



Pueblo Chemical Agent-Destruction Pilot Plant

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How the U.S. Army's Explosive Destruction System Will Augment the Pueblo Chemical Agent-Destruction Pilot Plant

The Pueblo Chemical Agent-Destruction Pilot Plant, or PCAPP, has been built and is now testing its systems to ensure readiness for safe and efficient destruction of the chemical weapons stockpile currently stored at the U.S. Army Pueblo Chemical Depot, or PCD. A two-step technology, neutralization followed by biotreatment, is the process selected to destroy the large majority of the stockpile. However, it is known that a small number of the weapons will pose a problem for the main plant's automated equipment to process, requiring the selection of an additional method, the Explosive Destruction System, or EDS, to augment PCAPP.

Q. What technology will be used at PCAPP to safely destroy chemical weapons?

A. The main facility will use neutralization followed by biotreatment.

During the neutralization process, munitions will be taken apart and energetics (explosives and propellants) will be removed. The mustard agent will be drained and the munitions bodies rinsed. The agent will then be mixed vigorously with hot water and sodium hydroxide, which destroys the agent. The resulting product, known as hydrolysate, is held and tested to ensure agent destruction before proceeding to a secondary process known as biotreatment, where ordinary sewage-treatment-type bacteria will further break down the hydrolysate into carbon dioxide, water and minerals.

Q. What technology will be used by the PCAPP EDS?

A. The PCAPP EDS will use neutralization.

The PCAPP EDS will use cutting charges to explosively access the mustard agent inside the munition. Operators will then add neutralization chemicals to destroy the agent. The detonation of the cutting charges also eliminates the explosive components of the munition. A heavy sealed stainless-steel vessel contains the blast, vapor and fragments from this process. Before the vessel is reopened, elimination of the chemical agent is confirmed by sampling residual liquid and air from the interior of the vessel.

Q. Why is the PCAPP EDS necessary?

A. It is needed to destroy "overpacks" and "rejects" that pose a problem to process in the main plant.

"Overpack" refers to chemical munitions that have leaked or were sampled in the past to determine the condition of the mustard agent. In both instances, operators placed these munitions in air-tight sealed canisters, or "overpacks," for continued safe storage. PCD stores more than 500 overpacked chemical munitions. "Reject" chemical munitions have conditions that pose difficulties for automated processing. Based on experience of other chemical weapons destruction facilities, a certain number of munitions cannot be disassembled using plant equipment. Because this condition may not be discovered until the munitions undergo processing, such munitions would be classified as "rejects" and would require elimination by an alternate method – in this case, the PCAPP EDS. Out of PCD's total stockpile of more than 780,000 munitions, about 800 "rejects" are anticipated.