Pueblo
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A Partnership for Safe Chemical Weapons Destruction

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Pueblo Chemical Agent-Destruction Pilot Plant

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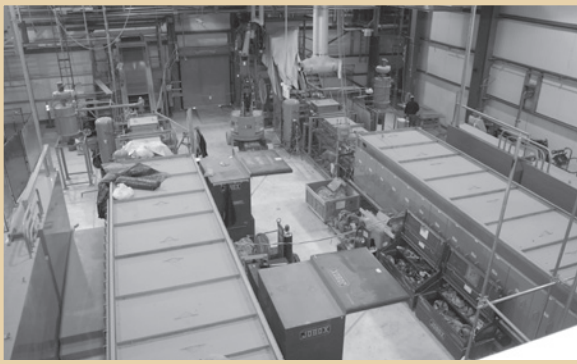
First-of-a-Kind Equipment Arrives at PCAPP



Three types of equipment, the Munitions Washout System (MWS), top, Munitions Treatment Units (MTU), bottom right, and the Projectile Mortar Disassembly (PMD) system, have been developed specifically for use at the Pueblo Chemical Agent-Destruction Pilot Plant to perform unique functions. Such equipment is referred to as First-of-a-Kind. Using remote controls, the PMD system will dismantle the three types of munitions stored at the U.S. Army Pueblo Chemical Depot. The MWS will use multiple Cavity Access Machines to collapse the burster well and drain the mustard agent from projectiles. The MTU is the last stop for the munition bodies, where they will be heated to 1,000 degrees Fahrenheit for 15 minutes, resulting in decontamination of any residual chemical agent.

Levi and Fahrion Team Up

By RENEE MARTINEZ
PCAPP Public Outreach Specialist

As the hunt for Pueblo's permanent site project manager continues, two local men recently received the baton to lead the Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP).

Walton Levi, who has served as the deputy site project manager for the past two years, was appointed acting site project manager. Jack Fahrion was named acting deputy.

Levi, a native of Colorado Springs, Colo., earned a bachelor's degree in Chemical Engineering from Colorado State University, Fort Collins. He began his federal career in 1987 with the Chemical Agent Munitions Destruction System in Utah, where he served as a project engineer for incineration systems and special projects. He worked at various sites in Utah with the Army's chemical demilitarization program until October 2008.

Fahrion most recently served as the technical interface between the systems contractor and the government at PCAPP. He is the subject matter expert for the development of Pueblo's First-of-a-Kind chemical demilitarization equipment and is the project systemization lead engineer.

Fahrion has more than 23 years of experience in design, fabrication, modifications and installation of demilitarization equipment for conventional and chemical munitions.

A native of Colorado, Fahrion grew up in Cortez and Telluride. He earned a degree in mechanical engineering from the University of New Mexico, Albuquerque. Prior to coming to Pueblo in 2004, Fahrion worked for the Defense Ammunition Center in McAlester, Okla., as a lead project engineer/manager.

Photo by Tom Schultz

On Nov. 1, 2010, Walton Levi, seated, and Jack Fahrion assumed leadership of the Pueblo Chemical Agent-Destruction Pilot Plant.

Bechtel Awards Five Teachers for "Thinking Green"

By SANDY ROMERO
Bechtel Communications Manager

Five elementary school teachers in Pueblo County each received a check for $500 through Bechtel's Sustainable Development Grant Program at a reception on Dec. 9, 2010.

"We like the idea of helping teachers realize their ideas for teaching sustainability concepts in the classroom," said Kevin Rankin, head of Bechtel's *Think Green* team. "Our goal is to get children working together to think about how we can use our resources wisely and reduce waste."

Grant recipients included: Mr. Michael Almeda, science teacher at Heaton Middle School; Ms. Cindy Ramos, 1st grade teacher at Goodnight Elementary School; Mr. Glen Gomez, science teacher, Bessemer Academy; Ms. Rachael Thompson, paraprofessional, and Ms. Kris Allen, 4th grade teacher, Beulah School of Natural Sciences.

