Pueblo Chemical Agent-Destruction Pilot Plant

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A Partnership for Safe Chemical Weapons Destruction

www.peoacwa.army.mil

Explosive Destruction System Overview

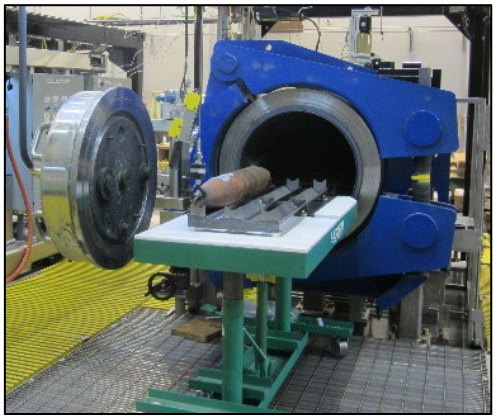
The Pueblo Chemical Agent-Destruction Pilot Plant, is safely and efficiently destroying the stockpile of chemical weapons stored at the U.S. Army Pueblo Chemical Depot. The pilot plant uses neutralization followed by biotreatment as the technology to destroy the majority of the munitions, containing mustard agent.

The Explosive Destruction System augmented the pilot plant to destroy a number of problematic munitions that could not be easily destroyed by the main plant's automated equipment.

During two campaigns from March 2015 to December 2018, the EDS eliminated 951 items resulting in 3.82 tons of mustard agent being reported as destroyed to the Organisation for the Prohibition of Chemical Weapons.

What are Problematic Munitions?

Problematic munitions include those that have leaked in the past, or whose deteriorated physical condition does not easily allow for automated processing. "Overpack" refers to chemical munitions that have leaked or were sampled in the past to determine the condition of the mustard agent. Operators will place these munitions, or overpack them, in air-tight sealed canisters for continued safe storage. In addition, "reject" chemical munitions having conditions that pose difficulties for automated processing are expected during plant operations that will require elimination by an alternate method. The EDS safely processed these problematic munitions during its two campaigns at the U.S. Army Pueblo Chemical Depot.



How Does EDS Work?

EDS was housed inside an Environmental Enclosure with an air filtration system. The system's stainless steel vessel has 3.655-inch thick walls that not only contain all the blast, vapor and fragments from the process, but also reduce the noise levels such that they don't carry beyond the enclosure. During each process, experienced EDS operators attach cutting charges to each munition. Once the munitions, up to six at a time, are sealed inside the chamber, the charges are detonated, opening each munition so the agent can be neutralized, while also eliminating the explosive components in the munitions.

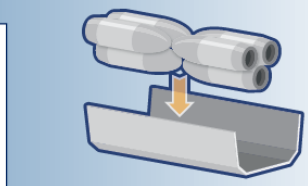
Operators confirm treatment is complete by sampling liquid and air from the vessel prior to reopening the sealed chamber. After processing, all metal waste is placed in drums and disposed of as hazardous waste. Liquid waste, such as neutralent and rinsewater, is packaged and disposed of as hazardous waste. All hazardous waste products will be disposed of at permitted Treatment, Storage and Disposal Facilities.

With the addition of the PCAPP site, EDS has successfully destroyed more than 2,560 items during testing and at missions at Aberdeen Proving Ground (APG), Maryland; Spring Valley, Washington, D.C.; Dover Air Force Base, Delaware; Former Camp Sibert, Alabama; Dugway Proving Ground, Utah; Pine Bluff Arsenal, Arkansas.; Rocky Mountain Arsenal, Colorado; and Redstone Arsenal, Alabama. EDS testing was conducted in the United Kingdom and at APG.

How Does EDS Work?

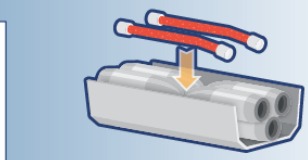
STEP 1

Operators bring the overpacked munitions into the environmental enclosure, unpack the munitions and place them in the munition holder, which can hold up to six munitions.



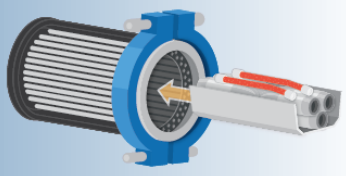
STEP 2

Operators attach linear shaped charges along the munition bodies.



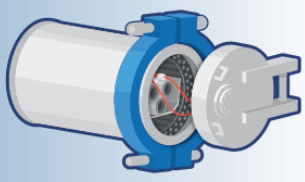
STEP 3

Operators slide the items into the EDS vessel where the Advanced Fragment Suppression System (AFSS) surrounds them, protecting the chamber of the EDS during operations. The AFSS efficiently allows operators to replace the individual damaged rods instead of the entire system.



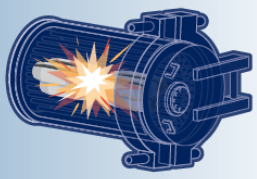
STEP 4

Operators attach electrical components, then close and seal the door and validate the seal.



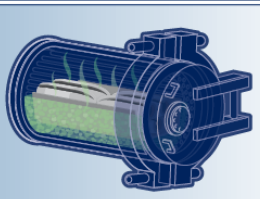
STEP 5

Operators remotely detonate the linear shaped charges to access the munition bodies and their chemical fill, while eliminating their explosive capacity.



STEP 6

Operators add neutralization chemicals and heat the vessel, if needed, using steam heating technology that injects live steam directly into the EDS, heating the vessel on the inside only.



STEP 7

Operators rotate the unit to mix the contents and neutralize the chemical fill. They confirm treatment by sampling residual liquid and air from the vessel prior to reopening the EDS. Finally, operators remove the contents and transport them to an approved facility for treatment as hazardous waste.