Highlighting the U.S. Army's Chemical Demilitarization Program

Reach

Pine Bluff
Summer/Fall 2003

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CMA

U.S. Army Chemical Materials Agency (Provisional)

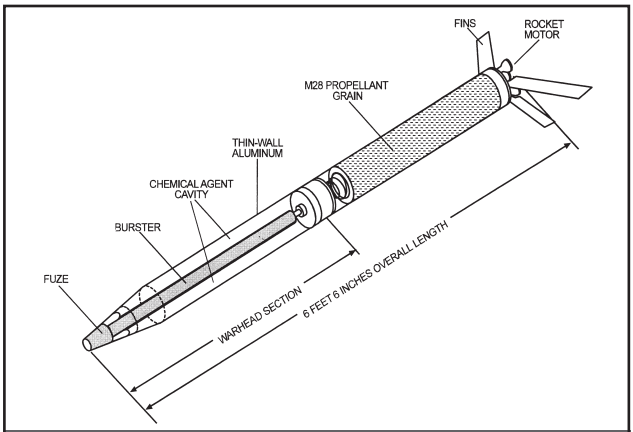
www.cma.army.mil

Arsenal prepares for munitions disposal

Rockets slated for first destruction

This is the first in a series of articles that will provide an in-depth look at each chemical munition to be destroyed at the Pine Bluff Chemical Agent Disposal Facility.

The Pine Bluff Chemical Agent Disposal Facility (PBCDF) plans to begin destroying stored chemical munitions in spring 2004. Currently the state-of-the-art facility is undergoing systemization, or testing, with Army quality assurance oversight to ensure that each piece of equipment and each step of the destruction process are safe and effective before destroying the stored agent. In addition to Army oversight, federal and state regulatory agencies closely monitor this phase, making sure the facility and its staff can demonstrate their ability to safely destroy chemical agent according to environmental permits and regulatory requirements.



M55 Rocket

Illustration courtesy of U.S. Army

When agent processing begins, the first step in the process that will be used is reverse assembly, where chemical munitions are separated into their component parts. Munitions components are then incinerated.

During destruction, PBCDF will destroy the four types of agent and three types of chemical munitions stored at the Arsenal. The chemical agents are nerve agents GB (Sarin) and VX and mustard blister agents HD and HT. The types of munitions containing these agents are rockets, landmines and ton containers.

What is the M55 rocket?

The first munition type planned for destruction is the M55 rocket. The rocket consists of five basic parts: a warhead, motor, fins, fuze and burster. The warhead contains the chemical agents GB or VX, commonly known as nerve agents, which were developed to interfere with the body's central nervous system. The motor launches the rocket and fins attached to the motor stabilize the rocket in flight. Upon impact, the fuze in the tip of the warhead detonates the burster, which distributes the nerve agent.

How will the rockets be destroyed?

The rockets will be removed from the high security storage areas called igloos, where they have been stored. They will then be placed in an enhanced on-site container (EONC) for transport to the chemical agent disposal facility. The EONC, a 10-ton, double-walled, cylindrical steel container transported by special tractor-trailers, has been flame, puncture and drop-tested to ensure that munitions are protected against external forces. The EONC, containing the M55 rockets, is delivered to the Container Handling Building for receipt and interim storage.

In the Unpack Area, the EONC is monitored to ensure no agent has leaked inside the EONC during transportation and interim storage before it is opened in the Unpack Area. During the Unpacking process, prior to rockets being placed on the metering machine and conveyor, the EONC is opened and the rocket pallets are placed in the lift where it transfers the pallets to the upstairs area of the UPA. The rockets, still in their shipping/firing tubes, are then sent to the Explosive Containment Room (ECR), which has 28-inch thick walls made of concrete and steel rebar. This special room is designed as a safeguard to contain the effects of any possible detonation of the munition.

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PBMAS to allow for safer handling of non-stockpile items

In the 1980s the U.S. Army initiated a major environmental restoration project at Pine Bluff Arsenal. The result of this site clean-up effort was the source of 96 percent of the site's recovered chemical warfare materiel.

Non-Stockpile Chemical Materiel Program (NSCMP) officials at Pine Bluff Arsenal (PBA) continue their important work toward safely destroying the arsenal's inventory of recovered chemical warfare materiel.

Photo courtesy of the U.S. Army

The Pine Bluff Munitions Assessment System (PBMAS) is being constructed in this building at the Pine Bluff Arsenal.

Key to this work is the ability to "see" inside a recovered item to determine the best method of handling and destruction. To safely speed this process, NSCMP is constructing the Pine Bluff Munitions Assessment System (PBMAS) in an existing building at PBA. PBMAS is scheduled to be operational by January 2004.

In the 1980s, the U.S. Army initiated a major environmental restoration project at PBA. The result of this clean-up effort was the source of 96 percent of the site's recovered chemical warfare materiel. Upon removal from the burial sites, the items were stored in large metal drums, designed to safely store multiple munitions, single round containers and steel shipping containers. These drums are also used to hold liquid-filled items, reducing the possibility of leakage.

The arsenal is also home to the nation's largest remaining supply of chemical agent identification sets (CAIS), kits that contain small bottles and vials of chemicals once used in training troops and civil defense officials to identify chemical agents in the field. Some bottles contain chemical agent while others contain common industrial chemicals. Developed in 1928, they were removed from service in 1969 and declared obsolete in 1971. The Army began CAIS destruction efforts in 1979.

