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

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| **Report:** | Optima Belle LLC Explosion and Fire |
| **Recommendation Number:** | 2021-02-I-WV-R1 (R1)<br>2021-02-I-WV-R2 (R2)<br>2021-02-I-WV-R3 (R3)<br>2021-02-I-WV-R4 (R4) |
| **Date Issued:** | July 6, 2023 |
| **Recipient:** | Optima Belle LLC (Optima Belle) |
| **New Status:** | R1: Open – Acceptable Response or Alternate Response<br>R2: Open – Acceptable Response or Alternate Response<br>R3: Open – Acceptable Response or Alternate Response<br>R4: Open – Acceptable Response or Alternate Response |
| **Date of Status Change:** | December 20, 2023 |

**Recommendation Text:**

***2021-02-I-WV-R1***

*Develop and implement a written thermal and reactive hazards evaluation and management program. The program should adhere to industry guidance provided in publications such as the Center for Chemical Process Safety's Essential Practices for Managing Chemical Reactivity Hazards. At a minimum, the program should identify the process that Optima Belle will use to manage chemical reactivity hazards, resources for collecting and assessing reactivity hazards, steps for determining how and when to test for chemical reactivity, documentation requirements, and training.*

***2021-02-I-WV-R2***

*Develop and implement a written program for tolling process design and equipment selection using guidance from the Center for Chemical Process Safety's Guidelines for Risk Based Process Safety and Guidelines for Process Safety in Outsourced Manufacturing Operations to ensure that:*

*a) equipment design basis is adequate for any new tolling process or product;*

*b) safeguards and ancillary equipment are considered and adequately designed, installed, and function as designed and required; and*

*c) new processes are evaluated for potential process hazards at the laboratory and/or pilot scale before production scale.*

*This written program should incorporate the information developed in Optima Belle's thermal and reactive hazards evaluation program (see CSB recommendation 2021-02-I-WV-R1) to ensure that chemical hazards are fully understood and controlled.*

***2021-02-I-WV-R3***

*Develop and implement a formalized program for the development of toll manufacturing agreements using resources such as the Center for Chemical Process Safety's Guidelines for Process Safety in Outsourced Manufacturing Operations and Guidelines for Risk Based Process Safety. Ensure that the program provides for the following:*

> *a) Identification of roles and responsibilities of all parties, including the client, toller, and any third-party technical service providers, for all phases of a proposed arrangement;*
>
> *b) Evaluation of equipment requirements/specifications to ensure that they are adequate for intended operation; and*
>
> *c) Participation by all parties in the tolling process development, including process hazards analysis and emergency planning, and appropriate stages of the pre-planning, pre-startup, and production phases.*

***2021-02-I-WV-R4***

*Develop and implement a process safety management system consistent with industry guidance publications such as is contained in the Center for Chemical Process Safety's Guidelines for Risk Based Process Safety. At a minimum, the process safety management system should address hazard identification, risk analysis, and management of risk.*

**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 four recommendations to Optima Belle LLC (Optima Belle). This status change summary addresses CSB Recommendation Nos. 2021-02-I-WV-R1, 2021-02-I-WV-R2, 2021-02-I-WV-R3, and 2021-02-I-WV-R4.

B. Response to the Recommendation

Optima Belle has notified the CSB that they intend to implement their recommendations. They have provided a plan of action that appears when implemented will satisfy the objectives of the recommendations and they have provided a timetable for completion.

C. Board Analysis and Decision

Based upon the information above, the Board voted to change CSB Recommendation Nos. 2021-02-I-WV-R1, 2021-02-I-WV-R2, 2021-02-I-WV-R3, and 2021-02-I-WV-R4 to: "Open – Acceptable Response or Alternate Response."