Kingman, Arizona

The National Hazardous Materials Fusion Center offers *Hazmat History* as an avenue for responders to learn from the past and apply those lessons learned to future incidents for a more successful outcome. This coincides with the overarching mission of the Fusion Center – to improve hazmat responder safety and enhance the decision-making process during pre-planning and mitigation of hazmat incidents.

Incident Details:

Location and Date

Kingman, Arizona July 5, 1973

Hazardous Material Involved

Propane

Type (mode of transportation, fixed facility)

Railroad Tank Car

Overview

On Thursday July 5th, 1973 at approximately 1:30 pm, two employees of Droxol Propane were in the process of off-loading the contents of the 127 kl (33,500 gal) railroad tank car into two propane storage tanks. When the valves were opened, one of the connections was discovered to be leaking. One of the employees attempted to stop the leak. It is believed that the employee somehow generated a spark that ignited the leaking propane. Both of the employees were either knocked down or fell from the tank car. One of the employees was able to stumble across the street to the Highway Patrol Office to ask for help.

In 1973 the Kingman Fire Department was a combination of 6 career firefighters and 36 volunteers operating out of two stations. Equipment in service at the time consisted of 4 engines and a rescue vehicle. Station 2 was located just 800 m (.5 mi) west of the Droxol Gas Distribution Plant.

Kingman Firefighters received the first call for help at 1:57 pm and arrived on the scene three minutes later. Knowing that they were not properly equipped to extinguish the fire, they attempted to keep the tank cool to avoid an explosion. Police officers from Kingman, officers from the Highway Patrol and deputies from the Sheriff's Office began blocking the roads in an effort to control the gathering crowd. Members of the Fire Department were working to set up unmanned nozzles to increase the amount of water flowing onto the tank.

A large crowd of people had gathered across Route 66 with nothing more than about 185 m (200 yd) of desert separating them from the scene. Officers were ordering them to move back, while others were working to block traffic on the roadway and establish a perimeter around the scene.

The explosion occurred approximately 20 minutes after the original call was received. Flames and debris were sent over 600 m (2000 ft) away. The 2 ton end cap of the tank was propelled down the railroad spur approximately 400 m (.25 mi). The explosion left a 3 m (10 ft) deep crater were the tank once stood. Flaming propane and debris rained down on spectators and buildings in the area. Over 100 people received burns from the explosion, eleven firefighters and one civilian died, either immediately or within days of the incident. Several buildings in the immediate area were ignited by the burning propane, causing further problems to the incident.

Slurry bombers from the Bureau of Land Management, normally used to fight range fires, helicopters from the Highway Patrol, and helicopters from two air force bases joined in to fight the fires and help evacuate the injured. Over 100 casualties jammed the Mohave General Hospital, being transported by the one ambulance, police cars and private vehicles. The most severely burned victims were flown to hospitals in Phoenix about 282 km (175 mi) away or Las Vegas about 160 km (100 mi) in the opposite direction.

The explosion literally shook this tiny town of 7,500 and was reportedly felt up to8 km (5 mi) away.

Lessons Learned/Smart Practices

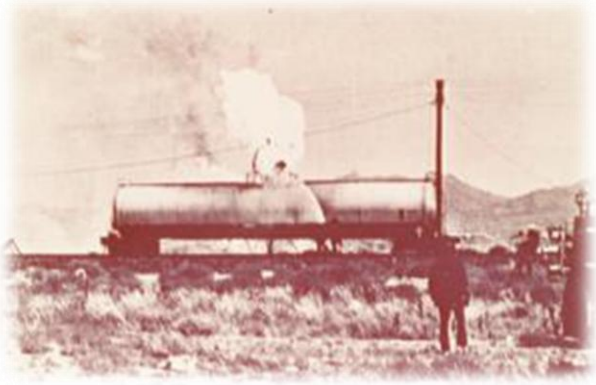
- BLEVEs can be caused by an external fire near the storage vessel causing heating of the contents and pressure build-up. While tanks are often designed to withstand great pressure, constant heating can cause the metal to weaken and eventually fail. If the tank is being heated in an area where there is no liquid, it may rupture faster without the liquid to absorb the heat. Gas containers are usually equipped with relief valves that vent off excess pressure, but the tank can still fail if the pressure is not released quickly enough. If the substance involved is flammable, it is likely that the resulting cloud of the substance will ignite after the BLEVE has occurred.

- Using today's training and resources, like the Emergency Response Guide Book (ERG), you would find that a container of this size involved in fire would require an evacuation of 1 mile

- in all directions. Looking back at this scene, if this information and training was available then, many injuries and even live could have been saved.

- A good "Rule of Thumb" is to flow at least 500 gallons per minute on the top of a container involved in fire for every point of fire impingement with un-attenuated master stream nozzles.

Additional Resources and Pictures



Sources

http://www.withthecommand.com/2003-July/NV-kingman.html

http://www3.gendisasters.com/arizona/7144/kingman-az-tank-car-explodes-in-town-july-1973

http://findarticles.com/p/articles/mi_hb4760/is_200809/ai_n32296414/

http://kingmanhistoricdistrict.com/points-of-interest/firefighters-memorial-park/the-disaster-story.htm

http://www.kingmanfire.com/pages/memorial/doxol.asp