



## ASPHYXIATION

Asphyxiation is described as oxygen deprivation to the organs and tissues within our bodies. Asphyxiation can be caused by obstruction of the airways from medical conditions such as asthma, simple blockages from the presence of foreign materials or from being in environments where oxygen is not readily available such as under water, low oxygen atmosphere where other toxic gases are present or atmospheres that have excessive smoke as a result of fires.

In our industries, the most common hazard relating to asphyxiation is from the presence of toxic or inert gases. The most common types of asphyxiants which maybe present in our processes are CO<sub>2</sub>, CO, SO<sub>2</sub>, H<sub>2</sub>S, N<sub>2</sub> and Propane.

The most common types of incidents due to asphyxiations occurs in confined spaces where the presence of oxygen is reduced.

The highest risk we face is during a shut down when our equipment is shut down and “appears to be safe”.

In a recent incident, during a plant shutdown, an operator had to inspect a column, on one of the stages he found a colleague with his head and shoulders inside the column. The man was pulled out but did not respond. The emergency services attended however the man

was pronounced dead in hospital.

You may ask “How did this happen?”

The column had previously contained a flammable solvent, in order to make it safe for entry it was purged with nitrogen. The manholes had been left open without any warning signs. For reasons unknown, the deceased operator placed his head inside the column. Once his head was inside, he would have inhaled nitrogen and become unconscious. Although nitrogen is an inert gas present in our environment, when the concentration of oxygen decreases below the lower limit (19%) for life the environment becomes hazardous to life.

Once we breathe an atmosphere low in oxygen it affects the blood supply to the brain, it impairs judgement, it reduces co-ordination, it reduces muscle strength and death can follow rapidly. Those that have survived, report “taking deep breath but still feel like they are suffocating.”

In the USA over a 10-year period nitrogen has contributed to 80 fatalities and 50 injuries.

How can you as a Safety Manager or responsible person prevent such an incident?

**Risk Assessment?** Have you conducted a risk assessment to identify the potential asphyxiation hazards in your process?

**Safety Procedures?** Do you have detailed procedures on isolation and preparing a vessel for confined space entry? Has the procedure been prepared by a competent person?

**Equipment?** Do you have an oxygen monitoring device to measure oxygen content in a vessel? Do you have procedures to calibrate the oxygen meter?

Have your staff been trained on the hazards of the asphyxiants on site?

You can view the video on Hazards of Nitrogen Asphyxiation at <http://www.mhiriskengineers.com/news>

*MHI Risk Engineers is an AIA for the MHI Regulations. We perform process safety training/ consulting and risk assessments for all your regulation requirements.*



## News from around the world

### **WAYN FARMS – Chemical Spill**

DOTHAN, Ala. — A Wayne Farms processing plant in Dothan, Alabama, was evacuated on June 26 following a chemical spill.

The company said a commercial supplier delivering and handling industrial chemicals accidentally caused a chemical reaction to occur in a building adjacent to the main plant.

Two people were taken to a local hospital for observation and treatment. One was a chemical company worker and the other was a Wayne Farms employee, according to company spokesman Frank Singleton.

“There were no other injuries. After technicians cleaned the spill area of any chemical residue, the plant was reopened for the second shift and normal operations,” Singleton said. As of June 27, the facility was fully operational.

### **CANNABIS INTOXICATION OF EMPLOYEES**

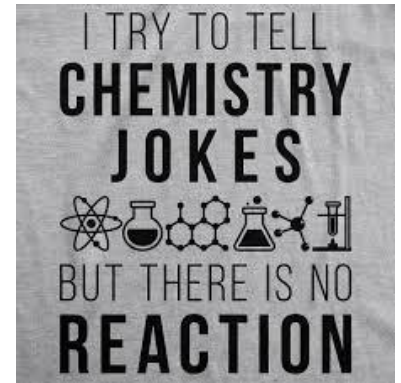
TOPEKA, Kan. (AP) — A man local Kansas authorities say was using a blow torch to cut into what he thought was an empty metal drum died after the drum exploded.

The Topeka Fire Department says in a news release that the explosion happened Friday evening near a maintenance building at the Heartland Motorsports in Topeka. Firefighters arrived to find 41-year-old Joshua Darryl Aubert suffering from critical injuries. Officials say he died at the scene.

Investigators say while Aubert thought the drum was empty, it was labelled as containing methanol, which is a highly volatile compound.

Officials have listed Aubert's death as accidental.

*Just for the FUN of it*



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