

Donaldson Enterprises, Inc. Fatal Fireworks Disassembly Explosion and Fire

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Activity

A single, large, federal contractor, the VSE Corporation of Alexandria, Virginia is in charge of storage, auctions or disposal for large amounts of government-seized property including counterfeit goods, livestock, and illegal fireworks. VSE was tasked with the disposal of three imported firework shipments that were seized by federal law enforcement agencies that were being shipped through Honolulu. These seized fireworks were labeled for consumer use, but in reality contained far more explosive materials typical for these used in professional firework displays. VSE subcontracted Donaldson Enterprises, Inc. for a three-year period to dispose of the fireworks because DEI was a local company who was already storing the fireworks in a hillside facility. For VSE, it was the lowest cost and most time-efficient. DEI obtained an emergency environmental permit for the work from the state of Hawaii and began their work.

Hazard

Fireworks are composed of aerial shells and black powder, together a highly explosive mixture of chemicals.

Preventative Actions and Safeguards

Determine that proper procedures in place for disposal.

Contingency Plan/ Mitigating Actions

Ensure the disposal is being performed after all hazards have been analyzed and properly taken care of.

Initiating Event

There are no good practice standards to follow for the disposal of fireworks, so DEI came up with a disposal plan, which VSE approved. The first plan was to soak the fireworks in diesel fuel and then burning them at a local shooting range, but some fireworks were exploding. Instead they decided to try another method, disassembling the individual firework tubes and cutting slits in the aerial shells so the diesel can fully soak into the shells reducing the chance they would explode. The process was being rushed for their next batch, so workers separated the black powder from the shells. These accumulated in separate boxes and radically increased the chance of an explosion.

Incident

No proper hazard analysis was done throughout any of the process. On the morning of April 8, 2011, workers were disassembling some of the seized fireworks on the cement loading dock of the storage facility. It began to rain heavily, so the workers moved just inside the facility. An explosion occurred inside the facility and a fire accompanied it. Five workers died due to the explosion, while another sustained minor injuries.

Lessons Learned

Key issues from this incident were the fact that the personnel of DEI had no specific expertise in the removal of fireworks, the procedures they came up with were extremely unsafe, and also no national standards or accepted good practices for the disposal of fireworks. New recommendations are that

federal agencies develop a new government-wide safety and environmental responsibility requirement for contractors concerning safe disposal of fireworks. Conducting proper process hazard analysis before implementing a procedure is necessary to ensure all possible dangers are brought to everyone's attention and to deem the proper way to go about handling them.

