

# Fact Sheet-

# Umatilla Chemical Agent Disposal Facility

## Deactivation Furnace System

### 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." Mustard agent is stored 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 role of the Deactivation Furnace System (DFS) in the facility?

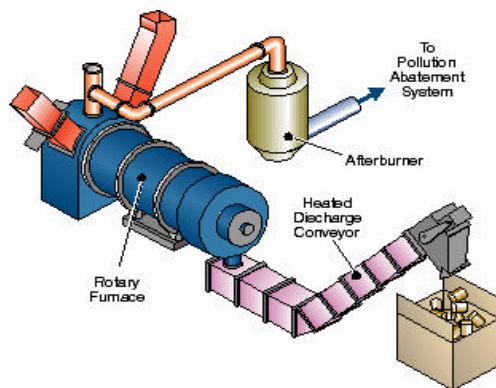
The DFS provides the flexibility and the capacity to incinerate the chopped rockets, explosives and propellants and remaining agent.

### What material is burned in the Deactivation Furnace System (DFS)?

The primary function of the Deactivation Furnace System (DFS) is to incinerate and destroy the explosives and propellants removed from the various munitions as they are taken apart during the demilitarization process. Explosive components include fuses and detonators, initiator and burster charges, and cutter charges of various types and sizes. Most of the propellants come from the rockets. Other items fed into the DFS include the fiberglass tubes used to store the rockets, land mine casings, waste materials from Munitions Demilitarization Building (MDB) maintenance, and other small metal or non-metal items.

### How is waste fed into the DFS?

Wastes are fed into the DFS through chutes connected to the Explosive Containment Rooms (ECRs). The munitions are physically dismantled in the ECRs. The exception being M55 rockets, which are cut into (8) pieces with the explosives and propellants in tact, these pieces are burned in the DFS.



### How does the DFS work?

The DFS is a rotary kiln, which slowly rotates to move wastes through the barrel of the kiln. The wastes move through the kiln and remain separated with the help of an internal spiral baffle, which looks similar to the edge of a screw.

The process begins when items drop into the high temperature end of the kiln through two chutes from the ECRs. The objects heat up and ignite as they enter the furnace and burn out completely as they spiral through the length of the kiln. The burner at the discharge end of the kiln maintains a minimum temperature of 950°F.

At the discharge end of the kiln the metal and ash residues drop onto a heated discharge conveyor where they are heated at a minimum temperature of 1000°F for at least 15 minutes to ensure complete decontamination. The hot ash residues are then discharged into bins and transferred to the cooling pad.

Combustion gases from the kiln process flow through a cyclone where the gases swirl (resembling to a tornado) to remove fiberglass pieces and other ash caught in the gases. The cyclone causes the waste particles to separate from the gas and drop into a collection hopper. The ash is then packed into drums for disposal.

After passing through the cyclone the gases flow to a secondary combustion chamber (or afterburner) for further treatment to ensure agent destruction. Temperatures in the afterburner are maintained at a minimum of 1950°F. The exhaust gases then flow to the Pollution Abatement System (PAS) for removal of any remaining pollutants prior to leaving the stack.



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### **What is left over after the DFS process?**

The primary wastes generated from the DFS process are metal scrap, fiberglass residue, and ash. The DFS process also produces combustion gases, which are treated in an afterburner and in the Pollution Abatement System (PAS). The PAS is a wet scrubber system that uses water and chemicals to cool the gases and remove pollutants.

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

### **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
- | Metal Parts Furnace
- | Rocket Processing
- | Projectile Processing