The winning projects ranged from growing community gardens and purchasing a portable greenhouse, to purchasing video cameras and providing a field trip for students to visit the Keystone Science School.

Photo by Bob Kennemer

Beulah K- 8 School has received a Bechtel Sustainability Grant for two consecutive years. Above left, Angie Fillmore, principal, and Rachael Thompson, paraprofessional, describe how last year's grant money was used to produce a community garden.

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A Constructive Year at PCAPP

By SANDY ROMERO
Bechtel Communications Manager

With construction progressing nicely and electrical subsystem turnover nearly complete, 2010 was a productive year for employees of the Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP). Here's a snapshot of what was accomplished this year:

- Nearly 200 craft workers installed electrical, piping and instrumentation commodities throughout the various ancillary and agent processing buildings.
- All 16 Immobilized Cell Bioreactors were staged on site in the Biotreatment Area.
- Cavity Access Machines – part of the First-of-a-Kind (FOAK) equipment– were installed in the Munitions Washout System room located in the Agent Processing Building.
- Three Projectile Mortar Disassembly systems were deliverd for installation in the Explosion Containment Rooms of the Enhanced Reconfiguration Building.
- Additional FOAK equipment was tested and delivered to the project for installation.
- A total of 22 subsystems (out of a total of 285) were turned over from the construction group to the start-up group.

With the hiring of skilled workers running steady, construction work should trail off by the end of 2011. "We're proud of what we have accomplished here in Pueblo," said Bechtel Site Superintendent Steve Thieme. "It's gratifying to see PCAPP nearly complete."

Photo by Ken Young

One of the primary activities currently occurring at the pilot plant is the running of electrical cable. By the time the project is complete, 436 miles of cable will be run.

The Pueblo Chemical Agent-Destruction Pilot Plant team is proud of the progress made at the construction site in 2010. As seen in the foreground, earth now covers the Munitions Service Magazines (MSM), and the siding and roofing have been placed on the MSM corridor.

Photo by Ken Young

Assembling the Disassembler

By TOM SCHULTZ
PCAPP Public Affairs Specialist

Construction at the Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP) marked another milestone with the arrival of the first Projectile Mortar Disassembly (PMD) system – an alternative offering a 'hands-free' approach to dismantling chemical munitions – on Oct. 20, 2010.

The PMD, which actually is a series of components including conveyors, work stations and a robotic arm, arrived during a two-day period and was housed in the Enhanced Reconfiguration Building (ERB). The following week, workers set about the task of beginning the installation of machinery in the northernmost Explosion Containment Room, or ECR #1, of the ERB.

Using remote controls, the PMD will dismantle the three types of munitions (155mm projectiles, 105mm projectiles and 4.2 inch mortar rounds) stored at the U.S. Army Pueblo Chemical Depot, in preparation for destruction so that workers are protected during the process. The PMD's robotic technology allows very precise munitions placement and parts removal.

Control room operators, extensively trained and experienced with robotic systems, will operate and monitor the PMD, which can process a munition every 60 to 80 seconds. They will remove the munitions' energetic components (bursters, boosters and fuzes) robotically before they're transferred to the Agent Processing Building (APB) where the mustard agent will be drained and neutralized.

PMDs will be positioned in all three ECRs within the ERB. Each ECR, which has 25-inch thick concrete walls and roof as well as a 4-foot thick concrete floor, is designed to contain a blast in the unlikely event one should occur.

According to Jack Fahrion, PCAPP mechanical engineer and acting deputy site project manager, the first unit arrived with modifications that were not part of the original design. First-of-a-Kind equipment testing conducted at Anniston Army Depot, Ala., determined that difficulties were encountered when removing the nose or fuze portion on some of the 4.2 inch mortars; therefore, the teeth on the cam which 'grab' onto those sections were redesigned. The changes not only improved the ability of the prototypes at Anniston to do their job and lowered the reject rate, but also allowed for improvements in the PMDs designed for PCAPP.

