and Marine Corps leaders to conduct counterinsurgency operations anywhere in the world. It provides a foundation for study before deployment and serves as the basis for operations in theater. Perhaps more importantly, it outlines essential requirements for success against today's adaptive foes and presents techniques for generating and incorporating lessons learned during operations. The use of the prescribed techniques is meant to ensure that U.S. forces remain more agile and adaptive than their irregular enemies. These traits are essential for any military confronting an enemy who does not fight using conventional tactics and who adapts while waging irregular warfare. Unfortunately, it is particularly challenging for a military to adopt the techniques when they are engaged in conflict.



General David Petraeus

Based on Jomini's principle and strategies, Petraeus was considered the best-educated and best-trained U.S. general in 2007; therefore, he was selected as the commander of the Multinational Forces–Iraq. Following his confirmation, he put Jomini's principle—along with his own principles—to work. He surmised that political support and additional troops were necessary to separate the Iraqi people from insurgent forces.

### Clash of Mao Tse-tung's Theory and Jomini's Principle

President George W. Bush ordered additional U.S. Soldiers and Marines to be sent to Iraq to wage a counterattack against the insurgents who were bidding for control of the government. Most additional troops were sent to large urban areas, since General Petraeus believed that these were the decisive points at which to defeat the insurgency. The presence of the additional troops allowed the newly elected government the opportunity to gain citizen support. U.S. forces began assisting with the hiring of local citizens, which increased the size of the Iraqi army and police forces. The tactical principles of mass and surprise, which were focused on decisive and objective points of insurgent strongholds and middle-class neighborhoods, proved to be successful. The surge of U.S. troops also allowed Iraqi security forces to provide more equipment and increase training, resulting in a more self-reliant force that was capable of conducting independent operations against insurgent forces. The populace began to lose faith in the insurgents and started working with local governments and U.S. forces to rid the country of insurgents and shadow governments. By the end of 2009, the Iraqi government was able to provide security and basic needs for its citizens.

### Conclusion

The success of the Jomini approach over that of Mao Tse-tung can be attributed to the people of Iraq. Originally, the small U.S. force was not able to assemble a mass or to surprise insurgent forces; therefore, they were unable to gain the support of the local populace. Following the increase in size of the U.S. and Iraqi forces, the forces carried out more decisive actions against the insurgents, separating the insurgents from the citizens and allowing the country to return to a sense of normalcy. The decisive point against the insurgency came when, with minimal U.S. assistance, Iraqi security forces were able to defeat insurgent forces in urban areas in 2008. This resulted in government legitimacy in the public eye. ●●●

#### Endnotes:

<sup>1</sup>An "insurgent" refers to "a person who revolts against civil authority or an established government; especially: a rebel not recognized as a belligerent." *Merriam-Webster's Collegiate Dictionary*, Eleventh Edition, Merriam-Webster, Incorporated, Springfield, Massachusetts, 2003.

<sup>2</sup>Mao Tse-tung, *On Guerrilla Warfare*, 1937.

<sup>3</sup>Mao Tse-tung, "Problems of Strategy in Guerrilla War Against Japan," from *Selected Works of Mao Tse-tung*, Vol. II, Foreign Language Press, Peking, 1967, <<http://www.marx2mao.com/Mao/PSGW38.html#c2>>, accessed on 29 July 2010.

<sup>4</sup>“People’s War,” *Quotations From Mao Tse Tung*,” Peking Foreign Language Press, 1966, <<http://www.marxists.org/reference/archive/mao/works/red-book/ch08.htm>>, accessed on 29 July 2010.

<sup>5</sup>Ibid.

<sup>6</sup>The People’s Liberation Army, which was established as the military arm of the Communist Party of China in 1927, is the unified military organization of the People’s Republic of China.

<sup>7</sup>Chiang Kai-shek was the leader of the Nationalist Party in China, 1928–1948, and in 1948, became the President of the Republic of China.

<sup>8</sup>“People’s War,” 1966.

<sup>9</sup>*Napoleon.org*, “History of the Two Empires,” Foundation Napoleon, 2008, <[http://www.napoleon.org/en/reading\\_room/biographies/files/jomini.asp](http://www.napoleon.org/en/reading_room/biographies/files/jomini.asp)>, accessed on 19 August 2010.

<sup>10</sup>Baron Henri de Jomini, Captain C.H. Mendell, and Lieutenant W.P. Craighill, *The Art of War*, 1862.

<sup>11</sup>Ibid.

<sup>12</sup>Ibid.

<sup>13</sup>Ibid. “Grand Tactics” refers to the art of posting troops on the battlefield according to the accidents of the ground, bringing them into action, and fighting on the ground—in contradistinction to planning upon a map.

<sup>14</sup>Ibid.

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FM 3-24, *Counterinsurgency*, 15 December 2006.

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## CBRN Soldiers Welcome CROWS Training


*By Ms. Kerstin Lopez*

Soldiers of the M93A1 Fox Chemical, Biological, Radiological, and Nuclear (CBRN) System reconnaissance team, 84th Chemical Battalion, were the first Fort Leonard Wood, Missouri, Soldiers to receive the specialized XM153 Common, Remotely Operated Weapons Station (CROWS) training, which was conducted 9–13 August 2010.

The CROWS is designed to improve Soldier safety in combat situations by replacing the exposed Soldier at the turret of the Fox with a remote-controlled weapon system. According to Mr. Jack Linthicum, CROWS instructor, four types of weapons can be mounted to the outside of the station—the MK19 grenade launcher, M240B machine gun, M249 squad automatic weapon, and M2 machine gun. Soldiers use a control grip and monitor to engage targets while remaining within the safety of the vehicle.

The CROWS became available in 2008, and training for new instructors and operators has been conducted ever since. According to Mr. Linthicum, most Fox vehicles are now equipped with the CROWS; so it was only a matter of time before CBRN Soldiers at Fort Leonard Wood were afforded the opportunity to train with the system.

CROWS training consists of 60 hours of instruction, concluding with hands-on range time. Students become familiar with the system and its capabilities and fire 100 rounds to gain confidence and achieve operator certification.

According to Linthicum, the CROWS is extremely important because it keeps gunners under armor so that they are not exposed to sniper fire or elements of an improvised explosive device—in short, it keeps them safer. 

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

# Rapid Acquisition of Commercial Chemical, Biological, and Radiological Detection and Analytical Equipment: Implications for Training and Education

By Mr. Peter G. Schulze

*The movement toward the “rapid” acquisition of commercial, off-the-shelf (COTS) equipment for detecting chemical, biological, and radiological compounds has created new challenges for joint acquisition and the development of appropriate training solutions for Soldiers, Sailors, Airmen, and Marines. From a purely acquisition program perspective, acquiring readily available, independently tested COTS equipment to meet defined capability gaps or urgent operational needs is a fundamentally sound strategy. However, the corresponding fielding and integration of approved COTS chemical, biological, and radiological detection systems with evolving Department of Defense (DOD) chemical, biological, radiological, and nuclear (CBRN) organizations and personnel can have significant training and education implications and can negatively impact the selected materiel solution.*

## Defining the Problem

Training and education can make or break the implementation of a technology and determine if, and when, the investment in a materiel solution will pay dividends in expected capabilities. Unfortunately, there is a growing notion that simply providing initial training in the operation of individual detection equipment—to any target audience and in any form—is sufficient to realize its expected capability. The processes that acquisition and training specialists use to ascertain the need for training and determine its effectiveness are often not applied—or, if applied, are nonprescriptive, are time-consuming, and lack empirical rigor. In addition, the processes used by DOD to determine, develop, institutionalize, validate, and fund training requirements and their associated supporting products were established and promulgated more than 25 years ago. These processes have not kept pace with the urgent needs of the joint warfighter or the evolving Joint Capabilities Integration and Development System (JCIDS). As a result, the rapid procurement, training, fielding, and maintenance of CBRN COTS equipment often results in a mismatch between the expected operational capability of the materiel solution and the ability of individuals or units to achieve and sustain that capability.

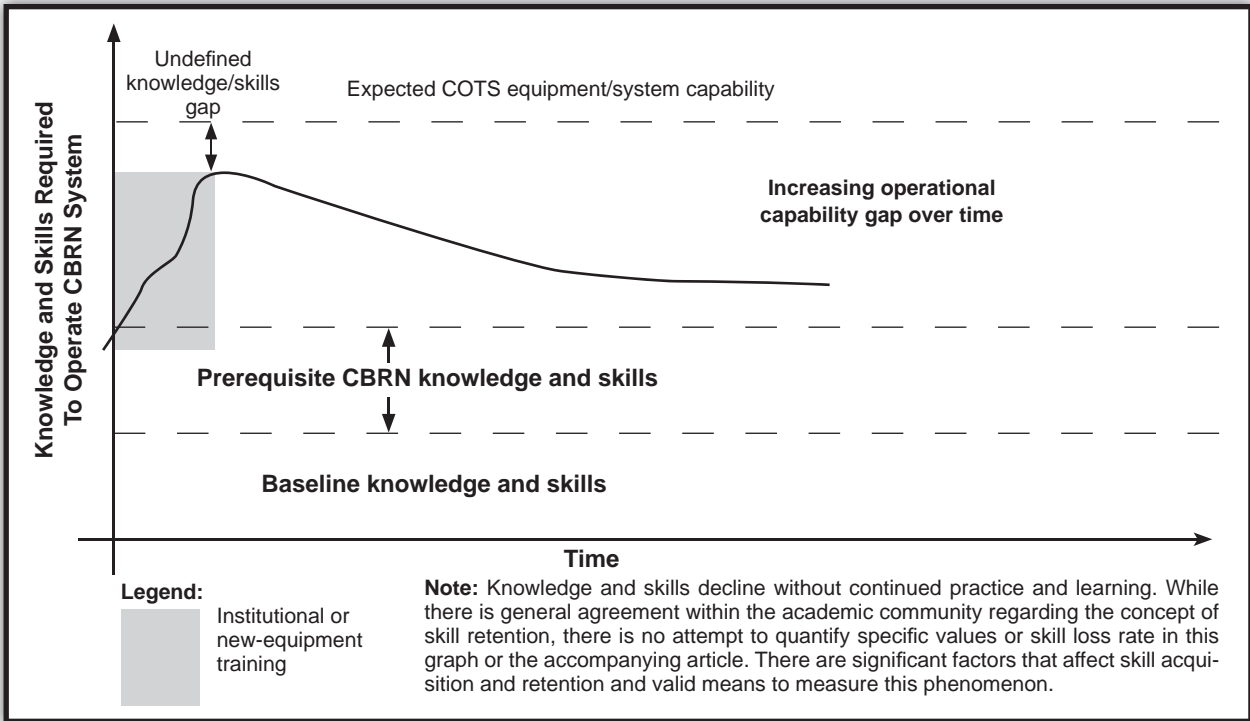
There are many human and organizational performance issues associated with the fielding of CBRN systems and equipment and the subsequent achievement of a full spectrum CBRN capability. Among these are loosely defined missions; insufficient doctrine or guidance; the diversity of CBRN organizations; conflicting priorities; poorly maintained equipment; ineffective training; and a lack of management controls, qualified personnel, funding, and equipment. Individually, each of these performance issues can potentially impact a unit’s CBRN capability and associated readiness. Together, they can complicate and frustrate traditional, analytical

efforts to ascertain and document sustained operational capabilities.

The rapid procurement of COTS systems and equipment taxes institutional processes and poses challenges in developing appropriate performance strategies and obtaining the resources needed to sustain capabilities. The fielding of CBRN COTS systems and equipment without accompanying performance strategies can result in undefined capability gaps and sets of improvised solutions that do not solve the underlying problems. While there are many potential performance issues associated with the rapid procurement of CBRN COTS systems, one of the most misunderstood problems regarding Army institutional and new-equipment training is that of skills acquisition and retention. The CBRN skill set is one of the most difficult and diverse to teach and retain, primarily because most personnel infrequently use the knowledge and skills needed to respond to *actual* CBRN events. Nevertheless, CBRN training and education are constrained to standardized training development and execution process stovepipes without the benefits that are typically associated with continued practice and validated lessons learned.

Figure 1 illustrates the manner in which skill acquisition and retention can potentially complicate the spectrum of performance issues associated with the rapid and continuing procurement of CBRN COTS systems and equipment within the training and education continuum.<sup>1</sup> The theoretical knowledge/skills gap at the conclusion of institutional or new-equipment training should be a reflection of an *individual’s* ability to employ newly acquired CBRN systems or equipment. However, because robust job task analyses and empirically based posttraining and fielding evaluations of institutional training are rarely conducted, that





**Figure 1. Skill Acquisition and Retention as a Function of Time**

gap typically remains undefined. And because skill retention depends on structured practice, the lack of unit management controls, personnel, experience, self-development, equipment, training, and maintenance can potentially further decrease *unit* operational capability, resulting in an increasing—but still undefined—operational gap. Defining this potential gap is much more complicated than a cursory glance suggests. The unique personnel composition and mix of DOD CBRN organizations, complex array of CBRN systems and equipment, competing operational demands, and evolving CBRN threats contribute to the complexity. While many factors influence an organization’s ability to maximize the capability of a new equipment set or system, training and education have the most potential to *maximize* or *limit* operational capability.

### Developing the Solution

The DOD has published a blueprint for the institutionalization of ongoing reform and the reshaping of America’s military to counter weapons of mass destruction and prevent their proliferation.<sup>2</sup> This broad review serves as a catalyst for an enterprising approach to the development of a measurable joint CBRN training and education strategy that—

- Recognizes the need to anticipate evolving threats and associated technological countermeasures.
- Promotes Service integration and efficiency, while accounting for differences, limitations, and Title 10 responsibilities.<sup>3</sup>
- Serves as a platform and facilitation instrument for the continuous, rapid assessment of CBRN readiness.

