THE ENGINEERING EDGE

EDGEWOOD CHEMICAL BIOLOGICAL CENTER
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INSIDE THIS MONTH'S ISSUE:

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Army Team Honored for Life Support System for Chemical Demilitarization Workers

A multi-agency Aberdeen Proving Ground team was recently honored for ensuring that workers who will destroy the remaining U.S. chemical weapons stockpiles in Colorado and Kentucky have the critical and effective life support systems they need.

An operator places three 105mm projectiles into the Pueblo Chemical Agent-Destruction Pilot Plant Explosive Destruction System. Protective gear, such as the escape breathing apparatus, keeps worker safe during chemical demilitarization operations. *Photo Credit: U.S. Army*

The team, comprised of employees assigned to the Program Executive Office, Assembled Chemical Weapons Alternatives (PEO ACWA), U.S. Army Edgewood Chemical Biological Center (ECBC) and U.S. Army Contracting Command, received a bronze award in the category of Outstanding Professional Technical, Scientific and Program Support at the annual Excellence in Federal Career Awards Luncheon and Ceremony.

The award-winning group included PEO ACWA employees Ray Malecki and Matt Shevland, and Jeffrey Hofmann and Tim Pedrick of the Joint Project Manager for Nuclear, Biological and Chemical Contamination Avoidance (JPM-NBC CA). Hofmann and Pedrick are Engineering Directorate employees matrixed to the JPM from ECBC, a U.S. Army Research, Development and Engineering Command laboratory. U.S. Army Contracting Command employees Brenda Aleman, Eric Braerman, Elaine Millard and Pam Serra rounded out the team.

They were commended for supporting the development of a new escape breathing apparatus (EBA), a critical component of the protective ensemble worn by plant operators during chemical demilitarization operations. The EBA provides another source of clean air for the worker to breathe should the primary airline in the ensemble suit be disrupted for any reason. The chemicals being destroyed are so toxic that even the smallest amount of exposure could be detrimental to the health of the worker. The current EBA has been used in the U.S. chemical demilitarization program for the past 20 years, but it is no longer being supported and must be replaced before 2018 when the certification of the current EBA units expires.

"The EBA team took on the difficult task of developing a replacement unit that will not only provide all the required safety protections inherent in the use of the unit, but must also garner user trust and acceptance," said Darren Dalton, Director of Systems Engineering and Operations at PEO ACWA, who nominated the team for the award.

"For us, it's more than the satisfaction of getting the new EBA in place and functioning, with more capability than previous units," said Hofmann. "It's about the plant operators and their safety. That is what makes us proud of this accomplishment."

For the full article on the team's accomplishment, go to www.ecbc.army.mil/news

Ask a Tech Tip: Better Visability Through Your Windshield

Mike Kauzlarich**, of the Pyrotechnics and Explosives Branch, reveals how the techniques and lessons learned in labs can help solve your household problems. Submit a question to him at **usarmy.APG.ecbc.mbx.engineering-directorate@mail.mil.

Someone mentioned in passing that the spring rains made driving difficult, and that someone should come up with a better way to clean your windshield. Well, they have! There is a liquid polymer—a chemical compound in which molecules are bonded together in long repeating chains—that you apply directly to your windshield. It's called Rain-X® water repellent. It is a polymer that fills the pores of glass that allows rain, sleet and snow to "slip" off your windshield. When applied properly, this polymer's effect is dramatic, and it will increase visibility and driver response time—and therefore your safety!

Saluting Team CBRNE Warfighters

In honor of Military Appreciation Month, the Engineering Edge introduces you to two Army Soldiers whose service, expertise and perspectives strengthen Team CBRNE.

MAJ Edwin Kolen

Assistant Product Manager, Sensors
Joint Project Manager for Nuclear, Biological and Chemical Contamination Avoidance (JPM-NBC CA)

What inspired you to have a career in the military?

