



# CBARR NEWS

Edgewood Chemical Biological Center

July 2013 | Volume 1 | Issue 7

*A worldwide leader  
in CB solutions*



This July, the U.S. Army Edgewood Chemical Biological Center (ECBC) takes time to reflect on its history while highlighting some proven chemical and biological solutions regularly executed by the Chemical Biological Application and Risk Reduction (CBARR) Business Unit. From live agent handling to field operations, state-of-the-art equipment has enabled trained technicians to provide integrated solutions to customers worldwide, as well as lead to innovative technologies such as the new Field Deployable Hydrolysis System, which was a culmination of outstanding government partnership, planning and execution. CBARR's capabilities go beyond solving problems, they ignite new ideas that shape the ECBC story as it continues to support the Warfighter and the larger mission of the chem-bio national defense community. Enjoy a great read this July!

## INSIDE THE ISSUE

### The T-30 Transportable Detonation Chamber

Munition Disposal Operations provide safe onsite solutions (P.3)



### Field Deployable Hydrolysis System

First-time demonstration draws DoD stakeholders (P.4-5)



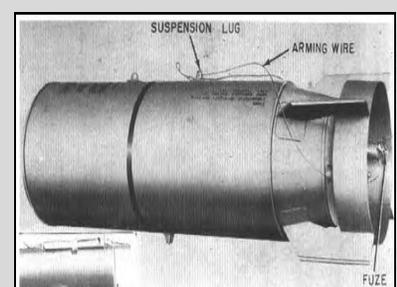
### MAPS Facility Processes Found Item

Recovered munition suspected to contain phosgene (P.2)



### A Short History: Chem-Bio Munitions

A look back at weapons from World War I to the 1950s (P.8)



# Recovered munition processed at MAPS facility

## CBARR's Process Technology Branch conducts 'drill and sample' operation



**ABERDEEN PROVING GROUND, Md.** – When a munition is found and recovered on the Aberdeen Proving Ground (APG) installation, it gets processed at the Munitions Assessment and Processing System (MAPS) facility, an 11,500 square foot single-story masonry and steel structure located downrange at Edgewood. ECBC supports APG's ongoing Installation Restoration Program, which requires a method of safely disposing explosively configured, recovered chemical munitions found on the grounds of the installation.

The MAPS facility was constructed in 2003 by the Chemical Materiel Activity (CMA) to safely access, drain, neutralize and decontaminate the waste of chemical munitions and containers, and to detonate the remnants of explosively configured munitions with engineering controls. The facility ultimately transitioned to ECBC ownership, where trained operators and expert technicians from the Center's CBARR Business Unit safely separate the liquid payload from the munition components, decontaminate those components and transfer the liquid fill into a bottle certified for transport by the Department of Transportation. The drained sample is analyzed at CBARR's Environmental Monitoring Laboratory (EML) while residues and decontamination wastes are collected, characterized and sent to the appropriate waste management facilities for disposal.

On July 17, CBARR's Process Technology Branch safely conducted a "drill and sample" operation of a Livens munition suspected to contain phosgene, an agent formerly used in trench warfare during World War I. The munition was recovered last year on APG and has been stored at the N-Field bunker since then. The CBARR team reviewed all assessment information in the Materiel Assessment Review Board (MARB) database and completed a preoperational survey prior to the operation.

*The Burster Detonation Vessel (BDV) explosively destroys the munition shell after decontamination.*

According to Cheryl Kyle, CBARR program manager, the challenge of working with phosgene is its natural compound state: vapor. In order to successfully drill the munition, it must first be chilled to bring the agent to its liquid form. "X-ray data from the MARB assessment indicates where the bursters and agent are located inside of the munition shell. Once the munition is unpacked and prepped for drilling inside the glove boxes, it is moved inside an explosive containment chamber (ECC), where operators sitting in a separate control room can remotely drill the munition using computer controls," said Kyle. "The operating team does a fantastic job and is up to any challenge or task asked of them."

Processing a munition at the MAPS facility takes about one full day to complete and two additional days for the EML to analyze and characterize a report for customers. The facility provides an alternative solution to open detonation, which requires a 5:1 explosive to agent payload ratio. Instead, MAPS is a significant improvement in protecting human health and the environment. In an area where chemical agents and industrial chemicals are managed, the MAPS facility is equipped with a ventilation system that establishes negative air pressure and that discharges air through carbon filter units. Near real-time air monitors provide additional workspace surveillance.

