



U.S. Chemical Safety and Hazard Investigation Board

OFFICE OF GENERAL COUNSEL

Memorandum

To: Board Members

From: Christopher M. Lyon *Christopher M. Lyon*  
 Acting General Counsel

Cc: Amanda Johnson  
 Adam Henson  
 Leadership Team

Subject: Board Action Report – Notation Item 2024-79

Date: May 22, 2024

On May 21, 2024, the Board approved Notation Item 2024-79, thereby designating Recommendation 2017-04-I-MO-R3, to Loy-Lange Box Company, from the Loy-Lange Box Company Pressure Vessel Explosion investigation (2017-04-I-MO), with the status of Closed – Acceptable Action.

**Voting Summary – Notation Item 2024-79**

**Disposition: APPROVED**

**Disposition date: May 21, 2024**

	Approve	Disapprove	Calendar	Not Participating	Date
S. Johnson	X				5/21/2024
S. Owens	X				5/21/2024
C. Sandoval	X				5/21/2024



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

<b>Report:</b>	Loy-Lange Box Company Pressure Vessel Explosion
<b>Recommendation Number:</b>	2017-04-I-MO-R3
<b>Date Issued:</b>	July 29, 2022
<b>Recipient:</b>	Loy-Lange Box Company
<b>New Status:</b>	Closed – Acceptable Action
<b>Date of Status Change:</b>	May 21, 2024

### Recommendation Text:

*Implement an electronic records and data management system that preserves all critical company records, safety policies and procedures, and operational data. Ensure that such records are stored and can be accessed remotely in the event of a catastrophic incident.*

### Board Status Change Decision:

#### A. Rationale for Recommendation

On April 3, 2017, an explosion occurred at the Loy-Lange Box Company (Loy-Lange) in St. Louis, Missouri when the bottom head of a pressure vessel (called a Semi-Closed Receiver (SCR)) catastrophically failed. The pressure vessel failure caused a boiling liquid expanding vapor explosion (BLEVE) which fatally injured a Loy-Lange employee working nearby. The pressure vessel then launched from the Loy-Lange building into the air and crashed through the roof of a nearby business, fatally injuring three members of the public.

The U.S. Chemical Safety and Hazard Investigation Board (CSB) investigated the incident and found that the failed pressure vessel resulted from oxygen pitting corrosion and generalized corrosion which thinned the pressure vessel bottom head until it could no longer contain the pressure inside the vessel. The CSB determined that the cause of the incident was deficiencies in Loy-Lange's operations, policies, and process safety practices that failed to prevent or mitigate chronic corrosion in the pressure vessel as well as Kickham Boiler and Engineering, Inc.'s performance of an inadequate repair to the SCR in 2012 that left damaged material in place. The CSB identified additional issues in their overall regulatory compliance as well as with their records and data management. As a result of these findings, the CSB issued three recommendations to the Loy-Lange Box Company. This status change summary addresses CSB Recommendation No. 2017-04-I-MO-R3.

#### B. Response to the Recommendation

In April of 2024 Loy-Lange notified the CSB that they have developed and implemented a business continuity plan. Additionally, all the company's critical records since 2017 have been uploaded to the cloud and can be accessed remotely in the event of a catastrophic incident. The CSB has reviewed documentation submitted by Loy-Lange to verify their statements.

C. Board Analysis and Decision

Based upon the information above, the Board voted to change CSB Recommendation No. 2017-04-I-MO-R3 to: “Closed – Acceptable Action.”