Need for Static Detonation Chambers Explained

The Program Executive Office, Assembled Chemical Weapons Alternatives, or ACWA, program is currently exploring the use of Static Detonation Chambers (SDCs) to augment the capabilities of the Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP), improve worker safety, and decrease the risk that the program will not meet the legal mandate to destroy the U.S. Army Pueblo Chemical Depot stockpile munitions by Dec. 31, 2023.

What is the problem?

During the first year of PCAPP Main Plant operations, processing problems occurred that have increased worker safety risk, and have slowed, and even halted, stockpile destruction. The following conditions have caused (or may cause) safety concerns and processing delays.

- **Maintenance of Processing Equipment.** Due to the intricate nature of the equipment scheduled to be used to access the 4.2-inch mortar round agent cavity, maintenance activities will be extremely difficult to perform by workers in chemical agent personal protective equipment, thus possibly increasing worker safety risk.

- **Solids.** One of the most significant technical challenges encountered in the PCAPP Main Plant is from solids, which caused equipment breakdown and otherwise inhibited the ability to convey liquids throughout the processing and storage systems. These solids are being washed from inside the 155mm projectiles, and additional amounts are expected from the 4.2-inch mortar rounds. Analysis has shown that the solids contain iron compounds from corrosion of the internal components. Problems caused by solids have increased the number of difficult chemical agent entries by personnel into agent contaminated areas of the PCAPP Main Plant, increasing the safety risk to personnel for potential agent exposure. Processing problems caused by solids in the 4.2-inch mortar rounds are anticipated to be even greater than during the 155mm projectile campaign due to the design and material of construction of the mortar bodies. Therefore, the risk to worker safety due to the increasing number of chemical agent entries that will be required might result in an increased risk of employees contacting chemical agent.

- **Pressurized Agent.** The liquid agent in some of these munitions is under pressure, further complicating processing. Based on experience at baseline facilities, some of the 105mm and 155mm projectile lots may have an increased likelihood of the liquid agent being under pressure. Pressurized munitions may froth agent out when opened, thereby requiring chemical agent entries to perform cleanup.

The preferred way to deal with these problems is to keep these munitions from entering the main plant and instead process them in SDCs, where disassembly of the munition is not required.

For additional information on the SDC, and its application, please visit:
https://www.peoacwa.army.mil/bgcapp/bgcapp-destruction-technologies/static-detonation-chamber/

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