



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

Report:	MGPI Processing, Inc. Toxic Chemical Release
Recommendation Number:	2017-01-I-KS-R2
Date Issued:	January 3, 2018
Recipient:	MGPI Processing, Inc.
New Status:	Closed – Exceeds Recommended Action
Date of Status Change:	May 11, 2018

Recommendation Text:

Conduct an evaluation of the Mod B chemical transfer equipment (e.g., fill lines, transfer valves, transfer piping, tanks and other associated equipment) and install appropriate engineering safeguards to prevent and mitigate an unintended reaction, chemical release, or spill during bulk unloading. Where feasible, install safeguards, such as alarms and interlocks, to prevent personnel from opening the incorrect chemical transfer valves during deliveries. In addition, install mitigation measures to automatically shut down the transfer of chemicals into the facility based on process deviations or abnormal conditions (e.g., pressure, temperature, flow or level indications; gas detection).

Board Status Change Decision:

A. Rationale for Recommendation

On October 21, 2016, a chemical release occurred at the MGPI Processing, Inc. (MGPI) plant in Atchison, Kansas. The release occurred when a chemical delivery truck, owned and operated by Harcros Chemicals, was inadvertently connected to a tank containing incompatible material. The plume generated by the chemical reaction led to a shelter-in-place order for thousands of residents. At least 120 employees and members of the public sought medical attention. During the release, Mod B building personnel were not able to shutdown ventilation in the control room or access appropriate respiratory protection and were forced to evacuate. This addresses one of two recommendations that the U.S. Chemical Safety and Hazard Investigation Board (CSB) issued to MGPI to address those issues.

B. Response to the Recommendation

On April 3, 2018, MGPI informed the CSB that they retained a third-party professional engineering firm to conduct an independent evaluation of the Mod B facility unloading operations. The evaluation led to several new safeguards specific to the Mod B facility's chemical transfer equipment with special focus on the fill lines, transfer valves, transfer piping, tanks, and associated equipment. Specifically, MGPI took the following actions:

- They upgraded their chemical unloading and transfer equipment with chemical portal separation, signage, unique locks, and fittings as well as implemented an extremely innovative key control and chemical unloading sequence.

- They upgraded their monitoring and detection equipment to decrease their risk of chemical releases. The upgrades include pump and valve interlocks and automatic engagement of the deluge system.
- They added new emergency shutdown devices (ESDs) to complement the devices that were already in place. Additionally, the ESDs not only shut down the unloading process, but also automatically close the air dampers in the Mod B control room, the reactor room, and Motor Control Center.
- They extended and upgraded the deluge system to cover the Propylene Oxide day tank and all sides of the truck and trailer during unloading. This also involved the rerouting of the secondary containment on the chemical unloading pad to the sump pit located in the Propylene Oxide containment.
- They added an egress to the Modified B facility control room, installed more emergency supplied air packs along the egress path, and improved movement within the control room by moving the center control console from the middle of the control room to the walls. They also ensured employee involvement and hands-on training to allow for greater feedback from the operators who use the systems every day.
- They established local inspection requirements, testing requirements, documentation requirements, and applicable standards for pressure vessels, piping, storage tanks, pressure-relieving devices, pumps, and control systems.
- They conducted several Process Hazard Analyses (PHAs) covering Propylene Oxide, Phosphorous Oxychloride, and Acetic Anhydride and implanted corrective actions.
- They also made the decision to remove the Acetic Anhydride process entirely and the decommissioning has already been completed, leaving only four liquid bulk chemicals at the Modified B facility as opposed to the previous five. This will also reduce the number of bulk flammable chemicals from two to only one.

C. Board Analysis and Decision

MGPI has met the requirements of the CSB Recommendation. In addition to the highly innovative solutions that they implemented, MGPI's use of PHAs to identify additional hazards and implement the resulting corrective actions to include removing the Acetic Anhydride process in its entirety, clearly enhances the reduction of future risk and optimizes driving positive chemical safety change. As such the Board commends the actions of MGPI and voted to change the status of **CSB Recommendation No. 2017-01-I-KS-R2** to: **“Closed – Exceeds Recommended Action.”**