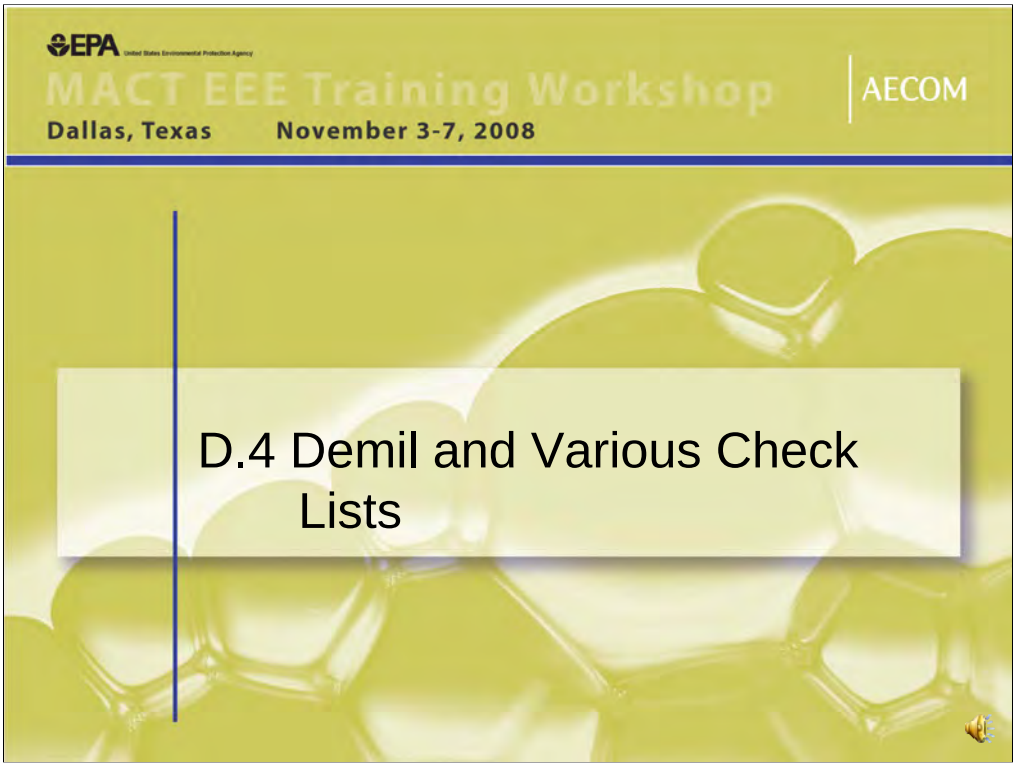
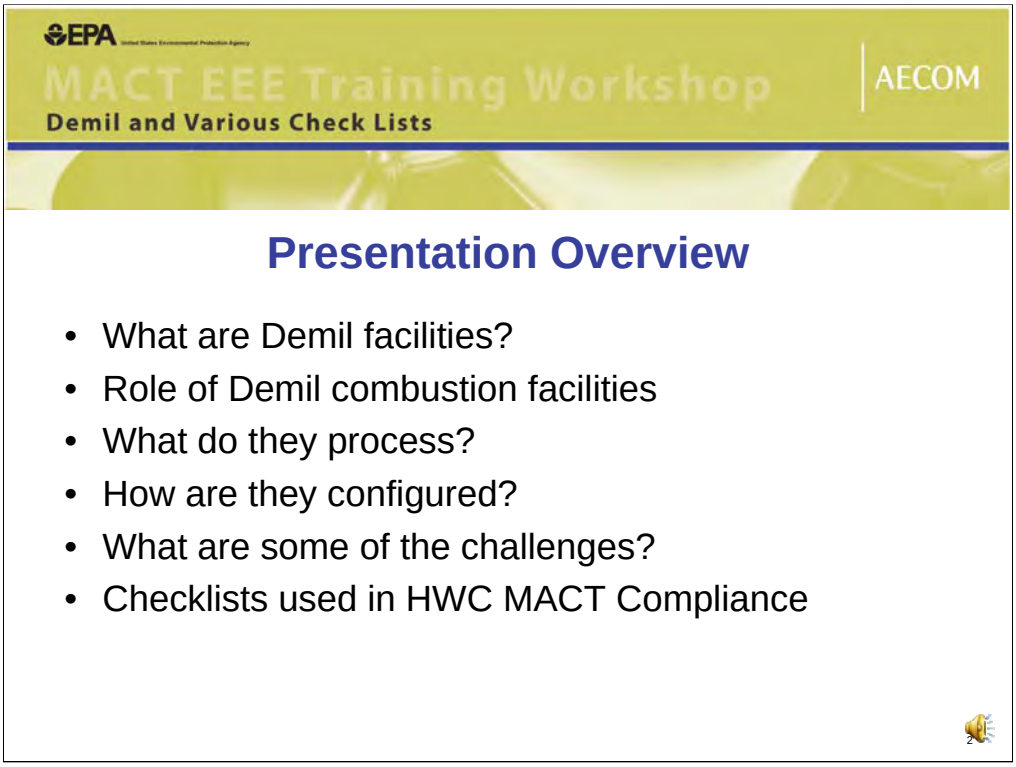


