

Fact Sheet-

Umatilla Chemical Agent Disposal Facility

Metal Parts Furnace

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. All of these chemical warfare agents are highly toxic. Nerve agents are contained in munitions, such as rockets, projectiles and land mines, and in large containers, such as spray tanks, bombs, and "ton containers." Blister agent is stored only in ton containers.

Destruction of the various munitions requires different types of furnaces. UMCDF has three different furnace types; including two Liquid Incinerators (LICs), a Deactivation Furnace System (DFS), and a Metal Parts Furnace (MPF).

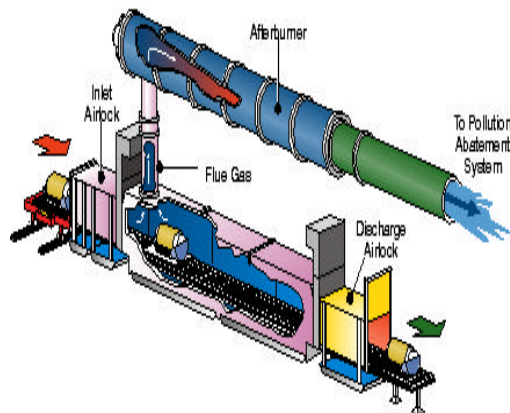
What is the Metal Parts Furnace role in the facility?

The MPF ensures that the large quantity of metal from munitions demilitarization and other metal scrap from Facility operations and maintenance are decontaminated by high temperature heat treatment before they leave the site for metal recycling or land disposal.

All wastes, including residues from the furnaces, must be certified as "agent-free" prior to off-site shipment.

What material is burned in the (MPF)?

The Metal Parts Furnace (MPF) receives the emptied projectiles, bomb cases and other metal containers that contained chemical agent or chemical munitions. The metal items put into the MPF are from munitions that have been drained of chemical agent, disassembled, and have had the energetics (explosive and propellant parts) removed during the demilitarization process. Other items fed into the MPF include piping and equipment replaced during operational maintenance. Any agent remaining inside the metal items or on their surfaces is destroyed by combustion.



How is waste fed into the MPF?

The wastes are brought from the processing bay (dismantling area), then put on a conveyor belt and fed into the MPF through the hydraulically-operated airlock doors into Zone 1 of the MPF. This is where the combustion process begins.

How does the MPF work?

The MPF is a natural gas-fired incinerator with three distinct burner zones connected by roller conveyors. Airlock chambers on both ends of the incinerator allow items to enter and leave the furnace without agent vapor escaping.

An item is moved from the feed airlock into the first burner zone, where it is heated by gas-fired burners for a preset amount of time, which varies depending on type of munition. Operating temperatures in Zone 1 vary from 1450° F to 1600° F. After being heated in Zone 1 for the preset time, the roller conveyors transfer the items into Zone 2, where they are heated for an extended period of time at the same temperature as in Zone 1. As items are transferred from Zone 1 to Zone 2, new items are introduced into Zone 1. After being heated in Zone 2, the wastes are moved to Zone 3, where they are heated at high temperatures until all agent is destroyed.

Exhaust combustion gases from Zones 1, 2 and 3 flow to the Afterburner, where they are heated to 2000° F to ensure that any agent vapor present is burned before the gases continue onward to the Pollution Abatement System (PAS). The PAS is a "wet" scrubber system that uses water and chemicals to cool the gases and remove pollutants.



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When items have completed the heating cycle in Zone 3 they are moved into the discharge airlock and the airlock door is closed to isolate them from the high furnace temperatures.

Air is then blown into the discharge airlock to begin cooling the items, during this process air coming out of the airlock is monitored to confirm that all agent has been destroyed. If no agent is detected, the items can be transferred from the discharge airlock to the cool-down conveyor. If agent is detected the conveyors reverse to return the items to the MPF for additional treatment.

What is left over after the MPF process?

The main waste generated from the MPF is the heat-treated metal scrap, with some ash residue. The combustion gases exhausted from the MPF continue on to the PAS for treatment and removal of pollutants.

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
- | Rocket Processing
- | Projectile Processing
- | Deactivation Furnace System