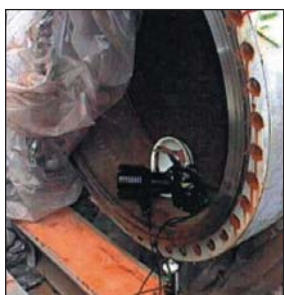


## Hazards of Temporary Confined Spaces



Do you think you could create a dangerous confined space by pulling the black plastic sheet over the open pipe end in the picture? **YES**, this can create a dangerous confined space! Two workers used the black plastic sheet to block sunlight so they could use a “black light” to inspect the open pipe. Unfortunately, approximately 150 feet away, and several floors below this work location, there was an open nitrogen line connected to the piping. The nitrogen flowed through the pipe and out of the open pipe end shown. The black sheet used to cover the open pipe end provided sufficient confinement to trap nitrogen under the sheet in the work area and create a hazardous oxygen deficient atmosphere. One worker under the sheet was killed by nitrogen asphyxiation, and another was severely injured.



There were a number of other people working in the immediate area, but the low oxygen atmosphere incapacitated the workers under the sheet so quickly that they passed out before they realized that they were in danger, and they never cried for help. They were only discovered when a somebody nearby saw a hand sticking out from under the sheet and got no response when he called to the worker.

### Did you know?

- A hazardous confined space can be created by anything that can restrict air flow and ventilation required to maintain a safe atmosphere for breathing.
- The hazardous atmosphere can result from toxic vapors, or from reduction of the oxygen content of the atmosphere in the confined space by inert gases such as nitrogen or carbon dioxide.
- Any open process vessel or pipe is a potential source for vapors, which can create a hazardous atmosphere.
- Hazardous vapors can travel long distances through connected piping and vessels, and can be released through an open pipe or vessel far away from the source of the vapor.

### What you can do

- Recognize potentially hazardous confined spaces and follow your facility's procedures for safely working in confined spaces.
- Do not go into an area with little or no ventilation, and open vessels, pipes, or other open process equipment, without proper work permits and monitoring of the atmosphere to ensure that it is safe.
- Remember that you may have to follow open pipes for many hundreds of feet to ensure that all sources of potentially hazardous contaminants are properly disconnected, blinded or otherwise isolated.
- If you change the conditions in a work area (for example, working under the plastic covering the pipe end), make sure that you have qualified people do a field hazard evaluation to identify hazards and provide appropriate controls.
- Review the April 2004 CCPS Process Safety Beacon for more information on the hazards of nitrogen asphyxiation.

**Recognize confined spaces and treat them with respect!**

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