Respiratory Protection Fatality File

Electroplater and Four Co-workers Die from Asphyxiation in Metal Plating Vat

The employer is an electroplating company with 31 employees most of whom are electroplaters. Employees with at least 1 year of experience had attended a one-time training session on chemical hazards from a hazard communication training company. New employees receive a brief orientation on the chemicals used in the plating operation and the location of Material Safety Data Sheets (MSDS), and then take a “chemical awareness test” which is a review of the information received. Electroplaters are required to wear personal protective equipment (boots, gloves, aprons and safety glasses). Acid-mist cartridge-type respirators had been issued to two electroplaters and the wastewater treatment operator but were available for use by any of the workers.

At the time of the incident the employer had no written safety program, no plant emergency procedures, no on-going safety training, no confined space safe entry procedures, and did not conduct safety meetings with employees.

The victim was not wearing any respiratory protective equipment and the only personal protective equipment (PPE) he was wearing were gloves, boots and an apron. Within a few minutes hydrogen cyanide vapor formed in the tank due to a chemical reaction between the muriatic acid and zinc cyanide. About 4 minutes after he had entered the tank, co-workers observed the victim trying to climb out but then falling back into the tank. Four co-workers entered the tank in an attempt to rescue the victim. They were wearing varying amounts of PPE but no respiratory protective equipment. They all collapsed inside the tank. Other co-workers,

seeing these workers collapse, also made varying rescue attempts. By this time, as the chemical reaction continued, most of the co-workers who entered the zinc plating room were unable to even get close to the holding tank because of the hydrogen cyanide vapor. However, one co-worker (without respiratory protection) removed one of the four collapsed co-workers (who was bent over the top of the tank with his head down inside) and administered cardiopulmonary resuscitation.

The city police, state police, and fire department were notified. Personnel from these departments arrived within approximately 15 minutes and began removing the workers from the zinc cyanide holding tank. Firefighters were wearing full turnout gear (standard PPE for firefighters) with self-contained breathing apparatus (SCBA). Police officers were not wearing any respiratory protective equipment or PPE.

The county coroner pronounced the electroplater (victim) and three of the co-workers attempting rescue dead at the scene. The fourth co-worker was taken to the local hospital where he died 2 days later. In addition to the 5 fatalities, 30 individuals received medical treatment for toxic exposure to hydrogen cyanide vapor:

- 2 company workers hospitalized.
- 10 company workers treated and released.
- 1 police officer hospitalized.
- 3 police officers treated and released.
- 13 firefighters treated and released.
- 1 medical examiner treated and released.