



Chemical Weapons

Chemical agents in the modern sense were first used in World War I, when chlorine gas was released, from large cylinders, in a favorable wind. This surprise operation caused massive casualties, demoralisation of the forces attacked and demonstrated the need for protection from this kind of warfare. The first improvised mask was a cotton pad soaked in sodium thiosulphate, glycerine and sodium carbonate. Subsequently in World War I, a great variety of chemical agents were used by both sides, the most damaging being the blister producing mustard gas. Military clothing, even with a respirator, gave little protection against this agent.

Immediately prior to World War II and during the early part of that war, Japan is supposed to have used chemical weapons against China. During World War II, President Roosevelt announced a no-first-use policy but had promised instant retaliation for any Axis use of chemical agents. Over 600 military casualties and an unknown number of civilian casualties resulted from the 1943 German bombing in Bari Harbor, Italy, of the John Harvey, an American ship loaded with two thousand 100-pound mustard bombs.

At the end of the war stockpiles of newer agents, called "nerve gases," were discovered. These were found to be effective in much lower concentrations than those agents known up to that time. The end of World War II did not stop the development or stockpiling of chemical weapons. The U.S., which used defoliants and riot-control agents in Vietnam and Laos, finally ratified the Geneva Protocol in 1975 but with the stated reservation that the treaty did not apply either to defoliants or to riot-control agents.

US policy renounces the first use of lethal or incapacitating chemical agents. However, it retains the right to retaliate if deterrence fails to prevent the enemy's first use of chemicals. As is the case with nuclear weapons, the President of the United States must approve the initial use of chemical weapons. This approval procedure is known as chemical release.

The United States stockpile of unitary lethal chemical warfare munitions consists of various rockets, projectiles, mines, and bulk items containing blister agents (mustard H, HD, HT) and nerve agents (VX, GB). About 60% of this stockpile is in bulk storage containers; 40% is stored in munitions, many of which are now obsolete. The stockpile is stored at eight sites throughout the Continental US (Edgewood Chemical Activity, MD; Anniston Chemical Activity, AL; Blue Grass Chemical Activity, KY; Newport Chemical Depot, IN; Pine Bluff Chemical Activity, AR; Pueblo Chemical Depot, CO; Deseret Chemical Activity, UT; and Umatilla Chemical Depot, OR) and at one site outside of the Continental US on Johnston Atoll.

In 1985, the Congress passed Public Law 99-145 directing the Army to destroy the US stockpile of obsolete chemical agents and munitions. Recognizing that the stockpile program did not include all chemical warfare materiel requiring disposal, the Congress directed the Army in 1992 to plan for the disposal of materiel not included in the stockpile. This materiel, some of which dates back as far as World War I, consists of binary chemical weapons, miscellaneous chemical warfare materiel, recovered chemical weapons, former production facilities, and buried chemical warfare materiel. In 1992, the Army established the Nonstockpile Chemical Materiel Program to dispose of the materiel.

In 1993, the United States signed the UN-sponsored Chemical Weapons Convention. In October 1996, the 65th nation ratified the convention making the treaty effective on April 29, 1997. Through ratification, the United States agreed to dispose of its unitary chemical weapons stockpile, binary chemical weapons, recovered chemical weapons, and former chemical weapon production facilities by April 29, 2007, and miscellaneous chemical warfare materiel by April 29, 2002.

