

CHEMICAL WEAPONS DESTRUCTION EXPERTISE

Decades of CBRNE Experience Proves Valuable in Syrian Mission

Research and development from former binary chemical weapons destruction mission provided the technological advantage necessary to construct the Field Deployable Hydrolysis System (FDHS) within six months.

A project completed eight years ago benefited the timely development of the system used to destroy declared Syrian chemical warfare materiel in 2014. Extensive research, testing and development of the hydrolysis process for neutralizing chemical warfare materiel by the Non-Stockpile Chemical Materiel Project (NSCMP), now U.S. Army Chemical Materials Activity Recovered Chemical Materiel Directorate (CMA RCMD), enabled a team of experts to develop and deploy the FDHS quickly and safely.

The 2014 mission to neutralize Syrian chemical weapons materiel aboard the MV Cape Ray had its roots in a technology used to destroy United States binary chemical weapons. CMA RCMD provided historical data and technical knowledge developed during that mission to streamline development of the FDHS. While they took place years apart, the binary and the Syrian destruction missions shared a major goal — neutralizing methylphosphonic difluoride, or DF, a chemical used to make nerve agent.

Decades of chemical weapons destruction experience

In the early 1980s, the U.S. Army developed binary chemical weapons to modernize its aging chemical weapons stockpile. Binary chemical weapons were designed to mix two nonlethal chemicals while in flight to a target to form a chemical agent. One such weapon used DF that combined with isopropyl alcohol and isopropylamine during the in-flight spin of a specially designed projectile formed the nerve agent GB.



United States binary chemical weapons development led to the signing of a bilateral arms reduction agreement between the United States and Soviet Union, which led to the Chemical Weapons Convention (CWC), an international treaty mandating the elimination of chemical warfare materiel and chemical warfare production facilities. The Department of Defense (DoD) tasked NSCMP, now CMA RCMD, with destroying existing stores of chemicals designed for use in binary chemical munitions, including DF and QL (diisopropyl aminoethylmethyl phosphonite), a chemical precursor used to make the nerve agent VX.

Water chemistry was selected as the binary chemical destruction method, as it produces a liquid byproduct as opposed to a precipitate or solid byproduct. When NSCMP's binary destruction mission was completed in April 2006, all chemical precursors used in the binary program had been destroyed.