CCPS 20 YEARS
CENTER FOR CHEMICAL PROCESS SAFETY
An AIChE Industry Technology Alliance

Process Safety Beacon

http: //www.aiche.org/ccps/safetybeacon.htm

Messages for Manufacturing Personnel

CCPS Welcomes CEC Combustion Services Group as a New Member

October 2005

Gas Leak Destroys Plant

Here's What Happened

This foundry suffered a natural gas explosion that resulted in three fatalities, six hospitalizations, and $30 million U.S. in damages. The portion of the facility where the explosion occurred was completely destroyed. One of the fatalities occurred at the time of the initial explosion, but two others were caused by a collapsing building. Evacuation from building in the facility and emergency response efforts were hampered by acrid smoke and a broken water main.

Photographs and incident description supplied by CEC Combustion Services Group: http://www.combustionsafety.com.

How Did This Happen?

Although the facility handles both propane and natural gas, evidence suggests that an undetected natural gas leak slowly supplied gas to a confined space. It reached an explosive level and found an ignition source.

There were several warning, or near-misses, before the explosion. Twice the preceding week, gas odors had been detected. In the first incident, the leak source was never found and the odor was blamed on wind blowing the gas "smell" into the building from outside. The second near-miss resulted in a plant evacuation and occurred because a tank outside of the building leaked gas into a pipe that opened in the building. Both incidents contributed to a desensitization of the hazards of natural gas.

PSID Members see
Free Search: Natural Gas

Did You Know?

- Not all natural gas or propane is odorized. Usually a mercaptan is added as the odorant.
- The lower explosive limit for natural gas is only 4.3% by volume in air. It takes very little to get in to the explosive range.
- Not all flammable vapors behave the same. Usually, natural gas and hydrogen are lighter than air and may accumulate in high spaces. Propane is heavier than air and flows along the ground like a river of vapor that pools in low spots.

What You Can Do

ALL gas leaks are dangerous! Even very small leaks can supply enough fuel to cause a destructive explosion. Report, find and correct every gas leak.

If you smell gas, **SAFELY** evacuate the area. Do not turn on lights or equipment that might supply an ignition source. Stop all hot work IMMEDIATELY!

To stop a leak, be aware that closing valves or shutting down equipment may provide an ignition source. Know where remote shut off valves and switches are and use them.

When you test for explosive atmospheres be sure to use the right type of test equipment that is calibrated according to manufacturer's recommendations and specifications.

Once the leak is controlled, **ventilate confined spaces carefully!** When you ventilate a fuel rich atmosphere, it will pass through the explosive range and any ignition source will cause an explosion.

Don't Ignore Even Small Fuel Leaks. Test Suspicious Atmospheres.

The Beacon is usually available in Arabic, Chinese, Dutch, English, French, German, Hebrew, Hindi, Portuguese, and Spanish.
Circle No 103 on p. 79 for a free electronic subscription to the Beacon