The strategy must provide the foundation for capabilities-based, Service CBRN training and education programs designed to be ready and responsive to technical innovations and evolving threats. The programs must challenge traditional Service training and education stovepipes, redundant processes, and resourcing models.<sup>4</sup>

The success of future Service CBRN training and education programs depends on their ability to complement the evolving JCIDS acquisition process, while concurrently advancing joint and interagency cooperation; the procedural use and operational employment of advanced detection, analytical, and information systems and equipment; techniques for operating in hazardous environments; and the culture of continuous improvements as a specialist and leader. In addition, these programs should emphasize the development and sustainment of the individual and the unit based on operational expectations in regard to necessary tangible skills and desired intangible attributes. The systematic application of human performance technology (HPT), aligned with Service organizational and capability goals, has the best potential to provide the analytical foundation necessary for rapid training analysis, appropriate implementation and, ultimately, improved operational capabilities for the Services.

Traditional doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) analytical processes, which are typically nonprescriptive, are often applied as a gap analysis tool, generating perceived requirements for each DOTMLPF component without a causal or comprehensive set of

performance indicators and potential solution sets for the entire system. The visibility, complexity, evolving nature, and cost of CBRN acquisition programs require that potential performance issues be rapidly and accurately assessed to implement a targeted set of solutions. The use of a structured performance analysis model is important in matching potential performance issues to their appropriate solutions. HPT (which has been used successfully throughout industries, the U.S. Navy, and the U.S. Coast Guard) can be applied to DOTMLPF analytical processes to pair performance gaps with appropriate solutions and to provide the CBRN community with measurable improvements in CBRN organizational performance.

HPT is an engineering approach that involves the systematic application of a method or series of methods to identify performance gaps. Performance parameters, issues, and gaps are considered to be components of systems that can potentially impact other systems. Because the focus of HPT is on human and organizational outcomes, rather than on a specific bureaucratic process, all available means and methods of obtaining results can be explored. Whenever possible, validated best practices are applied and empirical evidence is used to achieve and document the desired performance.

As a result of DOD Office of the Inspector General Audit Report Number D-2001-043<sup>5</sup> and a subsequent Deputy Secretary of Defense directive to develop training standards and “institutionalize” training for the Weapons of Mass Destruction–Civil Support Team Program, the U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS) somewhat successfully applied HPT in support of the development and validation of weapons of mass destruction–civil support team training and education. The performance analysis was guided by the application of various versions of Thomas Gilbert’s Behavior Engineering

Model—a model that is commonly used by the HPT professional community.<sup>6</sup> USACBRNS staff modified the original Gilbert model to support military-specific doctrine, organization, training, materiel, and personnel performance issues. The USACBRNS model has continued to mature and is now derived, in part, from Dr. Anthony Marker’s Synchronized Analysis Model.<sup>7</sup> In this variation of the Behavior Engineering Model, performance indicators are stratified into various levels, allowing the analyst to pinpoint potential barriers to full performance at individual, job, organizational, and external levels. Figure 2 shows a typical performance outcome (or expectation) that USACBRNS staff has modeled to organize volumes of data and determine cause-and-effect relationships. This data organization is applied to the analysis process to validate actual or potential performance gaps that ultimately support the development, modification, or elimination of training and education solutions.

### Summary


Acquiring readily available and independently tested CBRN COTS equipment to meet defined capability gaps can be a fundamentally sound strategy. However, the Services and the Joint Program Executive Office need to reconsider how the acquisition of COTS impacts the ability of the Services to respond to existing and emerging CBRN threats and to remain ready to support national strategies. The operational capability and associated readiness of a CBRN unit cannot be defined by fielded CBRN system and equipment capabilities. These parameters must be measured by the organization’s overall ability to continuously employ materiel and nonmateriel solutions to meet clearly defined missions and expectations. CBRN capabilities must be analyzed using a comprehensive, open system that considers the technical, operational, fiscal, and social parameters required to achieve the desired capability of the materiel solution.

|                                    |               | Critical Performance Indicators                                                                                                                                                                                                                                                                                                               |                                                                                             |                                                                                |                |
|------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|----------------|
|                                    |               | Training/Education<br>(doctrine, data, feedback,<br>knowledge, skills)                                                                                                                                                                                                                                                                        | Materiel/Facilities<br>(support, tools, capacity,<br>equipment, funding,<br>transportation) | Personnel<br>(prerequisites,<br>consequences, rewards,<br>incentives, motives) |                |
| Environment                        | External      |                                                                                                                                                                                                                                                                                                                                               |                                                                                             |                                                                                | Outside<br>DOD |
|                                    | Organizations |                                                                                                                                                                                                                                                                                                                                               |                                                                                             |                                                                                |                |
|                                    | Team          |                                                                                                                                                                                                                                                                                                                                               |                                                                                             |                                                                                | Within<br>DOD  |
| Individual                         | Job           |                                                                                                                                                                                                                                                                                                                                               |                                                                                             |                                                                                |                |
| Performance Outcome (Expectations) |               | As a member of a domestic survey team, identify trace residue and vapors emitted from explosives, illicit drugs, chemical agents, and toxic industrial chemicals (ion mobility spectrometry). End-of-training (EOT) standard: 80 percent accuracy with 15 samples/9 compounds randomly selected (92 percent accuracy at EOT plus 6–9 months). |                                                                                             |                                                                                |                |

Figure 2. Sample of a Typical Performance Outcome Modeled by USACBRNS Staff

The challenge for the Services is to develop comprehensive training and education programs designed to complement and support the rapid and continuous acquisition of CBRN systems and equipment within their organizational and institutional constraints. For the past few years, the USACBRNS and joint program managers have, to some extent, successfully navigated the complex JCIDS acquisition and other institutional processes. In many cases, they have supported and reinforced communication and negotiation between diverse stakeholders (each with their own set of perspectives, processes, agendas, and perceived requirements), keeping them focused on supporting the warfighter. However, the continued lack of a JCIDS connection with the institutional processes of the Services, coupled with the uncoordinated approach to CBRN training and education within DOD, remains problematic.

The globalization and evolving nature of CBRN threats must be met with a diversity of Service organizations and personnel, the ability to synchronize DOD capabilities, and the “rapid” acquisition of COTS for the analysis and detection of CBRN materiel. However, the success of the acquisition depends on the use of an integrated approach in which training and education considerations are appropriately applied throughout the total life cycle management framework. The application and integration of HPT within the JCIDS and Service training processes significantly enhance the likelihood of closing known capability gaps and help Services focus on results rather than solutions. Overall, HPT supports a continuous, adaptive set of processes to ensure that CBRN specialists and units receive timely and effective education and training that is aligned with the “rapid” acquisition of

commercial chemical, biological, and radiological detection and analytical equipment. 

#### Endnotes:

<sup>1</sup>Christina Stothard and Robin Nicholson, “Skill Acquisition and Retention in Training: DSTO Support to the Army Ammunition Study,” Defence Science & Technology Organisation Electronics and Surveillance Research Laboratory, Commonwealth of Australia, December 2001.

<sup>2</sup>*Quadrennial Defense Review Report*, DOD, February 2010.

<sup>3</sup>“Title 10” refers to U.S. Code, Title 10, *Armed Forces*.

<sup>4</sup>James J. Blascovich and Christine R. Hartel, editors, *Human Behavior In Military Contexts*, Committee on Opportunities in Basic Research in the Behavioral and Social Sciences for the U.S. Military, 2008.

<sup>5</sup>Audit Report Number D-2001-043, “Management of National Guard Weapons of Mass Destruction—Civil Support Teams,” Office of the Inspector General, DOD, 31 January 2001.

<sup>6</sup>Thomas F. Gilbert, *Human Competence: Engineering Worthy Performance*, Tribute Edition, International Society for Performance Improvement, Silver Spring, Maryland, 1996.

<sup>7</sup>Anthony Marker, “Synchronized Analysis Model: Linking Gilbert’s Behavior Engineering Model With Environmental Analysis Models,” *Performance Improvement*, Vol. 46, Issue 1, pp. 26–32, January 2007.

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## 90th Chemical Mortar Battalion Reunion


*By Mr. Kip Lindberg*

Six veterans of the 90th Chemical Mortar Battalion and their families visited Fort Leonard Wood, Missouri, on 16 September 2010. They were hosted by the U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS) and the Chemical Corps Regimental Association.

The veterans participated in a Chemical Memorial Grove wreath-laying ceremony to honor their service and the sacrifice of their fallen. In recognition of their service to the Chemical Corps and the Nation, Colonel Vance “Phil” Visser, commandant of the USACBRNS, presented each veteran with the Order of the Dragon. Colonel Visser said, “The courage you displayed [during World War II] is the same courage evident in our Dragon Soldiers today.” In

addition to the memorial service, the group also participated in oral interviews and toured the Chemical Corps Museum.

The veterans expressed their appreciation for all that was done for them during their visit. “There are less than 20 members still alive,” remarked one, “and if this is our last reunion, it will always be remembered as being very special.”

The 90th Chemical Mortar Battalion fought in the European Theater during World War II, firing 4.2-inch chemical mortars in support of the 1st Infantry and 82d Airborne Divisions. In March 1945, the battalion supported the capture of the Ludendorff Bridge at Remagen, Germany, providing the close fire support that proved instrumental in holding the bridgehead. 

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*Mr. Lindberg is the director of the U.S. Army Chemical Corps Museum, Fort Leonard Wood.*

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# U.S. Responses to Egalitarian and Traditionalist Insurgencies

By Major Dexter Davis

*Following World War II, countries that were not directly allied with the United States or the Union of Soviet Socialist Republics began to experience internal friction resulting from a lack of resources, religious differences, and political freedoms that gained alliances with the United States or the Union of Soviet Socialist Republics. Insurgencies—or “struggle[s] between a nonruling group and the ruling authorities in which the nonruling group consciously uses political resources and violence to destroy, reformulate, or sustain the basis of legitimacy of one or more aspects of politics”<sup>1</sup>—have since ensued. The desired outcome of these insurgencies is the political dominance of the nonruling group over the ruling group. According to Bard O’Neill, there are nine different types of insurgencies.<sup>2</sup> Of these, egalitarian and traditionalist have been the most prominent during the post-World War II era. This article describes these two types of insurgencies and discusses U.S. responses.*

For many years, analysts for nation-states often misread the types of insurgencies and desired outcomes. Egalitarian insurgencies seek to impose a new system of equal distribution and central control of the populace. The anti-Communism “Red Scare” that followed World War II was related to this type of insurgency. Traditionalist insurgencies articulate primordial and sacred values rooted in ancestral ties and religion. Traditionalists seek to establish political structures that are characterized by limited participation, with political power in the hands of the economic, military, or clerical elite. The Taliban, al-Qaida, and Islamic revolutions are examples of this type of insurgency.<sup>3</sup>

In the 1950s, the Union of Soviet Socialist Republics and China began to export egalitarian insurgencies into Eastern Europe and Asia. The United States attempted to defeat the insurgency in Indochina (which later became known as Vietnam). Ho Chi Minh and his North Vietnamese army defeated the French and South Vietnamese armies, which were supported by the Western-colonizing countries of the United States, Britain, and France. The U.S. government began to fear the continuing spread of egalitarian insurgencies and, with the intent to defeat the spread of Communism, eventually went to war against the insurgent forces. The United States fought a counterinsurgency war, which involved creating a democratic government and establishing nine- to twelve-man military advisor teams with each South Vietnamese Army unit and provincial Civil Operations and Revolutionary Development Support agency.<sup>4</sup> The goals were to turn military operations over to the South Vietnamese as soon as possible and to use provincial teams to establish local governance and essential services. But the United States faced a huge problem in that Ho Chi Minh had a large,

active support base that wanted to rid Vietnam of foreign influence and reestablish a “normal” life. This eagerness to return to normalcy, coupled with a favored nationalistic approach and external support from neighboring countries (who provided faculty training and a safe haven for the North Vietnamese army), prompted the people of Vietnam to accept the egalitarian ideas over the U.S. strategy. Aware of this, the North Vietnamese army appealed to the basic land and service needs of the people. Adjustments to the U.S. strategy had little impact because of the inability of the United States to influence the Vietnamese people.


After the fall of the Union of Soviet Socialist Republics, there was an increase in traditionalist insurgencies. Religious fundamentalists expanded their control throughout the Muslim world. This culminated in a horrific 11 September 2001 clash with the United States, when several Afghanistan-based al-Qaida terrorists attacked the World Trade Center in New York City and the Pentagon in Washington, D.C. In response, the United States waged a war against Islamic terrorism in Afghanistan. It took four months for coalition forces to defeat the Taliban (who were harboring the al-Qaida) and free the Afghan people from tyranny. For the past seven years, the United States has left the sustainment of these successes to smaller military forces, while waging yet another war to defeat the Saddam Hussein regime in Iraq. Due to a shift in tactics from conventional to guerrilla warfare, the cost of these conflicts has been high for American military and civilian personnel. The U.S. government has been fighting these counterinsurgency battles based on a 1965–1973 advisory strategy. Because of the strong central and provincial government systems in Iraq and because most Iraqi citizens have formal educations and

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live in well-populated, urban areas, this strategy has been somewhat successful in Iraq. In contrast, the Afghans are generally poorly educated and dwell in rural areas. They are unaware of what a government should provide, and they do not understand democratic societies. At the same time, the Taliban is seeking to reestablish the way of life that existed in the region for hundreds of years. It would take decades to shift the Afghan mind-set, and the Taliban understand that the United States does not have the time or resources necessary to maintain an extended counterinsurgency.

The fundamental problem with using traditional counterinsurgency strategies in Afghanistan is the same as that encountered in Vietnam—the nationalistic and religious beliefs of the people are very different from those of the United States, which makes it easier for insurgents to mold, shape, and align the thoughts of the natives against the Western world. In both cases, insurgency forces were present for years and the citizens believed that the established governments were corrupt and did nothing to improve the lives of their citizens. Therefore, the people did not accept the national or provincial governments. This lack of trust allowed the North Vietnamese and the Taliban/al-Qaida to move in and around villages and form shadow governments. And the coalition military did not have the forces required to

extend security to the multitude of villages in these countries. This enabled the Communist and Taliban/al-Qaida elements to continue recruiting members for their causes. 

