U.S. ARMY
COMMUNE BONUM
CHEMICAL MATERIALS ACTIVITY

RCMD
RECOVERED CHEMICAL
MATERIEL DIRECTORATE

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FACT SHEET

TRANSPORTABLE DETONATION CHAMBER (TDC)

One of the destruction technologies available to the U.S. Army Chemical Materials Activity Recovered Chemical Materiel Directorate (CMA RCMD) is the Transportable Detonation Chamber. The TDC is a fully enclosed, explosive destruction technology that uses the heat and pressure generated by an explosion to destroy the chemical fill of recovered chemical warfare materiel (RCWM), while capturing any vapor with redundant air filtration systems.

The TDC-60 has three main components: a detonation chamber, an expansion chamber, and an emissions control system. Personnel operating the TDC place a munition wrapped in explosive in the detonation chamber. The chamber contains material to absorb some of the blast energy, including bags of water, which also produces steam. The steam reacts with the chemical agent. Operators add supplemental oxygen when destroying mustard agent. After detonation, the resulting gases are vented to an expansion chamber, then to the emissions control system. The emissions control system includes a reactive-bed ceramic filter to remove acidic gases and to collect particulates such as soot and dust. A catalytic oxidation (CATOX) unit oxidizes hydrogen, carbon monoxide, and organic vapors from the gas stream before venting it through a carbon adsorption bed.

In 2008, CMA RCMD used the TDC-60 unit to successfully destroy 71 munitions at Schofield Barracks, Hawaii. In other operations, the TDC destroyed 282 pounds of mustard in 29 cylinders at Aberdeen Proving Ground, Maryland, during testing in 2009–2010; and, in 2010–2011, the system was deployed to Columboola, Queensland, Australia, by another organization to destroy 144 mustard-filled munitions.

The TDC has demonstrated the ability to destroy mustard, phosgene, chloropicrin, white phosphorus, smoke, and vomiting agents. TDC systems have a DoD Explosives Safety Board (DDESB) net explosive weight (NEW) rating of up to 60 pounds trinitrotoluene (TNT)-equivalent.

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