



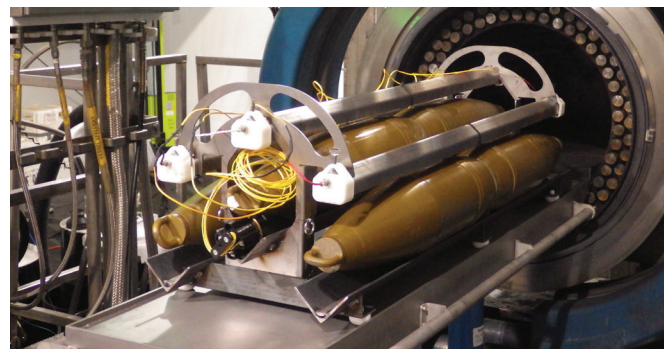
# RECOVERED CHEMICAL MATERIEL DIRECTORATE FACT SHEET

## RCMD MISSION SAFETY

The U.S. Army Recovered Chemical Materiel Directorate (CMA RCMD) provides management and direction to the Department of Defense for assessment and destruction of recovered chemical warfare materiel (RCWM). In every mission, RCMD puts safety first, protecting its personnel, surrounding communities and the environment.

RCMD's focus on mission safety begins long before any chemical warfare materiel is recovered – at the research and development phase. Before RCMD brings new technologies online, rigorous research and testing confirms whether the systems can safely treat the chemical agents and munition sizes for which they are intended.

This research also helps RCMD ensure all technologies earn approvals from the Chemical Agency Safety Council, of which RCMD is a member, the Army Technical Center for Explosive Safety and the Department of Defense Explosives Safety Board (DDESB).



*RCMD field testing of the EDS Universal Munition Holder, which can be configured to accommodate a variety of munition sizes and shapes.*

**Safe treatment of RCWM relies on thorough packaging, assessment and storage before the destruction technology is deployed.**



*Multiple Round Container (MRC)*

Recovered items are placed in a Multiple Round Container (MRC) specifically designed, tested and fielded for the transport of chemical warfare materiel.

The Interim Holding Facility (IHF) provides safe temporary storage of RCWM at sites where storage facilities such as igloos and bunkers are unavailable. Safety features include an automatic fire-suppression system, chemical-agent monitoring to detect any possible leaks and a secondary containment area below the floor to contain liquids should a leak occur.

*Interim Holding Facility (IHF)*



REV: 030123





## SAFE ASSESSMENT

Once a recovered item is safely packed in an MRC, RCMD deploys transportable assessment technology to analyze the item for a liquid fill and explosive configuration without opening it, greatly reducing risk to the public and emergency response personnel.

The Materiel Assessment Review Board, comprised of U.S. Army subject matter experts in chemical warfare, uses the assessment results and other historical data to determine whether a recovered item contains chemical warfare materiel and how it should be destroyed.

### Digital Radiography and Computed Tomography (DRCT)



DRCT uses X-ray technology to produce images that show if a recovered munition contains a liquid fill and its explosive configuration.

### Portable Isotopic Neutron Spectroscopy System (PINS)



PINS uses neutron particles to produce an energy spectrum unique to the chemical elements inside the munition, which helps identify its contents.

### Raman Spectrometer



Raman uses a fiber optic probe and laser light to produce a spectrum, which helps identify the contents of recovered chemical agent identification sets.

## PRE-OPERATIONAL SURVEY

A pre-operational survey, or pre-op, is required to evaluate RCMD's readiness to safely proceed with the RCWM destruction operation. Usually completed within the two-week period before the scheduled start of operations, the pre-op ensures that personnel are following required explosive safety submissions approved by the DDESB and required work plans, site plans and accident-prevention plans approved by RCMD.

The pre-op also ensures that personnel are fully trained and qualified and that safety resources are available for medical emergency responses. A simulated operation during the pre-op period demonstrates the proficiency of operational and support personnel to perform each phase of the operation.

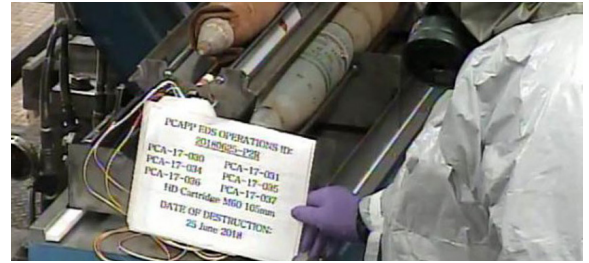
At the conclusion of the pre-op, RCMD prepares a report on the readiness of the RCWM destruction operation to proceed. If any issues are identified, the operation may proceed only after the issues are adequately addressed and all operational requirements are met.

## SAFE DESTRUCTION

The goal of the RCWM treatment operation is to eliminate the explosive hazard of the recovered item, safely neutralize chemical agent, and transport waste to a permitted treatment, storage and disposal facility (TSDF).