**Endnotes:**

<sup>1</sup>Bard E. O'Neill, *Insurgency & Terrorism: Inside Modern Revolutionary Warfare*, Brassey's, Inc., 1990.

<sup>2</sup>Bard E. O'Neill, *Insurgency & Terrorism: From Revolution to Apocalypse*, Potomac Books, Inc., 2005.

<sup>3</sup>O'Neill, *Insurgency & Terrorism: Inside Modern Revolutionary Warfare*, 1990.

<sup>4</sup>The Civil Operations and Revolutionary Development Support agency was a civilian organization that was aligned with military headquarters that established provincial civilian reconstruction teams to assist American units with reconstruction following the defeat of North Vietnamese forces.

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## Maintenance Is the Key to Technical Escort Unit's Readiness

*By Sergeant First Class J.B. Jaso III*


The Soldiers (or "Responders") of Company A, 22d Chemical Battalion (Technical Escort), 48th Chemical Brigade, 20th Support Command, depend on equipment to accomplish their jobs. Unserviceable equipment affects unit capabilities; therefore, equipment maintenance is essential in ensuring the safety of American citizens.

Major Damon Yourchisin, commander of Company A, explained that his Soldiers (who are members of the U.S. Army Technical Escort Unit, stationed at Aberdeen Proving Ground, Maryland) deploy within the United States and overseas to eliminate weapons of mass destruction and respond to chemical, biological, radiological, nuclear, and high-yield explosives incidents. Members of the unit depend on equipment to identify and protect against the chemical and biological hazards that are consistently encountered.

"Maintenance is the cornerstone of any effective organization and especially one as technically oriented as ours," Major Yourchisin said. "Our equipment must be in a

constant state of readiness to effectively do our job at any moment, which we have been called on to do with very short notice."

With that in mind, Major Yourchisin has implemented a maintenance-focused plan to ensure that the entire set of equipment is serviceable and that the company is ready to answer the call—if and when it is made. In addition to weekly equipment checks, the company conducts regular checks on the equipment before, during, and after its use.

"We spend a lot of time maintaining our equipment," stated a member of a Company A sampling team. "It's important to us to be ready when it's our turn to execute the mission." 

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*Sergeant First Class Jaso is an assistant team sergeant with Company A, 22d Chemical Battalion. He is pursuing a bachelor's degree in public administration from Upper Iowa University.*

# LETHAL CONFINES: SEARCHING FOR SILENT KILLERS IN A PRISON

*By Captain Darrin Haas*

**Editor's Note:** *The following paragraphs describe one of the many scenarios that the 45th Civil Support Team (a unit of the Tennessee Army National Guard, Smyrna, Tennessee) enacted for a March 2010 training event.*

*It was dark and cold when two members of the 45th Civil Support Team first stepped onto Death Row in the Tennessee State Prison.<sup>1</sup> The only light in the cell block originated from the flashlight that each Soldier held as he searched from cell to cell.*

*Sergeant Stephen Evans and Sergeant Wesley Groves, the two survey team members, swiftly searched the cell block, looking for evidence of what had caused prison inmates to become deathly ill earlier that day. They found the items they were looking for on an inmate's desk: chemical and biological books, an eyedropper containing a clear liquid, and a shank. Based on evidence collected earlier, the Soldiers suspected that the liquid in the eyedropper was botulin—a nerve toxin that, when ingested, can quickly lead to paralysis and death.*



*Wearing full protective gear (including re-breathers, masks, and Level A containment suits<sup>2</sup>), the Soldiers carefully documented the location of the eye dropper and collected a sample of the liquid. But just as they finished, a call came over their radios: “Abort!” A violent inmate was unaccounted for and roaming free throughout the prison.*

*Following protocol, the pair gathered their tools and raced back to the decontamination area—not an easy task to perform while wearing an airtight suit, carrying 65 pounds of gear, and operating in an environment that contained potentially deadly microscopic toxins. The Soldiers would be easy prey for someone who had nothing to lose.*

The training event was organized and evaluated by U.S. Army North—an agency responsible for homeland defense and defense support of civil authorities. The exercises are designed to be as realistic as possible, and the 45th is evaluated every 18 months.


“Realism is the key to success,” said Captain Jason Stockton, the survey section commander. “All training has to be done as realistic as possible, because when on an actual mission and you are working with chemical or biological agents, there is no room for error.” This same philosophy was evident throughout all phases of the exercise.

“We did not know when or where the event would take place,” said Sergeant David Owen, a survey team member. “I was alerted a little after midnight on the 9th, and we had less than an hour to be back at our armory, prepared to deploy anywhere for anything. After reporting in, we were briefed on our mission. For this incident, we were informed that 150 inmates were eating dinner in the auditorium at the Tennessee State Prison in Nashville when an inmate threw containers filled with [simulated] chemicals producing chlorine gas into the crowd, possibly gang-related. There were also reports of inmates getting deathly ill, vomiting, and having high fevers. Some suspected poison in the food.”

Because the scenario took place at a “working prison,” the 45th was required to operate as if there were inmates present in the facility. This made the mission particularly challenging; but by 2 a.m., the 22-person survey team had begun using support equipment to conduct complex operations at the prison.

Survey team members investigated the prison cell blocks, working areas, and auditorium. Any evidence that was found was documented, photographed and, if appropriate, sampled. The entire area was treated as a crime scene.

When the Soldiers left the contaminated area, they and their equipment were completely decontaminated. The team physician, who specializes in chemical and biological response, was available to address any medical problems. Samples were transported to the 45th Civil Support Team mobile laboratory.

With the successful completion of this evaluation, the 45th has been recertified and is now ready to be called out on the next real-world mission. According to Sergeant Owen, the experience of working inside the old Tennessee State Prison has helped the Soldiers of the 45th to “think outside the box” when it comes to real-world missions. “You never know where you can be called to or what you will be doing,” he said. 


**Endnotes:**

<sup>1</sup>The Tennessee State Prison, which has been closed since 1992, also served as the filming location for several movies, including *The Green Mile* and *The Last Castle*.

<sup>2</sup>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.

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*Captain Haas is the deputy director of the Joint Public Affairs Office, Tennessee National Guard. He holds a bachelor's degree in history from Tennessee Technological University, Cookeville, Tennessee.*



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# *A Wonderful Marriage*

*By Captain Nicholas Bell*

*As a junior chemical, biological, radiological, and nuclear (CBRN) officer, I once thought that the Chemical Corps was alone in certain things. For example, I thought that we were the only ones who knew about downwind hazards after a nuclear detonation. And I thought that we were the only ones who dealt with radiation safety, environmental management, medical chemical defense equipment and material, and the effects of CBRN incidents on human health. But those thoughts have been squashed! All Army units need to know who is to their left and right flanks. This means that CBRN leaders must fully understand the capabilities of resources outside the CBRN community.*

Now that I have executed the CBRN consequence management response force and am working in one of the four Regular Army medical brigades, I know that the Army Medical Department (AMEDD) is well resourced to work closely with Dragon Soldiers. In our AMEDD unit in Afghanistan, we have a nuclear medical science officer, an area medical laboratory (AML), and preventive-medicine (PVNTMED) assets. In addition to this correlating knowledge, AMEDD also deals with medical chemical defense equipment and material.

The issue of radiation safety is often tackled by CBRN leaders in brigade combat teams, but AMEDD has dedicated professionals for that purpose. In our medical task force, the nuclear medical science officer provides guidance for the use of equipment at military treatment facilities and assists brigade combat teams with equipment that contains radiation. While they are part of the medical arsenal, nuclear medical science officers provide more than medical radiation information. They also understand plume models and the environmental effects of CBRN events; therefore, they can use their expertise to inform the commander about CBRN-related events. And these professionals are available while deployed and in garrison. As you establish your own radiation safety standards, I highly recommend that you consult with not only your local safety office, but also your local military hospital regarding their radiation safety standards.

An AML is comprised of several sections. Toxic industrial chemicals and materials are presumptively identified in the analytical chemistry section. Section personnel are capable of focusing on low levels of nerve and blister agents and can also evaluate for Soldier exposure to a nerve agent by analyzing for plasma cholinesterase.<sup>1</sup> The analyses and tools used are familiar to the Chemical Corps. But the similarities do not end there. The environmental surveillance section of an AML also makes use of a familiar piece of equipment—the HazMatID Chemical Detector—to presumptively identify the wide range of CBRN threats on the battlefield. In addition, AMLs use another familiar piece of equipment—

the AN/PDR-77 Radiac Set—during contingency operations following the use of weapons of mass destruction.<sup>2</sup>

Environmental management is another area that often falls under the purview of the CBRN Soldier. Although environmental management is very closely related to our profession, there are PVNTMED units that serve as subject matter experts on environmental policy. Those units execute forward operating base camp assessments, which reveal the sanitary conditions and environmental hazards on forward operating bases. The PVNTMED detachment, in conjunction with the local PVNTMED officer, then implements a plan to correct any deficiencies. The health of our Soldiers depends on these PVNTMED units and their assessments. Knowledge about the benefits of a PVNTMED unit is crucial to sustaining the fighting force when leading Soldiers in combat. I highly recommend that CBRN officers partner with the closest PVNTMED detachment and PVNTMED officer to help execute base camp assessments—or, at the very least, consult with them regarding environmental issues that may arise in garrison or while deployed.

The issues of storage and accountability of medical chemical defense equipment and material should also be on the mind of every CBRN leader during deployment. Although Army leaders often look to the Chemical Corps for guidance, the U.S. Army Medical Materiel Agency and the Office of the Surgeon General actually serve as lead agencies for the distribution and accountability of medical chemical defense equipment and material.<sup>3</sup> In addition, every theater contains medical assets that act as the lead in this area, as well as subject matter experts such as pharmacists and medical logistics units. Therefore, CBRN leaders must know who to contact regarding these issues. Because medical chemical defense materiel contains a controlled substance, CBRN leaders must know the policies for its distribution and storage in a deployed environment.

The Chemical Corps and AMEDD are more related than not. CBRN leaders and Soldiers should refer to AMEDD



professionals regarding policy and expertise in certain areas. As Dragon Soldiers, we can do more with our training and knowledge than teach Soldiers how to don protective masks. CBRN leaders should learn about AMEDD capabilities for future career use. Working together, the Chemical Corps and AMEDD can successfully sustain and preserve the fighting force.

**Endnotes:**

<sup>1</sup>Colonel Beau J. Freund, "Capabilities and Applications," 1st AML, 1 October 2009, slides 27–29.

<sup>2</sup>Ibid.

<sup>3</sup>Supply Bulletin (SB) 8-75-S7, *Army Medical Department Supply Information*, 20 July 2009, pp. 5-1–5-10.



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*Captain Bell is the brigade CBRN officer, 62d Medical Brigade, Joint Base Lewis-McChord, Washington. He holds a master's degree in environmental science from Webster University.*

## Army CBRN Warrant Officer Program Takes Off

*By Mr. R.J. Oriez*

Noncommissioned officers with Military Occupational Specialty 74D now have the opportunity to become warrant officers with the designation of *chemical, biological, radiological, and nuclear (CBRN) technician*.

According to Ms. Lisa Merrill—chief of the Individual Training Division, Directorate of Training and Leader Development, U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS)—to be eligible as a CBRN technician, noncommissioned officers must—

- Hold the rank of staff sergeant or above.
- Have completed the Basic Noncommissioned Officer or Advanced Leader Course.
- Have 8–12 years of active service (including 5 years of military occupational specialty experience).
- Have a baseline skilled technical (ST) score of 100.
- Be recommended by the appropriate chain of command.

Additional requirements are listed at <http://www.usarec.army.mil/warrant>. Those noncommissioned officers selected for the CBRN Warrant Officer Program will attend the 10-week Marine Corps Basic CBRN Defense Officer's Course held at Fort Leonard Wood, Missouri, beginning in June 2011.

Marine Chief Warrant Officer George Lawson stated that chemical warrant officers have been a part of the Marine Corps for more than 20 years and that formal chemical warrant officer training began in 1996. The Army plans to take advantage of that Marine experience. "The Army leadership—the [USACBRNS] commandant and other leaders—have worked with Marine warrants over the course of time and are impressed with the level of expertise they bring," Ms. Merrill said. Chief Warrant Officer Lawson added, "These are two services coming together and doing multiservice training without any directions or funding from the Joint Staff."

While the Basic CBRN Defense Officer's Course will remain a Marine Corps program, the Army will also provide instructors to help with the increased number of students. "We haven't determined what the makeup of the Army instructors will be initially," Merrill said. "Later, we may be contributing warrant officers."

Upon completing the course, the new warrant officers will be filling billets formerly held by lieutenants. "There are identified positions which we [had] second lieutenants in," Merrill said. "They determined they'd be better served by a warrant officer, with that level of expertise, in those positions; for example—a CBRN officer in a field artillery or a military intelligence battalion." Ms. Merrill went on to say that the intelligence staff officer (S-2) is the only chemical battalion position that will be filled by a warrant officer.

As a warrant officer's career advances, other positions will become available. Chief warrant officers three and higher could find themselves working on explosive ordnance disposal, with technical escort battalions, or at the USACBRNS.

"[The CBRN Warrant Officer Program] is not just good for the [USACBRNS] or for the Chemical Corps. It is also to enhance the skill sets [of] units because they will be more fully developed with more experience and more technical background," said Merrill.



