

# ACTIONABLE LESSONS LEARNED: Railcar Acid Burns



Exposure to Hazardous Substance - Acute

## Incident Overview

Fort Madison, May 13, 2024

A contractor was depressurizing an acid railcar. While attempting to check the low-side pressure valve assembly, the employee was unable to maintain a tight seal on the valve and was sprayed with 93% sulfuric acid. The contractor was wearing chemical gloves, a suit, boots, face shield and goggles.



## Causal Factors

- Contractor attempted to check low-side pressure valve assembly using left hand while the rail car was depressurizing.
- Inadequate PPE – contractor was not wearing a hood, and suit sleeves were not cuffed.

## Site Specific Actions



- **Engineering** – Evaluate the addition of pressure gauges to create a “christmas tree” configuration. This will help the transload operator determine if it safe to open the low-side valve. The Sulfuric Acid Steering Team will review this action and determine if a global action item is needed.

**Global Action Item Proposal**



- **Engineering** – Evaluate adding an elbow to the 2-inch, low-side pipe to redirect sulfuric acid away from the transload operator if residual pressure exists in the railcar. The elbow would connect to a hose that would discharge any acid in the line to a tote. The Rail Steering Committee will review this action and determine if a global action item is needed.

**Global Action Item Proposal**



- **Administrative** – Ft. Madison employees and contractors will attend a Sulfuric Acid Bulk Handling training. Employees and contractors will conduct inspections, task audits, emergency response, and risk and hazard assessments together.



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## Acid Loading Employees

- Ensure all personal protection equipment (PPE) is in good, suitable condition. PPE must be worn according to manufacturer specifications and for the hazardous material you are working with or around.
- Rail cars must be fully vented before attempting to check valves.
- Be cognizant of hand placement. Avoid placing any part of your body in areas that have potential for harm.
- Make sure you have participated in Sulfuric Acid Bulk Handling training.
- Know the emergency notification procedures and be sure to follow them.



## Freeport Leadership

- Frequently check in with your team. Help ensure policies and procedures are being followed, proper PPE is worn and verify all employees are competent in the jobs they are performing.
- Set high expectations for your team and hold individuals accountable when undesired behaviors are occurring.
- Set the expectation that employees stop work when unsafe conditions exist.



## All of Us

- Never enter an acid loading or unloading hot zone without having proper training.
- Stop work when conditions are unsafe, or you are uncertain in your duties.
- PPE is a last line of defense. For PPE to work effectively, it must always be worn appropriately.
- Avoid complacency in your daily tasks. Complacency leads to accidents.
- Speak up and question your training if it does not align with standard operating procedures.



# Actionable Event: Railcar Acid Burns

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## Preliminary Incident Details

<b>Operation</b>	Fort Madison
<b>Date / Time</b>	May 13, 2024 / 12:10 pm
<b>Event Type</b>	Injury – Medical Treatment
<b>Summary</b>	A contractor was depressurizing an acid railcar. While attempting to check the low side pressure valve assembly, the employee was unable to maintain a tight seal on the valve and was sprayed with 93% sulfuric acid. The contractor was wearing chemical gloves, a suit, boots, face shield and goggles.
<b>Risk Category</b>	Actionable – Significant (3) Likely (3)
<b>Findings / Missing Controls</b>	<ul style="list-style-type: none"> <li>Acid tank was not properly depressurized. <ul style="list-style-type: none"> <li>Operator deviated from depressurizing procedures.</li> <li>Improper depressurizing training.</li> </ul> </li> <li>Missing and improperly worn personal protection equipment.</li> <li>Failure to conduct periodic monitoring and assessment of contractor transload operations.</li> </ul>
<b>Applicable Policies / Procedures</b>	<ul style="list-style-type: none"> <li><a href="#">FCX-HS28 – Sulfuric Acid Bulk Handling Policy</a></li> <li><a href="#">FCX-HS01 Administration Requirements Policy</a></li> </ul>
<b>Employee Condition</b>	<ul style="list-style-type: none"> <li>Contractor sustained second-degree burns.</li> </ul>
<b>Contact</b>	<ul style="list-style-type: none"> <li>Michael Alsbrook, Manager-Health and Safety</li> <li>Sarah Johnson, Manager-Moly Operations</li> </ul>

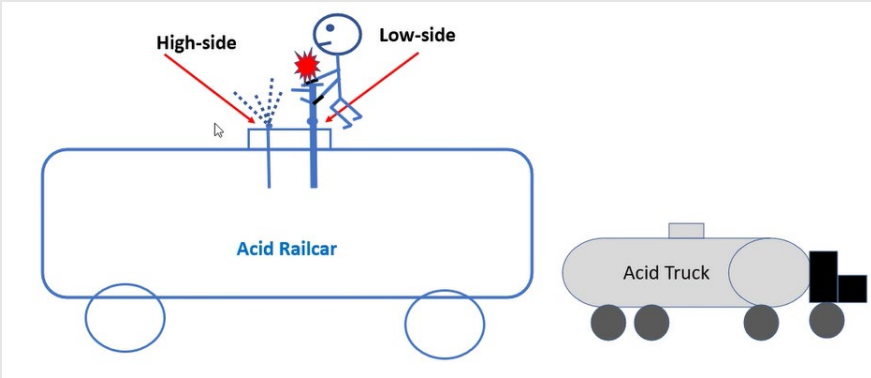
## Photos / Links



Re-enactment of valve assembly.



Contractor suit following acid exposure.



Railcar tank set up.