I simply wanted to serve. I've been on active duty for 10 years, and also served in the National Guard. After a few years of service, I knew it was something I wanted to dedicate my life to.

Tell us about your current role with the JPM-NBC CA.

I am an Army Acquisition Corps officer. I help manage the cost, schedule and performance of various DoD products. Many Soldiers may not realize the materiel development side of the DoD and the people and processes that are involved in the acquisition of equipment. Soldiers are known to be very passionate about what they do, and I believe they would be elated to know just how passionate the civilians are about their jobs. What they accomplish here at the JPM gives Warfighters a strategic advantage on the battlefield.

What unique perspective does a Warfighter bring to Team CBRNE?

I've had the chance to speak up about the kinds of equipment that are being used by Soldiers and what capabilities might be needed. The exposure to the civilian side of acquisition and the skills I have learned here will prepare me for the next step in my career.

Is there anything about working in CBRNE that has surprised you or would be interesting to other Warfighters?

Before this assignment, I didn't realize all of the chemical and biological threats that are out there. The civilian workforce—I call them "quiet professionals"—is actively studying this, looking for ways to fill in the gaps and getting Soldiers prepared for emerging threats. Communication and collaboration styles are different on the civilian side, but the enthusiasm for the mission is definitely there.

SGM Jamison Johnson

Senior Enlisted Advisor to the Director
U.S. Army Edgewood Chemical Biological Center (ECBC)

What inspired you to have a career in the military?

I enlisted because I wanted a secure job and to travel and learn a skill. I've been serving for 22 years now, and these expectations turned out to be true.

What has your developmental assignment at ECBC been like?

In this role, my goal has been to provide an understanding of how certain technologies are currently used, or could potentially be used, by the Soldier. I have been introducing myself around the Center as enlisted and having field operations experience, so they can use me as a resource. I have spent time learning about the various capabilities, many of which have really surprised me—for example, the video gaming and robotics capabilities that the Advanced Design and Manufacturing Division is using for military applications.

What unique perspective does a Warfighter bring to Team CBRNE?

I hope that my perspective gives a practical validation to the design process and integration of technologies. At a demonstration of unmanned aerial vehicles with mounted detectors, I provided input about what the Soldier looks for regarding functionality and supportability. Training on the Joint Chemical Agent Detector will begin soon, and I will go to Fort Leonard Wood to be a liaison between ECBC and the Soldiers to help ensure the most realistic scenarios are demonstrated.

Is there anything about working in CBRNE that has surprised you or would be interesting to other Warfighters?

I do have experience training Soldiers in CBRN, such as donning masks and personal protective gear. But learning how the equipment is tested in laboratories here at ECBC—using live agent—has been eye opening. The scientists and researchers here are proving the technology well before the Warfighter has to use it. That would have been great to know as a younger Soldier.

Trainers Teach Soldiers How to Use Equipment for Dismounted

Kyle Phillips leads instruction on the M272 Chemical Agents Water Test Kit. *Credit: ECBC Detection and Decontamination Engineering Division*

The nation's military maintains some of the most state-of-the-art weapon systems in the world. But before the equipment is distributed amongst user communities, the DoD's research, development and engineering community is charged with supporting this materiel from design through sustainment. This includes training joint-service Warfighters on safe operation and maintenance of fielded chemical, biological, radiological and nuclear (CBRN) systems.

U.S. Army Soldiers stationed around the world are currently being trained on the Dismounted Reconnaissance Sets, Kits and Outfits (DR SKO)—a modular, tailorable and sustainable set of equipment for dismounted reconnaissance and site assessment for the full spectrum of CBRN hazards they may encounter while deployed in support of worldwide contingency operations. The DR SKO was developed by the Joint Project Manager for Nuclear, Chemical and Biological Contamination Avoidance (JPM-NBC CA), the organization responsible for the development, production, integration, testing and fielding of NBC detection, obscuration and reconnaissance systems for the joint-service Warfighters.

