CASE VII

A worker was assigned to clean out sludge in the large degreaser he had been operating. His supervisor advised him to use gloves and respiratory protection before entering the degreasing tank and told him to make sure he had a co-worker watch him while he worked. An hour later, the supervisor noted the co-worker eating lunch. He asked the co-worker where the degreaser operator was. The co-worker responded that the operator had told him to go to lunch, and that he would be finished in the degreaser in five minutes. The supervisor and co-worker went immediately to check on the operator, whom they saw face down in the degreasing tank. The supervisor hurriedly descended into the tank to rescue the worker, but had to leave without retrieving him when he immediately began to feel light-headed. The co-worker called the emergency responders who, equipped with self-contained breathing apparatus, retrieved the unconscious operator. The operator survived, but spent several days in the hospital recuperating and has experienced some memory loss and problems with coordination.

What could have been done to prevent this incident and similar situations in the future?

Guide and Background Information for Case VII

Explain that this is a typical confined-space incident, in which the rescuer is as likely (or more likely) to be injured as the initial victim. In more than half the recorded cases, the unprepared rescuer has also been a fatality.

Other pertinent facts include:

- The degreaser operator had not received training in proper use of respiratory protection or confined-space entry procedures.
- The operator was able to work in the pit for at least an hour before being overcome because:
  - His organic vapor respirator did provide protection against the initial concentration of solvent vapors in the tank.
  - The tank was not an oxygen deficient atmosphere initially (although under other circumstances, it might have been one), but became one later.
  - The worker stirred and shoveled up the sludge. Solvent vapors were released from air pockets in the solid material, so the concentration of vapors increased in the tank, and began to displace oxygen. The respirator no longer protected him because the absorbent material had become saturated with the solvent, and more important, the respirator could not supply oxygen (which had

been depleted by the end of the hour). When trying to rescue the worker, the supervisor began to experience the effects of a lack of oxygen.

- The cloth gloves the worker wore may have added to his solvent exposure, because they may have allowed the solvent to be absorbed through the skin.

Possible Solutions for Case VII

1. The job indicated poor or no planning. The operator, co-worker, and supervisor should have received training on the hazards and proper procedures for entry into confined spaces. These include:
   a. Use of a permit entry system
   b. Pre-entry sampling of the atmosphere for flammable or toxic gases and vapors
   c. Use of air-supplied or self-contained breathing apparatus where dangerous chemical exposures could occur, as well as impervious clothing
   d. Use of lifelines and belts to aid in retrieval, if necessary
   e. Presence of an attendant throughout the duration of the work
2. The supervisor should have completed a confined-space entry permit and communicated to the operator the equipment and precautions that were necessary, and ensured that these were used.
3. The operator should have received training in the proper use of respiratory protection and protective clothing, and the distinction between air-purifying and air-supplying respirators.
4. Hazard communication training should have been provided to these workers to acquaint them with the toxic properties of the chemicals they worked with.

Summary

Better training should be provided and procedures instituted to prevent future incidents of this type. The hazards of the confined space should be assessed and understood before anyone attempts an entry.