Abstract

Mustard Processing at Tooele

The TOCDF will destroy a total of 13,617 tons of GB, H, HD, HT, and VX stored in ton containers, rockets, bombs, projectiles, mines, mortars, and spray tanks. This total constitutes the single largest inventory in the US stockpile. As of 1 April 2007-- 8218.1 tons (7455.3 tonnes) of nerve and mustard agent (60.3%) to include all of the GB and VX filled munitions in the DCD stockpile have been destroyed.

The TOCDF completed ten years of chemical weapons destruction operations on 22 August 2006. Since initiating destruction operations on 22 August 1996, the TOCDF has destroyed 1,015,048 munitions with an average annual destruction rate of over 100,000 munitions a year.

In preparation for the mustard campaign TOCDF conducted early sampling of 98 mustard ton containers in 2003 in order to begin characterizing the ton container stockpile in preparation for the upcoming campaign to destroy mustard munitions. In addition to the known challenge of significant solids accumulation (heel) in the ton containers, results identified two additional challenges, mercury contamination and hydrogen pressurization.

To address these challenges a processing strategy was developed that divided the ton containers into two sub-campaigns, one for low or no mercury contamination ton containers and a later campaign for high mercury contamination after installation of addition abatement equipment. The first was dubbed the 'baseline' campaign and includes initial 100% sampling to segregate the nearly 6400 ton containers based on mercury levels and heel depth.

All of the mustard challenges contributed to a significant permitting effort involving the EPA, the Utah Department of Solid and Hazardous Waste, and the Utah Department of Air Quality. The TOCDF worked with all of these groups, including the public, to coordinate early and often. The result was early buy-in to strategic decisions that facilitated timely approval of permit modifications and an Alternative Monitoring Request for mercury monitoring to support an early start to TOCDF's mustard campaign in support of the United States Chemical Weapons Convention Treaty obligations.

In accomplishing this early start the TOCDF has developed two first-of-a-kind applications for mercury sampling using Zeehman spectroscopy and cold vapor atomic adsorption. Additionally shakedown efforts have facilitated the establishment of Metal Parts Furnace parameters that support the incineration of upwards of 600 lbs heels and have eliminated initial concerns regarding SO_2 emissions in the cool down area.