When it becomes operational, PBMAS will use three state-of-the-art technologies to analyze the contents of recovered munitions and CAIS. These methods will examine the contents of the munitions and CAIS through their drum containers to determine whether or not any items are armed and, if there is chemical fill, what chemicals are present. Examining recovered chemical warfare materiel without opening them is called non-intrusive assessment.

Once the items have been assessed, the best method of destruction can be determined. Depending on the stability and the chemical fill, they can be processed on-site at PBA using one of several NSCMP-developed systems. These include the Pine Bluff Non-Stockpile Facility, the Explosive Destruction System and the Rapid Response System. These systems use neutralization to treat chemical agents present. Resulting waste will be sent to licensed treatment and disposal facilities in accordance with existing laws, regulations and permits. CAIS items filled with industrial chemicals will be separated from those requiring neutralization and sent to a licensed treatment and disposal facility.

Additional capabilities of the PBMAS will be explored in future issues of this newsletter. For more information on NSCMP, call the Outreach Office for Chemical Disposal at (870) 247-2025.

Rockets slated for first destruction

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While in the ECR, each rocket advances through the Rocket Shear Machine, where it is punched and drained. The drained agent is then measured and sent to a holding tank. After being drained of agent, the rocket is cut into eight pieces and fed through feed gates into the Deactivation Furnace. This furnace destroys residue agent and thermally decontaminates the sheared rocket sections and energetic components at 1100 degrees Fahrenheit. The kiln gases are further processed through an after burner at 2100 degrees Fahrenheit. The ash residue and remaining rocket sections are then heated at 1000 degrees Fahrenheit in the discharge conveyor. The final result of this process is decontaminated metal and fiberglass ash.

The liquid agent that has been drained from the rocket is then sent from a holding tank to the two-chamber Liquid Incinerator, where it is destroyed. The chemical agent is atomized (reduced to very small spray droplets) and sprayed into the primary chamber. In the primary chamber, the agent is burned at approximately 2700 degrees Fahrenheit. Water will be used to cool the gases coming from the primary chamber as they enter the secondary chamber. The exhaust gases from the Liquid Incinerator are sent to the Pollution Abatement System, where they are cooled, the acidity is neutralized and particles within the gases are removed.

Several monitoring systems will be in place to confirm the protection of personnel and the environment. Automatic Continuous Air Monitoring Systems (ACAMS) will monitor the facility for agent to validate that no harmful emissions are released into the environment. Continuous Emission Monitoring Systems (CEMS) are also in place and operational to validate the efficient operation of the system of non-agent emissions such as carbon monoxide and to confirm that emissions are within state-permitted levels.

As further protection, the Depot Area Air Monitoring System, or DAAMS, collects samples from the atmosphere within and around the plant and then it is analyzed in an on-site laboratory. DAAMS units provide a historical record of the environment and function as backup and verification to the ACAMS.

Each step of the chemical agent disposal process, which is primarily run by automated equipment, is controlled and monitored by highly skilled control room operators. These operators receive extensive training and must pass a rigorous certification process.

Through proven technologies and approaches, the skills of highly trained professionals, the oversight of the Army and various regulatory agencies, the PBCDF is moving forward to eliminate locally stored chemical munitions in a safe and environmentally sound manner.

PBCDF Three Cornerstones:

- *Emergency Preparedness*
- *Environmental Stewardship*
- *Proven Technology and Approaches*

ORO welcomes new manager

Photo by Kelley Dancer

Jennie Kirby, Outreach Office Manager

Jennie Kirby recently joined the Outreach Office for Chemical Disposal as manager. Kirby brings to this position a strong background in community relations and a commitment to the local community.

"I am delighted to be working with the local community to ensure that the citizens of Pine Bluff, White Hall, Jefferson County and Grant County are adequately informed and feel confident in the process of making chemical weapons history," she said.

Previously Kirby worked for the National Institutes of Health (NIH) as a community relations specialist, where she served as a liaison between the local community, civic leaders and elected officials and the NIH. Kirby has a master's in public administration from the University of Arkansas at Little Rock and an undergraduate degree from Ouachita Baptist University in Arkadelphia, Ark.

The outreach office is a one-stop resource for citizens to learn and stay informed about the chemical stockpile and non-stockpile programs. Outreach personnel can walk visitors through the disposal processes using munition models and displays. Resources such as fact sheets, newsletters, videotapes, reports and speakers for upcoming events are also available to the public. Come by and visit, pick up information about the stockpile and non-stockpile programs and say hello to the newest member of the outreach team.

Parker named acting director of new agency

As the acting director, Parker oversees chemical munitions storage and plant construction, systemization and the operational functions for the destruction mission.

Photo by Conrad Johnson

Michael Parker, Acting Director, Chemical Materials Agency (Provisional)

On Feb. 18, 2003, Michael A. Parker was appointed acting director of the Chemical Materials Agency (Provisional), which is headquartered at the Edgewood Area of the Aberdeen Proving Ground, Md. As the acting director, Parker oversees chemical munitions storage and plant construction, systemization and the operational functions for the destruction mission.

While serving in his previous assignment as the deputy to the commander of the U.S. Army Soldier and Biological Chemical Command, Parker was recognized for his leadership in restructuring America's overall chemical and biological defense program, including an effort that culminated in a joint service agreement for unified management of the chemical and biological defense programs of all military departments.

The St. Louis native holds a bachelor's degree in mechanical engineering from the Missouri School of Mines and Metallurgy, and has attended graduate schools of engineering at the University of Michigan and Johns Hopkins University. He is the recipient of numerous Army and civilian awards.

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