Light Sets off Flammable Vapor



A painter died of extensive burn injuries after an explosion inside a tank he was painting. A co-worker was also injured but recovered.

Both were working for a sheet metal fabrication firm. They were assigned to paint the inside of a newly-fabricated 1,300-gallon (4,921-liter) tank. The victim entered the tank by stepping on the built-in mixing blades. He was wearing a supplied air respirator without an auxiliary self-contained breathing apparatus for escape, as well as a welder’s cap, coveralls, rubber gloves and steel-toe boots.

The co-worker set a 400-watt halogen lamp over the tank entryway to provide lighting. The tank was not of explosion-proof design. The co-worker sat on the top of the tank near the opening to watch the first worker. Using an airless spray gun, the victim began painting the interior of the tank using an epoxy-based paint. He completed the bottom and sides and was starting work on the top of the tank when the spray nozzle hit the light and broke the sealed beam. The vapor from the epoxy ignited in a flash fire and explosion. The victim climbed out of the tank, took off his respirator and walked with the co-worker to the plant office. Both were taken to a hospital emergency room.

The first worker had suffered second- and third-degree burns to 40 per cent of his body. The co-worker had suffered first- and second-degree burns on 12 per cent of his body, and a broken arm from falling off the tank. Both workers were taken to a burn center for treatment. The victim died five days later from respiratory complications resulting from the burns. His co-worker was released from hospital after a week.

Investigation into this accident determined the company did not have a formal safety program which would have identified the two hazards leading to the explosion: use of flammable epoxy and lighting that was not explosion-proof.

Supervisors and workers need to assess each job for safety. A job safety breakdown would have made this crew aware of the hazards of flammable liquids and the need for safe work practices.