



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

Report:	Aghorn Operating Inc. Waterflood Station H2S Release
Recommendation Number:	2020-01-I-TX-R8
Date Issued:	May 21, 2021
Recipient:	Occupational Safety and Health Administration
New Status:	Closed – Acceptable Action
Date of Status Change:	April 10, 2023

Recommendation Text:

Issue a safety information product (such as a safety bulletin or safety alert) that addresses the requirements for protecting workers from hazardous air contaminants and from hazardous energy.

Board Status Change Decision:

A. Rationale for Recommendation

On October 26, 2019, an Aghorn Operating Inc. (Aghorn) employee responded to a pump oil level alarm at Aghorn's Foster D waterflood station in Odessa, Texas. In response to the alarm the employee worked to isolate the pump. He closed the pump's discharge valve but only partially closed the pump's suction valve. At some point on the night of the incident, the pump automatically turned on and water containing hydrogen sulfide (H₂S), a toxic gas, was discharged from the pump. The employee was fatally injured from his exposure to the H₂S. Subsequently, the spouse of the employee gained access to the waterflood station and searched for her husband. During her search efforts, she was also exposed to the released H₂S and was fatally injured.

The U.S. Chemical Safety and Hazard Investigation Board (CSB) investigated the incident and found that the employee was not wearing his personal H₂S detection device upon entering the waterflood station on the night of the incident, and there was no evidence that Aghorn management required the use of these devices. The CSB also found that at the time of the incident Aghorn did not have any written Lockout/Tagout policies or procedures. The Occupational Safety and Health Administration (OSHA), the Federal regulator for oversight of these safety issues, requires employers to develop, document, implement, and enforce energy control procedures in 29 CFR 1910.47 – *The Control of Hazardous Energy (Lockout/Tagout)*, and requires employers to implement administrative or engineering controls to minimize or eliminate the risk of employees being exposed to air contaminants in 29 CFR 1910.1000 – *Air Contaminants*. The CSB concluded that Aghorn, not adhering to these regulatory requirements, contributed to the incident. Finally, the CSB concluded that improved communication of the hazards that contributed to this incident, as well as the regulatory requirements to control those hazards, could help prevent future incidents. As a result of these findings the CSB issued one recommendation to OSHA.

B. Response to the Recommendation

On January 13, 2023, OSHA published a FatalFacts guidance document entitled “[Hydrogen Sulfide Release](#).”¹ This document discusses the lessons learned from the Aghorn incident, summarizes the incident and its likely contributing causes, and highlights requirements employers must comply with to protect workers from hazardous air contaminants and hazardous energy. The document also discusses ways to help prevent an H2S incident, including:

- having engineering and administrative controls for air contaminants;
- protective equipment to keep the exposure of employees to air contaminants within the limits of OSHA’s air contaminants standard; and
- a formalized lockout/tagout program to isolate equipment from energy sources.

The document then lists the CSB’s recommendations to employers from the Aghorn investigation:

- *Mandate the use of personal H2 S detection devices as an integral part of every employee or visitor personal protective equipment (PPE) kit prior to entering the vicinity of the facility. Ensure detector use is in accordance with manufacturer specifications. (2020-01-I-TX-1, abbreviated)*
- *Commission an independent and comprehensive analysis of each facility ventilation design and mitigation systems to ensure that workers are protected from exposure to toxic gas (2020-01-I-TX-3, abbreviated); and*
- *Ensure the H2 S detection and alarm systems are properly maintained and configured and develop site-specific detection and alarm programs and associated procedures based on manufacturer specifications, current codes, standards, and industry good practice guidance (2020-01-I-TX-5, abbreviated).*

The document concludes by stating that employers in oil and gas production industries should develop and implement a written formal site-specific security program to prevent unknown and unplanned entrance of non-employees to the facility and refers to industry standards and guidance such as ANSI/API Standard 780, *Security Risk Assessment Methodology for the Petroleum and Petrochemical Industries*, and API RP 781, *Facility Security Plan Methodology for the Oil and Natural Gas Industries*. Lastly, the document also provides a link to the CSB Aghorn investigation report as well as additional resources that contain information on chemical hazards, respiratory protection, H2S, and control of hazardous energy.

C. Board Analysis and Decision

As OSHA’s recently released safety information guidance document satisfied the recommendation, the Board voted to change the status of CSB Recommendation No. **2020-01-I-TX-R8** to: “Closed – Acceptable Action.”

¹ Available at <https://www.osha.gov/sites/default/files/publications/OSHA4204.pdf> (accessed March 14, 2023).