The MAPS facility is used on an intermittent basis to support ECBC's national chem-bio defense mission. The last operation took place on Aug. 21, 2012, when CBARR successfully drilled and sampled a 75-millimeter munition that was transported from the Naval Air Engineering Station (NAES) Lakehurst in New Jersey. The EML performed sample analysis and characterized the liquid sample, which verified the munition as a smoke round. The effort supported a project that was funded by CMA to verify non-intrusive assessment data collected in the field.

# ECBC MUNITION DISPOSAL OPERATIONS

## THE T-30 TRANSPORTABLE DETONATION CHAMBER

**T**he T-30 Transportable Detonation Chamber (TDC) has enabled CBARR operators to destroy more than 115 recovered items at Spring Valley in Washington, D.C., where 17 of those items were known or suspected to contain explosive material. In April 2012, the system was transported to the west coast, where it safely destroyed a variety of items recovered from the Port of Seattle. CBARR has 200 field-deployable scientists, engineers, technicians and operators that are certified and ready for missions where conventional munitions are recovered and need to be safely destroyed.

The video link below highlights the unique capability of the T-30 TDC which is a transportable system designed to provide high throughput, safe destruction of explosively configured conventional munitions. Trained and experienced CBARR personnel operate the equipment to maximize onsite operational capabilities for customers while ensuring environmental safety of workers and the surrounding communities. The 160,000-pound chamber has received final safety board approval from the Department of Defense Explosives Safety Board.

The chamber features a double-walled construction fabricated with steel that can accommodate up to 30 pounds of TNT equivalent for projectiles with a maximum diameter of 155 millimeters. The chamber interior is lined with hardened abrasion-resistant armor plates and the space between the walls is filled with dry silica sand that functions as a shock absorber. The effects of the blast are contained within the chamber, which localizes and reduces the overall pressure and fragmentation of the munition to a level that has no effect on the surrounding community. Solid emission products released by the detonation are collected on Torit bag filters.

The T-30 TDC operations are fully enclosed under a tent-like structure to protect personnel and equipment from weather, and to provide noise abatement during detonation activities. With a maximum demonstrated daily throughput of 21 munitions, the deployable system has been used at project sites across the country.



CBARR technicians operate the T-30 TDC system at the Port of Seattle in April 2012. Multiple items, including a five-inch Navy projectile were destroyed onsite.



**CLICK [HERE](#) TO WATCH THE INFORMATIONAL VIDEO ON THE T-30 TRANSPORTABLE DETONATION CHAMBER.**

## ECBC transitions new WMD elimination technology to JPEO-CBD

In partnership with the Defense Threat Reduction Agency (DTRA), ECBC signed a technology transfer agreement with the Joint Program Executive Office-Chemical Biological Defense (JPEO-CBD) on June 27. The official transition took place upon completion of the demonstration of a new transportable, high-throughput neutralization system: the Field Deployable Hydrolysis System (FDHS).

The FDHS would help further the mission of chemical agent disposal operations and is designed to be deployed worldwide, with operational capability anywhere in the world within 10 days of going mobile. The FDHS is designed to change chemical warfare material into compounds not useable as weapons. It has the capability to neutralize bulk amounts of known chemical warfare agents and their precursors through chemical reactions involving reagents such as water, sodium hydroxide and sodium hypochlorite. The FDHS uses mixing and heating to facilitate chemical reactions and optimize throughput with a destruction efficiency of 99.9 percent.

“It has been six months to the day since we first conceptualized

## First-time FDHS demonstration draws DoD stakeholders to Edgewood

the design of the FDHS, and now we have a functional working model,” said Tim Blades, director of operations for ECBC’s CBARR Business Unit. “The funding from DTRA got us started and with the technical efforts of more than 50 ECBC employees that accounted for 13,000 hours of work, we have now transitioned the project from science and technology to advanced development with the transfer to JPEO-CBD.”

Department of Defense (DoD) stakeholders across numerous organizations attended the demonstration, which included an information session about the technology and a walk-through of the simulated project site, including support equipment, mobile laboratory and personnel decontamination station. Resident subject matter experts (SMEs) engaged with stakeholders during the tour and answered questions regarding the

components, design, functionality and overview of the entire system. ECBC, DTRA, JPEO-CBD, the U.S. Army Chemical Materials Activity (CMA) and the U.S. Army Contracting Command are responsible for the design, procurement, fabrication, testing and training of the FDHS.

