

HISTORY OF RCMD OPERATIONS AT PINE BLUFF ARSENAL (PBA)

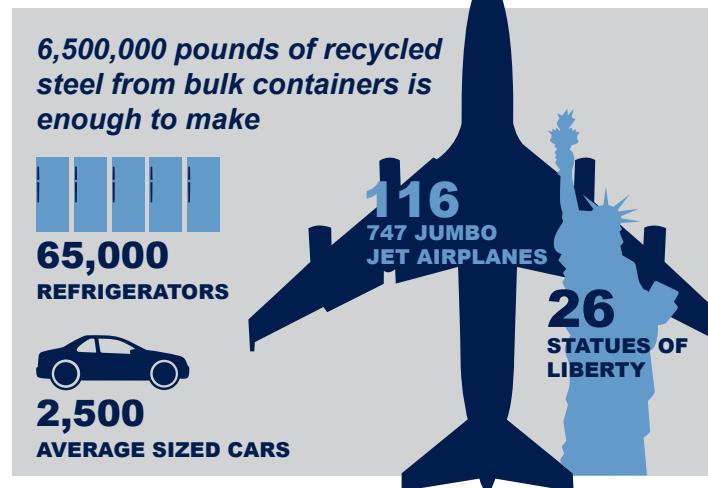
The U.S. Army Chemical Materials Activity Recovered Chemical Materiel Directorate (CMA RCMD) has completed a number of chemical demilitarization operations at Pine Bluff Arsenal (PBA), Arkansas, in support of the United States' obligations as a State Party to the Chemical Weapons Convention, the 1997 international treaty mandating the destruction of chemical warfare materiel. These operations include the destruction of the largest recovered chemical warfare materiel inventory to date, demolition of three former chemical weapons production facilities, and decontamination of more than 4,300 ton containers.

Pine Bluff Ton Container Decontamination Facility (PBTCDF)

PBTCDF began operations in September 2003 to decontaminate and recycle more than 4,300 empty ton containers (TCs) stored at PBA. The 1,600-pound steel containers once held hazardous materials and required decontamination of residual chemical agent. Operators heated the TCs to 1,000°F for 60 minutes, well in excess of the Army standard required to achieve chemical agent decontamination, significantly reducing liquid waste. Once decontaminated, TCs were transported to a treatment, storage and disposal facility. There, they were cut in half, remaining residue was removed, and the steel was recycled. PBTCDF successfully completed operations in July 2011, resulting in the recycling of more than 6,500,000 pounds of U.S. steel.



From 2005 to 2006, the Pine Bluff Munitions Assessment System analyzed and assessed more than 7,000 recovered munitions to determine their contents and explosive capability.



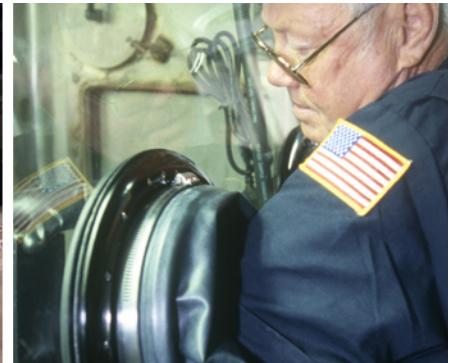
Pine Bluff Munitions Assessment System (PBMAS)

PBMAS was developed to identify the contents of overpacked items recovered during a U.S. Army Corps of Engineers environmental remediation effort at PBA. Until the 1970s, burial of chemical warfare materiel was an internationally accepted means of disposal on military installations where chemical weapons were manufactured, tested, or stored. Historically, burial of chemical warfare materiel was an acceptable means of disposal on military installations where chemical weapons were manufactured, tested or stored.

Because many munitions were recovered together in single 55- and 85-gallon drums, the PBMAS was designed to provide a place to unpack, assess and then repackage items prior to safe treatment and disposal. PBMAS began analyzing the items in July 2005, using an X-ray system known as Digital Radiography and Computed Tomography and an assessment system known as Portable Isotopic Neutron Spectroscopy. By 2006 the PBMAS assessed more than 7,000 suspected recovered chemical warfare items.

Rapid Response System (RRS)

The RRS, a transportable treatment technology, processed more than 5,300 Chemical Agent Identification Sets items once stored at PBA. The Army manufactured and distributed CAIS items to military installations around the country between 1928 and 1969 to train soldiers in the safe identification, handling and decontamination of chemical agents. The RRS began operations in August 2005 and completed processing in November 2006. It has since been decommissioned, as more cost-effective disposal options have become available.



The Rapid Response System (RRS) was a mobile trailer system designed to treat numerous CAIS vials found in a single location. Operators handled the items through a glove box, in which the glass bottles containing small amounts of chemical agent were crushed prior to neutralization.

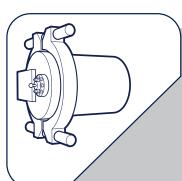
Pine Bluff Explosive Destruction System (PBEDS)

PBEDS began operations in June 2006 to destroy more than 1,200 recovered chemical warfare munitions at PBA, which was the largest inventory of RCWM to date. The system involved three EDS units, each set up in a vapor containment structure.

