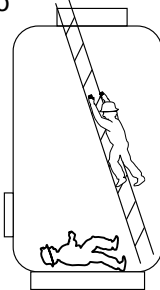


Gas in Confined Spaces: Illustrating the Dangers

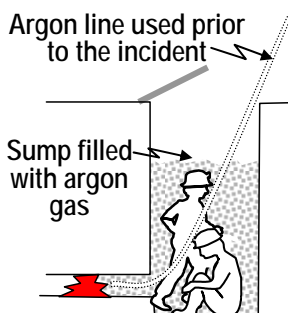
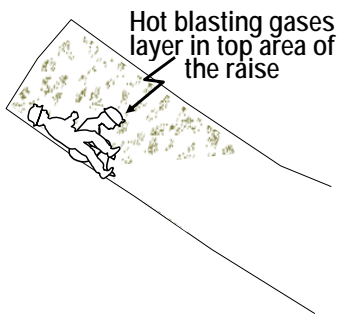
WHEN THE RESCUER BECOMES A VICTIM

... A cellarhand entered a wine tank to remove a mixer. He succumbed immediately to gas inhalation and fell unconscious. The Foreman and another employee tried to get to him. The Foreman also inhaled the gas and fell unconscious. Other employees managed to remove both men from the tank and resuscitation initiated immediately. However, both men died.



... A Winch Operator was fatally injured in an underground mine on entering a raise that was poorly ventilated and gassed. A miner and assistant involved in the rescue were also affected by the fumes and hospitalised for observation.

... In a similar incident, the face of a re-raise was blasted and broken rock from the blast completely choked the raise at the position where the inclination changed. This prevented the ventilation of toxic blasting gases from the area behind the broken rock. After testing for gas behind the broken rock, one team member entered the raise to remove a loose rock further up the re-raise which posed a danger to cleaning operations below. When he did not return, a second person went in to investigate. The team leader noticed that both men were missing and, with the rest of the team, was able to get them out. Both men were overcome by toxic gases. The person who entered first was revived. The second person to enter died.

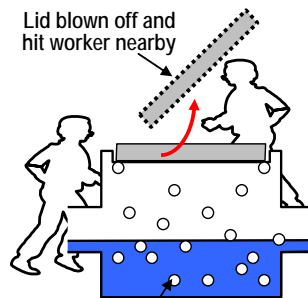
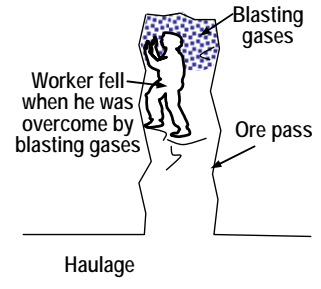


... Argon gas was used to clean a connecting pipe between a sump and a trench. While the operator who used the argon was taking a break, a colleague entered the sump and was overcome by the gas. When he was discovered, electrocution was suspected, due to the presence of a submersible electrical pump used for removing accumulated water from the sump. The electrical power was immediately isolated for safe rescue. However, the rescuer on entering the sump also fainted and asphyxiation was then suspected. Both victims were extricated after flushing the sump with compressed air. Despite first aid, both died.

GAS ENVIRONMENT CAUSES OTHER DANGERS

... A Rock Drill Operator was overcome by blasting gases when he entered a box hole. He fell down the box hole and was fatally injured.

... During the blasting of a drop raise, it was discovered that the orepass did not blast through. A contractor drill operator entered the orepass from the bottom to inspect the "frozen" rock and fell after being overcome by noxious gases.



CO gas escaped from flume water and accumulated in flume void area

... A contractor artisan doing maintenance work near a gas scrubber flume set off an explosion. The flume lid was blown off by the blast and hit his colleague nearby. It is thought that carbon monoxide, which is flammable in high concentrations, escaped from the flume water and had accumulated in the flume void area.

NOT JUST INDUSTRIAL SETTINGS...

... People have been overcome by toxic gases in less likely places too - where they have lit a fire in a security cabin, hut or even a tent to keep warm. Adequate ventilation in these potentially confined spaces must be considered.

... Fire suppression systems that release gas on detecting smoke and fire have been installed in many areas such as electrical sub stations, offices, laboratories, etc. This creates a risk of electrocution with the water or foam.

... Argonite is often used in fire suppression systems to reduce the risk of asphyxiation. Its density is similar to that of normal air so it avoids the dangers of gas layering. These systems are designed to reduce oxygen levels enough to extinguish the fire but still sustain life to enable rescue.

DID YOU KNOW? ...

The effects of asphyxiation is the reason passengers on airplanes are told to fit their own oxygen mask first before attempting to assist anyone else in case of a loss of air pressure.