

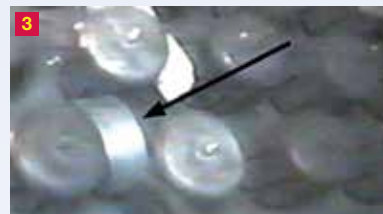
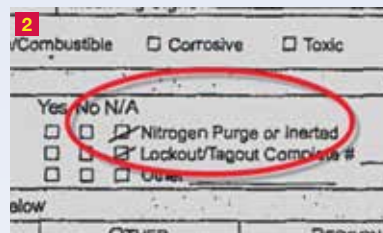
Safe Work Practices

A maintenance crew was reinstalling piping at the top of a reactor in a refinery. The reactor was being purged with nitrogen to keep oxygen in the air from contacting the catalyst inside, and the top of the reactor was open (Photo 1). A sign indicated that the reactor was a confined space and a permit was required for entry, but no sign warned about the presence of nitrogen. On the job permit, the box indicating “Nitrogen Purge or Inerted” was checked “N/A” — Not Applicable (Photo 2).

When the maintenance workers began the job, they observed a roll of duct tape inside the reactor (Photo 3), which would have to be removed. They attempted to remove the tape from the outside using a long wire to hook the tape, without success. What happened next is not clear. A worker may have intentionally entered the reactor to remove the tape, intending to quickly exit. Another possibility is that the worker tried to get closer to the tape by sitting on the edge of the reactor opening, and either slipped and fell in, or lost consciousness from the reduced-oxygen atmosphere near the reactor opening and fell into the reactor.

A co-worker observed the unconscious man inside the reactor and entered it himself in an attempted rescue. He also lost consciousness and collapsed. A properly equipped rescue team arrived and removed the unconscious men, but it was too late. Both were pronounced dead at the hospital.

The U.S. CSB report and video on this incident can be found at <http://www.csb.gov/valero-refinery-asphyxiation-incident/>.



Did You Know?

- The term *safe work practices* refers to the processes we use to authorize nonroutine work activities, and to control the hazards and manage the risks associated with these activities.
- Safe work practices often authorize work through permits, which frequently include checklists of potential hazards associated with the work.
- A nonroutine activity has nothing to do with how often the activity is done. Instead, it refers to activities that are *not* part of the normal process for converting raw materials to finished product, and *not covered* by the plant's standard operating procedures for normal operations.
- Some examples of safe work practices: line breaking, vessel entry, other confined-space entry, control of energy sources, lockout-tagout, hot work permits, elevated-work permits, excavation in process areas.

What Can You Do?

- Understand all of the safe work practices in your plant and your work area, including authorization and permit systems. Know what activities require a permit, and what the process is for obtaining a permit.
- If you are authorizing nonroutine work activities covered by your plant's work permit systems, make sure you are properly trained, understand the permit systems, and understand the hazards associated with the work.
- If you issue a permit, make sure the people doing the job understand all of the hazards.
- Don't rely on others to verify that a system is properly prepared for the work. If you are going to sign the permit, check everything yourself.
- If you are doing the nonroutine work activity, make sure that you have the required permit, follow all of the required procedures to control hazards, and use the proper personal protective equipment. If the job changes while in progress, contact the person authorizing the work for permission and to determine whether any additional safety precautions are needed.

Understand your plant's work permit systems!

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