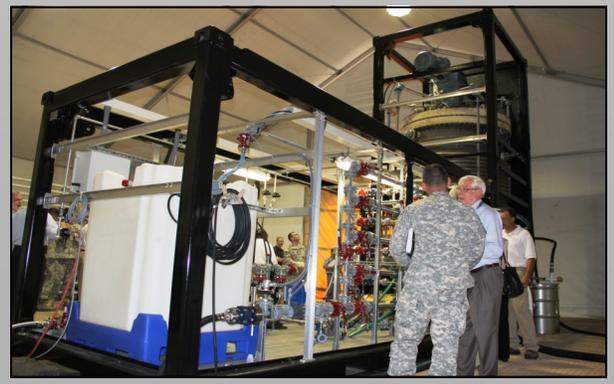
(CONTINUED P.5)



ECBC, DTRA sign the technology transfer agreement with JPEO-CBD.



APPROVED FOR PUBLIC RELEASE





*Tim Blades, CBARR director of operations, addresses the audience at the June 27 demonstration of the FDHS at Edgewood Area of APG.*

# Field Deployable Hydrolysis System

“The team that worked on this project has delivered a beginning-to-end solution for a complex problem,” said Blades. “Every organization came together and brought their expertise to the table. It’s been a team effort from the start, and it’s nice to see it transition for further development.”

ECBC’s rapid prototyping capabilities and field operational experience were vital to the design and functionality of the FDHS. Engineers and technicians discussed various design plans and blueprints, and screened and analyzed more than 40 technologies throughout the process. This technical expertise was combined with CMA’s experience in building and operating chemical agent neutralization facilities like those located at Aberdeen Proving Ground and Newport Chemical Depot in Indiana, and Pine Bluff Arsenal in Arkansas. Those facilities have safely and successfully completed their chemical agent disposal missions.

Once onsite, a crew of 15 personnel is needed each shift for 24/7 operational capability. The full FDHS site includes power generators and a laboratory that is fully capable out of the box, needing only consumable materials such as water, reagents and fuel to operate. The FDHS is also equipped with redundant critical systems that ensure maximum reliability. Throughput varies from five to 25 metric tons per day, depending on the material being treated. To increase throughput rates, multiple units can be co-located onsite, which also enables the sharing of security and other assets.

# ECBC CONNECTION

CALLING ALL MENTORS!



Interested in becoming an ECBC mentor next school year? ECBC's Community and Educational Program can connect you with students from Edgewood Middle School, Bel Air High School, Joppatowne High School and Cecil County STEM Academy.

For additional information, contact Outreach Specialist Jennifer Carroll at: [jennifer.j.carroll2.civ@mail.mil](mailto:jennifer.j.carroll2.civ@mail.mil) or at 410-436-5383.

## What's the Word?

### Contact us!

Send us your feedback. For article suggestions, questions or comments please contact CBARR Communications Officer Kristen Dalton at [kristen.a.dalton.ctr@mail.mil](mailto:kristen.a.dalton.ctr@mail.mil)

### Subscribe!

If you are interested in receiving the electronic edition of the CBARR News, click [here](#).

# JULY forecasts



## WEATHER AROUND THE WORLD

CBARR LOCATIONS	AVG. HIGH (F)	AVG. LOW (F)	AVG. PRECIP. (in)
Aberdeen Proving Ground, Md.	86	68	4.41
Pine Bluff Arsenal, Ark.	92	73	4.09
Washington, D.C.	89	71	3.73
Deseret Chemical Depot, Utah	92	66	0.89
Umatilla, Ore.	88	61	0.18
Redstone Arsenal	91	71	4.05
Melbourne, Australia	56	43	1.90



# # CBARR by the numbers

The Environmental Monitoring Laboratory (EML) is seeking feedback from its customers! Please take a few moments to complete a [performance survey](#), which will help the EML improve its services regarding the sample analysis workload it completes every month.

**[ 865 ]**

DAAMS and MINICAMS samples completed at ECBC in June. Samples analyzed for MRICD, CBARR, R&T, Engineering, Redstone Arsenal and the E3200 Block on Edgewood Area APG. This number was an increase of more than 300 analyzed samples since May.

**[ 1,389 ]**

Total number of environmental samples analyzed by the EML in June, an increase of more than 300 since May.

**[ 1,773 ]**

Total number of samples analyzed in the field and reported to customers within 1-2 working days at all site locations.

# DO YOU KNOW AMANDA WEIDER?

## Management and Program Analyst, ECBC Workforce Management Office



As furlough schedules are implemented, make sure you know the right folks to reach out to if you have any questions. Amanda Weider is one of those people. She has worked at ECBC since 2008 and is currently CBARR's liaison for Human Resources. Stop by her CBARR office in E3942 every Tuesday or call 410-436-8652. Her email is: [amanda.m.weider.civ@mail.mil](mailto:amanda.m.weider.civ@mail.mil).