The system provides a dismountable reconnaissance capability consistent with mission requirements for each service. The DR SKO is employed expeditiously to perform initial field assessments of potentially dangerous material and determine if there is a need for action by a follow-on CBRN Sensitive Site Exploitation/ Hazardous Response Team. Specific system components permit the decontamination of personnel exposed to CBRN agents. DR SKO was approved for full-rate production by the Joint Program Executive Office for Chemical and Biological Defense (JPEO-CBD) in March 2014, and system deliveries commenced in the first quarter of FY15.

A team of trainers from JPM-NBC CA and the ECBC Engineering Directorate are responsible for teaching Warfighters how to operate the DR SKO's various detectors, suits and equipment. Trainers Nichole Mortin, Kyle Phillips and Troy Thompson are from the Detection and Decontamination Engineering Division. Collectively, they have supported eight of the last 11 training missions occurring at U.S. Army installations at CONUS and OCONUS locations.

Each trainer draws upon a wealth of new equipment training and fielding experience, including support of a similar system—the Domestic Response Capabilities (DRC) Kit for civil support teams. The DR SKO system is a larger, modular, more complex kit, bearing a larger volume of equipment in comparison to the DRC. The system requires Soldiers to participate in an 80-hour new equipment training course articulating individual component operation, storage and maintenance.

CBRN Reconnaissance

Soldiers practice with the Level B Suit. *Credit: ECBC Detection and Decontamination Engineering Division*

Preparing to execute operator instruction amongst joint-service Warfighters mandates that trainers be proficient with their assigned DR SKO equipment's operational function and accompanying component programs of instruction. "We are familiar with some subcomponents from prior projects" explained Mortin. "But to learn new equipment, we cross-train with the JPM-NBC CA and then demonstrate that we can instruct it. It is important for us to get our hands on all of the equipment, understand how it works, think about how to demonstrate it, consider any faults that may occur during demonstration, and anticipate the questions the Soldiers may ask."

Another important step of the pre-training process is ensuring all equipment to be used for training is operable and complete, then arranging the shipment to the training site. The full package must include several sets per item so that Soldiers, working in pairs, have as much hands-on instruction as possible. The Advanced Design and Manufacturing Division supports the trainers by storing the training and support equipment in their warehouse between missions and handling the weighing, shipping and receiving.

The course agenda is developed by the JPM-NBC CA, and follows a logical order of how the equipment is worn or used. "For example, air-breathing and self-contained breathing apparatus equipment is taught first, then suits, because you have to wear the equipment within the suit," said Phillips.

Phillips said that the training sessions follow a deliberate "crawl, walk, run" approach, facilitating Soldier familiarization with each piece of equipment. "First, each item is introduced, including how it is used, its safety warnings and cautions, and its basic functionality," explained Phillips. "Then the Soldiers partner up and take turns reading the instructions and practicing with the equipment." Following the training course, the Soldiers conduct field exercises with the equipment, led by trainers from the Maneuver Support Center of Excellence at Fort Leonard Wood.

Being flexible, adaptable and comfortable with public speaking are requirements for trainers. "You have to be able to think on your feet," said Mortin. "This is the best opportunity for Soldiers to ask questions about the equipment. There are some technical questions, but many of their questions are about logistics and supportability, like 'How do I clean and store it?,' 'How do I replace a broken system?' or 'How do I re-order expended consumables?' For the user, and therefore the system or maintenance engineer, these questions are just as important as 'How does this technology work?' If we don't know the answer, we reach back to the JPM-NBC CA, then follow up with a response."

"The Soldiers trust that the research and development community has done their job with the capability. They want to know how it works for their mission—and it's our job to teach them," said Mortin.

The team will continue to train Soldiers through FY15. Additional training missions for the Army and Marine Corps are anticipated for FY16.

