CSB Releases 7 Guidelines To Reduce Workplace Explosions

Dinesh Ramde, Associated Press Write

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MILWAUKEE (AP) — There was no reason to think the storage tank was unsafe. All it contained was recycled water and organic waste.

So when a damaged part needed repair, three workers approached the top of the 80-foot-tall tank on a catwalk and one worker began welding.

Moments later an explosion tore through the massive tank. All three workers were killed, including two who were thrown 80 feet to the ground. A fourth worker was injured.

Accidents such as this, which occurred in 2008 at a Packaging Corporation of America plant in Tomahawk, Wis., could have been avoided with a simple test, a federal agency said Thursday.

The U.S. Chemical Safety Board issued seven guidelines designed to prevent workplace explosions. The main recommendation: Always monitor air for the presence of flammable vapors before doing any "hot" work, which includes welding, grinding or other spark-producing activities.

"People should be aware of these hazards," said Don Holmstrom, an investigation supervisor with the agency. "We don't want people to discover they're working in a flammable atmosphere when they have an explosion."

The safety board developed its guidelines after investigating more than 60 deaths in industrial explosions nationwide over the past 20 years. Each explosion was sparked when workers performed "hot" tasks near pockets of flammable vapors, the agency said.

"Tragically, most of these accidents are readily preventable with better hazard assessments, proper gas monitoring and other straightforward safety measures," CSB member William B. Wark said.

In some cases the workers didn't expect any flammable gases in the areas where they were working, the board said. In other cases they assumed the concentration was too small to be dangerous.

In the case of Packaging Corp., a Chemical Safety Board analysis determined that hydrogen, a byproduct of bacteria feeding on the organic waste, built up in the tank. The welding apparently ignited the gas.

Analyzing an air sample is simple. Holmstrom said most industrial companies already have handheld combustible-gas detectors, which workers use in areas where they suspect the presence of flammable gas.

The typical detector provides a reading in seconds, meaning workers can prevent explosions by developing a simple habit — testing the air whenever they do "hot" work, even if they have no reason to believe flammable vapors are anywhere near.

"We're recommending broadly they do an analysis in, around and on tanks, but we're not making explicit recommendations to OSHA to change their regulations," Holmstrom said.

OSHA, or the U.S. Occupational Safety and Health Administration, prohibits hot work directly in flammable areas and "in the presence of explosive atmospheres." That includes dirty tanks and those that previously contained flammable materials.

But it doesn't specify that gas concentrations be measured. The handheld monitors give a reading that warns workers when the concentration is 10 percent or more of the explosive level.

OSHA Assistant Secretary David Michaels said his agency will need time to consider the Chemical Safety Board's report.

While it might seem obvious to monitor and test the air before doing potentially explosive work, there continues to be explosions across the U.S. that kill workers and leave others with serious burns.

Holmstrom said most companies do only as much testing as OSHA requires, which is why his board is examining OSHA's regulations.

The Chemical Safety Board studied five accidents since 2008 where hot work ignited flammable gas: the Packaging Corp. blast; an explosion at A.V. Thomas Produce in Atwater, Calif., in 2009 that severely burned two; a blast that killed one and injured another at EMC Used Oil in Miami; an explosion at MAR Oil in La Rue, Ohio, that killed two contractors; a blast at Philip Services Corp. in Kapolei, Hawaii, that killed one worker and injured three.

The board also looked at two 2006 explosions: one at the Partridge-Raleigh Oilfield in Raleigh, Miss., that killed three and injured one, and a second at Bethune Point Wastewater Plant in Daytona Beach, Fla., where two workers died and one was injured.

In at least four other explosions since 1995, workers followed improper procedure when testing for gases. They include the ignition of a massive gasoline tank that killed three at a TEPPCO Partners facility in Garner, Ark.; a blast at ConAgra Foods in Boardman, Ore., that killed a welder; an explosion that killed one and injured eight at Motiva Enterprises Refinery in Delaware City, Del., and a blast at Pennzoil Refinery in Rouseville, Pa., where five people died.

The Chemical Safety Board makes safety recommendations but doesn't issue citations or fines.

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