The final module in this training program covers a couple of different topics including the various types of combustion systems that deal with traditional and chemical weapons and some of the various checklists that egencies have developed for use on Subpart EEE issues



The topics discussed in this presentation will be:

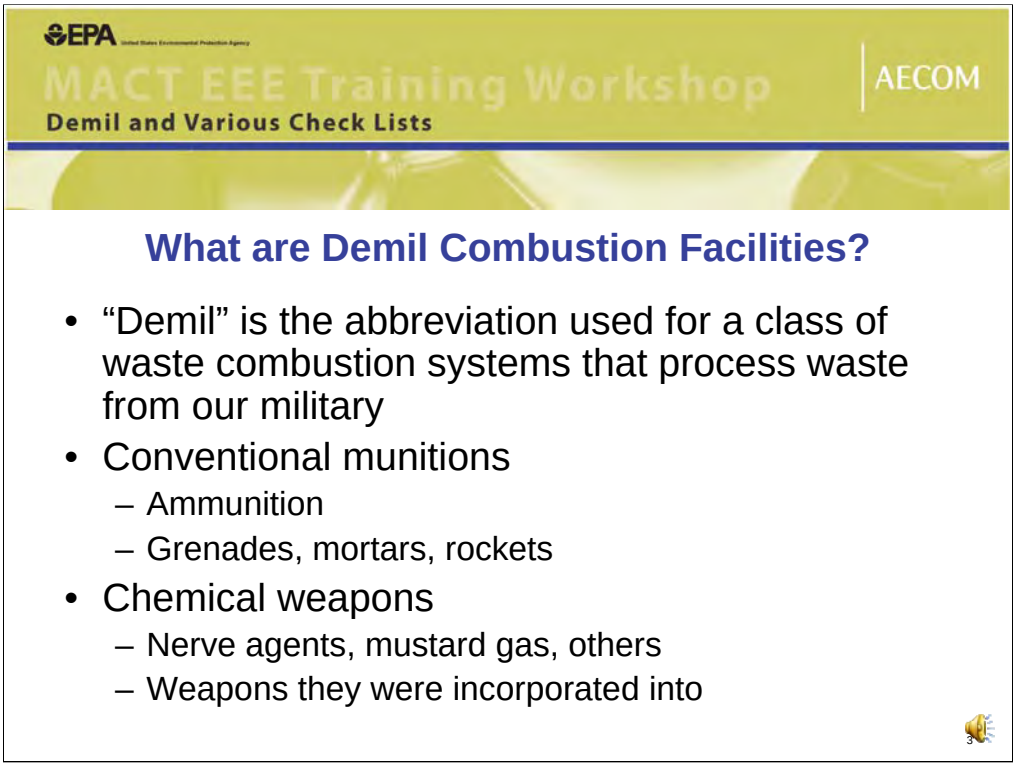
What are Demil facilities

The Role of Demil combustion facilities What do they process

How are they configured

What are some of the challenges, and

Checklists used in HWC MACT Compliance.