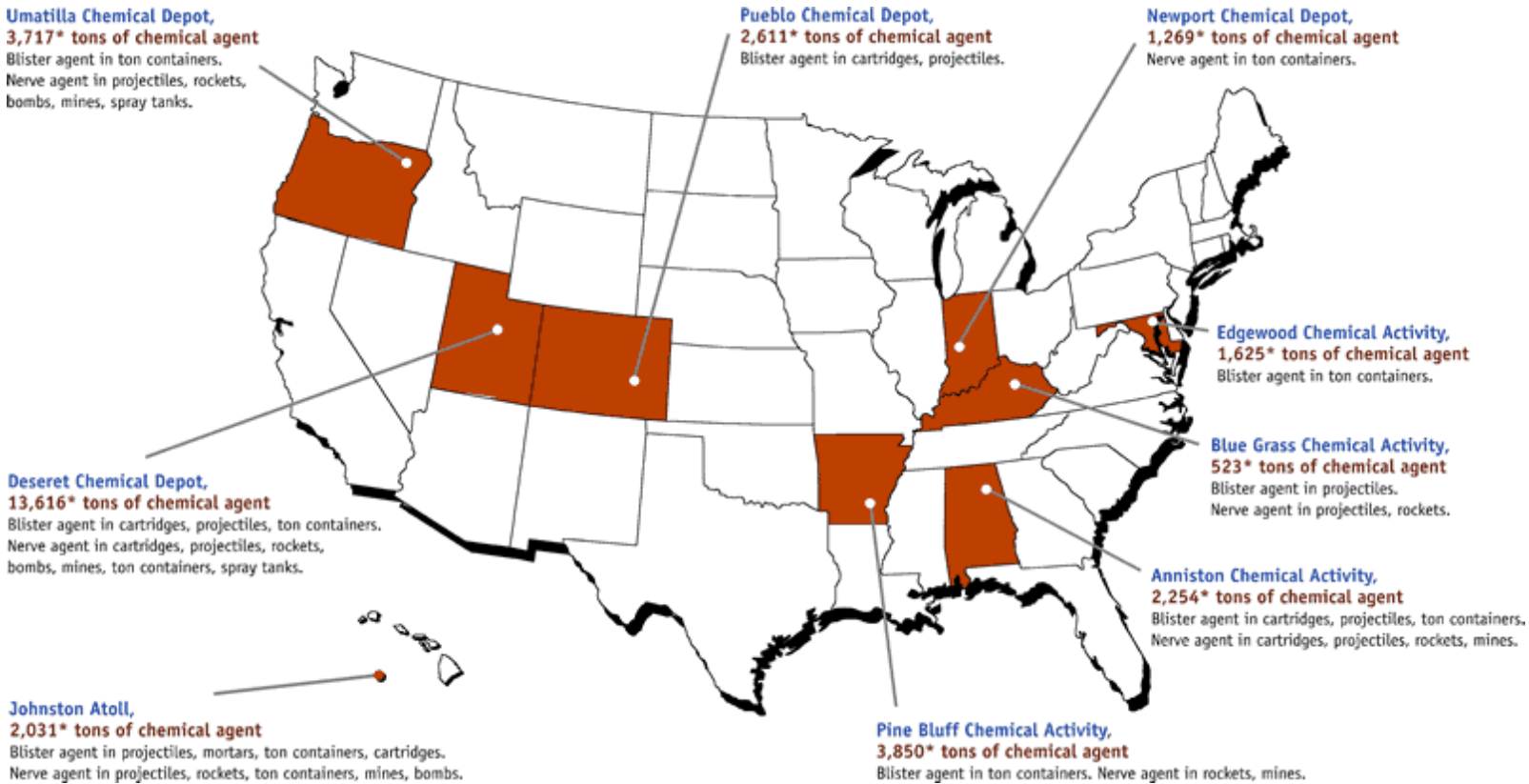
US Chemical Munitions

- [M60 105mm](#)
- [M360 105mm](#)

- [M104 155mm](#)
- [M110A1/A2 155mm](#)
- [M121/A1 155mm](#)
- [M122 155mm](#)
- [M687 155mm](#)

- [M426 8-inch](#)

- [M23 landmine](#)
- [M55 rocket](#)



