Lessons Learned

— MECHANICAL CONTRACTORS —

Date: 10/22/2022 **Region: Kennewick**

Project: Tyson Foods

Incident Title: Ammonia Line Break Exposure

Summary

An Apollo crew was working on demolishing an old ammonia line in a process facility. The line had been isolated and pumped down by the owner and an Apollo supervisor. The Apollo supervisor made multiple line cuts, isolating the pipe system, and exposing it to open atmosphere before demo was going to be begin. There were no indications that the line had any residual ammonia in it, as low spots were drilled, and no ammonia was boiling off.

Two Apollo craft members were in aerial lifts beginning demolition, after getting the green light from the supervisor. On the first section of demo, liquid ammonia came running out of the line and exposed one of the workers. Liquid ammonia dowsed one of his arms and pooled up in the lift creating a hazardous cloud.

The employee was able to evacuate the area with help of the supervisor and was rushed to the hospital due to the unknown full exposure and profuse coughing that continued with the employee.

What Went Right?

- Apollo's AISH 44 Line Break Procedure was followed.
- Low spots and multiple physical line breaks were performed to verify line condition.
- Supervisor that made initial cuts into the system was in full PPE when performing this task.
- Employee was proficient in using the aerial lift and was able to operate it under distress.

What Went Wrong?

- A dead-end section of the pipe, stubbed out about 2 feet to reach a hanger, accumulated oil and gunk that acted like a dam, which trapped ammonia behind it. When the line was manipulated and raised on one end, that unidentified ammonia came rushing out.
- Crew members physically removing the pipe were not in any PPE for specific protection against ammonia.
- Crew was not involved in the line break process and didn't have clear communication.
- Verification process in the procedure was insufficient and had gaps.

Lessons Learned

- **Line break procedure needs to be modified to address verification steps and placing employees in PPE for maximum potential exposure.**
- **Work scopes that are non-routine or potentially high risk need to be identified when awarded and safety, quality, or engineering need to be notified to help with the planning process.**
- **JHA's developed need to be updated frequently or reviewed if not used regularly. Though we had done ammonia line demo before and developed a JHA, it had not been performed in over a year and therefore no updates were provided.**