GFEBS, FIRE and How They Work Together—For You

Project accounting is essential to business operations at ECBC—but it's not always easy to get the financial information you need to manage your projects. We spoke with Justin Johnson, ECBC Chief Financial Officer, and Chris Beermann, ECBC's point of contact for the General Fund Enterprise Business System (GFEBS), to help you understand and get the most out of the Center's accounting systems, GFEBS and the Financial Integrated Reporting Environment (FIRE).

What is GFEBS?

GFEBS is the Army's web-based financial, asset and accounting system. It standardizes these processes across many Army organizations, and is the official accounting system of record at ECBC. It's used by budget analysts to enter, track and manage financial resources. However, understanding GFEBS well requires significant time and training, and the system leaves much to be desired when it comes to reporting financial information—that's where FIRE comes in.

What is FIRE? How does it work with GFEBS?

FIRE is a complementary tool developed by the U.S. Army Armament Research, Development and Engineering Center (ARDEC) that presents financial and budgetary information in an accurate and easy-to-read format. Every morning, FIRE receives multiple data feeds from GFEBS; then the data is organized and presented in a more digestible format that is handy for financial analysts and program managers. Engineering management has access to both GFEBS and FIRE for their financial reporting.

What kind of reports are available through FIRE?

ECBC is still in the early stages of deploying FIRE. The ECBC Financial Office has created a handful of reports available to FIRE users today. Examples are a budget execution report, with useful information about a project's funding and balance; an imbalance report that focuses on the project balance; an automated time attendance and production system (ATAAPS) time card report that shows how much time has been charged to a specific customer order; and a purchasing report that shows procurements for a project. You can also design your own reports in FIRE that pulls in any field from GFEBS. The ECBC Financial Office will continue to make new reports available, even by special requests from the workforce.

Financial reports can be scheduled at your desired interval and sent directly to any valid Army e-mail address. This capability provides ECBC personnel with timely and useful data directly to your mailbox, and allows a user to establish a report once and have it delivered regularly over an extended period of time. This capability is exclusive to FIRE.

What typically trips people up when using GFEBS and FIRE—and what are the solutions?

In the past three years, there have been significant changes and improvements made to the functionality of GFEBS to help users, but the system can be tricky, especially for recording research, development, testing and evaluation funds and reimbursable funding. You are encouraged to contact the ECBC Financial Office with any questions or need for assistance.

Users have experienced a lag in response time in FIRE due to operations on the APG DREN network. ECBC and ARDEC are working together to improve system performance locally. As mentioned, ECBC is in the early stages of rolling FIRE out to the workforce, so one of our focuses is on education and awareness. As we continue to implement the system, the ECBC Resource Management staff will provide information and training to the workforce.

What if I need help with GFEBS or FIRE?

For questions regarding either GFEBS or FIRE, please contact Chris Beermann in the ECBC Financial Office.

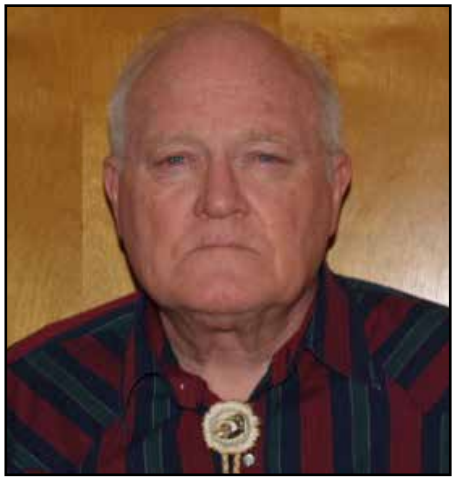
GFEBS: General Fund Enterprise Business System, the Army's web-based financial, asset and accounting system

FIRE: Financial Integrated Reporting Environment, a complementary tool that presents financial and budgetary information in an accurate and easy-to-read format

For questions, please contact: Chris Beermann, ECBC Financial Office

Mike Cress

This month's spotlight is on James "Mike" Cress, ECBC technical liaison to the Maneuver Support Center of Excellence.