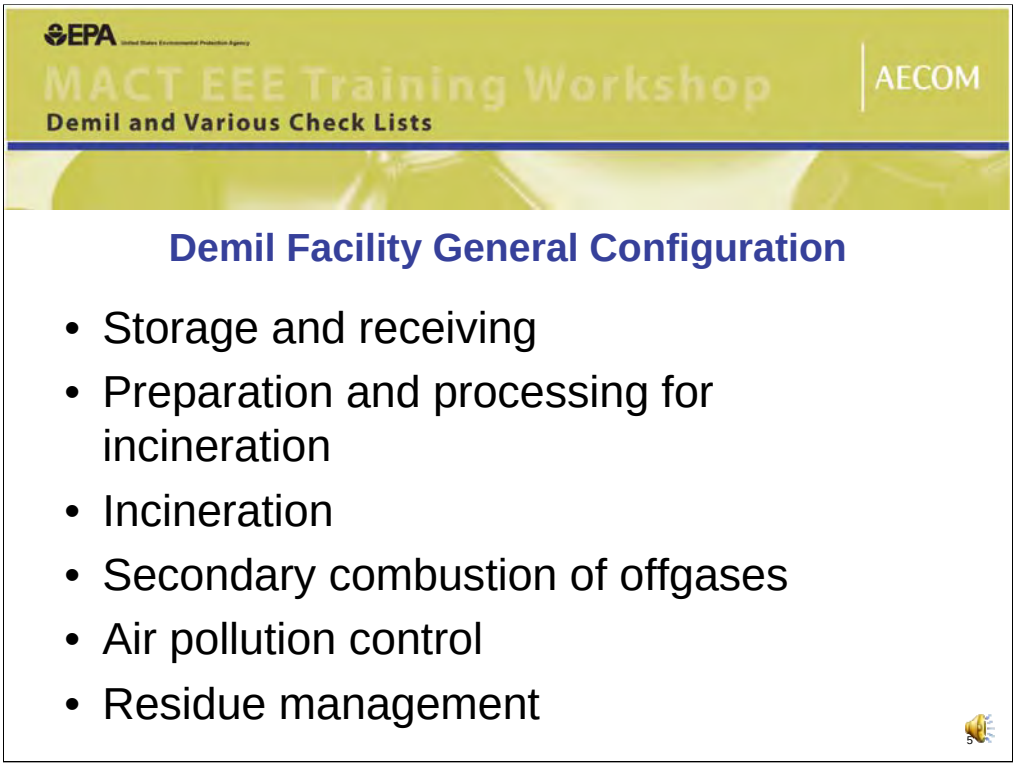


First, "Demil" refers to a class of combustion systems that are used to process different traditional and chemical munitions and weapons created or generated by various branches of the military. For traditional munitions, these generally involve treatment or disposal of aging stockpiles that can no longer be used for thin intended purpose. For chemical weapons, because of their extreme hazard and danger, these are being disposed under the auspices of international treaties.

What Role do Demil Combustion Systems Play?

- In the US, there are large stockpiles of conventional and agent weapons that are aging
- The Demil facilities process and treat these aging stockpiles
- There are both government and commercial facilities in operation
- Primary goal – reduce the risk associated with storing these materials through safe handling, dismantling and processing energetics and agents.
- Decontaminate all components and parts associated with the weapons

The primary role both types of facilities play is to reduce the aging stockpiles. There are both government and commercially run and operated facilities. These facilities must decontaminate both the active charges, but all other components associated with the weapon.



Facilities include all the same type of operations that other units do, however, there are a lot more details associated with the initial handling of these kinds of waste as at this point they pose the highest hazard.