The inventory in the first PBEDS campaign included 4.2-inch mortars, as well as German Traktor Rockets, which were captured during World War II and sent to PBA for analysis. PBEDS operators destroyed the last munition in April 2010, marking the destruction of all non-stockpile materiel declared when the United States became a State Party to the Chemical Weapons Convention.



The first PBEDS mission destroyed more than 1,200 RCWM munitions between June 2006 and April 2010.



Explosive Destruction System (EDS)

EDS is a total containment system that uses cutting charges to explosively access chemical munitions, eliminating their explosive capacity before the chemical agent is neutralized. The system's main component—a sealed, stainless-steel vessel—contains all the blast, vapor and fragments from the process. Treatment is confirmed by sampling residual liquid and air from the vessel prior to reopening the EDS.



U.S. ARMY CHEMICAL MATERIALS ACTIVITY

FACT SHEET

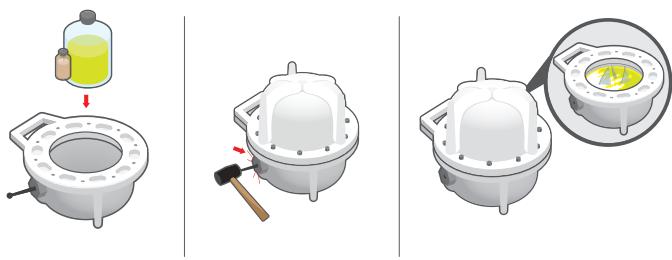
In December 2018, CMA RCMD returned to PBEDS to destroy chemical warfare materiel recovered during ongoing environmental remediation efforts at PBA. During this second PBEDS campaign, operators destroyed four mustard agent-filled German Traktor Rockets, a 4.2-inch mortar containing mustard agent and 7,101 CAIS K-941 bottles containing a small amount of undiluted mustard agent. As additional items are recovered, CMA RCMD will restart destruction operations at PBEDS as required.



The PBEDS site layout, set up in accordance with all applicable laws and permit requirements, encompasses three EDS units. Each EDS is set up in a vapor containment structure with a pollution abatement system to ensure protection of workers and the environment.

The CAIS bottle holder for the EDS reduced the operations time for phase one of CMA RCMD's second PBEDS campaign from years to weeks and resulted in significant cost and waste savings.

Single CAIS Access and Neutralization System

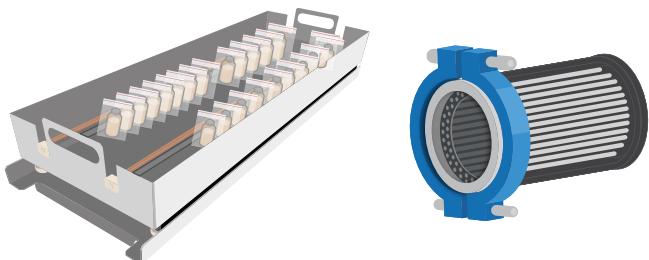


Typically, K-941 bottles are found in small quantities and destroyed one at a time, using the Single CAIS Access and Neutralization System (SCANS).

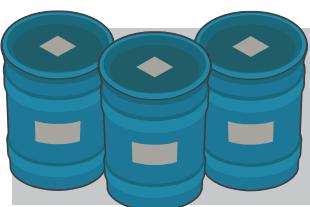


7,101 individual SCANS operations would have generated 7,101 20-gallon waste drums for disposal.

CAIS bottle holder for the EDS



Prior to the second PBEDS campaign, CMA RCMD successfully tested a CAIS bottle holder for the EDS, which allowed for the neutralization of up to 178 K-941 bottles in a single operation.



The EDS treated 7,101 bottles in 40 operations, generating the equivalent of only 550 20-gallon drums.



Pine Bluff Former Production Facilities

PBA once housed two chemical warfare production facilities, and CMA RCMD was charged with destroying them to comply with the CWC.

Destroyed in 1999, the BZ Fill Facility filled munitions with the agent BZ, a hallucinogen similar to LSD.

In 2003, CMA RCMD began demolition of the former Pine Bluff Integrated Binary Production Facilities (PB IBPF), designed to produce binary chemicals and fill binary chemical weapons. These weapons were designed to mix two non-lethal chemicals to form a chemical agent in flight to a target. The DF Production/M20 Canister Fill and Close Facility operated from 1988 to 1990. The BLU-80/B Bigeye Bomb Fill Facility, QL Production Facility and DC Production Facility never operated, and all were demolished.



BZ Fill Facility



Destruction of the PB IBPF marked the destruction of the last chemical warfare production facility in the U.S.



The remaining PB IBPF building, intended to fill binary munitions for the Multiple Launch Rocket System but never used for that purpose, was reutilized as the Pine Bluff Binary Destruction Facility to neutralize the binary precursor chemicals DF and QL. Neutralization was completed in October 2006 and demolition of the building was completed on December 28, 2006.



Pine Bluff Binary Destruction Facility

This milestone not only marked the end of the PB IBPF demolition, but also the destruction of the last former chemical warfare production facility in the United States, four months ahead of the international treaty schedule. Approximately 2,800 tons of metal were recycled from the IBPF.

Ongoing Missions

The U.S. Army Corps of Engineers continues environmental remediation of chemical weapons burial sites on active military installations and formerly used defense sites. CMA RCMD will periodically return to Pine Bluff Arsenal to neutralize any chemical warfare materiel recovered in these ongoing operations.