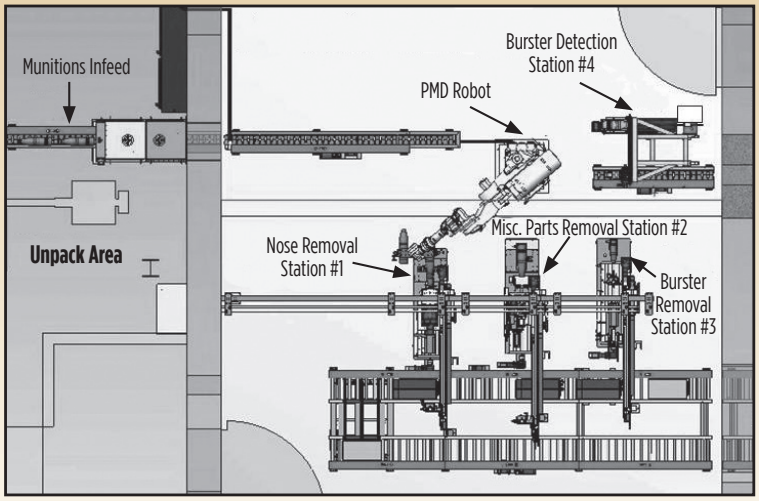
Energetics, or explosive parts, removed from the munitions will be packaged for transport to the Energetics Service Magazine, where they will await on-site disposal or shipment to a permitted waste treatment facility.

Photo by Sandy Romero

Jack Fahrion, PCAPP mechanical engineer and newly appointed acting deputy site project manager, whose oversight responsibilities include the Projectile Mortar Disassembly (PMD) machines, checks out the system's components shortly after their arrival. Three PMDs were delivered to Explosion Containment Rooms within the Enhanced Reconfiguration Building.

Once the energetics are removed, the munition body will be transported by an Automated Guided Vehicle to the APB where the chemical agent is drained and neutralized. The PMD system provides PCAPP a state-of-the-art process for the safe elimination of the Pueblo chemical weapons stockpile.

Projectile Mortar Disassembly (PMD) System in the Explosion Containment Room



HOW THE SYSTEM WORKS:

Station #1: The nose closure or fuze, is unscrewed from the munitions. For the 4.2 inch mortar, the energetic material is also removed at this station.

Station #2: Miscellaneous parts are removed from the munitions, including the fuze well cup, and in some munitions, an energetic booster.

Station #3: The burster is removed at this station.

Station #4: Munitions are checked to make sure no explosive material remains.

A Bug's Life

By BOB KENNEMER
PCAPP Public Outreach Manager

The Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP) won't be calling an exterminator anytime soon.

The PCAPP team is actually building homes for "bugs." Sixteen Immobilized Cell Bioreactors (ICB) will be installed at the pilot plant to carry out a biotreatment process that will use "bugs" to destroy the waste byproduct of the chemical agent neutralization process.

Biotreatment is a common process found in nature, in which microbes, also called bacteria or bugs, eat a variety of manmade and/or naturally occurring waste materials, some of which are considered hazardous. Such activity takes place in swamps and wetlands every day. In fact, some smaller towns use wetlands to "biotreat" their municipal sewage, while larger communities utilize sewage treatment plants. In both cases, microbes eat the sewage and break it down into less dangerous constituents. This process has taken place in nature for eons and has been used to process manmade wastes for several decades.

According to Allan Farber, who serves as PCAPP's senior wastewater treatment specialist/engineer, "the bugs that will be used in the PCAPP facility are standard sewage treatments microbes, which will be obtained from local sewage treatment plants either here in Pueblo or in Colorado Springs. These microbes will then be conditioned, or acclimated, for treating the hydrolysate."