What does it mean to be the technical liaison to the Maneuver Support Center of Excellence?

My primary role is to match the applied science and technology to the user needs and what they want to accomplish. In this job, I facilitate the transfer of technology by providing technical support for concepts, requirements, training packages and supporting analytical documents required by the Joint Capabilities Integration Development System process. I participate in the capability needs analysis process, integrating user needs with technical base projects and small business innovative research. I prepare and execute user assessments, limited objective experiments, technical demonstrations, technical documentation that supports requirements documents, white papers proposing new technology applications, and concepts of operation and execution. Additionally, I am a patent holder for a CBRN marking system and a principle contributor to the Chemical Reconnaissance Explosive Screening System (CRESS), as well as a member of various CBRN integrated project teams (ICT). In late 2014, I assumed an additional duty of representing the Natick Soldier Research and Development Center.

Tell us a little about your military experience.

I was an Army infantry officer and instructor during the Vietnam War and a Special Forces officer during Operation Desert Storm, with various deployments and exercises in between.

What inspires you the most about working with the Army?

When I came back from Desert Storm, I stopped at a restaurant near my home for a cup of coffee and struck up a conversation with a truck driver. He said he had hauled rockets to an Army base in Georgia. I explained to him how those rockets were used during the mission, and let him know that his job—delivering equipment and supplies to troops—was critically important and appreciated. That is how the Army works—every job, from the most humble to the most exalted, contributes to the success of the organization and is appreciated. Or, think about it like this: If you wear a watch, notice the face and how the hands work, then take out all of the parts you don't need to make the watch work. There are none—all the components are necessary, especially those behind the scenes. I enjoy my work; even after a long career both in the military and supporting it, I still have imagination and energy for what I'm doing. I really enjoy working with young Soldiers and scientists who show so much interest in the technology. It keeps me feeling young and my mind fresh.

Outside of work, what are your hobbies?

For years, I have been engraving firearms and jewelry. I typically work with unplated brass or metal and use a European push-engraving technique. You may consider me a journeyman, just by the number of years I've had this hobby and the variety of work I've done. Interestingly, I use the same type of laboratory microscope that is used in the labs at ECBC!

Cress has been engraving unplated brass and metal for several years. *Photos courtesy of Mike Cress*

Strategic Initiatives Drive Directorate's Planning Efforts

Engineering Directorate employees are known for being analytical, logical problem solvers. Practical, yet creative. They are design thinkers who view things holistically, organize their thoughts in process-driven way, and pay extreme attention to detail. They are understanding of how one part of a system may impact another, and have a keen sense of awareness for the purpose of every part.

It is fitting then, that the Engineering Directorate would take this very approach to its strategic planning efforts in support of its vision, mission, core competencies and overall strategy. The Business Development Initiative (BDI) and the Human Capital Initiative (HCI) are two of six strategic initiatives that have made tremendous strides in the past year thanks to a concentrated effort that has been powered by personnel and backed by resources. As a result, BDI implemented a fiscal year business plan, piloted a Business Management Tool (BMT) that tracks projects across the divisions, and developed an integrated business development process that links new business opportunities from the pipeline to the BMT.

"The Directorate has made great progress over the past year with this initiative and we are eager to build on these efforts through collaboration with the Directorate's other strategic initiatives," said Detection and Decontamination Engineering Division Chief and BDI lead Humberto Galarraga. "Currently, that focus is on coordination with the HCI because our workforce drives our business development. We appreciate the continuing support of the Engineering workforce and intend to show the fruits of our labor as we more fully utilize the BD process and plan now firmly in place."

Whether it is understanding customers' needs for business development or empowering employees with the tools they need to make critical decisions, people are at the heart of these two initiatives. One goal the HCI aims to achieve is to ensure the Directorate has the right people—in the right place at the right time—to maintain and grow business.

