Destroying 155-Millimeter Mustard Projectiles

Workers at the Tooele Chemical Agent Disposal Facility (TOCDF) are safely and progressively destroying more than 50,000 mustard agent-filled 155-millimeter projectiles stored at the Deseret Chemical Depot (DCD). DCD is one of five U.S. Army depots where chemical weapons are being destroyed under the provisions of an international treaty.

Mustard is a blister agent which has been stockpiled by the U.S. Army since the 1940s. The munitions are deteriorating from age, and the hazards associated with storing them cannot be completely eliminated until all of the chemical weapons are destroyed.

TOCDF workers have already successfully destroyed nearly one million projectiles of different sizes containing GB and VX nerve agents, dramatically reducing risk to the local community.

Like all chemical agent stockpiled at DCD, the mustard agent-filled 155-millimeter projectiles are stored in earth-covered igloos, which are located adjacent to the TOCDF. The munitions are transported from the igloos to the chemical agent disposal facility in On-Site Containers (ONCs) that have been designed to resist impact, punctures and fire to provide maximum protection for the workers and the environment during movement.

Once the ONC arrives at the disposal facility, it is inspected, monitored and inventoried before it is opened and the projectiles are unloaded onto conveyors. Once they are placed on the conveyors, the projectiles are dismantled and destroyed by remotely controlled demilitarization machines, which have been re-tooled to safely handle the mustard-agent filled 155-millimeter projectiles.

Because the explosive components, also known as bursters, have inadvertently bonded to the projectiles' interior components, TOCDF workers have had to utilize a new Burster Rotating Adapter Device (BRAD). The BRAD loosens the burster for removal. Once the burster is safely removed, a burster-well punch system clears a path for furnace heat to travel into the projectile and better facilitate the combustion of its contents. Because the mustard has solidified during years of storage, TOCDF operators do not drain the chemical agent before feeding the projectiles into the facility's Metal Parts Furnace. Increased amounts of dilution air and heat shields ensure that proper combustion of the agent takes place.

The incinerators at TOCDF destroy 99.9999 percent or more of the agent, and the pollution abatement system removes metals and particulates before the incinerator exhaust exits the stack. The stack's emissions are continually monitored, and the monitoring systems are capable of detecting agent well below the levels at which human health effects would be possible and conservatively within all federal and state safety requirements.

All modifications relating to the processing and destruction of the mustard agent-filled projectiles have been approved by Utah state regulatory officials.

TOCDF operators prepare to place a mustard agent-filled 155-millimeter projectile onto the Projectile/Mortar Feed Conveyer to start the demilitarization process.

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