



## U. S. Chemical Safety and Hazard Investigation Board

# RECOMMENDATION STATUS CHANGE

## SUMMARY

<b>Report:</b>	Optima Belle LLC Explosion and Fire
<b>Recommendation Numbers:</b>	2021-02-I-WV-R5 2021-02-I-WV-R6 2021-02-I-WV-R7 2021-02-I-WV-R8 2021-02-I-WV-R9
<b>Date Issued:</b>	July 6, 2023
<b>Recipient:</b>	Clearon Corporation
<b>New Statuses:</b>	R5: Open – Unacceptable Response/No Response Received R6: Open – Unacceptable Response/No Response Received R7: Open – Unacceptable Response/No Response Received R8: Open – Unacceptable Response/No Response Received R9: Open – Unacceptable Response/No Response Received
<b>Date of Status Changes:</b>	August 15, 2024

### Recommendation Text:

#### CSB Recommendation No. 2021-02-I-WV-R5:

*Develop and implement a comprehensive process knowledge management program or evaluate and revise existing process safety management procedures to ensure consistency with industry guidance publications such as the Center for Chemical Process Safety's Guidelines for Risk Based Process Safety. The program should:*

- a) assign specific responsibilities for compiling content and maintaining robust process technology and safety information packages that incorporate relevant knowledge for all hazardous processes and substances operated, manufactured, and/or handled by Clearon Corporation;*
- b) ensure that key process personnel are aware of critical reactive chemistry information, including thermal stability and calorimetry data, chemical compatibility information, and descriptions of any past reactive incidents and safety studies involving the materials; and*
- c) define procedures for the transmittal of such information to toll manufacturers.*

#### CSB Recommendation No. 2021-02-I-WV-R6:

*Update the sodium dichloroisocyanurate dihydrate (CDB-56®) safety data sheet. At a minimum, the document should:*

- a) *provide the underlying reasoning for the storage temperature maximum and the consequences of exceeding that temperature;*
- b) *provide the underlying reasoning for the decomposition temperature and the consequences of exceeding that temperature;*
- c) *explain or make clear the reason(s) for and/or the circumstance(s) resulting in the differences between the decomposition temperature and the lowest temperature at which self-accelerating decomposition may occur; and*
- d) *provide the exothermic decomposition energy in the Physical Properties section.*

**CSB Recommendation No. 2021-02-I-WV-R7:**

*Develop and implement a written program for tolling process design and equipment selection 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 to ensure that:*

- a) *equipment design basis is adequate for any new tolling process or product; and*
- b) *safeguards and ancillary equipment are considered and adequately designed, installed, and function as designed and required.*

**CSB Recommendation No. 2021-02-I-WV-R8:**

*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 the intended operation; and*
- c) *Participation by all parties in tolling process development, including process hazards analysis and emergency planning, and appropriate stages of the pre-planning, pre-startup, and production phases.*

**CSB Recommendation No. 2021-02-I-WV-R9:**

*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 five recommendations to Clearon Corporation. This status change summary addresses CSB Recommendation Nos. 2021-02-I-WV-R5 through 2021-02-I-WV-R9.

### **B. Response to the Recommendation**

Solenis LLC<sup>1</sup> provided an initial response to the recommendations in October of 2023. Subsequent CSB requests for further information have gone unanswered. The Board hopes that further communication and advocacy will persuade Solenis LLC to respond and act on these recommendations.

### **C. Board Analysis and Decision**

Based upon the information above, the Board voted to change CSB Recommendation Nos. 2021-02-I-WV-R5 through 2021-02-I-WV-R9 to: "Open – Unacceptable Response/No Response Received."

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<sup>1</sup> Solenis LLC acquired Clearon Corporation during September of 2022. The acquisition includes all Clearon Corporation assets, including their production facility in South Charleston, WV and an associated tableting and packaging facility.