Quantity of Assembled Chemical Weapons by Site

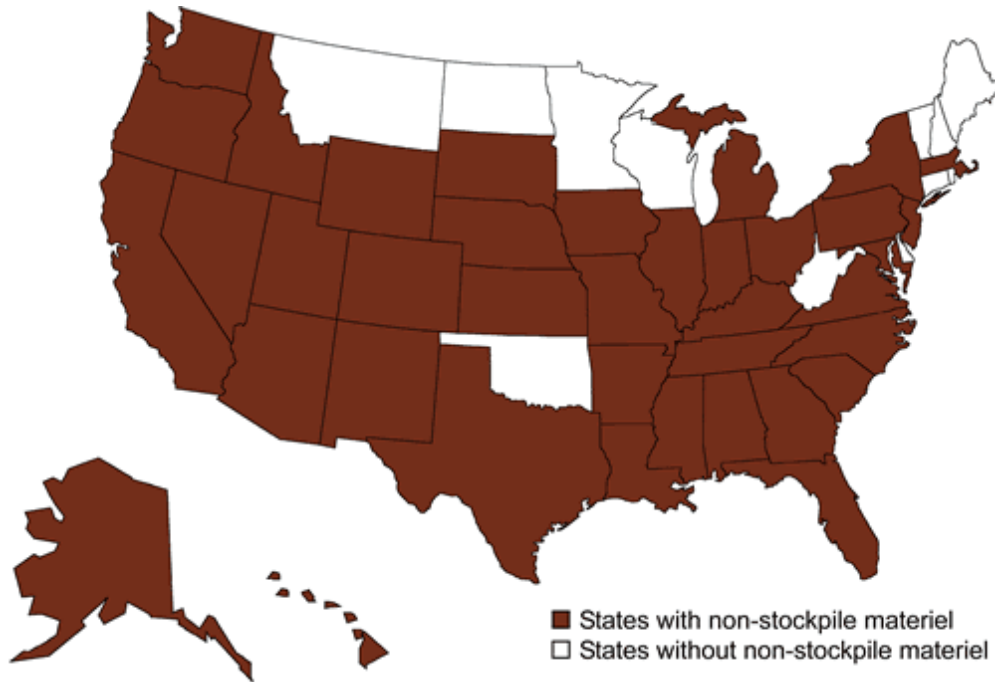
Weapon Type	Weapon Quantities by Site ⁽¹⁾						
	Anniston	Blue Grass	Pine Bluff	Pueblo	Tooele	Umatilla	JACADS
Mustard Agent (H, HD, HT)	23,064	—	—	383,418	—	—	46
105-mm Projectile (HD)	17,643	15,492	—	299,554	54,663	—	5,779
155-mm Projectile (H, HD)	258,912	—	—	97,106	63,568	—	43,660
4.2-in. Mortar (HD, HT)							

Agent GB	74,040	—	—	—	798,703	—	47,735
105-mm Projectile	9,600	—	—	—	89,141	47,406	6,386
155-mm Projectile	16,026	3,977	—	—	—	14,246	13,020
8-in. Projectile	42,738	51,716	90,231	—	17,353	91,375	—
M55 Rocket							
Agent VX	139,581	12,816	—	—	53,216	32,313	42,682
155-mm Projectile	—	—	—	—	—	3,752	14,519
8-in. Projectile	35,636	17,733	19,582	—	3,966	14,513	—
M55 Rocket	44,131	—	9,378	—	22,690	11,685	13,302
M23 Land Mine							

(1) Munitions quantities are as of July 11, 1997

MUNITION	Dimensions		Total Weight (lbs)	Fill Agent	Agent Weight (lbs)
	Diameter	Length (in)			
Mortar, M2	4.2-in	21	25	HD	6
Mortar, M2	4.2-in	21	25	HT	5.8
Mortar, M2A1	4.2-in	21	25	HD	6
Projectile, M60	105 mm	19.6	38.8	HD	3
Projectile, M360	105 mm	19.7	35.6	GB	1.6
Projectile, M360	105 mm	19.7	35.6	GB	1.6
Projectile, M104	155 mm	26.8	95.1	H	11.7
Projectile, M104	155 mm	26.8	95.1	HD	11.7
Projectile, M110	155 mm	26.8	94.6	H	11.7
Projectile, M110	155 mm	26.8	94.6	HD	11.7
Projectile, M121	155 mm	26.7	97.2	GB	6.5
Projectile, M121A1	155 mm	27	98.9	GB	6.5
Projectile, M121A1	155 mm	27	98.9	VX	6
Projectile, M122	155 mm	26.7	97.2	GB	6.5
Projectile, M426	8-in	35.1	199	GB	14.5
Projectile, M426	8-in	35.1	199	VX	14.5
Rocket, M55	115 mm	78	57	VX	10
Rocket, M55	115 mm	78	57	GB	10.7
Rocket, M55	115 mm	78	57	VX	10
Rocket, M55	115 mm	78	57	GB	10.7
Mine, M23	13-in	5-in (ht)	22.75	VX	10.5

