Program Manager Assembled Chemical Weapons Alternatives

Alternative Technologies Viable for the Blue Grass Stockpile

A Partnership for Safe Chemical Weapons Destruction

Information

The Assembled Chemical Weapons Assessment program has evaluated six alternative technologies to dispose of assembled chemical weapons. ACWA has determined that three of those technologies may be viable for the Blue Grass stockpile.

Neutralization followed by Supercritical Water Oxidation *(Demonstrated in 1999)*

- Munitions are disassembled by modified reverse assembly. Agent and energetics are separated.
- Agent and energetics are chemically decomposed and neutralized by caustic or water hydrolysis. The resulting chemical compounds are known as hydrolysates.
- The agent and energetic hydrolysates are destroyed using supercritical water oxidation (SCWO) units. SCWO subjects the hydrolysate to very high temperatures and pressures, breaking them down into carbon dioxide, water, and salts.
- Metal parts are thermally decontaminated to a 5X level by heating to 1000 degrees Farenheight for a minimum of 15 minutes.
- Solid effluents are recycled or tested prior to disposal in permitted landfills.
- Gas effluents are recycled or filtered before release to the atmosphere.

Electrochemical Oxidation with Silver and Nitric Acid (SILVER II™) *(Demonstrated in 2000)*

- Agent and energetics are removed from rockets/projectiles, separated and conveyed to two separate SILVER II™ units.
- Agent and energetics are electrochemically oxidized and destroyed with nitric acid and silver ions.
- Metal parts and dunnage are thermally decontaminated to a 5X level.
- Solid effluents are recycled or tested prior to disposal in permitted landfills.
- Gas effluents are recycled or filtered and monitored before release to the atmosphere.

Neutralization followed by Transpiring Wall Supercritical Water Oxidation and Gas Phase Chemical Reduction *(Demonstrated in 2000)*

- Munitions are disassembled by modified reverse assembly. Agent and energetics are removed.
- Agent and energetics are chemically decomposed and neutralized by caustic or water hydrolysis. The resulting chemical compounds are known as hydrolysates.
- The agent and energetic hydrolysates are destroyed using a supercritical water oxidation or SCWO unit. SCWO subjects the hydrolysate to very high temperatures and pressures, breaking them down into carbon dioxide, water, and salts.
- Metal parts and dunnage are treated in a gas phase chemical reduction (GPCR) system. GPCR destroys residual agent and energetics on metal parts or dunnage in a heated hydrogen atmosphere.
- Solid effluents are recycled or tested prior to disposal in permitted landfills.
- Gas effluents are recycled or filtered and monitored before release to the atmosphere.

FOR MORE INFORMATION CONTACT: Program Manager Assembled Chemical Weapons Alternatives Public Affairs at 410-436-3398. Blue Grass Army Depot Public Affairs can be reached at 859-625-6221, or call Blue Grass Chemical Activity Public Affairs at 859-625-6897. Additional information on chemical stockpile disposal is available at the Blue Grass Chemical Stockpile Outreach Office, 370 Highland Park Drive Suite 2, Richmond, KY 40475, or call 859-626-8944.

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