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

# Soldiers Help Advance Chemical Technology

By Sergeant Heather Denby

*Soldiers of the 4th Maneuver Enhancement Brigade (MEB) tested the latest palm-sized, automated, chemical-agent detector (PACAD) prototype (developed via a joint U.S. Department of Defense [DOD]–Japanese Ministry of Defense effort) at the Live-Virtual-Constructive, Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives (CBRNE) Environment at Fort Leonard Wood, Missouri, 6–15 July 2010. The 4th MEB (comprised of chemical, biological, radiological, and nuclear [CBRN] specialists, engineers, military police, and personnel from other military occupational specialties) is currently assigned to the CBRNE Consequence Management Reaction Force—a federal, domestic-crisis response force designed to support state and local authorities in the event of a large-scale domestic disaster.*

After a CBRNE alarm has been issued and Soldiers have donned protective masks, the PACAD is used to investigate the immediate air quality to determine if chemical agents are present. The PACAD automatically interprets the results of reaction tickets<sup>1</sup> based on M256A1 Chemical-Agent Detector Kit chemistry and technology. If the prototype is approved, the PACAD would serve as a key factor in decisions involving “all clear” alerts.

According to Mr. Mike Cress, the Edgewood Chemical Biological Center technical representative for the Maneuver Support Center of Excellence at Fort Leonard Wood, the M256A2 Chemical-Agent Detector Kit—which is currently used to detect the presence of chemical agents in solid, liquid, and vapor forms—is the Army’s best-performing, low-level detector and primary unmasking tool. The device is simple and lightweight and requires no batteries or external power. However, there are also limitations. For example, the manual process involves 14 steps and typically takes 2 Soldiers about 20 minutes to complete. Operating the kit (which includes the M256A1 and an attachment heater within a camouflaged pouch) is a Skill Level II task generally assigned to team leaders or higher-level personnel. The use of the M256A2 also requires white light, and the results are often difficult to interpret. In addition, the list of agents that can be detected is limited by the size of the kit. Finally, Soldiers must train periodically to maintain proficiency with the kit. The M256A2 kit is being fielded this fiscal year, replacing M256A1 kits whose shelf lives have expired.

According to a CBRN specialist assigned to the 193d Brigade Support Battalion, Headquarters and Headquarters Detachment, the M256 series is “old school”—even with the new heating system; but the PACAD makes use of up-to-date technology. “Sure, it could use some tweaks; but as far as time allotment and the number of Soldiers required to operate, [the PACAD] would definitely come in handy,” he said.

The PACAD prototype will be adjusted based on direct feedback provided by the 4th MEB Soldiers and a group of government-contracted data analysts. The feedback represents a portion of the screening process for new and potential military products that is referred to as the *military utility assessment*. The PACAD military utility assessment is one of six military utility assessments scheduled to be conducted by the Fort Leonard Wood Maneuver Support Battle Lab this fiscal year.

“The [military utility assessment] is a practical approach to a concept or technology that may have been put out in academia or maybe assessing a commercial product to see if it can be integrated into military doctrine, training programs, or fielding-out for use in deployment situations,” said a CBRN data analyst from a contracted agency operating on behalf of the Maneuver Support Battle Lab.

As the installation’s only U.S. Army Forces Command asset with direct combat experience, the 4th MEB was selected for testing of the PACAD. “The work these Soldiers are doing today won’t benefit them directly, but will pay dividends for Soldiers in the future,” said Mr. Dennis Hutchinson, Maneuver Support Battle Lab science and technology officer. “Talk about selfless service!”

The government contract requires the preparation of a report for the Maneuver Support Battle Lab. The report will be used to inform the acquisition community, requirement writers, and U.S. Army laboratories and research and development centers about the potential offered by the developing technology that was tested during this experiment.

#### Endnote:

<sup>1</sup>Reaction tickets are plastic cartridges that are inserted into the PACAD. They contain various reaction capsules that display certain colors which are indicative of chemical presence.

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*Sergeant Denby is a photojournalist assigned to the 4th MEB.*



## 349th Chemical Company Trains With New Equipment

A Soldier decontaminates a vehicle using the new M26.

*By Sergeant Amanda Solitario*

It was just an ordinary day in August for the Soldiers who were huddled in laughter and chatter—until the news from the reconnaissance patrol crackled through the radio. Soldiers from the 349th Chemical Company had suffered a notional chemical attack just outside the perimeter. Word spread quickly throughout the camp. Those inside leapt to their feet; hastily donned mission-oriented, protective-posture gear; and established a decontamination site. The mission, which capped a three-day training exercise designed to hone the reconnaissance and decontamination skills of 349th Soldiers at Joint Base Lewis-McChord, Washington, showcased a new piece of decontamination equipment that was first seen by the Soldiers just the previous day.

The M26 Joint Service Transportable Decontamination System—Small-Scale is a high-pressure power washer designed to decontaminate vehicles that have been exposed to chemical or biological agents. It replaces the M17 Lightweight Decontamination System.

Units that were once primarily worried about protection against weaponized chemicals are now concerned about the possibility of toxic industrial chemical and toxic industrial material attacks, since the enemy is now using whatever chemicals can be found under the kitchen sink. Modifications to equipment are just one way that chemical units are evolving in the face of the changing battlefield.

The new M26 operates with a push-start and runs on one fuel, so Soldiers can now begin decontamination procedures almost immediately. And the M26 seems to be more efficient in chemical and biological environments, where speed and reaction time are critical. Such modifications to equipment ultimately result in adjustments to training.

While the decontamination section received instruction on the M26, the reconnaissance platoon trained for a potential civilian mission of assisting emergency services in the event of a chemical attack on U.S. soil. This “white mission” is an additional duty that is rotated among military chemical units across the country. The 349th expects to receive that additional duty soon.

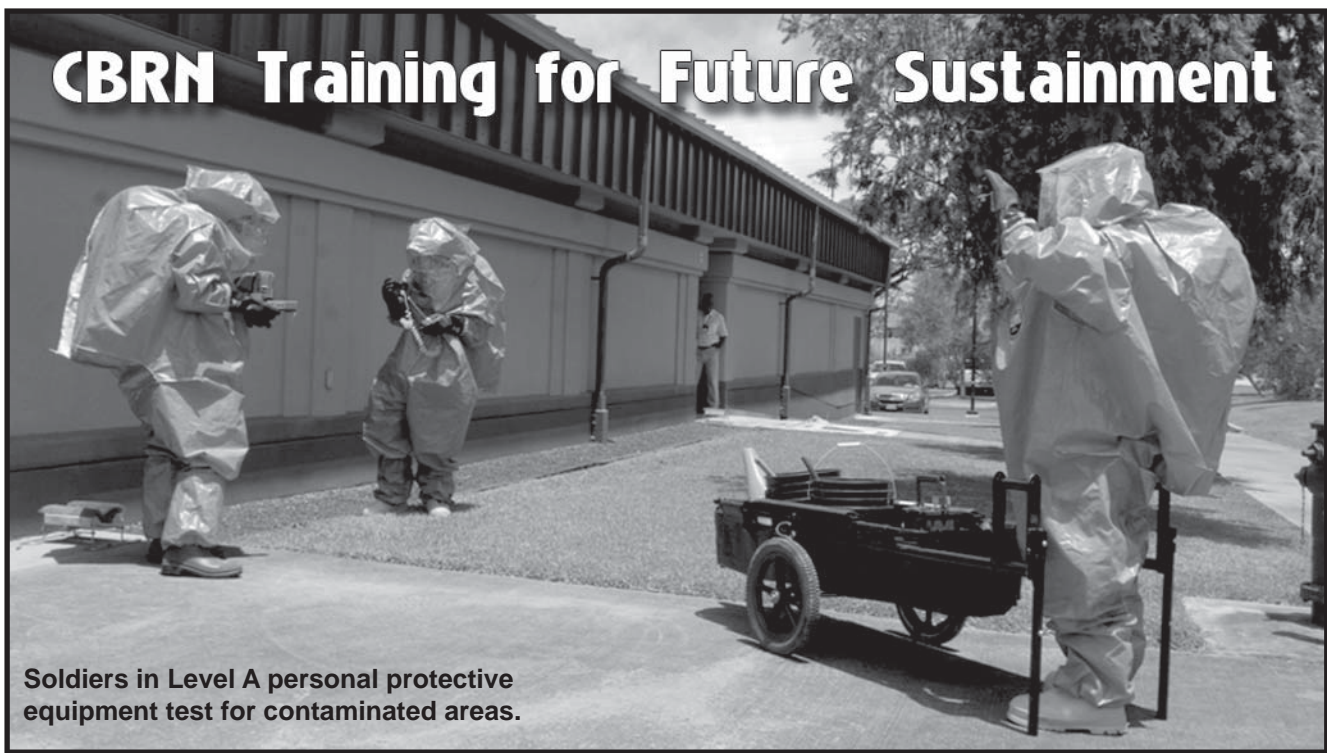


*Sergeant Solitario is assigned to the 304th Public Affairs Detachment, 349th Chemical Company, 476th Chemical Battalion, 301st Maneuver Enhancement Brigade, 416th Theater Engineer Command, Joint Base Lewis-McChord. She is working toward a bachelor's degree from the University of Washington, with a major in geobiology and a minor in biocultural anthropology.*



A Soldier trains with a chemical agent monitor in a mock hazmat zone.

# CBRN Training for Future Sustainment



**Soldiers in Level A personal protective equipment test for contaminated areas.**


*By Sergeant First Class Dawn Lorraine Robinson*

*Chemical, biological, radiological, and nuclear (CBRN) Soldiers are often referred to as “jacks of all trades and masters of none.” But that description does not apply to the CBRN Soldiers who recently participated in the CBRN Dismounted Reconnaissance Course, conducted on-site in Hawaii.*

The Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives (CBRNE)/Antiterrorism Cell, 25th Infantry Division, Schofield Barracks, Hawaii, hosted a CBRN Dismounted Reconnaissance Course, which was taught by a mobile training team from Fort Leonard Wood, Missouri, 3–26 May 2010. Forty Soldiers from various units (including the 25th Infantry Division, 8th Theater Sustainment Command, 766th Explosive Ordnance Disposal Company, and 71st Chemical Company) attended the course. The training was made possible through the coordination efforts of numerous organizations and individuals. The 25th Infantry Division provided the funds necessary to ship the course equipment and subject matter experts to Hawaii. The use of the mobile training team, rather than residential training, alleviated the need for student temporary duty travel and reduced the overall cost of training the Soldiers.

Following the 11 September 2001 tragedy, the Army received an alert prompting immediate attention to critical CBRNE training in support of a wartime mission. With subsequent deployments to Iraq and Afghanistan, combined with continuous training, CBRN specialists (Military Occupational Specialty 74D) prepared to fight and win our Nation’s wars. Although the threat of weapons of mass destruction still exists, the focus has now shifted to relatively low-budget, toxic industrial chemicals and materials.

Since 2004, the 25th Infantry Division has been in an Army force generation cycle in which organic units have been on separate rotations. This situation has presented a unique challenge to the division and its ability to conduct warfighting functions, including the oversight of people, equipment, and training for the various disciplines. The 25th Infantry Division CBRNE personnel worked tirelessly to provide multiple units in different stages of the Army force generation cycle with the unique CBRN Dismounted Reconnaissance training opportunity. At the time the course was conducted, the 2d Brigade Combat Team was preparing for their next combat tour and the 3d Brigade Combat Team and 25th Infantry Division Headquarters were transitioning from the reset phase to the train/ready phase of the Army force generation cycle.

The CBRN Soldiers were eager to increase their professional proficiency to meet current mission requirements, and the CBRN Dismounted Reconnaissance Course presented them with the mission-essential skills and knowledge necessary to respond to the most likely tactical threats encountered on the battlefield. The Soldiers who completed the course are now “masters” of their military occupational specialty element, and many were certified to the National Fire Protection Association 472 Hazardous Materials Technician level of training. 

*Sergeant First Class Robinson is a senior noncommissioned officer with the CBRNE/Antiterrorism Cell, 25th Infantry Division. She is a graduate of the Senior Leader’s, Advanced Leader’s, Physical Security, and Equal Opportunity Representative Courses.*



# 48th Chemical Brigade Off-Site

*By Major Andrew “Jack” Morgan*

The 48th Chemical Brigade conducted an off-site event for all company, battalion, and brigade command teams and operations and training officers (S-3s) 16–19 February 2010. The event, which was hosted by the 83d Chemical Battalion, was held at Fort Polk, Louisiana. Attendees participated in classes designed to standardize procedures, with a focus on motor pool operations, short-range battles, transformation, engaged leadership, and platoon hazardous response. Each evening, the leaders enjoyed dinner and camaraderie through various social gatherings on Fort Polk or in the surrounding community. Throughout the week, Colonel Eric W. Brigham, commander of the 48th, and Command Sergeant Major Edwin D. Moten, command sergeant major of the 48th, related their leadership experiences and personal and professional antecedents and formed the foundation for the standardization of procedures.

On the first day, the brigade leaders were presented with an overview of the off-site event and a risk assessment for the week. First Lieutenant Heather Morgan conducted a tour of the 83d Chemical Battalion Headquarters, focusing on the rich history and tradition of the last 60 years.


The second day began with a brigade run along the streets of Fort Polk. Following the run, Colonel Brigham and Command Sergeant Major Moten addressed the assembled leaders, describing what they should expect for the rest of the week. Participants then gathered at the 83d Motor Pool for the motor pool operations class, which covered Standard Army Maintenance System box capabilities and limitations, tool room operations, hazmat operations, and leader involvement in preventive maintenance checks and services operations. That afternoon, the class proceeded to the 88th Brigade Support Battalion, 1st Maneuver Enhancement Brigade, where they received an overview of direct support maintenance operations, including a description of the equipment, capabilities, and functions available from support activities at Fort Polk. Topics covered included shop operations and familiarization, supply support activity, and support operations. Next, the leaders completed classes on Chemical Corps assets and capabilities,

the National Technical Nuclear Forensics Program, and requirements building. They also received an update on chemical, biological, radiological, and nuclear (CBRN) support to the U.S. Army Special Operations Command. The evening entertainment consisted of a no-host social at a local restaurant in Leesville, Louisiana.