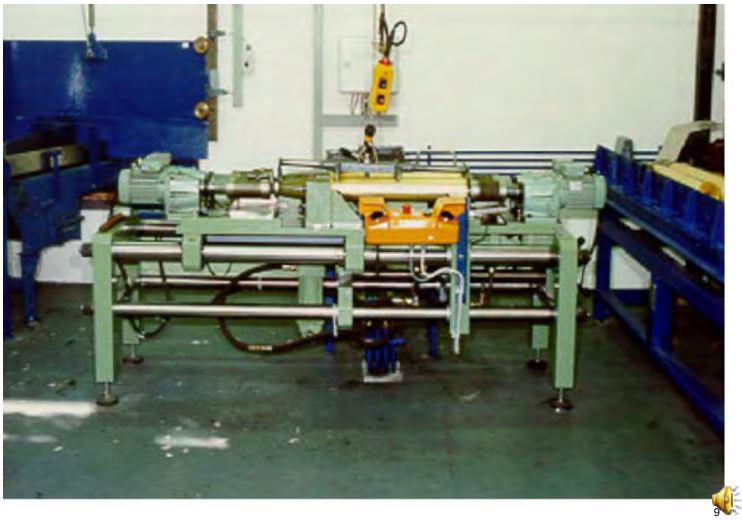
This is a typical receiving building for demil wastes. Note its remote location. These buildings also often includes some unique construction features such as conductive flooring, explosion and spark proof electricals.

These are large caliber shells loaded on an automated feed system.

Mortars

These are typical mortar shells.

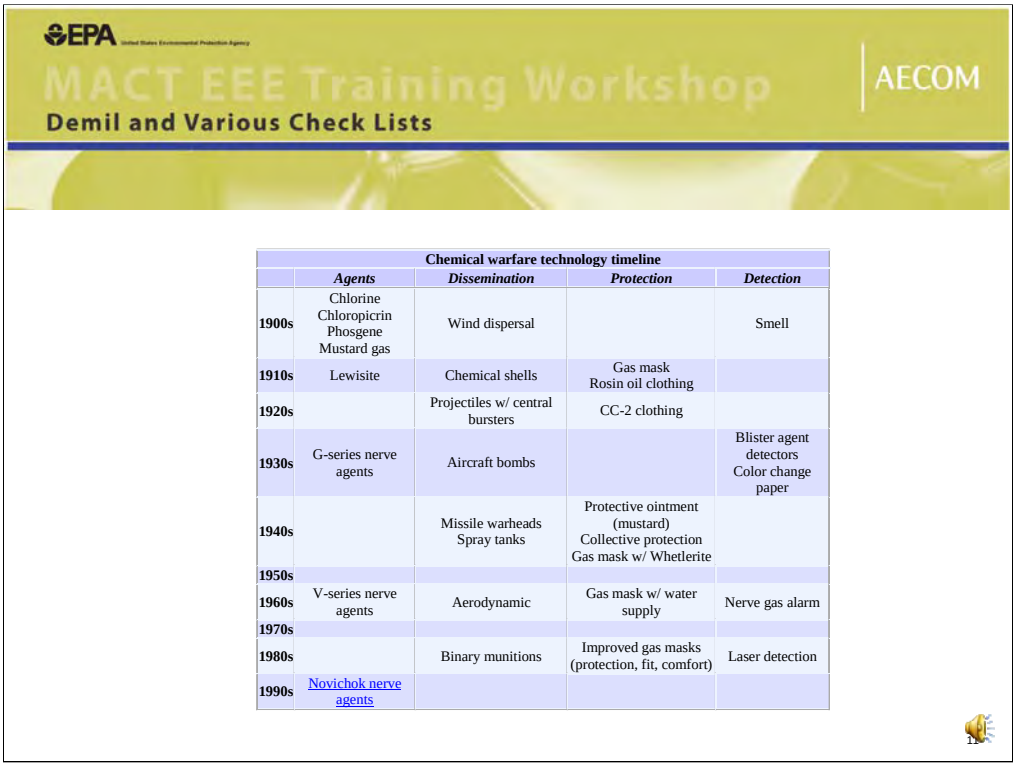
Rocket Dismantling



Here is a rocket dismantling unit. The purpose of this is to disassemble the warhead from the propellant so that each can be handled safely during combustion.

