



**CASE HISTORY**

**Within 36 hours a crude oil storage tank containing heavy sour crude was decontaminated of benzene, H<sub>2</sub>S, and LEL's safely with no pyrophoric combustion**



**Results Achieved**

Within 36 hours all benzene, H<sub>2</sub>S and LEL levels were zero

No iron sulphide combustion

Waste water treatment compatible

**Chemicals Utilized**

**FQE Solvent-H**

**FQE LEL-V**

**FQE H<sub>2</sub>S Scavenger**

**FQE Pyrophoric**

A world scale petroleum refinery scheduled an outage to clean and decontaminate a crude oil storage tank containing heavy sour crude.

The site concerns included LEL and benzene levels, high hydrogen sulfide presence and pyrophoric iron scales. We previously performed benzene encapsulation and hydrogen sulfide management in other areas of the facility, the client requested we perform this application. The client's needs were to bring the LEL level below 2%, benzene concentration under 0.5 ppm, no pyrophoric iron combustion and to not impact waste water operations.

Tank 602 is a 200' diameter vessel with a floating roof with an estimated 15' of heavy sludge. Samples taken of the vessel contents indicated a high asphaltene content and the presence of iron sulfide scale. Air samples of the vessel prior to beginning the work revealed 100% LEL, 40 ppm hydrogen sulfide and 33 ppm benzene.

Prior to our arrival, the client drained the free hydrocarbons from the vessel. Circulation equipment was stationed and a tank bottom circulation was initiated from four manway locations using LCO cutter stock and a 5% concentration of FQE<sup>®</sup> Solvent-H to solvate wax and asphaltenes present in the crude sludge.

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Following circulation of the tank bottoms, the fluidized organic solids were pumped out of TK T-602 to adjacent crude storage following analysis and approval by plant supervision.

Following evacuation of the tank oil liquid, an aqueous solution of FQE LEL-V and FQE H<sub>2</sub>S Scavenger were introduced into the tank via 3D nozzle from the tank roof to eliminate the resident benzene, H<sub>2</sub>S and bring down the LEL to specifications.

Within 36 hours of chemical addition all benzene / H<sub>2</sub>S and LEL levels were zero. A 2% solution of FQE Pyrophoric was introduced into the cleaning liquid at the completion of vapor space scrubbing to control iron sulfide concerns. Maintenance activities were able to be started immediately following draining of the final water rinse. Benzene / LEL levels did not rise and there was no iron deposit combustion. The cleaning solution was sent directly to waste water treatment without incident.

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