

# Tank Gauging Hazard Alert



Gauging, Thieving,  
Fluid Handling

**PREPARED BY:**

**NATIONAL STEPS**

**NIOSH**

**OSHA**

**OIL & GAS INDUSTRY REPRESENTATIVES**

# Suspected Inhalation Fatalities



- **NIOSH Oil and Gas Sector Program maintains a database, Fatalities in Oil and Gas Extraction (FOG) that collects data on fatal events in the oil and gas exploration and production industry.**
- **Fatalities were identified through a variety of sources including OSHA, media reports, and professional contacts.**

# Suspected Inhalation Fatalities



- **A summary of the data contained in FOG related to suspected inhalation deaths to workers involved in tank gauging, sampling, and fluid transfer activities at oil and gas well sites.**
- **The report can be found at:**  
**[www.cdc.gov/niosh/topics/fog/data.html](http://www.cdc.gov/niosh/topics/fog/data.html)**

# Case Definition



- **Fatalities in the report were associated with tank gauging, sampling and fluid transfer activities at oil and gas well sites where the inhalation of volatile petroleum hydrocarbons is a possible contributing factor.**
- **Many of the 2014 cases are still open so information is limited.**
- **Confined space, fires/explosions, and H<sub>2</sub>S fatalities were not included.**

# Summary Points



- **During 2010-2014, nine fatalities were identified that met the above case definition.**
- **Of the 9 fatalities-**
  - **6 occurred in 2014**
  - **1 in 2013**
  - **1 in 2012**
  - **1 in 2010**
- **3 fatalities occurred in North Dakota, 3 in Colorado, 1 in Texas, 1 in Oklahoma and 1 in Montana.**

# Summary Points



- **All of the fatalities occurred at crude oil (production) tanks**
- **4 of the fatalities occurred during tank gauging**
- **5 fatalities occurred during sampling by pumpers/truckers**
- **All workers who died were working alone or not being observed**
- **In at least one case, the victim had previously experienced health effects and sought medical evaluation**

# Case # 9



- **20 year old male flow tester found unresponsive on a well pad site face down in the upper hatch of a crude oil storage tank.**
- **The victim was gauging the tank.**
- **There was no H<sub>2</sub>S exposure.**
- **Medical examiner reported the cause of death as cardiac arrhythmia and exposure to petroleum hydrocarbon vapors.**

# Case # 8



- **Employee was assigned to an oil production tank battery to gauge and monitor oil production.**
- **Every hour, the employee would gauge each of the 6 tanks on site by climbing up the stairs to the catwalk above and dropping a gauge line into the tank.**
- **The victim was found at the bottom of the stairs next to the tank battery.**



# Case # 7



- **A 59 year old oil tanker driver died while collecting crude oil samples from an open thief hatch.**
- **The employee was wearing a 4 gas monitor which showed an oxygen deficient atmosphere and the presence of hydrocarbons exceeding 100% of the LEL at the time of his death.**

# Case # 6



- **A 57 year old employee working for a transport company was found collapsed on a catwalk adjacent to a crude oil tank.**
- **Time of death was 11:00 AM.**
- **No significant hydrocarbon vapors or H<sub>2</sub>S was detected by emergency responders.**

# Case # 5



- **The employee, 52 years old, lost consciousness while pulling an oil sample out of a thief hatch on a tank.**
- **The employee fell backwards on the 90 degree corner of the catwalk guardrail where his clothing became hooked to the guardrail.**
- **It was determined that he died of natural causes.**

# Case # 4



- **A truck driver pumping and hauling crude oil from a tank battery was found slumped over and non responsive.**
- **He appeared to have been measuring the volume of liquid from the top of the tank battery.**
- **His H<sub>2</sub>S monitor did not alarm.**
- **There were no signs of physical trauma.**

# Case # 3



- **39 year old truck driver was transferring crude oil from a tank battery.**
- **A pumper showed up and found the victim slumped over the railing at the top of the tank battery.**
- **He was wearing an H<sub>2</sub>S monitor.**
- **There was no H<sub>2</sub>S or hydrocarbons detected in the bloodstream during the autopsy.**

# Case # 2



- **21 year old victim had just finished gauging a crude oil tank when he was found non responsive.**
- **The medical examiner ruled the cause of death to be hydrocarbon exposure due to inhalation of petroleum vapors, including propane, butane, and ethane.**
- **Death was ruled work related by worker's compensation.**

# Case # 1



- **The 30 year old victim was found at 3:00 AM slumped over on the catwalk by an oil storage tank at the well site.**
- **Two crew members performed CPR until emergency responders arrived.**
- **CPR was continued until the victim was pronounced deceased at the hospital at 4:35 AM.**

# Tank Gauging Hazard Alert



- **Alert has been put together through the efforts of National STEPS, NIOSH, OSHA, and representatives of the O & G industry of the hazards that can be found when working around tanks containing hydrocarbons.**
- **Sections include:**
  - Hazards that can be encountered by workers
  - Potential effects of exposure
  - Protect yourself
  - Use proper PPE to protect
  - Employers should...



# Tank Gauging Hazard Alert



- Opening Statement:

- ✦ **Opening thief hatches of storage tanks can lead to the rapid release of high concentrations of hydrocarbon gases and vapors. Those may result in very low oxygen levels and toxic and flammable conditions around and over the hatch. Recent reports have documented fires or explosions, and described workers experiencing dizziness, fainting, headache, nausea, and in some cases, death while gauging tanks, collecting samples, or transferring fluids. Tank gauging, thieving, and fluid handling can be performed safely with proper precautions.**

# Tank Gauging Hazard Alert



- **Closing Statement:**



**Your life can change in a  
single breath or with just one  
spark.**