

Explosion in an Exhumed Empty MS Storage Tank

The Incident

A fatal incident occurred due to explosion in an exhumed empty storage tank. The underground storage tank was in MS service in a retail outlet. It was exhumed, shifted and stowed away in an open plot of land earmarked by the concerned oil company for storing such exhumed empty tanks from retail outlets on 31.01.12.

On 01.02.2012, i.e. day after the tank was kept, the exhumed tank exploded at around 17.20 Hrs. The impact was such that one of the dish ends of the tank blew up in the air and landed 150 meters away in an adjacent slum area.

Two girls - aged 11 & 13 yrs. - who were playing on that ground was hit by the dish end. One girl died on the spot and the other girl died en-route hospital.

The Probable Cause

- Exhumed tank was not made gas free before shifting.
- The tank was not cleaned of sludge inside and the sludge might have emanated enough vapour due to temp rise in day time creating hydrocarbon rich atmosphere around the said tank.
- Source of ignition, either from smoking/ direct open fire/other source might have been provided by trespassing slum dwellers in the area thru' damaged boundary wall.

Concerned Oil Company had constituted an internal committee for investigating the incident and on perusal of the report observed Root Cause of the incident, other contributing factors to the incident, Engineering lapses and recommended preventive measures are as under:

Root cause of the incident

- No work permit was issued to the contractor by the authorized oil company personnel to the contractor.
- Contractor entrusted with the job of exhuming & shifting the tank out from the retail outlet has not ensured degassing of the tank.
- There was also no mechanism of the concerned oil company in place to supervise the above activities of the contractor.

a) **Other contributing factors**

- Storage of exhumed tank in an area where boundary wall was broken at several places resulting trespassing from slum area.
- Ineffective security arrangement resulting lack in security and surveillance.

b) **Procedural & Engineering lapses**

- The work permit issuance system has not been followed as defined in clause 9 of OISD STD-225 i.e. Storage, Handling & Dispensing at Petroleum Retail Outlets.
- The storage area access control wall was breached and not repaired allowing free public access compromising the safety standards with hazardous petroleum vapour in the atmosphere.
- The tank was not having any manhole and this may have posed difficulties to the contractor in de-gassing and sludge removal of the tank.

Recommended preventive measures

- ✚ De-gassing and cleaning to be mandatorily practiced in case of exhumation of empty used storage tanks before exhumation irrespective of the fact whether hot work is to be performed or not.
- ✚ Adequate and effective measures for security and surveillance of area earmarked for storage of empty used storage tanks after exhumation from Retail Outlets.