

Know when to leave!

July 2015

In April 1995, a manufacturing plant in New Jersey was preparing a product blend which included sodium hydrosulfite, aluminum powder, potassium carbonate (all solid materials), and a small amount benzaldehyde (a liquid). The mixing was done in a 6 cubic meter blender. An exothermic reaction occurred, likely due to water contamination. Employees were evacuated from the building, but later several workers returned to attempt to empty the blender. While they were doing this, the blender exploded causing five fatalities (all were in the blender room) and injuring four others.



In April 2004 an operator in a batch polyvinylchloride plant in Illinois inadvertently opened a valve on the wrong reactor. The reactor was in the reaction phase of the process and contained vinyl chloride monomer under pressure. A large cloud of flammable, toxic vinyl chloride was released into the building. Operators and a shift supervisor tried in vain to stop the release, and did not evacuate. The flammable cloud ignited and exploded, destroying the plant. There were five fatalities (including the operators who were trying to stop the release) and three injuries. For more information on this incident, see the June 2013 *Beacon*.



In June 2005 there was a fire in a gas cylinder filling and distribution facility in St. Louis, Missouri. The facility contained thousands of cylinders of flammable gas. A relief valve on a propylene cylinder opened on the extremely hot day, and the released gas ignited starting the fire. The fire spread rapidly, engulfing most of the facility within 4 minutes, and causing other cylinders to explode. All people in the facility evacuated immediately and the fire department did not attempt to enter. Although the death of one neighbor was attributed to an asthma attack triggered by smoke, there were no fatalities among the site workers and visitors who promptly evacuated.

What can you do?

In the first two incidents described, workers were fatally injured when attempting to respond to a serious abnormal event – an unexpected exothermic reaction in a vessel, and a large release of flammable vapor into a building. It is likely that they thought they could “save the day,” but either had insufficient information or didn't consider the risk. In the third incident, workers and visitors promptly evacuated the facility, fire fighters maintained a safe distance from the fire, and there were no fatalities among the workers, visitors, and fire fighters.

If there is an unexpected reaction in a vessel, you do not know when the reaction might develop enough pressure to cause the vessel to rupture. When there is a large release of a flammable vapor, all it needs is an ignition source to burn or explode. Never put yourself in danger by remaining in the area if this happens in your plant. Know your facility emergency plans, participate in drills, and know when to evacuate or shelter in a safe place.

Know what can go wrong in your plant, when you should evacuate, and when to shelter in place!

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