Bureau of Safety and Environmental Enforcement

SAFETY ALERT

Safety Alert No. 477

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BSEE Investigates Incidents Related to Working in Confined Spaces

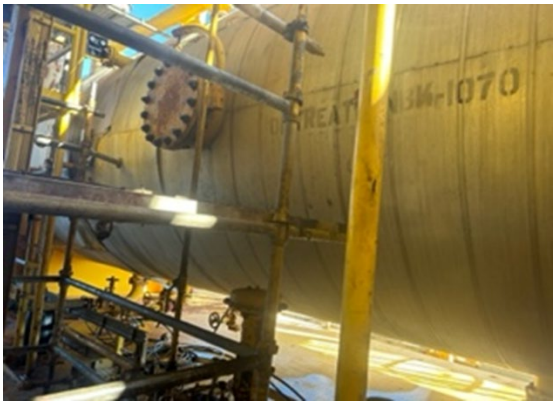

Figure 1. Heater-Treater Injured Party Entered.

Figure 2. Tank Injured Party Entered.

In recent months, the Bureau of Safety and Environmental Enforcement (BSEE) has observed a trend of safety incidents that occurred while personnel conducted tank cleaning operations in confined spaces.

Incident 1: Required CPR

The first incident occurred while a worker was vacuuming, and the nozzle became stuck inside the tank. To free the nozzle, the worker—who was wearing a respirator with organic filters specifically used for working outside the tank—fully entered the tank, where he fell ill. Coworkers found the worker inside the tank lying under the fluid. Cardiopulmonary Resuscitation (CPR) was administered to revive the worker.

A comprehensive investigation revealed:

- Stop Work Authority (SWA)[1] was not invoked, which is a deviation from standard safety protocols.

[1] SWA gives workers and contractors the authority and responsibility to stop work if they observe unsafe conditions or behaviors on the jobsite.

- There was non-compliance with the company's confined space entry policies.

In addition to procedural lapses, a significant contributing factor to the incident was human behavior. Specifically, it was noted that an employee felt compelled to rush, leading to hasty and ill-informed decisions. This haste ultimately led to unauthorized and unplanned entry into the tank, further exacerbating the situation.

Corrective actions to be implemented include:

- Providing additional refresher training for confined space rescue.
- Invoking safety stand downs.
- Installing X-Brace on manways for personnel barrier.
- Ensuring management meets with supervisors to go over policies and procedures before every job.

Incident 2: Experience Near-Syncope

In another incident, a worker began to feel ill while conducting tank cleaning operations and attempted to exit the tank. While exiting, the worker experienced a near-syncope episode (Near-syncope is feeling like one is going to pass out but without actual loss of consciousness). The worker initially appeared alert but was slow to answer questions, was sweating profusely, and then collapsed. A coworker revived the worker using CPR. The worker was flown to shore, and medical evaluation showed the worker had non-stress-induced cardiac arrythmia that may have contributed to the near-syncope episode.

OSHA Requirements

The Occupational Safety and Health Administration (OSHA) website lists the hazards associated with oil and gas storage tanks, including:

- Fire
- Asphyxiation
- Falls
- Death/injury
- Entrapment

OSHA provides requirements for working in confined spaces under 29 CFR § 1910.146. The American Petroleum Institute and the National Fire Protection Association have developed standards for tank cleaning operations.

BSEE recommends that operators and their contractors, where appropriate, consider:

- Ensuring all personnel understand what constitutes a confined space and confined space entry. Ensuring personnel are aware that confined spaces may be hazardous even if part of the body remains outside of the space.

- Ensuring a Job Safety Analysis (JSA) is in place and is discussed prior to starting work. Completing, if required, a confined space entry work permit, which should explain the hazards and mitigations common to confined space work.

- Stopping the job and discussing/analyzing any potential safety and environmental hazards, and renewing approval before proceeding when deviating from the JSA and/or permit.

- Ensuring the proper personal protective equipment (PPE) is worn.

- Ensuring others know of your planned activities and the duration of the planned activities prior to entering a confined space.

- Ensuring personnel inside the confined space have means to communicate with personnel outside. Regular communication can be used to detect if the personnel inside have become impaired.

- Ensuring proper ventilation prior to entering a confined space. If proper ventilation cannot be achieved, utilizing the necessary breathing apparatus.

- Developing a rescue plan for extracting personnel who are unable to exit a confined space due to injury or incapacitation. Identifying the personnel who will execute the rescue plan and the equipment that will be used.

- Ensuring employees and/or contractors have the proper training to clean in an enclosed space. Also ensuring the training is current and up to date.

- Clearly marking the storage tanks regarding the substance contained and any associated hazards (flammability, reactivity, health hazards, etc.).

- Keeping Material Safety Data Sheets (MSDS) for all substances found on location in an easily accessible area, including chemicals in the storage tanks.

- Ensuring all personnel are made aware of their duty and responsibility of utilizing SWA with the full support of their supervisor and management.

– BSEE –

A **Safety Alert** is a tool used by BSEE to inform the offshore oil and gas industry of the circumstances surrounding a potential safety issue. It also contains recommendations that could assist avoiding potential incidents on the Outer Continental Shelf.

Category: Personnel Safety