

SAFETY / QUALITY BULLETIN # 230

HEADLINE:

Clamp Removal - Acid Exposure

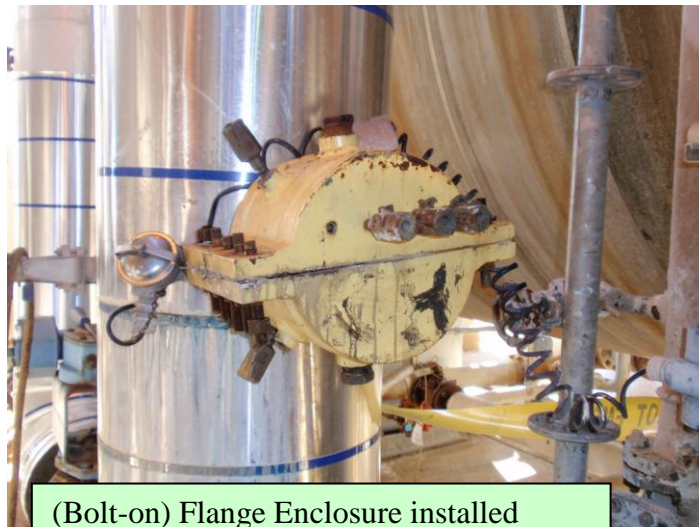
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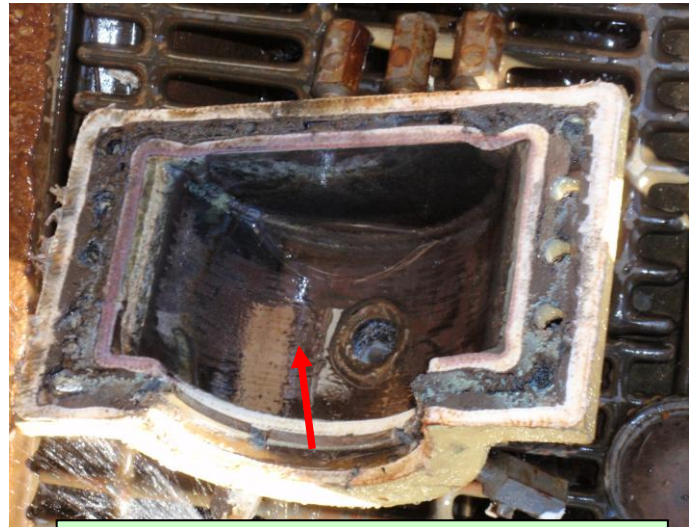
DESCRIPTION OF INCIDENT(S): Two LRS Techs were preparing to remove an enclosure from a 1½" thermo-well line. Operations stated the vessel and line had been depressured. They verified the valve positions were in the open position and a bleeder valve was open to the atmosphere. Operations issued the permit requiring Techs to wear goggles, gloves and have an H2S monitor. Techs reviewed the potential chemical hazards at the job site and completed their JSA and COP (Conoco Phillips) STOP card. Techs agreed they should also wear a chemical jacket while performing the task.

They proceeded to drill out and remove the injection valves from the perimeter of the clamp to verify there was no residual pressure inside the clamp. Once complete, they proceeded to remove the nuts and bolts on the north side of the clamp. One Technician was standing on the north side of the clamp, and the other on the west side. When they removed the nut from the last bolt, unexpected residual pressure and sulfuric acid (about 92% concentration) blew out from around the perimeter seal of the clamp, spraying one technician on the face around his goggles and the other tech on the neck and right arm.

Techs immediately went to the nearest safety shower, removed their clothing and flushed the affected areas for approx 10 minutes. They then proceeded to site medical where they notified the client and their supervisor of the incident. The nurse evaluated both technicians and washed the affected area for approx 10 minutes and applied burn gel to the affected areas.



(Bolt-on) Flange Enclosure installed around thermo-well on side of vessel



Void of Flange Enclosure where chemicals were trapped inside. There was no injection port available to access void area.

Causal Factors:

1. Critical Job Review not performed: Employees believed that since the system was down and drained, a CJ review would not be required.
2. TMS Pre-Assessment Form not completed: Investigation revealed this form was not completed due to TISI utilizing the current Conoco Injection / Clamp sheets.
3. Clamp Removal Procedure: Techs were referencing TRP-3016 for removing clamp. Procedure states that injection valves should be drilled out to relieve potential pressure or process. Techs only drilled out and removed injection valves in Perimeter Seal of enclosure.
 - This enclosure was initially installed in Sept. 2010 and only the perimeter seal was injected. There were no injection ports located on the void area of the enclosure. Without injecting the void, This design allowed for possible retention of any residual process.
4. Complacency - Techs had completed 2 similar jobs with the same style clamps, without incident.
 - There was no initial leak present during original installation. Clamps were installed on thin pipe with no leaks detected.
5. Techs believed there was no acid present and subsequently failed to implement the PPE they identified during the JSA review.
 - JSA identified 'Chemical Exposure' as a hazard and Group 2 PPE was required. Employees only donned Goggles, Rubber Gloves and Slicker Jacket.
 - They did not wear full chemical suit w/ taped connections and no Face-shield. These are required for Group 2.

Solutions / Corrective Actions:

1. A Critical Job (CJ) Review was conducted on the following day for completion of the clamp removal. Group 5 PPE was utilized. Class A Suits and Breathing Air was donned.
2. TMS Pre-Assessment Form will be completed for every job regardless if using Conoco Injection / Clamp sheets. This has been communicated with all Branch employees.
3. A vent hole will be drilled into the void of similar clamps to relieve any pressure and possible trapped chemicals, before removal of the clamp.
4. Branch Safety meeting conducted to review event and discuss how to break the clamp open. Techs will open clamp on opposite side, away from Techs.

Lessons Learned:

- NEVER Assume!
- Always prepare for the worse!
- Short cuts get you nowhere!

