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NAVFAC Naval Facilities Engineering Command NAVFAC NORTHWEST

Naval Facilities Engineering Command Northwest

Safety Lessons Learned Accident Abstract

Accident Type: Fire/Burn/Misuse of Hazmat

Injury: Second degree burns on 20-25% of body

Damage: Minor fire damage to housing unit

Type of Work: Demobilizing from soil sampling project

DESCRIPTION OF THE ACCIDENT:

On August 26 2016 at 1420 local time, in a leased Adak housing unit, an employee was attempting to heat methanol (flammable) soil sample preservative on a kitchen stove top to evaporate it. The methanol ignited, producing flames and catching the employee's clothing on fire which resulted in second degree burns over 20-25% of his body. Surfaces in the kitchen also ignited causing approximately $750 property damage. The damage was relatively minor since it was a 'flash fire' and was extinguished quickly by a nearby coworker. Approximately 75 60-ml vials of sample preservative (approximately one half to one gallon in total) were involved in the incident and reportedly completely volatilized into the atmosphere as a result of the fire. Instead of following proper protocol and shipping the methanol sample preservative back to the originating laboratory, as described in the Waste Management Plan and Accident Prevention Plan, the employees decided on their own to evaporate the unused methanol. The coworker consolidated the surplus methanol from the vials into pans to allow the methanol to naturally volatilize. But, to speed up the process, the injured employee poured the methanol from the pans into cooking pots and attempted to evaporate the methanol using the electric burner(s) of the housing unit's kitchen stove. The injured employee was stabilized at the Adak Medical Clinic. At approximately 2030 the employee was transferred/med-evac'd to Harborview Medical Center in Seattle, Washington. On September 13, 2016, the injured employee was released from Harborview and is recovering at home.

DIRECT CAUSE(S):

1) An employee attempted to evaporate surplus methanol soil sample preservative by heating on electric burners of a kitchen stove which caused a fire that resulted in burns to the employee and property damage.
2) A second employee who witnessed the activity did not stop the unsafe act.
3) Both the injured employee and the coworker did not follow the approved Accident Prevention Plan, Waste Management Plan/Environmental Protection Plan or Stop Work Authority procedure.

INDIRECT CAUSE(S):

1) Pre-planning for surplus methanol sample shipping was not specifically addressed prior to field deployment. The Waste Management Plan and Environmental Protection Plan did address that hazardous chemicals and waste would not be disposed of improperly.
2) Employees did not conduct a daily task hazard assessment during the day of the incident. It should be noted that daily task hazard assessments were performed during the Amchitka environmental field event.
3) Possible fatigue after Amchitka environmental field event.

4) There was a perceived time constraint for departing island (flights are limited to/from Adak on Thursday's and Sundays). Speeding up the evaporation of the sample preservative by adding heat was potentially the injured's rationale in conducting the unsanctioned activity.
5) Employees did not contact the Project Manager when faced with an unplanned condition.
6) Overconfidence to calculate and mitigate risk.

ROOT CAUSES: .

1) Employees created a contingency plan without discussing it with the Project Manager
2) Employees did not believe company would ship the excess methanol
3) Employees exercised poor judgment deciding to evaporate the methanol by heating it
4) Perceived time constraint for leaving Adak
5) Employees were possibly fatigued from the 18-20 hour boat ride from Amchitka

LESSONS LEARNED:

1) Incident Investigation – Complete thorough incident investigation and file follow-up and final reports with NAVFAC– may involve additional follow up questions and clarification's with key individuals
2) OSHA and Alaska Department of Environmental Conservation were notified of the incident.
3) Employee Training - Safety stand-down materials developed based on the review of the incident to reiterate planning and execution procedures related to the safe handling of sample preservatives, Hazard Communication, Hazardous Material Shipping, Change Management, and Stop Work Authority. This policy is currently being disseminated nation-wide to project teams performing similar work.
4) Documentation - Review and modify as appropriate written guidance to further enhance APP, Waste Management Plan/Environmental Protection Plans and Relevant Standard Operating Procedures. Disseminate revisions to the project managers, H&S personnel and project teams for use on active and up-coming projects.
5) Notification - Reiteration of requirements for live field emergency drills and 1st aid/CPR training across the Environment Business Line
6) Review - Project and senior management engagement and accountability in investigation and reporting process via Executive Incident Review (EIR) of this incident
7) Removal - Employees removed from the NAVFAC contract
8) Disciplinary action/fit for duty evaluation for both employees pending, and shall remain confidential
9) Dissemination of Lessons Learned throughout organization and shared with client and JV partner
10) On-going - Other Lessons Learned shared throughout the organization and JV partner.