



# U. S. Chemical Safety and Hazard Investigation Board

## RECOMMENDATIONS STATUS CHANGE

### SUMMARY

<b>Report:</b>	NDK Crystal, Inc. – High Pressure Vessel Rupture
<b>Recommendation Number:</b>	2010-04-I-IL-R2
<b>Date Issued:</b>	November 14, 2013
<b>Recipient:</b>	National Board of Boiler and Pressure Vessel Inspectors (NBBI)
<b>New Status:</b>	R2: Closed – Acceptable Action
<b>Date of Status Change:</b>	June 24, 2014

#### Recommendation Text:

*Communicate the findings of this Case Study to pressure vessel inspectors in all 50 states. At a minimum:*

- a) *Send the information (such as an article summarizing the investigation) to each member who is a pressure vessel inspector; and,*
- b) *Post a direct link to the NDK Case Study on the National Board's webpage.*

#### 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 NDK Crystal and to 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.

Because the National Board of Boiler and Pressure Vessels Inspectors (NBBI) promotes safety through training, enforcement guidance, and the development of standards such as the National Board Inspection Code, the Board issued this recommendation.

##### B. Response to the Recommendation

On November 25, 2013, the Executive Director of the NBBI sent an e-mail to all national board members advising them of the publication of the CSB's NDK Crystal Case Study. A link to the CSB Case Study was also placed on the NBBI Resources web page.

##### C. Board Analysis and Decision

As the actions taken by the NBBI met the intent of CSB Recommendation No. 2010-04-I-IL-R2, the Board voted to change its status to: "Closed – Acceptable Action."