STOCKPILE by National Stock Number								
NSN	Material	Ameslab	Beaumont	Johnston	Pinellas	Pueblo	Utah	Unk. #
1320005677909	GB M121	--	--	--	--	--	32,726	--
1320005297346	GB M121	--	--	311	--	--	--	--
1320001437009	GR M121A1	--	--	12	--	--	--	--
1320008924186	GB M121A1	3,800	--	6,063	--	--	34,959	47,406
1320005299033	GB M122	6,000	--	--	--	--	21,456	--
1315002038885	GB M380	53,400	--	47,735	--	--	119,400	--
1315005877908	GB M380	26	--	--	--	--	679,303	--
1315010821234	GB M380	20,614	--	--	--	--	--	--
1320007838879	GB M428	16,028	3,977	13,020	--	--	--	14,246
1340007161460	GB M55	42,738	51,716	--	90,231	--	17,353	91,375
1320009850704	HM104	--	--	--	--	--	10,281	--
1320003011824	HM110	--	--	--	--	--	38	--
1320005297353	HM110	--	15,492	--	--	--	44,349	--
1320000284348	HD M104	--	--	--	--	26	--	--
1320005297350	HD M104	--	--	--	--	33,036	--	--
132000J110001	HD M104	--	--	109	--	--	--	--
1320000963087	HD M110	--	--	--	--	68	--	--
1320005297352	HD M110	17,643	--	5,670	--	266,424	--	--
1315000285018	HD M2/M2A1	--	--	--	--	--	978	--
1315000285027	HD M2/M2A1	75,360	--	43,660	--	76,722	--	--
1315000284829	HD M60	2,500	--	36	--	392,575	--	--
1315003226365	HD M60	20,564	--	10	--	843	--	--
1315000285024	HT M2	183,552	--	--	--	20,384	62,590	--
1320007562888	VX M121A1	139,581	12,816	42682	--	--	53,216	32,313
1345005421580	VX M23	44,131	--	13,302	9,378	--	22,690	11,685
1320007536878	VX M426	--	--	13,591	--	--	--	3,752
1320008924306	VX M426	--	--	928	--	--	--	--
1340007243567	VX M55	35,836	17,733	--	19,582	--	3,956	14,513



The Non-Stockpile Project

While the stockpile project poses many challenges, the non-stockpile project faces its own set of complex issues. The term *non-stockpile chemical materiel* describes a wide variety of chemical warfare materiel that is not part of the unitary stockpile as declared in 1986. This materiel exists in a variety of physical configurations that range from chemical agent identification sets once used to teach soldiers how to identify chemical agents to large former weapons-production facilities.

This materiel is located on active or former military bases, and much of it is buried at small, geographically dispersed sites, as burial was once an accepted disposal practice. The logistical problems posed by locating burial sites, identifying what is buried there, and determining how to remove it safely are serious and far-ranging.

By the end of Fiscal Year 1999, materiel had been identified, or was believed to exist, at 99 locations in 38 states and U.S. territories, some of which had or have multiple burial sites. Approximately 229 known or suspected sites have been identified. At 33 of the 99 locations, hazardous materiel was removed, or no hazardous materiel was found.

Transportable treatment systems provide the flexibility to rapidly identify, treat and/or neutralize certain types of materiel. The Army prepared a Programmatic Environmental Impact Statement, issued in the fall of 1999, that examined the feasibility of deploying these systems across the country at locations where chemical warfare materiel must be treated.

Sources and Resources

- [US Chemical Weapons Facilities](#)
- [Non-Stockpile Chemical Materiel Program Draft Programmatic Environmental Impact Statement](#) October 1999

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