

**RECORD OF DECISION
CHEMICAL STOCKPILE DISPOSAL PROJECT
DESTRUCTION OF THE CHEMICAL AGENTS AND MUNITIONS
STORED AT BLUE GRASS ARMY DEPOT, KENTUCKY**

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 approve neutralization (hydrolysis) followed by supercritical water oxidation (SCWO) as the technology for full-scale pilot-testing at the Blue Grass Army Depot (BGAD) in Richmond, Kentucky. The purpose of the pilot testing is to demonstrate that neutralization followed by SCWO, when operated at full-scale is capable of safely and efficiently destroying the chemical agents and munitions bodies stored at BGAD. The Final Environmental Impact Statement (FEIS) adequately addresses the expected impacts of the Department's proposed actions relating to pilot-testing neutralization followed by SCWO at BGAD.

In making this decision the Department of Defense has considered all oral and written 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), required 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 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 in accordance with NEPA and the governing Council on Environmental Quality (CEQ) regulations (Title 40, Code of Federal Regulations, 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 to destroy the nation's unitary chemical stockpile. Site-specific EISs have been prepared for all nine of the stockpile sites and RODs have been issued for eight sites.

PL 104-208 required the Department of Defense to identify and demonstrate not less than two alternative destruction technologies to incineration. PL 104-208 also prohibited the obligation of funds for the construction of incineration facilities at BGAD 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 could be considered for destruction of the chemical stockpile stored at BGAD to incineration and those alternative technologies demonstrated on or before May 1, 2000.

The Draft EIS (DEIS) for the destruction of chemical agents and munitions stored at BGAD was released for public comment in May 2002. It considered environmental impacts of no action, incineration, two neutralization technologies and electrochemical oxidation. The FEIS incorporated all comments received on the DEIS.

THE DECISION

In his 4 February 2003 Acquisition Decision Memorandum, the Defense Acquisition Executive (DAE) approved chemical neutralization followed by SCWO as the technology for full-scale pilot testing at the BGAD. A variety of factors were considered in making this decision, including, but not limited to, mission needs, cost, schedule, environmental considerations, public and local community concerns, and compliance with the CWC.

Due to increased security concerns and a desire to increase the probability of the Department meeting the extended CWC destruction deadline, the DAE directed the Assembled Chemical Weapons Assessment Program (ACWA) to investigate ways to accelerate the destruction of the chemical stockpile stored at BGAD. The U.S. Army and ACWA will ensure that these efforts are carried out in full compliance with NEPA.

ALTERNATIVES CONSIDERED

In addition to the no action alternative, which is being considered in accordance with CEQ regulations, the FEIS addresses four alternative technologies that could be employed to destroy the chemical agents and munitions stored at BGAD. These include (1) the baseline incineration process that was used by the U.S. Army at the Johnston Atoll Chemical Agent Disposal System (JACADS) to destroy the chemical stockpile on Johnston Island, the same process currently being used in the Tooele Chemical Agent Disposal Facility to destroy the chemical stockpile stored at Deseret Chemical Depot, Utah; (2) chemical neutralization followed by SCWO; (3) chemical neutralization followed by SCWO and gas phase chemical reduction and (4) electrochemical oxidation.

The no action alternative was determined to be unacceptable due to hazards associated with continued storage including the possibility of external hazardous events (e.g., earthquake, lightning strike, airplane crash) as well as the requirements of PL 99-145 (the Department of Defense Authorization Act of 1986) and international treaty requirements that require the United States to destroy the stockpile.

For any of the four technological 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 munition bodies. The three munition components, i.e., energetics, agent, and munition body are then incinerated in separate furnaces.

Alternative 2, chemical neutralization followed by SCWO, involves separation of the energetics similar to the baseline incineration process to access chemical agent. All munitions components undergo a chemical neutralization/hydrolysis process. The neutralization products (hydrolysate) are broken down by high temperature and pressure in SCWO units. Dunnage is shredded, micronized, hydropulped and neutralized/hydrolyzed. Thermal treatment is used to treat metal parts.

Alternative 3, chemical neutralization followed by SCWO and gas phase chemical reduction involves separation of the energetics similar to the baseline incineration process to access chemical agent. The chemical agents and energetics undergo a chemical neutralization/hydrolysis process. The neutralization products (hydrolysate) are broken down in SCWO units. Dunnage and metal parts are treated using gas phase chemical reduction.

Alternative 4, electrochemical oxidation, involves separation of the energetics similar to the baseline incineration process to access chemical agent. Fuses and supplementary charges are detonated in a detonation chamber. Chemical agents and explosives are treated in separate SILVER II reactors. Metal parts and dunnage are thermally treated.

