

Rocket Processing

Background

In February 1997, the Environmental Quality Commission, the DEQ's governing body, issued environmental permits to the U.S. Army to build and operate the Umatilla Chemical Agent Disposal Facility (UMCDF) to destroy the chemical weapons stockpile stored at the Umatilla Chemical Depot (UMCD) near Hermiston, Oregon.

How are rockets stored?

All munitions are stored in earth-covered concrete bunkers called "igloos." Rockets are individually packed in fiberglass shipping and firing tubes. The encased rockets are strapped together on wooden pallets (15 rockets to a pallet) for storage and transport. The rocket is never removed from the shipping and firing tube during processing at UMCDF.

Are there guidelines for munitions transportation?

Yes. The UMCD has strict guidelines that must be followed prior to and during transportation of all munitions. The guidelines were established to prevent transportation accidents and to ensure that if an incident does occur, chemical agent will not travel beyond the UMCD boundaries. The UMCDF Permit requires that weather conditions be evaluated daily prior to any loading or transporting of munitions.

Under certain weather conditions, such as icy roads or dense fog, transportation of munitions is not allowed. The DEQ also requires that a Transportation Contingency Plan be in place prior to the movement of any munitions, and that all munitions (except for spray tanks) be transported from the igloos to UMCDF inside an "Enhanced On-Site Container" (EONC).

What is an EONC?

An EONC is a cylindrical transport container about 12 feet long by 8 feet high that is specifically designed to withstand impacts, fire, crushing, and leaks. There are a maximum number of munitions or containers that may be loaded into an EONC. This load limit varies for each type of munition. The EONC load limit for rockets is two pallets, or a total of 30 rockets. The EONC has a hydraulically sealed door with a locking ring mechanism. After the EONC is loaded the door is closed and the seal is checked for tightness before it is moved by truck to the UMCDF.

How are rockets transported to UMCDF?

Before opening any munitions storage igloo the UMCD workers sample the air inside of the igloo to make sure there are no vapor leaks. If the sample shows it is safe to enter the igloo, the workers open the door and prepare the work area. A forklift is then used to carefully pick up the each pallet individually in order to transfer the palleted munitions to the EONC. When the EONC is loaded with two rocket pallets, the door is closed and sealed. The EONC is then transported by truck to the Container Handling Building (CHB) at UMCDF, where the UMCDF personnel take custody of the munitions.

Because the loading and transportation of the munitions from the igloos may be prohibited under certain conditions, the CHB is permitted to store up to 48 EONCs at a time. This provides enough storage capacity to continue agent processing when additional munitions cannot be moved into the building.

What happens to the EONCs once inside the CHB?

The EONCs are unloaded from the truck with an overhead crane and placed on a conveyor for transfer to the unpack area (via an elevator to the second floor). There are two elevators between the unloading area and the unpack area, one for full EONCs going up and one for empty containers coming down. The lifts are sealed to make sure air from the Munitions Demilitarization Building (MDB) is contained within the filtered area of the MDB.

In the MDB unpack area the interior of the EONC is monitored for signs of chemical agent before opening the door. If agent is detected, the EONC remains sealed and is sent back down the elevator and routed to the Toxic Maintenance Area for special handling. If no agent is detected, the EONC door is opened and the pallets are removed.

The pallets are transported from the EONC to the Rocket Metering Machine to prepare for processing. From this point forward the processing is remotely controlled.

How much agent is in a rocket?

UMCD has about 91,400 M-55 rockets in storage, each of which contains 10.7 pounds of GB nerve agent. In addition, there are about 14,500 M-55 rockets, each containing 10 pounds of VX nerve agent.



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How are rockets prepared for processing?

Each rocket is manually removed from the pallet and placed on the Rocket Metering Machine, where an automated check ensures that the rocket is in a “nose first” position. The rocket must be fed into the process nose first to assure proper cuts are made in the appropriate location. The Rocket Metering Machine transfers the rockets to the Rocket Input conveyor and into the Explosion Containment Vestibule where the rocket is staged (stored) prior to entering the Explosion Containment Room (ECR) for processing. The ECR is designed with walls three feet thick to contain any explosions that may occur during processing.

How is a rocket processed?

Once the rocket enters the Explosion Containment Room it is transferred onto the Rocket Shear Machine. The first step of the process is to punch three holes through the shipping and firing tube and into the rocket agent cavity at the Drain Station. The agent is drained from the rocket and transferred to an agent quantification tank to verify the amount of agent removed from the rocket. The agent is then transferred through the agent collection system to the agent holding tanks to be stored before treatment in the Liquid Incinerator (LIC).

After the agent is drained, the rocket proceeds to the Rocket Shear Station where it is chopped into eight pieces using a water-cooled shear blade to help prevent explosions. The first cut removes the first few inches of the nose, containing the fuse (igniter) of the rocket. The second, third, and fourth cuts chop the burster charge into smaller pieces. The fifth cut removes the solid rocket fuel igniter, and the sixth and seventh cuts chop the solid rocket fuel.

All of the pieces of the rocket are dropped down a feed chute into the Deactivation Furnace System (DFS) for treatment of the residual agent and the reactive (explosive) components of the rocket. Although the DFS is designed to withstand internal explosions, chopping the rockets into small pieces and controlling the way the pieces are fed into the DFS minimizes the chance of any significant explosions occurring in the furnace.

Where to get more information

Contact Shelly Ingram at the DEQ office in Hermiston, 256 East Hurlburt (Suite 105) or call (541) 567-8297 ext. 25 (toll-free in Oregon 1-800-452-4011).

Alternative formats

Alternative formats of this document can be made available. Contact DEQ, Shelly Ingram at (541) 567-8297 ext. 25. People with hearing impairment may call DEQ's TTY at (503) 229-6993.

Related fact sheets available from DEQ:

- ┆ Liquid Incinerator
- ┆ Projectile Processing
- ┆ Metal Parts Furnace
- ┆ Deactivation Furnace System