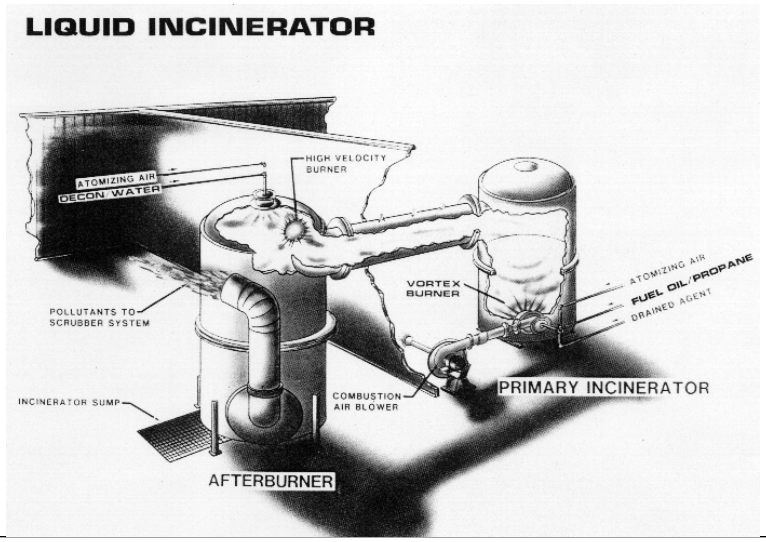
Empty Mortar Shells

These are empty burned out mortar shells.



Chemical warfare technology timeline				
	Agents	***Dissemination***	***Protection***	***Detection***
1900s	Chlorine Chloropicrin Phosgene Mustard gas	Wind dispersal		Smell
1910s	Lewisite	Chemical shells	Gas mask Rosin oil clothing	
1920s		Projectiles w/ central bursters	CC-2 clothing	
1930s	G-series nerve agents	Aircraft bombs		Blister agent detectors Color change paper
1940s		Missile warheads Spray tanks	Protective ointment (mustard) Collective protection Gas mask w/ Whetlerite	
1950s				
1960s	V-series nerve agents	Aerodynamic	Gas mask w/ water supply	Nerve gas alarm
1970s				
1980s		Binary munitions	Improved gas masks (protection, fit, comfort)	Laser detection
1990s	Novichok nerve agents			

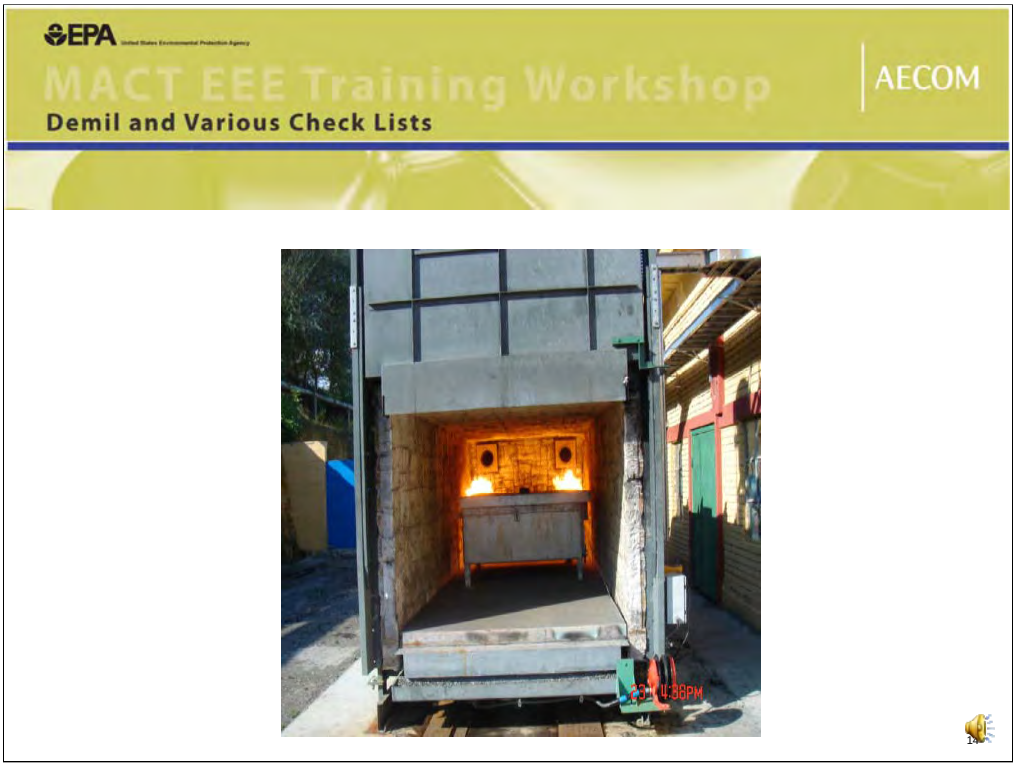
Switching from traditional munitions to chemical agent weapons, this slide provides a history of the various types of chemical weapons that have been used over the last century. As can be seen on this slide, There are several different weapons delivery systems that have been used and therefore a variety of forms that must be safely disassembled and managed.