Although the process of biotreatment is nothing new, the ICBs are. They were manufactured in Colorado Springs by Springs Fabrication under a $28 million contract with a national firm called Golder Associates. Golder's Lakewood, Colo., staff has been overseeing the production and installation of the ICBs and will advise PCAPP staff throughout the demilitarization process.

Farber states that each ICB has several cells, which are filled with plastic tubes and foam blocks. The cells are immobilized by a series of metal grates that sandwich the material. "This provides a large surface area, within a relatively small structure [the reactor] for the microbes to attach onto, and enables the bugs to process more waste material quickly."

Photo courtesy of Bechtel Corporation

Within the Immbolized Cell Bioreactors, plastic tubes and foam blocks are sandwiched between metal grates which hold them in place. Sewage treatment microbes will adhere to the surfaces of the tubes and blocks.

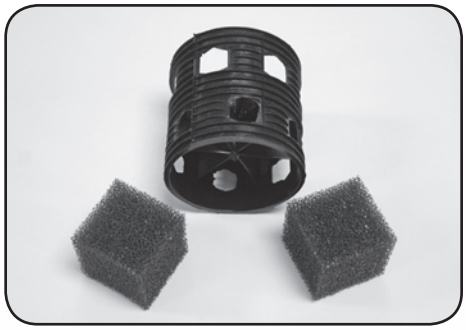
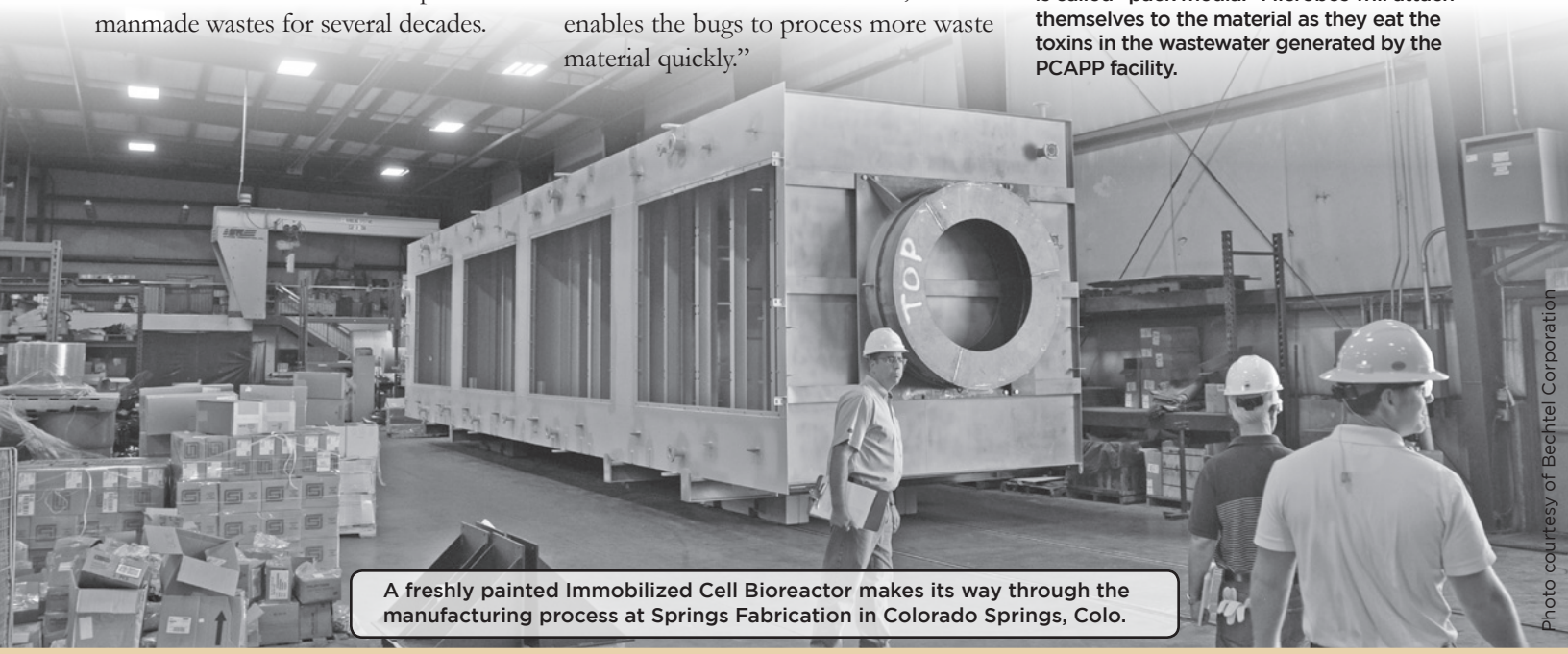


