

February 2004

## Flammable Gas in Enclosed Space = BOOM !



### How This Relates to Process Safety and What You Can Do to be Safe !

**This event may seem to have little relationship to process safety in chemical plants, but NUMEROUS building and vessel explosions have occurred under similar conditions!!!**

- Storing flammables of any kind in an enclosed area is risky business. Small leaks can lead to flammable mixtures in a portion of, or an entire building. Then, only an ignition source is needed—and, ignition sources are very easy to find!
- Store flammable liquids in containers and cabinets specially designed for such use. Be especially alert for solvents used in maintenance activities.
- Store flammable gases in the open or well ventilated areas so that small leaks can dissipate and NOT accumulate. Particularly watch out for instrument calibration gases and welding bottles.
- Remember that some gases are heavier than air and some are lighter. Provide the appropriate ventilation.
- Know and consider where and how explosive mixtures might accumulate in piping systems or process vessels, such as in the head space of atmospheric tanks. Be prepared to recognize when flammables are present and react quickly to prevent ignition.

### Here's What Happened:

A pickup truck with a small cylinder of acetylene stored in the cab was parked for the weekend. Unfortunately, the cylinder had a VERY small leak. Because all the windows were closed, a flammable atmosphere was developed inside the truck's cab. When the owner returned on Monday and opened the door---BOOM. You can see the results.

### How Did This Happen?

- Acetylene is one of those gases that has a very wide flammability range. In fact, acetylene is flammable in concentrations from 2.5% to 82% in air.
- It took only a very small leak to eventually fill the cab of this truck with the ¼ pound of acetylene needed to reach a flammable mixture.
- When the door was opened, the flammable mixture "found" an ignition source.
- In this case, the driver was seriously injured, but luckily, was not killed.

***Flammable materials in unventilated areas is an explosion waiting to happen!***