## Tank Cleaning

1. **Purpose**

The purpose of this safety program is to ensure safety during the cleaning of tanks and vessels.

1. **Requirements**

* The requirements of the Confined Space Entry Program, Energy Isolation Lockout/Tagout Program, Equipment Isolation and Blinding and Hot Work and the Spark Producing Safety Programs must be followed for tank cleaning jobs that require personnel to enter the tank.
* Protective Equipment. All personnel must wear the proper protective equipment dictated by the nature of the job and as required by the Confined Space Entry Permit.

1. **Procedure**

**Tank Preparation**

Tanks scheduled for cleaning must be prepared so they are rendered as safe as possible for personnel.

NOTE- a NORM survey must be completed prior to starting the tank/vessel cleaning.

**Special Precautions – Pyrophoric Materials**

Tanks must be considered to contain Pyrophoric Materials, such as iron sulfide, unless proven otherwise. The preferred method of removing Pyrophoric Materials from a tank is by keeping them in a water slurry state and pumping them out for safe disposal. Maintaining a water blanket on Pyrophoric Materials will be necessary for the duration of the job. Contact the environmental coordinator for proper disposal methods.

Pyrophoric Material must be kept wet to prevent ignition. Each situation must be evaluated individually; however, procedures for cleaning tanks containing Pyrophoric Material may include those shown below.

**Gas Freeing Methods**

Blinding/isolating the tank from other equipment. Disconnected lines must be sealed in a closed position immediately after opening to prevent air entering the tank.

Any Pyrophoric Material must be wetted down immediately upon opening the tank.

Once the material is wet, purging the tank of any combustible gas may begin. Natural ventilation may be used by opening the roof thief hatch and the side manway. Use of an explosion-proof air mover at the thief hatch may speed the process.

During the entire ventilation phase of the job, Pyrophoric Material must be wetted down.

When gas tests at the thief hatch indicate 10 % or less LEL, high pressure water may be introduced from the side manway or top hatch to break up sediment, rust, scale, and other deposits.

Interior surfaces of the tank should not be allowed to dry until all scale and other deposits have been removed.

**Gas Testing Procedures**

Once gas tests indicate that combustible vapors inside the tank are kept below 10% LEL, the ventilation equipment and water spray should be shut down for 15 minutes and the tests run again.

The Pyrophoric Material must be saturated before stopping the water spray so it will remain wet during gas testing.

All tank openings should be tested. If the test results show 10 % LEL, ventilation purging and flushing must be resumed.

Respiratory protection, either positive pressure self-contained breathing apparatus (SCBA) or air line unit, must be used during gas testing if H2S levels are unknown or may reach 10 ppm in the breathing zone.

Entry by anyone will be allowed only after a Confined Space Entry Permit has been properly issued.

All provisions of the permit must be strictly followed.

If hot work is to going on as part of the operations, the LEL must be 0%. For additional information refer to the Hot Work safety program.

**Tank Disassembly**

Tanks may have to be disassembled for cleaning if manways are covered up and a closed loop cleaning procedure cannot be done. Safety must be the primary consideration in tank disassembly.

Personnel must wear the proper personal protective equipment, including respiratory protection.

The tank must be vented/purged before disassembly may begin. Internal combustible gas levels must be 10 % LEL before work can start.

Pyrophoric Material must be kept wet for the duration of the project.

Ignition sources must be controlled. If hot work must be performed, all provisions of the Hot Work and Spark Producing Safe Practices Plan must be strictly followed. LEL of 0%. Lubricated cold cutting is the preferred method for cutting into the tank.

Any scaffolding used must be in compliance with company and regulatory standards.

**Vessels and Tanks Surveys and Considerations**

Before any vessel is entered, a NORM survey must be completed.

Confined space atmospheres must be tested before entry is allowed. The atmosphere must be tested for oxygen content, flammability (LEL), and any suspected toxic contaminants such as hydrogen sulfide, NORM etc.

1. **Key Documents/Tools/References**

American Petroleum Institute; API 2015 - Cleaning Petroleum Storage Tanks