ENVIRONMENTAL CONSEQUENCES

Impacts to the environment surrounding BGAD from the decision to pilot-test neutralization followed by SCWO are summarized below.

Pilot testing is not expected to significantly impact on-post land use because land disturbance would be limited to a relatively small area within the larger area of BGAD that has been reserved for chemical storage and demilitarization activities.

Water use at BGAD will increase substantially during pilot test operations due to the amount of process water required. A 500,000-gallon water storage tank would be constructed to provide additional capacity and ensure adequate supply would be available during peak demand periods, fires or other emergency response demands. Groundwater is neither currently used at BGAD nor would it be required for destruction of the chemical weapons stockpile.

All of the four technological alternatives evaluated would produce process wastes. Hazardous solid wastes resulting from normal operations of a non-incineration facility would consist mainly of brine salts, aluminum oxide, and anolyte-catholyte wastes. Hazardous solid wastes would be transported to an off-site permitted hazardous waste disposal facility. The largest quantity of solid hazardous wastes should be generated by the neutralization technologies, with baseline incineration expected to generate approximately 25% less and electrochemical oxidation approximately 80% less. The quantity of hazardous liquid wastes is expected to be small to non-existent (through recycling) for all alternatives. Liquid hazardous wastes would be taken to an off-site permitted treatment, and disposal facility. Non-hazardous liquid and solid wastes would consist of sewage and uncontaminated metals and solids. Sewage would be treated on-site and the liquid effluent discharged to Muddy Creek. Solid wastes would be disposed of in an off-site permitted landfill.

Air quality impacts of conducting a pilot test are expected to be lower than National Ambient Air Quality Standards (NAAQS) except for particulate matter with a mass mean diameter of less than 2.5 microns, for which background concentrations already exceed the NAAQS. Operation of a baseline incineration facility would involve low emission levels with no exceedances of NAAQS expected. Impacts of a non-incineration pilot test would be similar to but less than those from a baseline incineration facility.

Two federally listed threatened or endangered species are known to occur at BGAD, the bald eagle and running buffalo clover. The bald eagle, a federal listed threatened species occurs as a winter migrant. Running buffalo clover occurs most commonly on rich soils in habitats with filtered light such as open woodlands, savannas, floodplains, and mesic stream terraces on well-drained sites. Based on this FEIS and the *Supplemental Biological Assessment Addressing Operations Impacts for the Proposed Program Manager for Chemical Demilitarization Agent Destruction Facility at Blue Grass Army Depot, Richmond, Kentucky*, dated November 2002, we conclude that the impacts to the running buffalo clover at BGAD from operation of the selected technology will not be significant.

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

MITIGATION

Mitigation and monitoring help ensure that storage, handling and pilot-test destruction of the chemical munitions are carried out in a safe and efficient manner. Similarly, pilot facility environmental permitting can be considered part of the mitigation measures. The permitting process requires advance consideration of potential health, ecological, and agricultural risks, and proof of capability to operate within limits that have been studied and set conservatively by regulatory agencies to provide an adequate margin of safety for the protection of workers, the public and the environment. The U.S. Army will adopt all practicable means to avoid or minimize environmental impacts from pilot facility operations using the selected alternative. Measures to mitigate potential impacts include operational constraints, safety enhancements, and emergency planning.

The U.S. Army will maintain strict operational constraints to ensure that pollutant levels in all 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 permit conditions, laws and regulations during pilot facility operations.

Measures to ensure maximum protection of facility personnel include various facility design features, administrative procedures, individual personal 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.

Effective emergency planning and management through the Chemical Stockpile Emergency Preparedness Program are designed to mitigate the consequences of accidental chemical agent releases for the population living near BGAD. Emergency planning and response capabilities have been upgraded in the BGAD vicinity, with Army assistance. Emergency planning and preparedness are designed to mitigate impacts from accidents during continued storage (no action), as well as from accidents during operation of the proposed pilot test facility.

CONCLUSION

We have carefully considered the FEIS and all comments provided during formal comment and waiting periods throughout the NEPA process.

The Defense Acquisition Executive (DAE) approved chemical neutralization followed by SCWO as the technology for full-scale pilot testing at the BGAD, Kentucky. The purpose of the pilot test is to demonstrate that neutralization followed by SCWO, when operated at full-scale, is capable of safely and efficiently destroying the chemical agents and munition bodies stored at BGAD. A variety of factors were considered in making this decision, including, but not limited to, mission needs, cost, schedule, environmental considerations, public and local community concerns, and compliance with the CWC.


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