"I really enjoy helping people and getting them the answers they need," said Weider. "I think it's great when somebody comes back and says, 'Thank you for digging into this and getting back to me so quickly.' I just like helping people."

According to Weider, the Workforce Management Office has received questions with regards to the furlough, including how it may impact certain projects as well as the start and end times of tour of duty. For example:

- What are core hours for ECBC? **"Core hours are defined by our Bargaining Unit Agreement. The agreement states that offices will have sufficient coverage during the core hours of 0830 and 1530,"** Weider explained.
- Additional frequently asked questions (FAQs) can be found at <https://cbconnect.apgea.army.mil/td/budget/FAQs/Forms/Source.aspx>.

### Tips for Staying Connected

- Keep communication lines open with all of your points of contact. Know their schedules and make sure they know yours in order to manage expectations and ensure current projects continue to make progress.
- Prioritizing is a must. Understand that there will be a new timeline for all work and that the furlough schedule impacts everybody.
- If you have immediate questions about how furloughs will impact your work, seek advice and counsel from your supervisor, who will guide you on meeting deadlines and proper distribution of work.

## TAKE OUR READERSHIP SURVEY!

It's been seven months since the *CBARR News* was redesigned and we want your feedback! Your input is valuable and will help us improve various aspects of the newsletter. Take 15 minutes to let us know how we've been doing and what we can do to make it better. Thanks!

Click: [Survey for Customers](#)

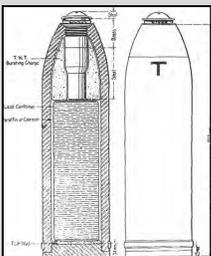
Click: [Survey for CBARR Employees](#)



# A Short History of Chem-Bio Munitions Across the Decades

All photos courtesy of Jeffery Smart, Command Historian of the Historical Research and Response Team, U.S. Army Research, Development and Engineering Command

ECBC is has become a premier resource for safely handling and processing recovered munitions across the United States and abroad. The Center has supported customers in government agencies, academia and industry during on-site operations that support larger Department of Defense remediation efforts. Here is a short history of the kinds of commonly used chemical and biological weapons used by various countries throughout the past century, many of which have since been recovered, processed and successfully destroyed by trained ECBC operators using the MAPS facility, the Explosive Destruction System or the TC-60 Transportable Detonation Chamber.



**1914, World War I:** The German 150-mm T-Shell, which mixed xylyl bromide with an explosive charge. The explosive charge was in the front and the chemical agent in the rear component—a design similar to the one proposed by John Doughty during the American Civil War in 1862.

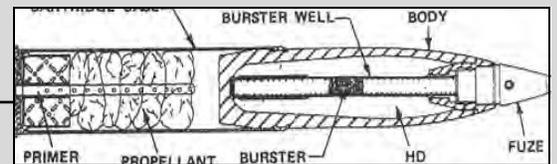


**1918, World War I:** A Livens projectile that features a central tube containing a small explosive charge. When detonated by the contact fuze, the shell breaks and disseminates chemical agent, which typically weighs 30 pounds while the munition shell weighs an additional 30 pounds.

**1920s-1930s:** Chemical weapon munitions from left to right: 75-mm mustard shell; 4.2-inch white phosphorus shell; M1 30-pound mustard bomb; Mk II 155-mm mustard shell; Livens phosgene projectile; and the Mk I portable chemical cylinder.

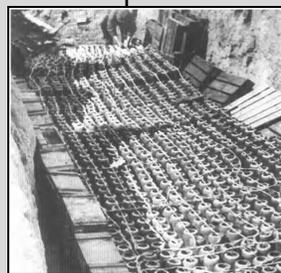


**1940s:** Diagram of the M60 105-mm mustard shell with the cartridge case attached. Typical 105-mm munitions contained mustard, but some also contained Lewisite.



**1944 (ABOVE):** Open storage of the M47 100-pound chemical bombs on Guadalcanal Island.

**Post WWII (RIGHT):** The Allied Forces used sea-dumping methods to dispose of munitions, including 150-mm German nitrogen mustard rockets wired for destruction.



**1950s:** The M34 series sarin cluster bomb (bottom left) was the first major nerve agent bomb standardized by the U.S. military post-WWII. The M114 four-pound bomb (bottom right) was the first biological weapon standardized by the U.S.

