



U. S. Chemical Safety and Hazard Investigation Board

RECOMMENDATION STATUS CHANGE

SUMMARY

Report:	Aghorn Operating Inc. Waterflood Station Hydrogen Sulfide Release
Recommendation Number:	2020-01-I-TX-R4
Date Issued:	May 21, 2021
Recipient:	Aghorn Operating Inc.
New Status:	Closed – Acceptable Action
Date of Status Change:	September 6, 2025

Recommendation Text:

For all waterflood stations where the potential exists to expose workers or non-employees to H₂S concentrations at or above 10 ppm, develop and demonstrate the use of a safety management program that includes a focus on protecting workers and non-employees from H₂S. This program should include risk identification, assessment, mitigation, and monitoring of design, procedures, maintenance and training related to H₂S. This program must be in compliance with 29 CFR 1910.1000 – Air Contaminants and 29 CFR 1910.147 – The Control of Hazardous Energy (Lockout / Tagout).

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 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, procedures, or associated training. As a result of these findings, the CSB issued seven recommendations to Aghorn. This status change summary addresses CSB Recommendation No. 2020-01-I-TX-R4.

B. Response to the Recommendation

To address this recommendation, among other actions, Aghorn developed and implemented an emergency response program and a site security policy. Additionally, several of the recommendation requirements were addressed by other recommendations issued to Aghorn which are acceptably closed, specifically:

- **CSB Recommendation 2020-01-I-TX-R2** addresses compliance with 29 CFR 1910.147 – The Control of Hazardous Energy (Lockout / Tagout) as well as training requirements.
- **CSB Recommendation 2020-01-I-TX-R3** addressed facility design vis-à-vis ventilation and mitigation systems.
- **CSB Recommendation 2020-01-I-TX-R5 and R6** addresses the design, procedures, and maintenance of H2S detection and alarms.
- **CSB Recommendations 2020-01-I-TX-R6** addresses the use of both audible and visual mediums, so that workers and non-employees within the perimeter of the facility would be alerted to a significant release.

Aghorn’s initial and follow-up responses provided a tremendous amount of documentation, including but not limited to new and revised health, safety, and environmental (HSE) manual chapters, purchase receipts, training records, calibration and inspection records for their fully automated H2S monitoring and alarm systems that include personal, portable, and fixed H2S monitors. The information and supporting documentation provided by Aghorn demonstrated the use of a safety management program that focuses on protecting workers and non-employees from H2S that addressed all of the requirements of the recommendation.

C. Board Analysis and Decision

Based upon the information above, the Board voted to change CSB Recommendation No. 2020-01-I-TX-R4 to: “Closed – Acceptable Action.”