



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-R3
Date Issued:	May 21, 2021
Recipient:	Aghorn Operating Inc.
New Status:	Closed – Acceptable Alternative Action
Date of Status Change:	July 25, 2025

Recommendation Text:

For all waterflood stations where the potential exists to expose workers to H₂S concentrations at or above 10 ppm, commission an independent and comprehensive analysis of each facility design vis-à-vis ventilation and mitigation systems to ensure that, in the event of an accidental release, workers are protected from exposure to toxic gas levels.

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-R3.

B. Response to the Recommendation

Aghorn's initial and follow up responses indicated that they contacted several independent companies to perform the analysis required by the recommendation, but they were not able to find a willing contractor. Aghorn did, however, make significant physical alterations to their waterflood stations to improve natural ventilation and upgraded the facilities' exhaust

ventilation to mitigate H₂S releases. They also installed fixed H₂S monitors set to alarm at 10 parts per million (PPM)¹. The monitors are tied to audio visual alarms present onsite and a system that notifies Aghorn employees via phone and text and requires acknowledgement from employees on duty. Though Aghorn did not conduct the analysis required by the recommendation, they did take significant action to ensure employees are protected from releases of H₂S meeting the objective of the recommendation envisioned by the Board.

C. Board Analysis and Decision

Based upon the information above, the Board voted to change CSB Recommendation No. 2020-01-I-TX-R3 to: “Closed – Acceptable Alternative Action.”

¹ The concentration of H₂S considered to be immediately dangerous to life and health (IDLH) is 100 ppm according to the National Institute of Occupational Safety and Health (NIOSH).