Photo by Bob Kennemer

Plastic tubes and foam blocks make up what is called "pack media." Microbes will attach themselves to the material as they eat the toxins in the wastewater generated by the PCAPP facility.



A freshly painted Immobilized Cell Bioreactor makes its way through the manufacturing process at Springs Fabrication in Colorado Springs, Colo.

Photo courtesy of Bechtel Corporation

Squeaky Clean

By SANDY ROMERO
Bechtel Communications Manager

It might sound hard to believe, but a major step in the chemical weapons destruction process at the Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP) basically involves a shower.

Projectiles and mortars entering the Agent Processing Building will first visit a station called the Munitions Washout System (MWS), which consists of several Cavity Access Machines (CAM). These machines will access the area of the projectile that holds the agent using a hydraulic ram to collapse the burster well. High pressure hot water is sprayed into each munition to assist in the draining of agent. Because there are two types of projectiles at Pueblo, the MWS consists of two operating lines, each designed to process 32 155mm projectiles per hour or 50 105mm projectiles per hour.

The process for the 4.2 inch mortars will be slightly different. Instead of collapsing the burster well, the base will be cut from the munition body. The high-pressure shower then aids in the draining of agent. Each MWS line is designed to process 48 mortars per hour. Drained agent and rinse water will be collected and pumped directly into the neutralization bay.

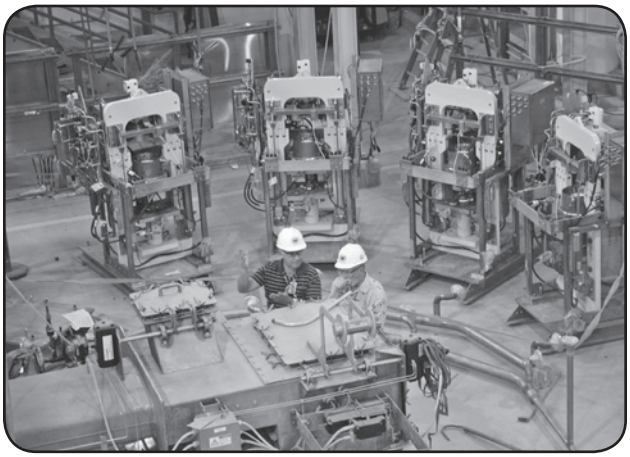


Photo by Ken Young

Cavity Access Machines will be used to get inside the chemical agent projectiles and wash out the mustard agent during demilitarization operations.

In July 2010, the CAMs for the 155mm projectiles arrived at PCAPP followed by the 105mm CAMs that arrived in December 2010. In early 2011, the CAMs for the 4.2 inch mortars will be tested and then shipped to PCAPP. In addition to the CAMs, other components of the MWS include conveyors, robots and hydraulic support and high pressure wash water systems.

Waste Not; Want Not

By RENEE MARTINEZ
PCAPP Public Outreach Specialist

Water is a precious commodity in the prairie; residents in and around Pueblo know that. The Brine Reduction System (BRS), which will treat liquid waste generated in the Biotreatment Area and recycle it back into other areas of the plant, is just one effort being made at the Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP) to conserve natural resources. The BRS includes a variety of tanks, process unit operations, associated piping systems, and a secondary storage system consisting of a coated concrete slab surrounded by perimeter curbs.