This is a typical liquid injection incinerator that is used to handle the drained liquid agent.

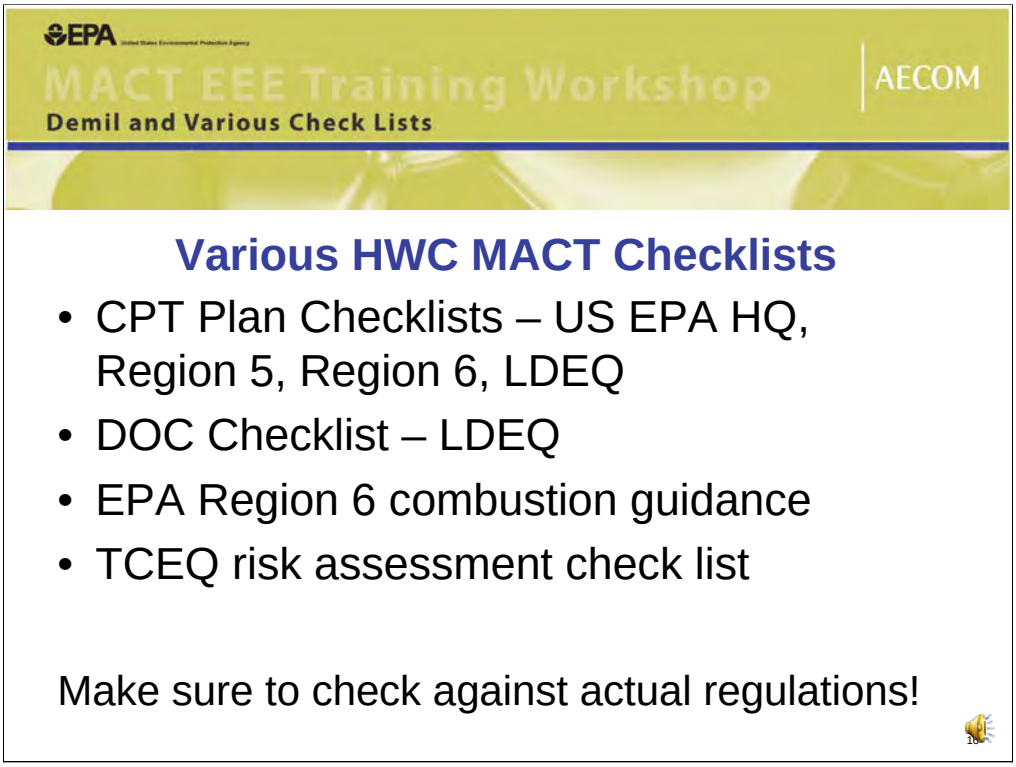
Deactivation Furnace

This slide shows a deactivation furnace where the propellant sections of the weapons and empty carcasses that have been drained of active agent. These component have holes in them so that an active propellant or agent can volatilize off and be combusted.



This is a picture of a car bottom furnace that is used for similar purpose as a deactivation furnace but this is generally used for larger components and while the deactivation furnace can be operated continuously, the car bottom furnace is a batch type system.

This is a picture of a complete agent unit. The combustion portion is on the right in this picture behind the rectangular secondary combustion chamber shown in mid ground. The ductwork flows to the front and left, with the air pollution system and stack on the left.



The final topic in this training is some of the various agency checklists that are in use. These are listed on this slide. It is encouraged that all agency staff using these check them again the regulations before relying on them.

These checklists can be found on the websites shown.