

**RECORD OF DECISION
CHEMICAL STOCKPILE DISPOSAL PROJECT
DESTRUCTION OF THE CHEMICAL AGENTS AND MUNITIONS
STORED AT PUEBLO CHEMICAL DEPOT, COLORADO**

Consistent with the National Environmental Policy Act (NEPA) and regulations promulgated pursuant thereto, this Record of Decision (ROD) documents and explains the Department of Defense's decision to select chemical neutralization followed by biotreatment for the destruction of the mustard chemical agent stored at the Pueblo Chemical Depot (PCD), Colorado. Initially, the plant will be operated as a pilot test facility before beginning full-scale operations. The destruction facility would be located adjacent to the existing chemical storage area, identified as site A in the Environmental Impact Statement (EIS). The Final Environmental Impact Statement (FEIS) adequately addresses the expected impacts of the actions relating to the destruction of mustard chemical agent and munitions stored at PCD. The FEIS shows that any of the four technological alternatives considered would provide for the protection of the environment, the general public, and workers at the destruction facility.

In making this decision, the U.S. Army has considered all comments received during the scoping meetings, public meetings, and public comment period associated with the preparation of the FEIS.

BACKGROUND

Public Law (PL) 99-145, Section 1412 (50 United States Code, Section 1521), requires the Secretary of Defense to destroy the U.S. stockpile of lethal chemical agents and munitions while providing for maximum protection of the environment, the general public, and the personnel who are involved in the destruction effort. In addition, the United States is a state party to the Chemical Weapons Convention (CWC), an international treaty that requires state parties to destroy their chemical warfare materiel by April 29, 2007, with a possible extension to this deadline of up to five years.

To implement the congressional directive, the U.S. Army conducted a programmatic environmental review consistent with NEPA and the governing Council on Environmental Quality (CEQ) Regulations (Title 40, Code of Federal Regulation, Parts 1500 through 1508). A Final Programmatic EIS was issued in January 1988. In its programmatic ROD (53 Federal Register 5816, February 26, 1988), the Department of the Army selected on-site incineration as the method by which the Army would destroy the nation's unitary chemical stockpile. Site-specific EISs have been or are being prepared for all nine of the stockpile sites.

PL 104-208 required Department of Defense to identify and demonstrate not less than two alternative destruction technologies to incineration and prohibited obligation of funds for the construction of incineration facilities at PCD and Blue Grass Army Depot, Kentucky, until 180 days after the Secretary of Defense submitted a report on the results of the demonstration effort. Initially, the Assembled Chemical Weapons Assessment (ACWA) Program identified three alternative technologies. PL 105-261 authorized the demonstration of three additional technologies. PL 106-398, Section 151, limited technologies that can be considered for destruction of the chemical stockpile stored at PCD to incineration and alternative technologies (Chemical neutralization with super critical water oxidation and chemical neutralization with biotreatment) demonstrated on or before May 1, 2000.

The Draft EIS (DEIS) for the destruction of chemical agents and munitions stored at PCD was released for public comment in May 2001. It considered environmental impacts of no action, two incineration processes (baseline incineration and modified incineration), and the two previously mentioned neutralization technologies. The FEIS incorporates comments received on the DEIS.

THE DECISION

The Defense Acquisition Executive (DAE) decided to use chemical neutralization followed by biodegradation for destruction of the chemical stockpile stored at PCD. A variety of factors were considered in making this decision, including, but not limited to, mission needs, cost, schedule, environmental considerations, public concerns, and compliance with the CWC. Any of the four technological alternatives from an environmental viewpoint would be acceptable. Public viewpoints were a significant factor in the decision.

In response to concerns arising from the September 11, 2001 terrorist attacks, the DAE directed the U.S. Army to investigate ways to accelerate the destruction of the chemical stockpile stored at PCD. The U.S. Army will ensure that these efforts are carried out in full compliance with NEPA.

PROPOSED ACTION AND ALTERNATIVES

The U.S. Army proposes to destroy the stockpile of chemical agents and munitions stored at PCD. In addition to the no action alternative, which is being considered in accordance with CEQ regulations, the FEIS addresses four alternatives to carry out the proposed action. These include (1) the baseline incineration process that was used by the U.S. Army in the Johnston Atoll Chemical Agent Disposal System (JACADS) to destroy the chemical stockpile at Johnston Island, and that is currently being used in the Tooele Chemical Agent Disposal Facility (TOCDF) to destroy the chemical stockpile stored at Deseret Chemical Depot, Utah; (2) a modified baseline incineration process that incorporates lessons learned at JACADS and TOCDF and is tailored to the specific conditions of the chemical stockpile at PCD; (3) chemical neutralization followed by super critical water oxidation (SCWO); and (4) chemical neutralization followed by biotreatment.

The no action alternative was determined to be unviable due to hazards associated with continued storage, including the possibility of external hazardous events (e.g., earthquake, airplane crash), as well as the requirements of Public Law 99-145 (the Department of Defense Authorization Act of 1986) and international treaty that require the destruction of the U.S. stockpile.

For any of the four destruction alternatives, the U.S. Army would erect structures designed to prevent release of chemical agent to the environment. This includes an explosive containment area for disassembly, handling, and destruction of the energetic parts of munitions containing explosives.

Alternative 1, baseline incineration, involves reverse-assembly of munitions, including the separation of energetics and draining of chemical agent from the munitions bodies. The three munitions components are then incinerated in separate furnaces.

