Blue Grass Chemical Agent-Destruction Pilot Plant Overview

Summary

The Blue Grass Chemical Agent-Destruction Pilot Plant (BGCAPP) safely destroyed a stockpile of more than 523 U.S. tons of chemical agent previously stored at the Blue Grass Army Depot (BGAD) in Kentucky in 2023 and is currently in the closure phase. After extensive decontamination and cleaning activities, the U.S. Army has determined there is no chemical-agent liability at the BGCAPP site.

Utilizing neutralization, the main plant destroyed munitions containing nerve agent in rockets and projectiles. Additionally, Static Detonation Chamber (SDC) technology augmented BGCAPP's neutralization technology to destroy some nerve-agent rockets and all the mustard-agent projectiles from the Blue Grass stockpile, many of which were unsuitable for processing through the main plant.

BGCAPP Facility Aerial Perspective

On July 7, 2023, operations at the destruction facility in Kentucky ended with the destruction of the last chemical weapon, a GB M55 rocket, at BGCAPP. This achievement fulfilled the Chemical Weapons Convention (CWC) treaty commitment date of Sept. 30, 2023. Additionally, it marked the completion of destruction of the remaining declared U.S. chemical weapons stockpile and concluded destruction of all declared stockpiles in the world, according to the international treaty.

The Blue Grass plant also destroyed containerized rocket warheads (CRW), which contained residual amounts of GB or VX nerve agents following draining in the main plant during operations, in the SDC units as part of the closure phase. These were considered agent-contaminated secondary waste and the last CRW was destroyed Sept. 11, 2025.

The Program Executive Office, Assembled Chemical Weapons Alternatives (PEO ACWA), a Department of War (DoW) organization originally established by Congress under Public Law 104-208, oversaw the safe and environmentally compliant destruction of the nation's chemical weapons stockpile stored in Kentucky and Colorado and is now responsible for closing both sites.

In Kentucky, PEO ACWA selected Bechtel Parsons Blue Grass (BPBG) as the systems contractor team to design, build, test, operate and close BGCAPP. The joint venture of Bechtel National Inc. and Parsons Corporation has three teaming subcontractors: Amentum, Battelle Memorial Institute and GP Strategies. At the peak of operations, more than 1,500 employees worked at BGCAPP.

Background

Established in 1941, BGAD is a U.S. Army Joint Munitions Command facility located near Richmond, Kentucky. One of the depot's multiple missions, chemical weapons storage started in 1944 and accounted for approximately 2% of the original declared U.S. chemical weapons stockpile.

The Blue Grass Chemical Activity (BGCA), a U.S. Army Chemical Materials Activity (CMA) organization and tenant of the nearly 14,600-acre depot, was established in 1995 and was responsible for the safekeeping of the chemical weapons stockpile stored at the depot.

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Destruction of the stockpile was a requirement of the CWC, a global multilateral arms control treaty enforced by the Organisation for the Prohibition of Chemical Weapons (OPCW) in The Hague, the Netherlands, which oversaw the destruction process at BGCAPP with international inspectors.

Chemical Weapons Overview

Chemical Weapons in Kentucky

The Kentucky chemical weapons stockpile originally comprised 523.4 U.S. tons of weaponized mustard agent and GB and VX nerve agents in 101,764 munitions: M55 rockets, 155mm projectiles and 8-inch projectiles. In addition to munitions, the original stockpile included steel containers of GB nerve agent and Department of Transportation bottles holding mustard agent and VX nerve agent.

Destruction of the Stockpile in Kentucky

- **Operation *Swift Solution*:** From November 2007 to April 2009, ACWA initiated Operation *Swift Solution* to safely eliminate three deteriorating steel containers holding a mixture of the chemical agent GB and its breakdown products that occurred over time in storage. The contents of the containers were drained and neutralized. All generated waste was shipped to a permitted commercial hazardous waste facility.
- **Neutralization:** The Department of Defense selected neutralization as the method to destroy chemical agents. During the neutralization process, munitions were disassembled using modified reverse assembly. After the agent was drained, it was chemically decomposed and neutralized by caustic or water hydrolysis. The resulting chemical compound, known as hydrolysate, was shipped to a permitted hazardous waste facility near Port Arthur, Texas, for final destruction. Metal munitions parts were thermally decontaminated using a Metal Parts Treater and non-contaminated rocket motors removed from munitions in the destruction process were shipped to the Anniston Field Office (AFO) at the Anniston Army Depot in Alabama and destroyed in an SDC unit.
- **Explosive Destruction Technology (EDT):** Because solidification of the mustard agent was found in a significant number of the mustard projectiles, rendering them unsuitable for the automated neutralization process in the main plant, BGCAPP installed and operated an EDT facility at BGAD to destroy the entire stockpile of mustard projectiles stored at the depot. A Static Detonation Chamber (SDC), later known as the SDC 1200, was selected by BPBG as the EDT best suited to augment BGCAPP destruction operations. A second, larger SDC, the SDC 2000, was later added to destroy overpacked nerve agent rockets and rockets deemed unsuitable for processing in the main plant.