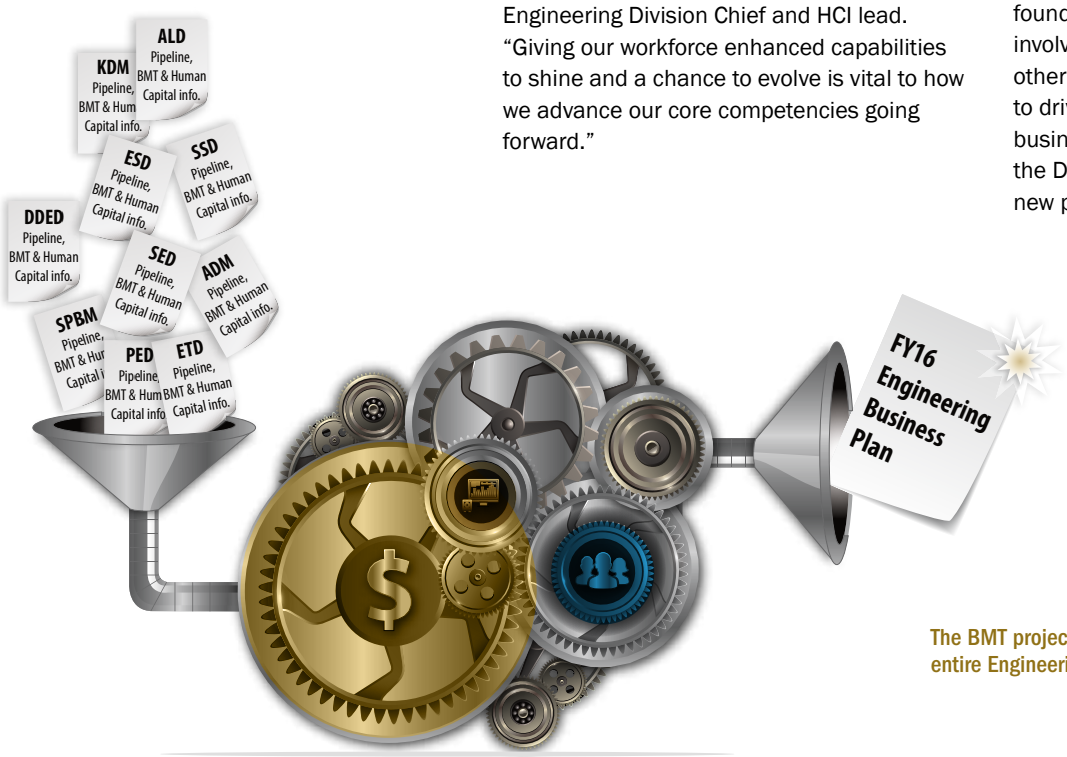
"We want our to be workforce to be as successful as possible and enjoy working at ECBC," said John Kerch, Sustainment Engineering Division Chief and HCI lead. "Giving our workforce enhanced capabilities to shine and a chance to evolve is vital to how we advance our core competencies going forward."

The Engineering Directorate's Business Development and Human Capital initiatives are key strategic focus areas for the near future.

The surveys and data gathering are part of a focused effort to better understand common and unique work-life challenges employees face. The results of a recent Engineering employee retention survey will help provide a holistic picture of engagement and environment.

"The Human Capital Initiative is integral to our on-going strategic planning efforts, and provides direct input into the Director's business planning process," said Hung Pham, Sustainment Support Division Chief and HCI co-lead. "The results from our surveys and data gathering activities will contribute to developing and improving our workforce of the future. I am pleased that a lot of progress has been made by HCI so far, but we still have much more to accomplish in our goal of remaining the premier chem-bio engineering center for the nation."

BDI and HCI have each achieved solid foundations through the hard work of those involved. These two efforts, along with the other four strategic initiatives, will continue to drive the Directorate's path forward. As business and organizational needs emerge, the Directorate will be able to capitalize on new possibilities.



The BMT project data drives strategic planning for the entire Engineering Directorate.