Fact Sheet-
Umatilla Chemical Agent Disposal Facility

Mine Processing

State of Oregon
Department of Environmental Quality

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Chemical Demilitarization Program
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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.

The Umatilla Chemical Depot stores nerve agents and blister (called "mustard") agents in liquid form. Nerve agents are contained in munitions, such as rockets, projectiles, land mines, and in large containers, such as spray tanks, bombs, and "ton containers." Blister agent is stored in ton containers. All of the chemical warfare agents are highly toxic.

How much agent is in a mine?
Each mine contains approximately 10.5 pounds of agent. The UMCD stores about 11,700 VX mines.

How are mines stored?
All mines are stored in earth-covered concrete buildings called "igloos" or bunkers. The mines are stored in metal drums; three mines are stacked on top of one another in each drum. The fuses and actuators of the mines are stored on the inside of the drum lid. The metal drums that contain the mines are stored on pallets and stacked in each igloo.

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.

Transportation of munitions is not allowed under certain weather conditions, such as heavy fog or icy roads. 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 is a maximum number of munitions or containers that may be loaded into an EONC. The load varies for each type of munition. 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 mines transported to UMCDF?
Prior to entry into the storage igloos the workers sample the air inside of the igloos to make sure no vapor leaks have occurred. If the sample shows it is safe to enter the building, the workers open the door. A forklift is then used to carefully pick up the pallets (one at a time) and transfer the munitions to the EONC. An EONC can hold 12 mine drums, for a total of 36 mines. Once the EONC is loaded, the door is closed and sealed. The EONC is transported by truck to the Container Handling Building (CHB) 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 mine drums are transported to the Mine Glovebox to prepare for processing.

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How are mines prepared for processing?

At the Mine Glovebox the mines and the explosive components (fuses and actuators) are removed from the drum one at a time. The removed explosives are placed in an empty fuse box and transported on a conveyor to the Explosion Containment Room (ECR). The explosive components are fed through the ECR down the feed chute to the Deactivation Furnace System (DFS). The mines are placed on the mine conveyor and transferred to the Explosion Containment Room Vestibule for staging prior to processing in the ECR. From this point forward all processing is remotely controlled.
The empty mine drum is transported to the Metal Parts Furnace (MPF) for thermal treatment.

How is a mine processed?

When the mine enters the ECR it is transferred onto the Mine Machine. The mine is rotated from a horizontal to a vertical position at the Punch and Drain Station. The agent cavity of the mine is then punched and the agent is drained.

The agent is measured to verify that the mine has been drained, and then pumped to holding tanks where it is stored prior to treatment in the Liquid Incinerator (LIC).

Once the agent is drained, the mine is placed upside down on the mine trolley and moved to the Burster Punch Station. A hole is punched through the burster; the burster is pushed out of the mine, and fed to the DFS. The empty mine is then dropped down the feed chute to the DFS for treatment of any residual agent.

Where to get more information

Contact Shelly Ingram 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 the 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