Chemical & Process Safety: Lessons from Past Explosions Fatality File



Explosion in Chemical/Drying Process

At approximately 10:00 p.m. on December 8, 2020, an employee was standing on a second-floor catwalk above a double-cone dryer in a chemical processing plant when the dryer exploded during its first-run drying operation of a chlorinated solid material. The blast resulted in fatal blunt-force trauma to the worker, who was transported to the hospital and later died from the injuries.

Investigators found that the dryer’s design and startup procedure failed to account for pressure buildup and reactive energy during the first-run, and the operator’s location placed him directly in the blast zone. The explosion released metal fragments and unspecified hazardous material around the area. The employer lacked appropriate process hazard controls, lacked documented safe start-up procedures for first-runs of reactive chemical processes, and did not conduct a proper hazard evaluation for the drying operation.

This incident demonstrates how process safety failures—such as untested first-run conditions, inadequate safeguards for reaction/pressure hazards, and missing operator protection—can escalate into deadly explosions. It serves as a strong reminder that every operation, not just heavy chemical plants, must manage reactive hazards, ensure safe startup and shutdown procedures, and protect workers near process equipment.

Source: Osha.gov