Alternative 2, modified baseline incineration, involves separation of energetics from munitions, followed by freezing of the munition and pressing of the fuze adapter into the chemical agent cavity to access the chemical agent. Energetics would either be shipped to a

permitted treatment, storage, and disposal facility or treated on-site. The chemical agent-filled munitions are incinerated in a single furnace. This approach eliminates chemical agent spills caused by frothing of the chemical agent, a problem observed during destruction operations at JACADS.

Alternative 3, chemical neutralization followed by SCWO, involves separation of the energetics, followed by freezing and cryofracture of the munitions to access chemical agent. Agent and energetics undergo a chemical hydrolysis process. The neutralization products and shredded dunnage are further treated in SCWO reactors. Recovered metal parts are electrically heat treated and released as scrap.

Alternative 4, chemical neutralization followed by biotreatment (the selected alternative), involves separation of energetics, followed by draining the liquid chemical agent from the munitions. Agent and energetics undergo a chemical hydrolysis process. The neutralization products are further treated in biotreatment reactors. Dunnage and recovered metal parts are steam-treated and properly disposed or released as scrap.

ENVIRONMENTAL CONSEQUENCES

The impacts to the site and the environment surrounding PCD from construction and operation of a chemical agent destruction facility are considered minimal. The principal findings regarding potential impacts are summarized below.

The impacts from construction of a chemical agent destruction facility under any of the four destruction alternatives are expected to be comparable to those from a typical medium-scale industrial facility. Land use impact is considered minimal because activity is limited to a relatively small area within the area of PCD that has been reserved for chemical storage and demilitarization activities.

Current water use at PCD will increase substantially during destruction operations due to the amount of process water required. Although this increase in water use may result in a temporary, localized decline in the water table and a marginal decrease in water quality, the ability to meet drinking water quality standards will not be impacted. These effects would likely be short-lived and reversed soon after operations are concluded. There would be no regional lowering of the water table for any of the alternatives and the area of the aquifer affected would lie completely within the PCD boundary. None of the four alternatives considered are expected to exceed historic water consumption levels, retained water rights, or allowed pumping capacity at PCD.

All of the four technological alternatives evaluated would produce hazardous wastes. Wastes resulting from the normal operations of a neutralization facility would include components from the treatment of metal parts and dunnage as well as process residues. These would include brine salts and biomass (neutralization followed by biodegradation only). The brine salts and biomass could contain significant amounts of toxic heavy metals (e.g., lead) and be considered hazardous waste. If so, the hazardous waste would need to be stabilized by a procedure that would reduce leaching of the heavy metal to a level that would allow it to be approved for land disposal as a hazardous solid waste. Salt wastes have proven somewhat difficult to stabilize; so additional studies might be required to identify an effective stabilization technology. If stabilization of the solid salt wastes was required, either a waste management process for stabilizing the wastes would be needed on post, or the wastes would need to be transported off-site and disposed of or treated in accordance with applicable regulations. Wastes

resulting from the normal operation of an incineration facility would consist mainly of metal parts and ash residue from the furnace systems and brine liquids generated from the pollution abatement system. Most likely, the ash residue and brine would contain heavy metals and would need to be sent off-site as hazardous waste. Both would be transported off-site and disposed of or treated in accordance with applicable regulations.

Construction and operation of a chemical munition destruction facility would be required to comply with related standards for emissions and ambient-air concentrations. Impacts of facility construction would primarily involve fugitive dust from construction and earthmoving activities. An incineration facility would have emissions from boilers, generators, and the incinerator stack. A neutralization facility will have emissions from boilers, generators, and the SCWO or biotreatment areas. Emissions from construction and operating either an incineration or neutralization facility would comply with all applicable local, state, and federal environmental regulations.

Based on the results of the analysis in the FEIS, none of the four destruction alternatives can be identified as environmentally preferable to the others. Overall impacts from chemical demilitarization activities are considered to be minor.

MITIGATION

The Department of Defense will adopt all practicable means to avoid or minimize environmental impacts from chemical destruction operations using the selected alternative. Measures to mitigate potential impacts include operational constraints, safety enhancements, and emergency planning.

The Department of Defense will maintain strict operational constraints to ensure that pollutant levels in effluents will be controlled to levels below regulatory requirements. Appropriate engineering measures will be undertaken to ensure compliance with all federal, state, and local environmental laws and regulations during facility operations.

Measures to ensure maximum protection of facility personnel include various facility design features, administrative procedures, individual protective clothing and equipment, as well as regular training and strict adherence to occupational safety and health procedures. No significant adverse impact to worker health is anticipated.

Emergency planning and response capabilities are in place both at PCD and in the surrounding communities. The U.S. Army has been providing, and continues to provide, financial and technical assistance to support emergency preparedness activities of the State of Colorado and local government agencies. These organizations will continue to cooperate to develop emergency response policy, plans, public education, and guidelines for exercises and training.

CONCLUSION

We have carefully considered the Final Environmental Impact Statement and all comments provided during formal comment and waiting periods throughout the Environmental Impact Statement process.

The Defense Acquisition Executive (DAE) decided to use chemical neutralization followed by biodegradation for destruction of the chemical stockpile stored at PCD. A variety of factors were considered in making this decision, including, but not limited to, mission needs, cost, schedule, environmental considerations, public concerns, and compliance with the CWC. Any of the four technological alternatives from an environmental viewpoint would be acceptable. Public viewpoints were a significant factor in the decision.

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