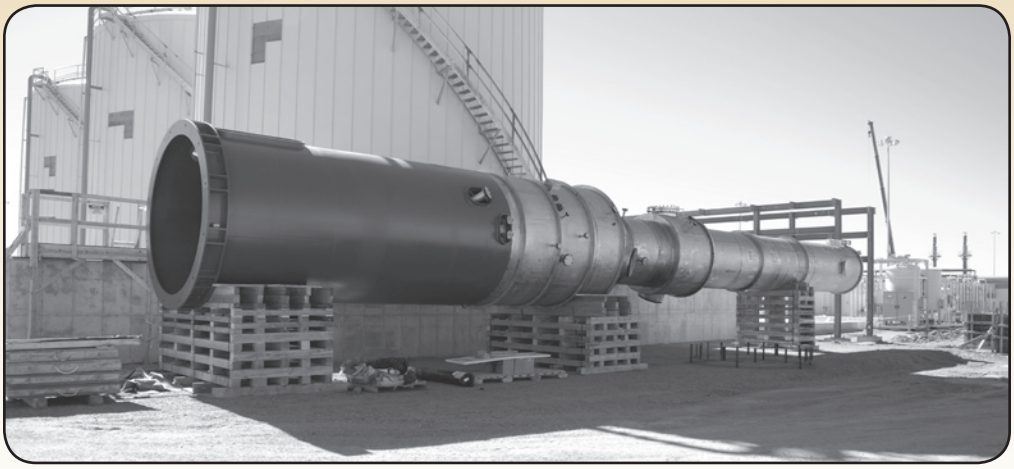


Photo by Bob Kennemer

The evaporator for the Brine Reduction System arrived at the PCAPP site on Oct. 6, 2010. When installed, the evaporator will stand 85-feet tall and be the tallest structure on site. Brine Concentrator Feed Tanks can be seen in the background.

After the mustard agent is neutralized using hot water and caustic, a liquid called hydrolysate is generated. This hydrolysate is transferred to the BRS from the Immobilized Cell Bioreactors (see related story on page 5), evaporated down to a cake-like residue and a distilled liquid. The liquid will be treated with carbon, and the recovered water will be recycled for use in other portions of PCAPP. The residue cake will be taken to a permitted treatment, storage and disposal facility.

Employee Corner

Flying High in Colorado

By ROSEMARY PATTERSON
PCAPP Public Outreach Assistant

Photo by Sandy Romero

Steve Cox, PCAPP's new demilitarization air monitoring branch manager, began working in the chemical agent industry in the late 1980's at the Rocky Mountain Arsenal.

Steve Cox is used to being up in the air. When not at work, he enjoys flying his single engine 75 Cessna Cardinal over the mountains of southern Colorado. Cox learned to fly in 1986 in northwest Alabama but has altered his flight plans and now cruises the Colorado airspace in more ways than one.

As the air monitoring branch manager, Cox will verify that the air monitoring equipment at the Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP) is operating within set parameters. He will ensure that certified personnel operate and monitor the equipment and provide oversight to technicians who operate the instruments used to collect air samples. Cox joined the PCAPP team on Sept. 1, 2010 and is currently reviewing documentation and procedures that will be used during the destruction of the chemical weapons at PCAPP.

Cox began his chemical demilitarization career in 1989, at the Rocky Mountain Arsenal, dismantling chemical production facilities and associated demilitarization equipment. He brings more than 20 years experience to PCAPP, one of the last two major demilitarization plants in the United States.

The opportunity to work with some of the most knowledgeable chemical agent specialists in the world and have access to the most technologically advanced agent monitoring system installed in a demilitarization plant are what Cox describes as being the best aspects of his new job.