On the third day of the event, participants gathered at the Fort Polk airfield, boarded UH-60 Black Hawk helicopters, and took a 15-minute flight to the Digital Multipurpose Battle Area Complex—an urban warfare training facility also located at Fort Polk. Once the party reassembled in an orientation tent, personnel from the 7th Chemical Company, 83d Chemical Battalion, discussed and, later, conducted a series of range exercises involving reflexive fire, stress fire, and live room-clearing. The purpose was to demonstrate a method of incorporating short-range battle techniques into current training plans and training strategies that are focused on mission-essential task lists. These exercises were designed to share best practices for improving Soldiers’ competence levels with weapons. At each demonstration range, a senior leader led an interactive discussion in which the experienced participants compared and contrasted advanced rifle marksmanship techniques. The range exercises culminated in a live demonstration of 7th Chemical Company Soldiers clearing nine rooms involving shoot/no-shoot scenarios. Brigade leaders watched the live room-clearing from the range safety officer catwalk above. Next, they moved to the after-action review theater, where the 1/59th Chemical Company, 22d Chemical Battalion, demonstrated the hazardous response platoon tactics, techniques, and procedures developed by the 22d. Then, the participants engaged in a facilitated, professional discussion about the hazardous response platoon and dismounted reconnaissance sets, kits, and outfits. Following the capability exercise, the leaders moved inside, where they completed a series of classes focusing on transformation and engaged leadership. Afterward, they boarded the Black Hawks and flew back to the airfield. The final event of the day consisted of social gatherings at various local dining establishments, where the Soldiers shared, learned, and created new friendships.

As most of the participants returned home, the assembled battalion and brigade S-3s formed a working group to study the required capabilities, mission-essential task list crosswalk, and force structure for U.S. Army combat support companies. The end result was a draft combat support model that includes mounted and dismounted reconnaissance, heavy and light decontamination, and patient decontamination capabilities. The proposed mission-essential task list crosswalk and force structure have been staffed through each battalion to ensure that leaders at all levels have the opportunity to provide input. An overview was presented to Brigadier General Leslie C. Smith (former

Chief of Chemical and commandant of the U.S. Army CBRN School) and many other senior CBRN leaders.

The overall objectives of the 48th Chemical Brigade off-site event were to establish standards for a wide range of areas, showcase capabilities available at Fort Polk, and build esprit de corps across the brigade. The resounding success of the off-site event will point the way ahead for every guidon in the brigade formation. Rounds Away! 

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*Major Morgan is the executive officer for the 83d Chemical Battalion. He holds a master's degree in zoology from North Carolina State University.*

## 2010 Chemical Corps Regimental Week

*By Ms. Kerstin Lopez*

Events associated with the 92d anniversary celebration of the Chemical Corps and 2010 Regimental Week were hosted by Fort Leonard Wood, Missouri, 21–25 June 2010. The National Defense Industrial Association (NDIA) sponsored the events, which consisted of a golf tournament, regimental review and change of command, sunrise service, Hall of Fame and Distinguished Members of the Corps induction, regimental run, and the annual ball. Senior leader conferences; the NDIA Joint Chemical, Biological, Radiological, and Nuclear (CBRN) Conference; and new equipment exhibits were held throughout the week.


The anniversary week promotes esprit de corps and pride in the Chemical Corps heritage and celebrates the victories and successes of the Regiment. According to then Chief of Chemical, Brigadier General Leslie C. Smith, Regimental Week activities coincide with the NDIA Joint CBRN Conference to promote discussion and creative thought among those in the chemical community.

The week kicked off with the annual Chemical Corps Regimental Association Golf Tournament, which concluded with a barbecue and awards ceremony.

On the second day, senior leaders participated in conferences and tours of various Fort Leonard Wood training facilities, ending with a retirement ceremony for Colonel Greg Olson, assistant commandant of the U.S. Army CBRN School.

The third day began with an awards ceremony for Brigadier General Smith and his wife Vanedra followed by the regimental review and change of command ceremony. The rest of the day was filled with the NDIA Joint CBRN Conference. General Martin Dempsey, commanding general of the U.S. Army Training and Doctrine Command, and Mr. Andrew Weber, assistant to the Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs, served as keynote speakers for the conference.

Chemical Corps Soldiers gathered at Memorial Grove to honor twenty-two of their fallen comrades during the Sunrise Service Ceremony of Remembrance held on 24 June. Later that day, students (junior high through college) were invited to explore NDIA exhibits. The 2010 Hall of Fame and Distinguished Members of the Corps induction ceremony, hosted by the Chemical Corps Regimental Association, took place that afternoon. The ceremony began with a tribute to Major General Robert Orton, former commandant of the U.S. Army Chemical School, who was deemed “one of the world’s foremost authorities on nonconventional weapons and their defense.” Hall of Fame inductees included Lieutenant Colonel Dean Dickey (Retired), Captain Paul Bowman, and Command Sergeant Major Theodore McDonnell (Retired). Colonel Gary Wallace (Retired), Lieutenant Colonel Edward Draper (Retired), Mr. Patrick Berry, and Mrs. Jo Johnston were designated as Distinguished Members of the Corps. (See “2010 Honorees of the U.S. Army Chemical Corps,” p. 37)

The final day of the anniversary week began with an early morning, 3-mile regimental run and culminated with the traditional Green Dragon Ball that evening. 

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

# 71ST CHEMICAL COMPANY ARC RECEIVES RECERTIFICATION

*By Private First Class Marcus Fichtl*

Soldiers of the 71st Chemical Company, 8th Military Police Brigade, 8th Theater Sustainment Command, Schofield Barracks, Hawaii, performed sensitive-site exploitation during a week-long reevaluation of the Active Response Chemical, Biological, Radiological, and Nuclear (ARC) platoon at Ford Island, Joint Base Pearl Harbor-Hickam on 15 July 2010. Members of the 93d Civil Support Team—a Hawaii National Guard unit—served as observers.

The ARC platoon—the newest addition to the 71st and the first platoon of its kind in the Pacific Theater—is a first-responder unit that identifies chemical, biological, radiological, and nuclear (CBRN) spills and hazards. The reevaluation exercise was designed to test the ability of the ARC platoon to react to various CBRN situations; it also served as a “stress test” for the entire unit.




**A Soldier tests an unknown sample.**

The exercise was conducted under Title 32<sup>1</sup> conditions, whereby the state activated the 93d Civil Support Team and requested the support of the 71st Chemical Company in identifying hazards. The reevaluation mission of the 71st Chemical Company involved traveling to the exercise site to identify and mitigate any chemical, biological, or radiological issues encountered in three different scenarios. In addition, with the help of a CBRN unmanned vehicle, the platoon designated entry points to hazard sites and safe zones for a decontamination line. According to the commander of the 71st, “We . . . [perform] identification of the hazard through piecing together clues from a hazard site and processing the samples. Cleanup and other tasks are then designated to the state or post.”

The ARC platoon relied on training to accomplish their mission. The focus of the training was on the use of Level A<sup>2</sup> decontamination suits and hazardous detection devices, the identification of hazmat, and the establishment of a decontamination line. According to the platoon sergeant, “We had a lot of new troops that weren’t up to speed with procedures, but we overcame it with a lot of good, precise training.” The commander of the 71st added, “We had some trouble, initially, with setting up the decontamination line; but with every rehearsal, we greatly improved our time and beat our . . . goal today.”



**A robot searches an area for contaminants.**

As the day wore on, the ARC platoon accomplished all objectives and the ARC status was recertified. The recertification and the ability of the 71st to be anywhere in the Pacific Theater at a moment’s notice reaffirms the 71st’s standing as a theater-wide security asset. And additional training is already scheduled for the future. 

#### **Endnotes:**

<sup>1</sup>“Title 32” refers to U.S. Code (USC), Title 32, *National Guard*.

<sup>2</sup>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.

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*Private First Class Fichtl is a public affairs specialist with the Public Affairs Office, 8th Military Police Brigade. He is a senior economics student at the University of Colorado at Boulder.*

# 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>NEW IN 2010!</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                     |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| The designator 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). Manuals to be published in late 2010 to early 2011 include the keystone manual (FM 3-11) and ATTP 3-11.23. |                                                                                                                                     |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Current Publications</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                     |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| ATTP 3-11.36<br>MCRP 3-37B<br>NTTP 3-11.34<br>AFTTP (I) 3-20.70                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Aspects of Command and Control | 12 Jul 10                 | An MTTP manual that provides commanders, staffs, key agencies, and Service members with a key reference for understanding, characterizing, and managing CBRN threats and hazards in a particular operational environment.                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| FM 3-11<br>MCWP 3-37.1<br>NWP 3-11<br>AFTTP(I) 3-2.42                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical Defense Operations                           | 10 Mar 03                 | This is the CBRN keystone manual. The revision represents a critical doctrinal shift from nuclear, biological, and chemical (reactive mode covering weapons of mass destruction [WMD] only) to CBRN operations (proactive mode covering the full range of CBRN threats and hazards). It implements the three strategic pillars of the <i>National Strategy to Combat Weapons of Mass Destruction</i> —nonproliferation, counterproliferation, and consequence management. The new name will be <i>Multiservice Doctrine for Chemical, Biological, Radiological, and Nuclear Operations</i> .<br><b>Status:</b> Under revision Fiscal Year (FY) 2011. Will be retained as an FM.        |
| FM 3-11.3<br>MCRP 3-37.2A<br>NTTP 3-11.25<br>AFTTP(I) 3-2.56                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Contamination Avoidance        | 2 Feb 06<br>C1 20 Apr 09  | A multiservice tactics, techniques, and procedures (MTTP) manual for CBRN contamination avoidance. It provides commanders, staffs, key agencies, and Service members with a key reference for planning and conducting CBRN avoidance and contains the tools that CBRN defense personnel need to implement active and passive CBRN avoidance measures. It also supports decisionmaking.<br><b>Status:</b> Current. Will be redesignated as ATTP 3-11.33.                                                                                                                                                                                                                                |
| FM 3-11.4<br>MCWP 3-37.2<br>NTTP 3-11.27<br>AFTTP(I) 3-2.46                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical (NBC) Protection                             | 2 Jun 03<br>C1 31 Dec 09  | An MTTP manual that establishes principles for CBRN protection and addresses individual and collective protection considerations for the protection of the force and civilian personnel.<br><b>Status:</b> Current. Will be redesignated as ATTP 3-11.34.                                                                                                                                                                                                                                                                                                                                                                                                                              |
| FM 3-11.5<br>MCWP 3-37.3<br>NTTP 3-1.26<br>AFTTP(I) 3-2.60                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Decontamination                | 4 Apr 06                  | An MTTP manual that defines the roles of military units and staffs involved in the preparation, planning, and execution of decontamination operations. It addresses the requirement for different decontamination techniques. The manual focuses on the need for all U.S. forces to be prepared to fight and win in a CBRN-contaminated environment. It also addresses homeland security support required from the Department of Defense (DOD).<br><b>Status:</b> Current. Will be redesignated as ATTP 3-11.35.                                                                                                                                                                       |
| FM 3-11.9<br>MCRP 3-37.1B<br>NTRP 3-11.32<br>AFTTP(I) 3-2.55                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Potential Military Chemical/Biological Agents and Compounds                                                                         | 10 Jan 05                 | A manual that provides commanders and staffs with general information and technical data concerning chemical and biological agents and other compounds of military interest, such as toxic industrial chemicals.<br><b>Status:</b> Current. Will be redesignated as GSTM 3-11.91.                                                                                                                                                                                                                                                                                                                                                                                                      |
| FM 3-11.11<br>MCRP 3-37.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Flame, Riot Control Agent, and Herbicide Operations                                                                                 | 19 Aug 96<br>C1 10 Mar 03 | A manual that describes the tactics, techniques, and procedures (TTP) for employing flame weapons, riot control agents, and herbicides during peacetime and combat. The distribution of this manual is restricted due to the sensitive nature of the information contained in it.<br><b>Status:</b> Current. Will be redesignated as GSTM 3-11.92.                                                                                                                                                                                                                                                                                                                                     |
| FM 3-11.19<br>MCWP 3-37.4<br>NTTP 3-11.29<br>AFTTP(I) 3-2.44                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical Reconnaissance                               | 30 Jul 04<br>C1 31 Dec 08 | An MTTP that provides tactical-level guidance and consideration for multiservice forces that are conducting CBRN reconnaissance and surveillance in all operational environments. It covers the full range of CBRN hazards by better addressing toxic industrial materials. It also expands TTP for dismounted CBRN reconnaissance and addresses CBRN sampling and sample management. The new name will be <i>Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Reconnaissance and Surveillance</i> .<br><b>Status:</b> Under revision FY 11. Will be combined with and supersede FM 3-11.86; will be redesignated as ATTP 3-11.37. |



