



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

Report:	Optima Belle LLC Explosion and Fire
Recommendation Number:	2021-02-I-WV-R11
Date Issued:	July 6, 2023
Recipient:	Occupational Safety and Health Administration (OSHA)
New Status:	Open – Awaiting Response or Evaluation/Approval of Response
Date of Status Change:	Not Applicable – Initial Status

Recommendation Text:

Update the Chemical Reactivity Hazards website (<https://www.osha.gov/chemical-reactivity>) to include various reactivity assessment tools developed since the 2002 Index-Based Method for Assessing Exothermic Runaway Risk and the 2004 Preliminary Screening Method. Mathematical methods, thermal analysis methods (e.g., Accelerating Rate Calorimeter (ARC) testing), ASTM E1231-19 Standard Practice for Calculation of Hazard Potential Figures of Merit for Thermally Unstable Materials, Stoessel Criticality, and the O.R.E.O.S. Method (an assessment that combines Oxygen balance calculations, the Rule of 6, and the Explosive functional group list with Onset decomposition and scale) are tools that could be considered for the update. The “Additional Resources” section of the website should also be evaluated for necessary changes and updates.

Board Status Change Decision:

A. Rationale for Recommendation

On December 8, 2020, a metal rotary cone double dryer containing a chlorinated isocyanurate compound (trade name CDB-56®) exploded following a decomposition reaction that resulted in a fire and toxic chlorine release at the Optima Belle LLC (Optima Belle) facility in Belle, West Virginia. The explosion occurred while Optima Belle, a toll manufacturer, was dehydrating CDB-56® on behalf of Clearon Corporation through a contractual agreement with Richman Chemical Inc.

One Optima Belle employee was fatally injured in the explosion, two others were evaluated for respiratory irritation, and one member of the public reported a minor leg injury. Debris from the explosion was found almost a half-mile from the incident. Local authorities issued a shelter-in-place order for a two-mile radius for over four hours. The facility experienced an estimated \$33.1 million in property damage.

The U.S. Chemical Safety and Hazard Investigation Board (CSB) investigated the incident and found several safety issues including ineffective process knowledge management, a lack of thermal hazard assessment, ineffective selection of process equipment, shortcomings in industry practices related to tolling hazardous materials, and a lack of regulatory coverage of reactive

hazards under the Occupational Safety and Health Administration's (OSHA's) Process Safety Management standard (PSM) and the Environmental Protection Agency's (EPA's) Risk Management Program rule (RMP). As a result of these findings, the CSB issued three recommendations to the Occupational Safety and Health Administration (OSHA). This status change summary addresses **CSB Recommendation No. 2021-02-I-WV-R11**.