Cox was born in Florence, Ala., but grew up in the small town of Killen, Ala., about an hour west of Huntsville. He graduated from the University of North Alabama with a bachelor's degree in chemistry. Cox has traveled throughout the nation during his career and plans to retire in and fly around Colorado.

The Many Suits of Greg Briggs

By RENEE MARTINEZ
PCAPP Public Outreach Specialist

Photo by Bob Kennemer

PCAPP's Project Management Engineer Greg Briggs says that the best aspect of his new job is working with like-minded people in finding safe ways to solve unique problems.

Today Greg Briggs typically wears a polo shirt to work, but in the past he donned a Demilitarization Protective Ensemble (DPE) as his work shirt.

Briggs is the new project management engineer at the Pueblo Chemical Agent-Destruction Pilot Plant and can now wear street clothes on the job. But in 1978 and 1979, he wore DPE in a gas chamber to test its effectiveness against high levels of nerve agent.

Briggs later managed the DPE procurement and redesign program at the Chemical Agent Munition Disposal System at Tooele Army Depot, Utah. While assigned as a government shift engineer to the Tooele Chemical Agent Disposal Facility at Deseret Chemical Depot, Utah, he would again demonstrate the efficiency of DPE while wearing it during GB (Sarin) and VX (nerve agent) maintenance activities.

"Helping to safely eliminate chemical weapons is a worthwhile career," exclaims Briggs.

Today, Briggs is in the process of developing a procedure which the field office can use as a guide during systemization. He will ensure that contractors and subcontractors are following their plans and procedures. Down the road, he will be part of a team which will review Bechtel's training programs for operations and maintenance personnel.

When Briggs was 5 years old, his father moved the family from the Denver-area to Los Angeles for a job within the aerospace industry. Returning to Colorado for college, Briggs earned a chemical engineering degree from Colorado School of Mines. Happy to be in Colorado again, Briggs and his wife enjoy biking and hiking and living in Pueblo.

Stop the Presses, We're Going Green!

Assembled Chemical Weapons Alternatives (ACWA) Program Newsletters to Go Electronic in 2011 – Register Today

This spring will mark the end of an era, as the January-March 2011 editions of the Pueblo and Blue Grass *Exchange* newsletters will be the last. But never fear, to ensure you get all the news you need from the Pueblo and Blue Grass construction sites, we're launching monthly e-newsletters.

In spring 2011, we'll be expanding our monthly e-news updates into robust e-newsletters, complete with articles highlighting construction progress, ACWA programmatic initiatives, employee profiles, photos, videos and more. It is our hope that these e-newsletters provide you with more timely information in an environmentally conscious fashion, and direct you to additional avenues for providing feedback and asking questions.

For those of you who already receive the monthly *Connect with BGCAPP and PCAPP* e-news updates, no need to sign up again. You can just look forward to receiving more informative editions this spring. If you are not already on our distribution list, don't delay, go to the ACWA website at www.pmacwa.army.mil to register today!

Online Resources

Find out more about ACWA's mission to safely destroy the chemical weapons stockpiles located at the Blue Grass Army Depot, Ky., and U.S. Army Pueblo Chemical Depot, Colo., by visiting www.pmacwa.army.mil. Interested stakeholders may provide feedback to the program by clicking on the "Give Feedback" icon.

Additional information regarding chemical weapons destruction in Colorado and Kentucky can be found at the following websites:

- ACWA Website: www.pmacwa.army.mil
- ACWA Page on Facebook: www.facebook.com/pmacwa
- ACWA Page on Twitter: www.twitter.com/acwanews
- ACWA Photos on Flickr: www.flickr.com/photos/acwa
- ACWA YouTube Channel: www.youtube.com/usaeacwa

You may also subscribe to the ACWA Real Simple Syndication, or RSS feed, by visiting http://www.pmacwa.army.mil/connect/acwa_rss.html.

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