# DOCTRINE UPDATE

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

| Publication Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Title                                                                                                                                  | Date                      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Current Publications (Continued)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                        |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 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.<br><b>Status:</b> Current. Will be redesignated as ATTP 3-11.24.                                                                                                                                                                                                                                                                                                                                                                         |
| FM 3-11.21<br>MCRP 3-37.2C<br>NTTP 3-11.24<br>AFTTP(I) 3-2.37                                                                                                                                                                                                                                                                                                                                                                                                                                             | Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Consequence Management Operations | 1 Apr 08                  | An MTTP designed for CBRN responders who plan and conduct domestic, foreign, or DOD-led consequence management operations. DOD personnel who respond to a CBRN incident may be responsible for CBRN consequence management planning and may be required to execute plans during full spectrum operations.<br><b>Status:</b> Current. Will be redesignated as ATTP 3-11.41.                                                                                                                                                                                                                                                                          |
| FM 3-11.22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Weapons of Mass Destruction–Civil Support Team Operations                                                                              | 10 Dec 07<br>C1 31 Mar 09 | A dual-service (Army and Air Force) manual that provides suggested doctrinal TTP for use by WMD–civil support teams. The revision updates the manual to incorporate the expanded mission of WMD–civil support teams, including responses to toxic industrial materials releases and natural or man-made disasters that could result in the loss of life or destruction of property in the United States. It also addresses expanded response areas in which the teams are required to conduct their missions, including maritime and urban areas and confined spaces.<br><b>Status:</b> Under revision FY 11. Will be redesignated as ATTP 3-11.46. |
| FM 3-11.34<br>MCWP 3-37.5<br>NTTP 3-11.23<br>AFTTP(I) 3-2.33                                                                                                                                                                                                                                                                                                                                                                                                                                              | Multiservice Tactics, Techniques, and Procedures for Installation CBRN Defense                                                         | 6 Nov 07                  | An MTTP that focuses on installation emergency management rather than CBRN installation defense. It will address all hazards—not just CBRN hazards. The revision is the result of newly published DOD policy and instruction and a front-end analysis of the DOD CBRN Defense Program led by the J-8/Joint Requirements Office. The new name will be <i>Multiservice Tactics, Techniques, and Procedures for Installation Emergency Management</i> .<br><b>Status:</b> Under revision FY 11. 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 obscuration during or in support of full spectrum military operations at the tactical through operational levels of war.<br><b>Status:</b> Current. Will be redesignated as ATTP 3-11.50.                                                                                                                                                                                                                                                                                                                                                                           |
| FM 3-11.86<br>MCWP 3.37.1C<br>NTTP 3-11.31<br>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.<br><b>Status:</b> Under revision FY 11. 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 manual that provides the basic doctrine for the employment of a chemical, biological, radiological, nuclear, and high-yield explosives operational headquarters to conduct tactical-level, WMD-elimination (WMD-E) operations or transition to a joint task force-capable headquarters for WMD-E operations to support campaigns and civil authorities.<br><b>Status:</b> Under revision FY 11. This is a Maneuver Support Center of Excellence manual, which will be redesignated as an FM.                                                                                                                                           |
| <p><b>Note.</b> Current CBRN publications can be accessed and downloaded in electronic format from the Reimer Digital Library at <a href="http://www.adtdl.army.mil/">http://www.adtdl.army.mil/</a>, CBRN Knowledge Network (CKN) at <a href="http://www.us.army.mil/suite/portal.do?p=409522">http://www.us.army.mil/suite/portal.do?p=409522</a>, or Maneuver Support Knowledge Network (MSKN) at <a href="http://www.us.army.mil/suite/page/275589">http://www.us.army.mil/suite/page/275589</a>.</p> |                                                                                                                                        |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Emerging Publications</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                        |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| ATTP 3-11.23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 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.<br><b>Status:</b> Under development FY 11.                                                                                                                                                                                                                                                                                                         |
| ATTP 3-11.47                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives Emergency Response Force Package (CERFP) Operations             | 4th Qtr, FY 11            | A dual-service ATTP that provides the tactical doctrine and associated TTP for conducting CERFP operations. This manual contains TTP associated with consequence management operations that involve State Active Duty, Title 32, and Title 10 response.<br><b>Status:</b> Under development FY 11.                                                                                                                                                                                                                                                                                                                                                  |
| <p><b>Note.</b> CBRN draft publications can be accessed and downloaded in electronic format from CKN at <a href="https://www.us.army.mil/suite/portal.do?p=409522">https://www.us.army.mil/suite/portal.do?p=409522</a> or MSKN at <a href="https://www.us.army.mil/suite/page/275589">https://www.us.army.mil/suite/page/275589</a>.</p>                                                                                                                                                                 |                                                                                                                                        |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

# 83d Chemical Battalion Honors Their Veterans

*By Captain Heather McColl Morgan*



Since its activation in 1942, the 83d Chemical Battalion has truly lived up to its motto of “Confront Any Mission.” From mid- to close-range mortar support during World War II to modern convoy operations and chemical, biological, radiological, and nuclear reconnaissance, surveillance, and decontamination, the 83d is a full spectrum operational unit with a rich history and tradition.

The battalion was first activated at Camp Gordon, Georgia, on 10 June 1942. After undergoing rigorous training and preparation, the men of the 83d departed for the Mediterranean Theater on 29 April 1943. They served 508 days in combat in the Mediterranean Theater and on mainland Europe during World War II. The battalion firepower, which was originally designed to consist of thirty-six 4.2-inch mortars, was equivalent to three 105-millimeter howitzers and provided formidable, mid- to close-range fire support to infantry units. The battalion expended nearly 500,000 rounds of ammunition in combat. They also captured almost 5,000 Italians and Germans and liberated 230 allied prisoners. The 83d successfully performed one airborne operation and five amphibious operations in eight campaigns, including Sicily (with arrowhead), Naples-Foggia (with arrowhead), Anzio (with arrowhead), Rome-Arno, Southern France (with arrowhead), Rhineland, Ardennes-Alsace, and Central Europe. Members of the battalion received the following awards for their distinguished service: 3 Distinguished Service Crosses (posthumous), 2 Legions of Merit, 39 Silver Stars, 9 Soldier’s Medals, 97 Bronze Stars, 5 Croix de Guerre, and 876 Purple Hearts.

The veterans of the 83d maintain a highly active organization that gathers annually to retell the unit’s stories and maintain connections with old comrades. This year, the leaders and Soldiers of the active battalion decided to honor the unit legacy in a unique way—by connecting the veterans to the unit’s more recent past, contemporary operations, and future. In a ceremony combining three significant battalion events, World War II veterans were awarded the Honorable Order of the Dragon, two new Operation Iraqi Freedom campaign streamers were added to the battalion colors, and the battalion’s newly commissioned print was unveiled.

In concert with the 19 June 2010 annual reunion of the 83d Chemical Battalion Veteran’s Association, leaders and Soldiers of the 83d gathered on the steps of the National World War II Memorial in Washington, D.C., to honor their own members of “The Greatest Generation”—veterans of the 83d Chemical Battalion who fought during World War II. The transformation of the battalion through the decades was depicted by Soldiers in period uniforms, beginning with a Soldier clad in the same olive drab uniform worn by battalion members during World War II. Soldiers who were dressed to represent the Korean Conflict, Vietnam War, Operations

Desert Storm and Desert Shield, and the War on Terrorism stepped forward in succession. The battalion World War II veterans and their families were then recognized for their exceptional valor, tenacity, and commitment.

The battalion awarded the Honorable Order of the Dragon to Mr. Stephen Vukson. An additional ceremony was held in Baltimore, Maryland, where the Honorable Order of the Dragon was also awarded to Lieutenant Colonel Leon Trey (Retired), Mr. Dan Miller, and Mr. John P. McEvoy. All four of the Honorable Order of the Dragon recipients served with distinction during World War II and continue to serve in the 83d Chemical Battalion Veteran’s Association.

Building upon the exceptional, combat-hardened beginning of the 83d has proven to be a challenging task for more recent members of the battalion; so, the present leaders and Soldiers of the 83d elected to add two Operation Iraqi Freedom campaign streamers to the battalion colors during the same ceremony. This allowed the veterans of the 83d and their families to see that their blood, sweat, and tears contributed to the making of an outstanding, relevant, and combat-ready battalion that is prepared to confront today’s missions and those of the future. One streamer was awarded for the Liberation of Iraq from 19 March to 1 May 2003, and another was awarded for the Transition of Iraq from 2 May to 12 July 2003.

The battalion also unveiled a commemorative print during the ceremony. In the print, which was created by artist Marc Wolfe, 83d Chemical Mortar Battalion Soldiers are fighting alongside modern 83d Chemical Battalion Soldiers, depicting the full spectrum of capabilities in today’s Chemical Corps. The combination of the print and the living Soldiers clad in historical uniforms provided the audience with a living picture of past and present heroes—men and women who put their lives on the line for our country’s freedom.

With a chorus of echoing Soldiers, Lieutenant Colonel Michael B. Hedges, commander of the 83d Chemical Battalion, called out a cadence: “Some say freedom is free . . . well, we tend to disagree.”

These events were more than a chance for participants to see our Nation’s capitol or to put on a good show. It was with a sense of overwhelming pride that members of the 83d Chemical Battalion invited visitors to the memorial to join them in honoring the veterans and families who sacrificed so much in the fight to preserve liberty. ●●●

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*Captain Morgan is the assistant intelligence staff officer (S-2), 83d Chemical Battalion, Fort Polk, Louisiana. She holds bachelor’s degrees in English and Spanish from Asbury College, Willmore, Kentucky.*



**Members of the sampling team approach a location where suspected chemical munitions were reported.**


*By Sergeant First Class J.B. Jaso III*

Severe rain didn't stop the Soldiers of Company A, 22d Chemical Battalion (Technical Escort), 48th Chemical Brigade, 20th Support Command, from carrying out a 9 June 2010 exercise in which they responded to a report of suspected leaking chemical munitions at the Edgewood Area of Aberdeen Proving Ground, Maryland.

According to First Lieutenant Maritzabel Mustafaa, chemical response team leader, the exercise was developed to train newly assigned Soldiers to "sustain proficiency and provide a team that is trained and capable of safely assessing, packaging, sampling, and processing chemical warfare munitions." She continued to stress the importance of the training, stating, "It is important for a [chemical response team] to know how to recover munitions, as it is a primary core task; and we can be called upon to assist in the remediation of chemical warfare materials discovered either by chance or during deliberate real estate recovery/restoration operations."

For example, in March 2010, the team was called upon to assist the Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives Analytical and Remediation Activity with remediation efforts involving the recovery of chemical warfare munitions in the Washington, D.C., area. These efforts eliminated civilian exposure to chemical and explosive hazards.

Since that time, though, new Soldiers have arrived and positions within the team have changed. The latest training was essential in making the new members of the team aware of established procedures.

The training consisted of two days of classroom and hands-on instruction and culminated in an exercise that tested what the Soldiers had learned. Although the weather was unfavorable, the conditions added a new level of difficulty, which forced the team to think about how to mitigate a leaking round without spreading contamination. The team leader concluded by stating, "The team surpassed my expectations on the way they conducted the mission, and we look forward to more challenging exercises." 

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*Sergeant First Class Jaso is an assistant team sergeant with Company A, 22d Chemical Battalion. He is pursuing a bachelor's degree in public administration from Upper Iowa University.*



# RESERVE COMPONENT UPDATE

## Professional Military Education

Qualification training courses are listed and described in Table 1.

**Table 1. Qualification training courses**

| <b>Enlisted/Noncommissioned Officer (NCO) Qualification Training Courses</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>74D10 Chemical, Biological, Radiological, and Nuclear (CBRN) Specialist Course (School Code 031)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Phase I<br>(Course 031-74D10 [R] [dL])                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Students who have a reservation for Phase II are automatically enrolled in Phase I. They receive e-mail instructions from The Army Distributed Learning Program via Army Knowledge Online (AKO). Students must complete Phase I before reporting for Phase II training. An Army Correspondence Course Program (ACCP) certificate of completion (e-mailed) or other documentation must be presented as proof of Phase I completion during Phase II in-processing. Soldiers who experience problems with Phase I should telephone the ACCP at (800) 275-2872 (Option 3) or (757) 878-3322/3335. If no ACCP representative is available, they should contact Ms. Karen Campbell, 3d Brigade (Chemical), at (860) 570-7117 or <karen.a.campbell@us.army.mil>.                                                                                                                   |
| Phases II and III<br>(Course 031-74D10 [R1])                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | These phases consist of resident training conducted at Fort Leonard Wood, Missouri. Soldiers must have an e-mail printout indicating that they have completed Phase I. Soldiers who fail to provide the printout are returned to their units. Phase II is waived for civil support team members who have already completed the Civil Support Skills Course (CSSC).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Advanced Leader Course (ALC)—Common Core (CC) dL (School Code G400, Course 600-C45)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| This is a 90-day, 60.4-hour, highly facilitated, Web-based, non-military-occupational-specialty-specific course that has replaced only the CC portion of the previous Basic Noncommissioned Officer Course (BNCOC). Unit trainers enroll Soldiers through the Army Training Requirements System (ATTRS). Students receive e-mail registration instructions. Soldiers who fail to register within 15 days prior to the start date are automatically cancelled and considered “No Shows.” The next Soldier on the waiting list is granted a confirmed reservation. Soldiers who are classified as “No Shows” or who have been cancelled may be required to wait 24 months to be rescheduled for any phase of ALC. Soldiers must complete the ALC-CC and the three-phase CBRN ALC technical course to be considered an ALC graduate. Soldiers who previously completed BNCOC-CC will receive constructive credit for ALC-CC. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>74D30 CBRN ALC (School Code R031, Course 031-74D30-C45)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| CBRN ALC is a three-phase resident course. Phase I is waived for Soldiers who possess a certificate indicating that they have completed Department of Defense (DOD)-certified hazmat training at the technical level.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>74D40 Senior Leader Course (SLC) (School Code R031, Course 031-74D30-C46)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| This is a three-phase resident course conducted at Fort Leonard Wood.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Officer Qualification Training Courses</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>CBRN Captain’s Career Course (C3) (School Code 031)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Phase I<br>(Course 4-3-C23[dL])                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | This branch-specific distributed learning (dL) phase (formerly Phase II) consists of 108 hours of dL instruction, which must be completed within 60 days before attending Phase II. Unit trainers enroll Soldiers through ATTRS. Students receive e-mail instructions from the Army Distributed Learning Program. Hazmat awareness training can be accessed at < <a href="https://afcesa.csd.disa.mil/kc/login/login.asp">https://afcesa.csd.disa.mil/kc/login/login.asp</a> > and completed by students prior to attending Phase II. Students who encounter problems should contact the U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS), CBRN C3 Course Manager, Major Michael Ballerstein at (573) 563-5018. The successful completion of Phase I (and the CBRN Defense Course [branch transfers]) is a prerequisite for Phase II attendance. |
| Phase II<br>(Course 4-3-C23)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | This branch-specific resident phase (formerly Phase III) consists of two weeks of training conducted at the USACBRNS. The focus is on radiological operations, live-agent training, hazmat awareness and operations level training and certification, and the basics of the Joint Warning and Reporting Network used within the Maneuver Control System. The successful completion of Phase II is a prerequisite for enrollment in Phase III.                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Phase III<br>(Course 4-3-C23 [dL])                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | This CC phase (formerly Phase IV) consists of 59.2 hours of dL instruction. Unit trainers enroll Soldiers through ATTRS. Students receive e-mail instructions from the Army Distributive Learning Program. Students must complete Phase III within 60 days of attending Phase IV. Those who encounter problems should contact Major Ballerstein at (573) 563-5018. The successful completion of Phase III is a prerequisite for Phase IV attendance.                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Phase IV<br>(Course 4-3-C23)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | This resident phase (formerly Phase V) consists of two weeks of training conducted at the USACBRNS. The focus is on a computer-aided exercise that includes additional Joint Warning and Reporting Network and Maneuver Control System training, culminating in a military decisionmaking process exercise using state-of-the-art battle simulation equipment.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <p><b>Notes.</b></p> <p>1. Soldiers completing any portion of the previous five-phase course receive constructive credit.</p> <p>2. The renumbering of the C3 phases has resulted in an increase in the number of students experiencing registration difficulties. The USACBRNS is working with the Training Operations Management Agency (TOMA) to address this issue. Once the problems have been corrected, clear guidance regarding the path to course completion will be provided. Please contact Major Ballerstein concerning any registration issues.</p>                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