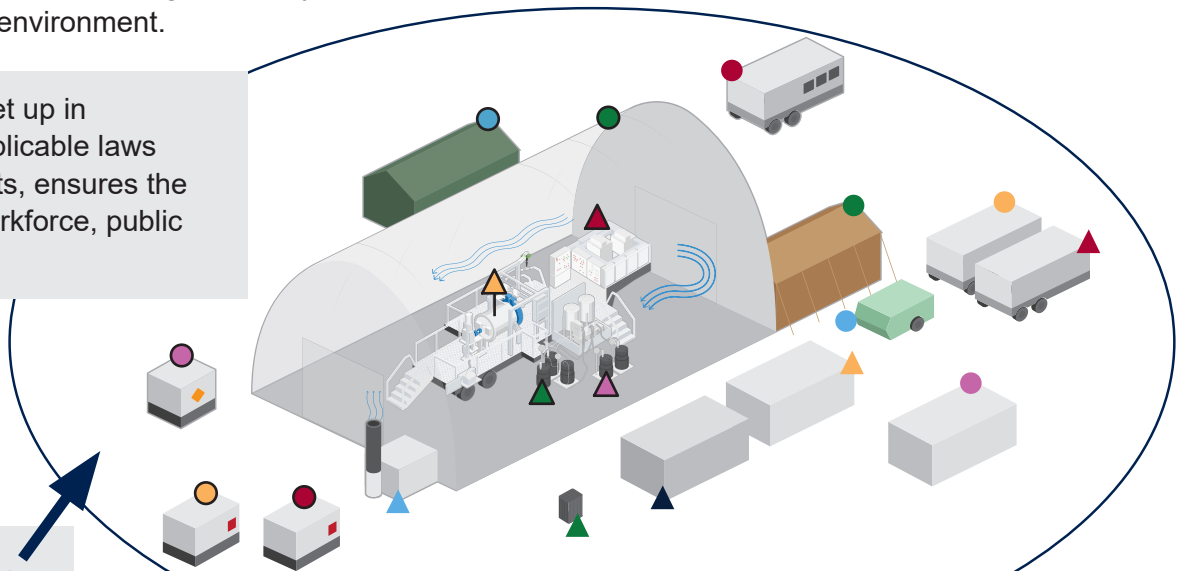
The centerpiece of RCMD destruction technology is the Explosive Destruction System (EDS). The transportable EDS provides on-site treatment of RCWM in a safe, environmentally compliant manner. The EDS uses cutting charges to explosively access chemical munitions, eliminating their explosive components before neutralizing the chemical agent. The system's main component, a sealed, stainless-steel vessel, contains all blast, vapor and fragments from the process.

Safety is ensured by monitoring and sampling the air around the vessel before, during and after operations. A sample is removed from the vessel and analyzed to confirm successful treatment before the door is opened, ensuring the safety of operators, communities and the environment.



*Pre- and post-operational photos document the destruction of chemical munitions during EDS operations at the Pueblo Chemical Agent-Destruction Pilot Plant in June 2018.*

The EDS site layout, set up in accordance with all applicable laws and permit requirements, ensures the overall safety of the workforce, public and environment.



Explosive and chemical hazard arcs, or exclusion zones, are established and approved by DDESB. Only authorized, mission-essential personnel are allowed access to operational areas within the hazard arcs.

### EDS SITE INCLUDES:

- |                                     |  |                           |
|-------------------------------------|--|---------------------------|
| ● Command post                      | ▲ Monitoring shed                            | ● Environmental enclosure |
| ● Support conex                     | ▲ Explosive opening subsystem (fireset area) | ● Cascading air system    |
| ● Laboratory                        | ▲ Air filtration system                      | ▲ Heater control panel    |
| ● Personnel decontamination station | ● Primary generator                          | ▲ EDS vessel              |
| ● Air compressor                    | ● Backup generator                           | ▲ Reagent drums           |
| ▲ Treaty trailer                    | ● Explosive storage magazine                 | ▲ Waste drums             |
| ▲ Maintenance trailer               |  |                           |





U.S. ARMY

## RCMD MISSION SAFETY (CONTINUED)

### PPE

Personal Protective Equipment (PPE) is clothing and equipment worn to protect workers during RCWM destruction operations. PPE, which is donned and removed in the personnel decontamination station, is worn by all personnel working within the exclusion zone. Protection levels are selected based upon the anticipated hazards that may be encountered.

#### LEVEL D



**A work uniform providing minimal required protection**

#### LEVEL C



**Used when concentrations and airborne substances are known and air purifying respirators are required**

#### LEVEL B



**Used when highest level of respiratory protection and supplied air are required**

### WASTE DISPOSAL

Destruction of RCWM creates secondary waste, which may include neutralents, munition bodies, used PPE, laboratory waste, overpack containers and remaining compounds that are not controlled by the international treaty on chemical weapons destruction.

RCMD disposes of this waste in a safe, environmentally sound and cost-effective manner at a permitted commercial TSDF, consistent with federal and state regulations for disposal of hazardous and nonhazardous waste.

