Investigation of the Jahn Foundry and CTA Acoustics Dust Explosions: Similarities and Differences

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Abstract

The Jahn Foundry in Springfield, Massachusetts and CTA Acoustics in Corbin, Kentucky experienced catastrophic dust explosions in 1999 and 2003, respectively. Jahn Foundry was a gray iron casting facility that used phenolic resin powder as a binder for sand castings. CTA Acoustics was a manufacturer of thermal-acoustic insulation that used phenolic resin powder as a binder for fiberglass mats. In both facilities the phenolic resin was able to migrate from the process area, accumulate within the facility, and fuel catastrophic dust explosions.

In this paper we review Exponent’s investigation of the two incidents, and identify the root causes of the incidents and applicable standards that, if followed, could have prevented or mitigated the incidents. Throughout the paper we identify similarities and differences between the two facilities. For instance, in both facilities, hazardous levels of dust had been allowed to accumulate due, in part, to poor housekeeping. However, a significant difference between the two facilities was that Jahn Foundry had no dust collection systems, while the CTA Acoustics facility had dust collection systems designed to prevent the release of dust into the plant. The paper summarizes lessons learned from these two incidents that should be remembered when designing new facilities and analyzing hazards at existing facilities.