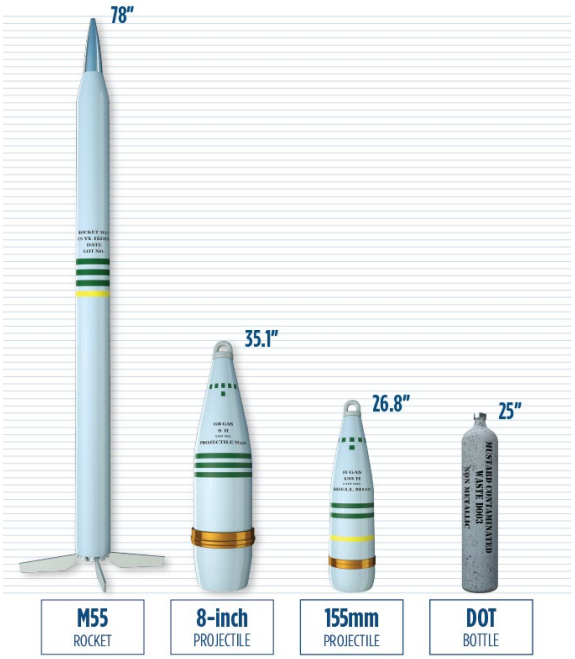

Illustration of chemical weapons of the U.S. stockpile formerly in Kentucky

Munition	Agent Type	Quantity	Destruction Technology
M55 Rocket	GB	51,740	Neutralization/ SDC*
M55 Rocket	VX	17,739	Neutralization
8-inch Projectile	GB	3,977	Neutralization
155mm Projectile	VX	12,816	Neutralization
155mm Projectile	H	15,492	SDC*
DOT Bottles	H	2**	SDC*
DOT** Bottle	VX	1**	Neutralization
TOTAL		**101,764**	

* Static Detonation Chamber

** Department of Transportation (DOT) bottles are not included in the original declaration quantities, since they contained samples/waste from declared stockpile

Environmental Protection

PEO ACWA's highest priority has been and always will be to ensure the protection of the workforce, community and environment. The BGCAPP team fulfilled its commitment by adhering to local, state and federal laws and regulations. These include the Resource Conservation and Recovery Act (RCRA), which gives the U.S. Environmental Protection Agency authority to control hazardous waste, including generation, transportation, treatment, storage and disposal, to protect human health and the environment.

BGCAPP operated under a RCRA hazardous waste permit issued by the Kentucky Department for Environmental Protection (KDEP), as well as other applicable environmental regulations and permits administered by state regulatory agencies and the U.S. Environmental Protection Agency (EPA), including the Clean Air Act, National Environmental Protection Act and Toxic Substances Control Act. BGCAPP's closure phase continues to be governed by local, state and federal laws and regulations.

Major Program Milestones

2006 – Groundbreaking ceremony marked start of construction

2007 – Operation *Swift Solution* started

2009 – Operation *Swift Solution* concluded

2015 – Substantial completion of construction achieved

2019 – EDT operations began: First mustard agent projectile destroyed

2020 – Main plant operations began: First nerve agent projectile destroyed

2021 – Final mustard agent projectile destroyed

2023 – Final nerve agent rocket destroyed/operations ended; closure phase began

2025 – Destruction of last non-contaminated rocket motor at the AFO; completion of destruction of agent-contaminated secondary waste

Closure

Following the completion of chemical weapons destruction operations in 2023, BGCAPP entered the closure phase. Closure is the final phase of the project and encompasses disposal of agent-contaminated and non-contaminated secondary waste; facility and equipment decontamination; and decommissioning and demolition of facilities in accordance with public law and U.S. Army direction. This included the destruction of the CRWs as secondary waste. As chemical weapons components, the CRWs were tracked to destruction by international verification inspectors with the OPCW. The closure phase is sequenced to occur in compliance with all permits, regulations and requirements.

Any buildings used directly for chemical agent destruction, such as the Munitions Demilitarization Building, will be decontaminated and demolished. Other buildings and infrastructure may be retained by BGAD as real property, as determined by U.S. Army mission requirements. Buildings and infrastructure not retained by the Army will be demolished. As part of the disposition process, personal property, such as uncontaminated or decontaminated equipment, tools, excess parts and office furniture, will follow government dispositioning regulations.

Closure activities at BGCAPP are expected to conclude in Fiscal Year 2028.

Partners

Many other organizations worked in partnership with the BGCAPP team to successfully complete the destruction mission and several continue to assist with the safe and environmentally protective closure of the facility. Those organizations include:

- BGAD
- BGCA
- Centers for Disease Control and Prevention
- Chemical Stockpile Emergency Preparedness Program
- Defense Threat Reduction Agency
- DoW
- Edgewood Chemical Biological Center (now U.S. Army Combat Capabilities Development Command Chemical Biological Center)
- EPA
- KDEP
- Kentucky Division of Emergency Management
- Madison County Emergency Management Agency
- OPCW
- U.S. Army Chemical Materials Agency (now Activity)
- U.S. Army Joint Munitions Command
- U.S. Congress
- U.S. Department of State
- U.S. Department of the Army

Public Involvement

In accordance with Public Law 102-484, the Kentucky Chemical Demilitarization Citizens' Advisory Commission (CAC) served as a bridge between the community and the government by providing a forum for exchanging information about chemical weapons destruction and now the closure phase. For decades, the CAC conducted public meetings to facilitate consistent public participation in the program. The Chemical Destruction Community Advisory Board (CDCAB) was an independent subcommittee of the CAC. The CDCAB was made up of a group of community leaders who represented different views and concerns of all sectors of the local community on issues regarding Kentucky's now-completed chemical weapons destruction program and the closure process.

After BGCAPP

Along with BGCAPP, BGCA is also going through a closure phase following destruction of the stockpile. The Blue Grass plant property and BGCA property will revert to BGAD, which will continue with other Army initiatives and missions after the closure of both BGCAPP and BGCA.