# RESERVE COMPONENT UPDATE



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|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Joint SLC (Course 4K-74A/494-F18)</b>                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 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 SLC forum offers a unique opportunity for senior military leaders, civilian government agency leaders, and leaders representing allied and coalition partners to exchange ideas. |
| <b>CBRN Precommand Course (Course 4K0F4)</b>                                                                                                                                                                                                                                                                                                                                                                                                                          |
| This is a five-day course that prepares Regular Army and Reserve Component (RC) officers who have been selected for command of a CBRN battalion or brigade or a CBRN position in a division. Each student receives instruction in the application of Field Manual (FM) 7-0 and FM 7-1 concepts to the battalion training management process.                                                                                                                          |
| <b>Note.</b> Additional information is available at < <a href="https://www.atrs.army.mil/">https://www.atrs.army.mil/</a> >.                                                                                                                                                                                                                                                                                                                                          |

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

**Table 2. Functional training courses**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CBRN Defense Course (School Code R031, Course 031-NBC)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 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 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. |
| <b>Mass Casualty Decontamination Course (School Code 031, Course 4K-F25/494-F-30)</b>                                                                                                                                                                                                                                                                                                                                                                                                                       |
| This nine-day course is appropriate for CBRNE enhanced response force package and domestic-response casualty decontamination team members. Students who successfully complete the course receive certification at the hazmat awareness and operations levels.                                                                                                                                                                                                                                               |
| <b>CBRN Responder Course (School Code 031, Course 4K-F24/494-F29)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 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.                                                                                                                                                                                                                                                                                  |
| <b>Civil Support Skills Course (CSSC) (School Code 031, Course 4K-F20/494-28)</b>                                                                                                                                                                                                                                                                                                                                                                                                                           |
| This eight-week course is appropriate for Army National Guard civil support team members. Students receive advanced training in hazmat technician and incident command and CBRN survey, point reconnaissance, sampling operations, personal protective equipment selection and certification, decontamination, and specialized training on a variety of military and commercial CBRN detection equipment.                                                                                                   |
| <b>Note.</b> All students who successfully complete hazmat training are awarded certificates issued by the International Fire Service Accreditation Congress and DOD. Additional copies of certificates can be obtained from < <a href="http://www.dodffcert.com">http://www.dodffcert.com</a> >.                                                                                                                                                                                                           |

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

## USACBRNS RC Personnel

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

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

3d Brigade (Chemical), 102d Division (Maneuver Support), is currently seeking instructors for various locations. Applicants should hold the rank of staff sergeant or sergeant first class, be qualified (or able to be trained) as Army basic instructors, and have completed the appropriate NCOES coursework. Interested Soldiers should contact Ms. Campbell at (860) 570-7117 or <[karen.a.campbell@us.army.mil](mailto:karen.a.campbell@us.army.mil)> or Master Sergeant Richard Kennon at (860) 570-7115 or <[richard.kennon@us.army.mil](mailto:richard.kennon@us.army.mil)>.

## Contact Information

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

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

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

Sergeant First Class Joseph Bahr (ARNG Proponency NCO), (573) 563-7667 or <[joseph.bahr@us.army.mil](mailto:joseph.bahr@us.army.mil)>.

# 22d Chemical Battalion Technical Escort Team Competition

By Sergeant First Class J.B. Jaso III

After months of training, Soldiers from the 22d Chemical Battalion (Technical Escort), 48th Chemical Brigade, 20th Support Command, held a week-long competition to finally determine which technical escort team was the best in the unit. The battle, which took place at the Edgewood Area, Aberdeen Proving Ground, Maryland, 2–6 August 2010, consisted of the demonstration of equipment proficiency and the sensitive-site exploitation of chemical and biological laboratories. Teams prepared and rehearsed for the clash for weeks in advance.

“The competition was fierce,” said a staff sergeant who is a sample team member with Company A, 22d Chemical Battalion. “Everyone wanted [his or her] team to win, which increased the level of proficiency and training within the battalion.”

Learning about the array of technical escort equipment is a major task within itself. During the competition, Soldiers were randomly selected to provide an explanation of technologies and to operate equipment. Because communications, detection, and analytical equipment was used for the competition, every Soldier needed to know how to operate the entire equipment set.

The teams were also required to conduct a timed, sensitive-site exploitation of chemical and biological laboratories. This involved the proper use of evidence collection techniques such as the sampling, analysis, and identification of possible contaminants.

Chemical Response Team 1, Company A, ultimately won the competition. According to Lieutenant Colonel Chadwick Bauld, commander of the 22d Chemical Battalion, “The point differential between first and second place was one point.”

“This competition was [about] more than just deciding which team was the best,” said a team sergeant from Company A. “It was about cross-training every individual on the team, identifying what improvements need to be made, and becoming more proficient as a collective unit.”

*Sergeant First Class Jaso is an assistant team sergeant with Company A, 22d Chemical Battalion. He is pursuing a bachelor's degree in public administration from Upper Iowa University.*



**Soldiers receive their orders.**



**A Soldier sprays another with decontamination solution.**



**A Soldier conducts an initial analysis of a suspected biological contaminant.**

# 2010 Honorees of the U.S. Army Chemical Corps

By Ms. Christy Lindberg

## Hall of Fame Inductees

*The U.S. Army Chemical Corps Hall of Fame award is the highest form of recognition offered by the Regiment. This coveted award honors those who have made landmark contributions to the overall history and traditions of the Chemical Corps or continue to work in ways that benefit the Corps. These individuals have distinguished themselves through advances in science and technology, a lifetime of service and devotion to the Corps, or gallantry in battle. The ranks of the Hall of Fame are inundated with scientists who tirelessly worked to protect the force through innovations and with Soldiers who exemplified the tenets of courage and honor. The following individuals were inducted into the Hall of Fame on 24 June 2010.*



### ***Lieutenant Colonel Dean Monroe Dickey (Retired)***

Dean Monroe Dickey was born 14 January 1923 in Millen, Georgia. He enlisted in the Army in 1939; and by the time the United States entered World War II, he was a master machine gunner.

An original member of the famous 23d Infantry Division (Americal), Sergeant Dickey was awarded the Silver Star for his actions in defending an aid station from a Japanese attack on the island of Guadalcanal on 14 January 1943. According to the award citation, "Sergeant Dickey ran through intense gunfire to attack an enemy force with bayonet, killing seven of the enemy, saving the lives of his wounded comrades, who he then voluntarily assisted with evacuation to a place of safety."

Following his participation in the Guadalcanal, New Georgia, and Bougainville campaigns, Sergeant Dickey returned to the United States, where he served as an artillery mechanic with the 175th Cannon Company, 70th Infantry Division. He was discharged from the Army on 20 September 1945, but immediately received a classified assignment to Africa and, later, Holland, where his fluency in German, Hebrew, and Dutch was of great assistance in postwar reconstruction efforts.

After earning a degree in chemistry from the University of California in 1948, Dickey was commissioned into the Chemical Corps. Upon completion of the Chemical Officer's Basic Course, Second Lieutenant Dickey was assigned as the chemical supply officer, 9710th Technical Service Unit, Edgewood Arsenal, Aberdeen Proving Ground, Maryland. During his tour with this unit, he became interested in the disposal of explosive ordnance. Consequently, he was designated as the officer in charge of a seven-man team that was tasked with clearing "O" Field, which is an impact area on the Gunpowder Neck of Edgewood Arsenal—an area known for its large number of unexploded conventional and chemical munitions.

While participating in nerve agent testing at Dugway Proving Ground, Utah, in November 1950, Dickey was accidentally exposed and became the Chemical Corps' first serious nerve agent casualty. Although Dickey was near death for two weeks, he recovered from the exposure and served with chemical service companies and depots in Japan for the next three years.

In March 1954, Dickey returned to the Technical Escort Detachment at Edgewood Arsenal and continued training in explosive ordnance disposal. He served as the chemical liaison officer at the U.S. Naval Ordnance Disposal School, Indian Head, Maryland, and later at the Army Materiel Command in Washington, D.C., before assuming command of the Technical Escort Center at Edgewood Arsenal in February 1965. Lieutenant Colonel Dickey served in that capacity until July 1970.

Upon his retirement in October 1970, Lieutenant Colonel Dickey received the Legion of Merit award for meritorious service and a commendation from the Secretary of the Army for his work in the chemical agent escort and disposal fields. Following retirement, Dickey continued to serve the Nation as a civilian project engineer for the U.S. Army Toxic and Hazardous Materials Agency.

Lieutenant Colonel Dean Dickey died on 14 November 1979 in Washington, D.C.

### ***Captain Paul Barkley Bowman***

Paul Barkley Bowman was born 3 September 1943 in Newaygo, Michigan. He entered the Army in 1966 and served in the U.S. Army Materiel Command Technical Escort Unit, Edgewood Arsenal, Aberdeen Proving Ground, Maryland.

In 1969, Bowman was deployed to Vietnam as a chemical officer in the chemical detachment assigned to Headquarters and Headquarters Company, 25th Infantry Division. The 25th was engaged in finding and destroying a large force of North Vietnamese army regulars in the Tay Ninh Province of South Vietnam in late January 1970. Because the Tay Ninh North Vietnamese army base camps were located along the border with Cambodia, the enemy could easily withdraw into the safety of Cambodia, where U.S. and South Vietnamese forces were not permitted. On 31 January 1970, while pursuing the retreating North Vietnamese army forces, companies of the 25th Division were pinned down by heavy machine gun and rocket fire in a densely forested area known as the “Mo Con Woods.” A complex of heavily fortified North Vietnamese army bunkers was identified, and a helicopter was sent to provide aerial support for the ground forces.



Captain Bowman was one of three Chemical Corps officers aboard the dispatched Huey helicopter, which began making low-level runs over the bunker complex. While the crew laid suppressing fire, Captain Bowman armed and dropped clusters of 2-chlorobenzalmalononitrile (CS) riot control agent bomblets. During one of the passes, the aircraft was hit. The helicopter crashed into the jungle canopy, killing Captain Bowman and the other six Soldiers onboard.

The efforts of Captain Bowman and the aircrew saved the lives of many ground Soldiers and were key to the capture of the bunker complex.



### ***Command Sergeant Major Theodore Roosevelt MacDonnell (Retired)***

Theodore Roosevelt MacDonnell was born 11 December 1920 in Ridley, Delaware. The son of a World War I British army veteran, MacDonnell enjoyed dual citizenship in the United States and Great Britain. He was educated in England and served as a cadet in a British border regiment at the age of 16. MacDonnell, who was an extraordinary athlete, earned a spot on the 1940 British Olympic decathlon team, but the start of World War II in 1939 prevented his participation. He returned to the United States in 1940 and entered the U.S. Army in 1942.

Upon reporting to Gadsden, Alabama, MacDonnell began constructing Camp Sibert, the primary training facility for the Chemical Warfare Service. He completed Chemical Warfare Service training at Camp Sibert and was sent first to California and then Fort Shafter, Hawaii, where he joined the 8th Chemical Depot Company. That company was responsible for the Chemical Warfare Service supply function in the Hawaiian Islands.

In the summer of 1943, Private MacDonnell volunteered for Ranger training and graduated in the first training class. Noticed for his exceptional skills, MacDonnell was selected as an instructor for the Ranger battalion. After serving in that capacity for several months, he was recruited for duty with the 91st Chemical Mortar Company. When he learned that the 91st was to be attached to the 7th Infantry Division, which was undergoing amphibious assault training in Hawaii for immediate combat service, MacDonnell accepted. While with the 91st, he saw action in the battles of Kwajalein, Leyte, and Okinawa.

