Neutralization of Chemical Agents

In 1994, in response to public input, the Army's former Alternative Technologies and Approaches Project started investigating alternatives to incineration for the disposal of the chemical agent stockpiles at Aberdeen Proving Ground, Md., and Newport Chemical Depot, Ind. Each of these sites stored only one type of chemical agent. Disposal operations at Newport Chemical Depot, Ind., were completed in September 2008. Agent disposal at Aberdeen Proving Ground, Md., was completed in February 2006.

These stockpiles, referred to as bulk agent stockpiles, were unique because they consisted solely of large steel containers filled with chemical agent, having no explosives or other weapon components. This simple configuration was ideal for testing alternative disposal methods.

After much study and community involvement, the Army selected neutralization as the best disposal method for the bulk stockpiles. Three independent groups composed of industry, science, safety and technology experts such as the National Research Council, as well as the Maryland and Indiana Citizens' Advisory Commissions, supported the Army's selection. After obtaining the necessary environmental permits, the Army began construction of neutralization pilot test facilities at the Maryland and Indiana sites.

After the Sept. 11, 2001, terrorist attacks, the Army investigated expediting safe neutralization of the two stockpiles. In 2002, the Army, with the agreement of state and federal agencies and officials, implemented accelerated schedules for neutralizing the Maryland and Indiana stockpiles.

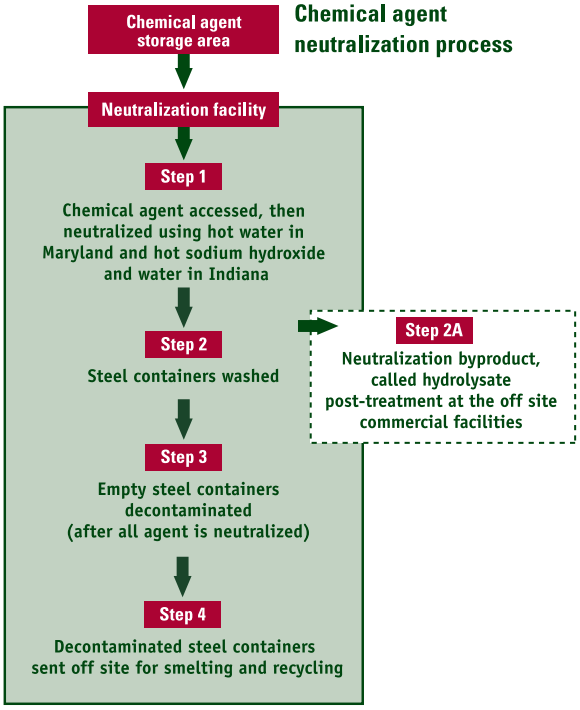
Neutralization

Maryland's chemical agent stockpile was destroyed by draining the agent from the steel storage containers and neutralizing it on site in industrial reactors using hot water. The Indiana stockpile was neutralized on site in reactors using hot sodium hydroxide and water.

As shown in the diagram below, both processes accessed the agent, neutralized it and transported the resulting byproduct (hydrolysate) off site to a commercial treatment and disposal facility for post-treatment. The empty steel containers then were cleaned, monitored to ensure complete decontamination and shipped off site for smelting and recycling.

Hydrolysate treatment

At both sites, the hydrolysate formed in neutralizing the chemical agent was tested to confirm that the chemical agent has been destroyed. Although free of chemical agent, the hydrolysate was considered an industrial hazardous waste and required further treatment. The hydrolysate from the Maryland facility was transported to the DuPont Secure Environmental Treatment Facility in Deepwater, N.J., for off-site treatment and final disposal. The hydrolysate from the Indiana facility was transported to Veolia Environmental Services in Port Arthur, Texas, for final disposal.



For more information, contact the CMA Public Affairs Office at
(410) 436-3629
(800) 488-0648