

Issued By: Corporate HSSE

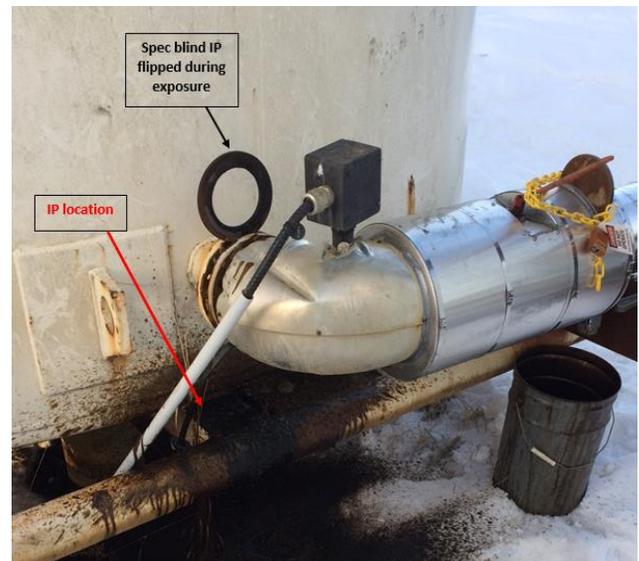
Date: January 16th, 2017

Target Audience: Field Personnel

H₂S EXPOSURE

INTRODUCTION

On January 17th a contract maintenance crew arrived at a tank battery in an Apache onshore region to modify equipment in preparation for a confined space entry into a sour emulsion tank. The tank had been partially flushed and purged prior to this step of the job. The workers, knowing that the tank held sour emulsion (containing H₂S), tested the fluid with a gas monitor by releasing a small amount from a bleed valve. The gas monitor did not register any detectable H₂S so the workers did not don respiratory equipment and proceeded to remove the bolts from the flange. When the blind was removed, fluid was released from the flange and the worker changing the blind began to experience difficulty breathing. The worker was able to egress from the immediate area and recover. The worker was then transported to a medical facility where he was evaluated and administered O₂ to offset the potential H₂S exposure. He was released without any lasting effects or medical restrictions.



CONTRIBUTING FACTORS

The workers did conduct the appropriate hazard assessments and complete the necessary permits prior to work, which did identify the correct hazards and controls when working in potential H₂S environments; however, they failed to follow existing procedures and did not don respiratory equipment or wear the appropriate gas monitors. In addition, the potential hazards involving the release of trapped fluid from a known H₂S source were not adequately appreciated or addressed.

RECOMMENDATIONS

- When breaking integrity on process systems containing H₂S, respiratory protection must be worn until the point at which the work environment is confirmed and verified to be safe. All relevant work permits and hazard assessments should clearly define all applicable job steps, potential hazards, mitigation controls and required personal protective equipment.
- Any tank, vessel, equipment or facility that harbors the potential to have H₂S in excess of the OSHA Permissible Exposure Limit of 10 PPM must be considered a hazardous environment. Proper respiratory and gas detection equipment must be worn when the potential for a hazardous environment exists, such as breaking piping or removing a hatch or man-way. For additional information on proper respiratory equipment, please see the OSHA regulations 29 CFR 1910.134(d)(i)(A) regarding respiratory protection and assigned protection factors.