The 91st Chemical Mortar Company provided close fire support for the 1st and 6th Marine Divisions and 7th Infantry Division in their relentless assaults against the Japanese defenses on the island of Okinawa. On the afternoon of 21 April 1945, Sergeant MacDonnell was acting as a forward observer for his company’s mortars, firing in support of the 2d Battalion, 32d Infantry Regiment, 7th Division. The infantry was preparing for an assault on Japanese positions along the lower half of Skyline Ridge—a feature that dominated the American lines. Intense Japanese rifle, mortar, and machine gun fire swept the exposed hillside, prompting General A.A. Arnold, commander of the 7th Division, to postpone the assault until the threat could be eliminated. Sergeant MacDonnell’s actions that afternoon nullified General Arnold’s concerns. The following general order describes what happened:

*General Orders: Headquarters, 10th U.S. Army. By direction of the President, a Distinguished Service Cross is awarded to Sergeant Theodore R. MacDonnell, Chemical Warfare Service, for extraordinary heroism in action on Okinawa on 21 April 1945.*

*When an enemy machine gun in a commanding position with protecting riflemen held up the advance of an infantry company to which he was attached as a chemical mortar observer, Sergeant MacDonnell voluntarily left a place of safety and, armed only with grenades, single-handedly assaulted the position.*

*Advancing up the shell-torn slope under heavy enemy sniper fire and a barrage of grenades, Sergeant*



*MacDonnell climbed to the top of the ridge three times, hurled grenades at the enemy, then slid back to the bottom of the slope to escape the enemy fire.*

*Having located the enemy gun on the third trip, he borrowed a Browning automatic rifle and, without regard for his personal safety and in the face of enemy fire, again climbed the ridge, intent on the destruction of the enemy. After firing one round, his gun jammed, forcing his withdrawal.*

*Undaunted, he returned, secured a carbine, and again made the perilous ascent in the face of a deadly hail of bursting grenades and heavy enemy fire, fearlessly assaulting the position, annihilating the enemy gunner and two riflemen.*

*Remaining in this exposed position, he threw the enemy machine gun and a mortar he also found in the position down the hillside—at the same time, still engaging the remaining enemy until other troops, electrified by his actions, joined him and secured the position.*

*Sergeant MacDonnell's courageous and intrepid actions were an inspiration to all and greatly expedited the advance of the assaulting elements and the attainment of the objective.*

Staff Sergeant MacDonnell reenlisted in the Chemical Warfare Service on 15 March 1946 and spent the next few years on recruiting duty. In 1949, he was commissioned as a second lieutenant in the Chemical Corps. That year, while stationed at Fort Bragg, North Carolina, he was involved in the integration of Chemical Corps smoke generation units—a program for which the Chemical Corps took the lead.

With the reduction in force of the post-Korean War Army and the accompanying freeze in promotions in the mid-1950s, Lieutenant MacDonnell was presented with the option of reverting to the enlisted ranks or separating from the Service. He elected to separate, leaving the Army in 1954 to pursue a career in professional baseball and football. However, a series of injuries ended his athletic career, and MacDonnell reenlisted in the Army at the rank of staff sergeant.

Staff Sergeant MacDonnell was assigned as a drill sergeant in the 10th Mountain Division and continued serving in the infantry for the remainder of his career. He earned his combat infantryman's badge in 1968 while serving as a first sergeant during the Tet Offensive in Vietnam.

Returning stateside, MacDonnell served as an instructor with the Training Division, preparing Soldiers for action in Vietnam. His final assignment was sergeant major of the All-Army Shooting Team at Fort Benning, Georgia.

Command Sergeant Major Theodore MacDonnell retired from the Army in 1973, after 31 years of service to the Nation. He currently resides in Columbus, Georgia.

### **Distinguished Members of the Chemical Corps Inductees**

Four names were added to the list of outstanding individuals serving the U.S. Army Chemical Corps. The award of the Distinguished Member of the Chemical Corps title means that these individuals have not only served a lifetime of service in the Corps, but also support the Chief of Chemical in implementing his vision of what the Corps is and where it is going in the future. The following individuals were inducted into the 2010 Distinguished Members of the Chemical Corps on 24 June 2010.

#### ***Colonel Gary R. Wallace (Retired)***

Colonel Gary R. Wallace was born 31 October 1954 in Bluff Dale, Texas. Upon graduation as a Reserve Officers' Training Corps Distinguished Military Graduate from Tarleton State University, Stephenville, Texas, in December 1977, he was commissioned as a second lieutenant in the U.S. Army Infantry.

During his 30-year Army career, Wallace served as an infantry platoon leader; a technical escort detachment commander; commander of the 68th Chemical Company, 1st Cavalry Division; deputy commander of the Pine Bluff Arsenal in Arkansas; commander of the Newport Army Ammunition Plant in Indiana; division chemical officer for the 1st Infantry Division; director of Chemical Warfighter Operations, U.S. Army Chemical School, Fort McClellan, Alabama; chief of the Weapons of Mass Destruction Domestic Preparedness Branch, Headquarters, Department of the Army; and commander of the Holston Army Ammunition Plant in Tennessee.

In 2002, Colonel Wallace was appointed as the assistant commandant of the U.S. Army Chemical School, Fort Leonard Wood, Missouri—a duty he performed until July 2007. As the assistant commandant, Colonel Wallace set the conditions for chemical, biological, radiological, and nuclear (CBRN) Soldiers to successfully complete missions in response to the events of



11 September 2001. He was also instrumental in gaining proponentcy for the technical escort mission; was the driving force in the development of the First Lieutenant Joseph Terry CBRN Responder Facility; and was influential in achieving approval for production of the Stryker Nuclear, Biological, and Chemical Reconnaissance Vehicle.

In his last military duty assignment, Colonel Wallace served as the Chief of Staff of the Maneuver Support Center and Fort Leonard Wood. He is now the principal CBRN analyst for Concurrent Technologies Corporation.

Throughout his career, Colonel Wallace's performance has been superior in every respect. His exceptional service has left an indelible mark on the Chemical Corps, the U.S. Army, and our Nation.

Colonel Gary Wallace, who resides in Hawkins, Texas, is married to the former Belinda Phillips of Watson Chapel, Arkansas. He has two daughters, Sarah and Jill.

### ***Lieutenant Colonel Edward Stanley Draper (Retired)***



Lieutenant Colonel Edward Stanley Draper was born 26 September 1940. He joined the Army on 10 October 1963. Through a distinguished military and civilian career spanning more than 30 years, Lieutenant Colonel Draper served as a warrior and a scientist, significantly contributing to U.S. national defense and homeland security. Results of his work on the Combined Arms in a Nuclear/Chemical Environment (CANE) Program in the 1980s still influence current military operations, training, and doctrine.

Lieutenant Colonel Draper's greatest contribution was the leadership he provided while serving in the Army and working as a contractor in the highly successful CANE Program. While on active duty, he was transferred to Fort McClellan, Alabama, to initiate and direct the CANE Program. Upon his retirement from the Army, he was hired as the program manager for the CANE support contractor, ORI, in Anniston, Alabama.

The 15-year CANE Program—which included studies, modeling and simulation efforts, and field tests—remains the most significant operational program ever conducted by the Chemical Corps. The CANE Program provided the first and only operationally analyzed and evaluated data that showed the impact of the nuclear and chemical environment on the mission performance of combat units and their support organizations. Units tested ranged from squad and platoon levels to battalion and heavy task force organizations. More than 60 corrective-action management plans that addressed deficiencies across all domains and U.S. Army Training and Doctrine Command mission areas were generated by the CANE Program.

To date, CANE is still considered the seminal program for addressing how mission performance is impacted when operating in a contaminated environment. The Joint Requirements Office is currently looking into a program that would consider how all Services are impacted when operating in a chemical environment; CANE is the genesis for that joint effort.

Lieutenant Colonel Edward Stanley Draper passed away on 8 July 2006.

### ***Mr. Patrick L. Berry***

Mr. Patrick L. Berry was born 24 March 1951 in Hillsboro, Ohio. He received a bachelor's degree in chemical engineering from The Ohio State University and a master's degree in operations research from George Washington University, Washington, D.C.

As a chemical engineer with the U.S. Army Edgewood Chemical Biological Center, Mr. Berry provided invaluable service to our Nation, advancing state-of-the-art chemical and biological defense technology. He successfully led numerous product development efforts, and many of his projects continue to provide critical support to our warfighters around the world.

Mr. Berry began his career as the development engineer for the XM-19/XM-2 Biological Detector and Warning System. This was the first effort to develop a military biological detection system. He also planned and organized the Army's first toxin defense technology program. As the group leader for the XM22 Automatic Chemical Agent Detector, Mr. Berry was able to overcome critical technical problems to develop a system that is now in use by all Services. He served as the team leader for the M31 Biological Integrated Detection System—the first system to provide a military capability to detect biological threats. The M31, which was a direct benefit to U.S. ground forces, was used in support of Operations Desert Thunder, Noble Eagle, Enduring Freedom, and Iraqi Freedom. It established the basic concept of operations, architecture, and technologies that were eventually used in subsequent systems such as the Joint Portal Shield and Joint Biological Point Detection System.



Throughout his career in federal service, Mr. Berry shared his acquired knowledge with coworkers and colleagues in industry and academia. Due to his expertise, the Joint Program Executive Office for Chemical and Biological Defense called on Mr. Berry to serve as the technical director for the Joint Product Manager Biological Detection Systems and the Joint Project Manager for Biological Defense. He served as the U.S. representative on numerous international working groups and task forces related to biological detection. He established several cooperative research and development agreements with industry. In addition, he contributed numerous articles and technical reports to the scientific and military communities. In all aspects of his career, Mr. Berry was considered an expert in his field and a great mentor.

Mr. Patrick L. Berry passed away on 1 October 2007.

### ***Mrs. Jo Johnston***

For many years, Mrs. Jo Johnston has devoted her musical talent, time, and energy to the U.S. Army. Her unique contributions have resulted in the composition of three Army branch songs: “Above the Best” for the Aviation Corps, “Dragon Soldiers” for the Chemical Corps, and “Essayons” for the Corps of Engineers. Mrs. Johnston was inducted into the Alabama Music Hall of Fame for her composition of the Aviation Corps theme song, “Above the Best.”

A branch song must appeal to Soldiers and serve as a rallying cry for the entire corps in peacetime as well as times of war. The composition of the Chemical Corps theme song and the timing of Mrs. Johnston’s support to Dragon Soldiers were especially important.

The Chief of Staff of the Army had just reversed an earlier decision to disestablish the Chemical Corps due to the erroneous belief held by a few that the threat of chemical and biological weapons on the battlefield had diminished and the Corps was no longer needed. Mrs. Johnston understood the importance of the Chief of Staff’s reversal. She realized that the Soldiers needed to have a positive image of themselves, and she believed she could provide it through song. Mrs. Johnston presented the music and lyrics of “Dragon Soldiers” to the men and women of the U.S. Army Chemical Corps in 1989.



Colonel Gregory M. Huckabee (Retired), former deputy staff judge advocate of the U.S. Army Chemical and Military Police Centers at Fort McClellan, Alabama, said this about the Chemical Corps song:

*Over a period of several hours, I had the privilege of watching history being made. When the symphony orchestra played the song through the first time, I was astounded at the power and inspiration conveyed by the music. I had no idea the new Chemical Corps theme song was going to be a symphonic masterpiece. Watching small changes made over a few hours only increased my appreciation of Jo and her musical gift. What she and her conductor produced has become part of the legacy of the Chemical Corps and part of the proud tradition of the U.S. Army.*

*At the conclusion of the theme song production, Jo paid for the entire symphony and production of several hundred cassette tapes. Representing the Army, I felt more than a little discomfited by such an act of largesse and mentioned this to her. She said it did not matter what she received back because this was important and she was honored to do it.*

*It was clear to me at this poignant moment that Americans find many ways to say “thank you” to Soldiers, but this songwriter chose a profound means of doing so in a gift to the Chemical Corps and Army that keeps on giving.*

Since its adoption as the official theme song of the Chemical Corps, “Dragon Soldiers” has been sung by hundreds of thousands of Soldiers and civilians; and its messages of pride and determination still hold true in the 21st century.

Mrs. Johnston resides in Birmingham, Alabama. She owns a publishing company and is president of a recording company.



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*Ms. Lindberg is the assistant historian at the U.S. Army CBRN School History Office, Fort Leonard Wood, Missouri.*



Chemical Corps Regimental Association

## 2011 CCRA Nominations for Hall of Fame and Distinguished Member of the Corps

Nominations are being accepted for the 2011 Chemical Corps Regimental Association (CCRA) Hall of Fame and Distinguished Member of the Corps honors.

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

For nomination criteria and submission requirements, see the CCRA Honors Program Web site at <http://www.chemical-corps.org/honors.htm>. Nomination packets should be sent to:

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

All packets must arrive before **1 April 2011**. For more information, call (573) 563-7339 or e-mail [david.chuber@us.army.mil](mailto:david.chuber@us.army.mil) or [christy.lindberg@us.army.mil](mailto:christy.lindberg@us.army.mil).

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## 86TH CHEMICAL MORTAR BATTALION REUNION



The 86th Chemical Mortar Battalion Association will hold a reunion at the Guesthouse Hotel in Nashville, Tennessee, 4–8 May 2011.

For more information, write to Mr. George Murray, 818 West 62d Street, Anniston, AL 36206, or e-mail him at [gputzer1024@yahoo.com](mailto:gputzer1024@yahoo.com).



# 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/chmtdsd>, and is available for sale by the Government Printing Office. As such, it is readily accessible to nongovernment and foreign individuals and organizations.

We cannot guarantee that we will publish all articles, photographs, or illustrations. They are accepted for publication only after thorough review. If we plan to use your article in an upcoming issue, we will notify you. Therefore, it is important to keep us informed of changes in your e-mail address or telephone number. All articles accepted for publication are subject to grammatical and structural changes as well as editing for style.

*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.mdtaocr@conus.army.mil](mailto:leon.mdtaocr@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—

*Army Chemical Review*  
464 MANSCEN Loop  
Building 3201, Suite 2661  
Fort Leonard Wood, MO 65473-8926



# Soldier's Creed



I am an American Soldier.

I am a Warrior and a member of a team.  
I serve the people of the United States  
and live the Army Values.

I will always place the mission first.  
I will never accept defeat. I will never quit.  
I will never leave a fallen comrade.

I am disciplined, physically and  
mentally tough, trained and proficient  
in my warrior tasks and drills.  
I always maintain my arms, my equipment,  
and myself. I am an expert,  
and I am a professional.

I stand ready to deploy, engage,  
and destroy the enemies of the  
United States of America  
in close combat.

I am a guardian of freedom  
and the American way of life.

**I am an American Soldier.**

