



U. S. Chemical Safety and Hazard Investigation Board RECOMMENDATIONS STATUS CHANGE SUMMARY

Report:	NDK Crystal, Inc. – High Pressure Vessel Rupture
Recommendation Number(s):	2010-04-I-IL-R3
Date Issued:	November 14, 2013
Recipient:	Office of the Illinois State Fire Marshall (IL-OSFM)
New Status:	R3: Closed – Acceptable Action
Date of Status Change:	March 31, 2015

Recommendation Text(s):

Prohibit the use of the existing pressure vessels at the NDK facility for crystal growing operations.

Board Status Change Decision:

A. Rationale for Recommendation

On December 7, 2009, a 50-foot pressure vessel used to produce synthetic crystals ruptured at the NDK Crystal facility in Belvidere, Illinois. The vessel, located in an enclosed building, generated several projectiles when it ruptured that resulted in one fatality and one injury to members of the public, and significant property damage to both NDK Crystal and an adjacent business.

The CSB determined that although the caustic sodium hydroxide solution used inside the NDK pressure vessels was known to be corrosive to carbon steel, the vessels received their initial certification from the state of Illinois for noncorrosive service. As a result, the state only required the vessels' exteriors to be inspected along with their safety relief valves. No internal inspections were performed, and the December 7, 2009, rupture of one of the vessels resulted from internal stress corrosion cracking.

Based on this finding the Board voted to issue a recommendation to the IL-OSFM to prohibit the use of the existing pressure vessels at the NDK facility for crystal growing operations.

B. Response to the Recommendation

In April of 2014, the IL-OSFM responded to the CSB that the use of the remaining/existing vessels at the NDK location had been prohibited and that notes had been entered into the IL-OSFM's pressure vessel database pertaining to the NDK location indicating the same. The CSB received documentation of the database notes in February 2015.

C. Board Analysis and Decision

As the actions taken by the IL-OSFM appear to satisfy the intent of CSB Recommendation No. 2010-04-I-IL-R3, the Board voted to change its status to: **“Closed – Acceptable Action.”**