



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

Report:	Public Safety at Oil and Gas Storage Facilities
Recommendation Number:	2011-H-1-R3
Date Issued:	September 30, 2011
Recipient:	Oklahoma Corporation Commission (OCC)
New Status:	Open – Acceptable Response or Alternate Response
Date of Status Change:	January 17, 2023

Recommendation Text:

Amend state oil and gas regulations to:

- a) Protect storage tanks at exploration and production sites from public access by requiring sufficient security measures, such as full fencing with a locked gate, hatch locks on tank manways, and barriers securely attached to tank external ladders and stairways.*
- b) Require hazards signs or placards on or near tanks that identify the fire and explosion hazards using words and symbols recognizable by the general public.*
- c) Require the use of inherently safer tank design features such as flame arrestors, pressure vacuum vents, floating roofs, vapor recovery systems or an equivalent alternative, to prevent the ignition of a flammable atmosphere inside the tank.*

Board Status Change Decision:

A. Rationale for Recommendation

On October 31, 2009, two teenagers, aged 16 and 18, were killed when a petroleum storage tank exploded in a rural oil field in Carnes, Mississippi. Six months later a group of young adults and teenagers were exploring a similar tank site in Weleetka, Oklahoma, when an explosion and fire fatally injured one individual. Two weeks later, a 25-year-old man and a 24-year-old woman were on top of an oil tank in rural New London, Texas, when the tank exploded, killing the woman and seriously injuring the man.

In April 2010, the U.S. Chemical Safety and Hazard Investigation Board (CSB) initiated a safety hazard study into the causes of these tragic incidents. All three incidents involved rural unmanned oil and gas storage sites that lacked fencing and signs warning of the hazards, which might have otherwise deterred members of the public from using them as places to gather. The CSB identified 26 similar incidents between 1983 and 2010, which resulted in a total of 44 fatalities and 25 injuries as part of this safety hazard study. All of the victims were 25 years of age or less.

Specifically, at the Weleetka, Oklahoma explosion site, the CSB determined that the only site security was an unlocked iron cattle gate, approximately 4 feet high by 12 feet long, located where the dirt road intersects the main road. There was no perimeter fence. The oil storage tanks

at the site were equipped with six-inch diameter hatches, but they were not locked and there were no warning signs identifying hazards of the flammable petroleum crude oil inside the tanks. Of the 26 incidents identified by the CSB in its safety hazard study, seven (27%) occurred in the state of Oklahoma (which resulted in 12 fatalities and two injuries).

As the Oklahoma Corporation Commission (OCC) regulates oil and gas drilling and production operations under various Oklahoma statutes for various purposes, the CSB reviewed state regulations applicable to oil storage tank sites. While the Oklahoma Energy Resources Board has taken a proactive role in the education of children about the dangers of playing around oil field equipment, the CSB noted that OCC oil and gas regulations do not: (1) require fencing around oil and gas sites that do not contain hydrogen sulfide; (2) mandate hatch locks for oil storage tanks; and (3) require inherently safer tank design features on oil storage tanks.

The CSB noted that oil storage tanks on oil and gas sites that also contain hydrogen sulfide hazards did require perimeter fencing, hazard warning signs and protective manways on some tanks. The CSB also noted that the OCC has stronger safety measures for certain aboveground flammable storage tanks; however, these rules do not apply to oil and gas wells and their associated tanks involved in upstream exploration and production (E&P) operations. Tanks subject to the aboveground flammable storage tank regulations are required to be enclosed within a 6-foot-high chain link fence, be separated from the fence by at least 10 feet, and have a gate to secure against unauthorized entry. These regulations also require "conspicuously posted" signs with the words "Warning" and "No Smoking" and grounding instructions.

The CSB concluded that the seven Oklahoma oil site incidents would have been less likely to occur if the sites were subject to the fencing and/or hazard warning regulations for aboveground flammable storage tanks, or the regulations applicable to oil and gas production sites with hydrogen sulfide hazards. Consequently, the Board issued a recommendation to the OCC to address these issues.

B. Response to the Recommendation

In December 2021, the OCC communicated to the CSB that it has limited jurisdiction and has not proposed any changes to its oil and gas regulations that address the issues listed in the CSB Recommendation beyond the 2013 changes (e.g., security requirements which only applied to commercial disposal well surface facilities, but not to unmanned oil storage tanks at production sites).

C. Board Analysis and Decision

The Board noted that the jurisdictional issues raised by the OCC pertain to occupational safety and health matters to workers on oil rigs where the CSB recommendation addresses protection of the public from fire and explosion hazards at unmanned oil storage production sites, which does fall under OCC jurisdiction. The Board also noted that the OCC demonstrated that they have sufficient authority to propose changes to the Oklahoma Administrative Code pursuant to the Oklahoma Administrative Procedures Act, subject to Governor and Oklahoma legislature approval. In fact, new security measures for commercial disposal well surface facilities were added by OCC to its oil and gas rules as a part of a 2013 rulemaking. However, the 2013 changes

made by the OCC to its oil and gas regulations did not address storage tanks at production sites, per the CSB recommendation.

On December 1, 2022, the CSB and OCC met via teleconference to discuss the matter further. The CSB and OCC agreed that subpart (c) of the recommendation is outside the scope of OCC's jurisdiction. OCC offered to coordinate CSB discussions with the Oklahoma Department of Environmental Quality (DEQ) and stated that they also believe that the Environmental Protection Agency (EPA) may be implementing the requirements of subparagraph (c). Additionally, next steps for actions to implement the remainder of the recommendation were discussed. Lastly, OCC offered the CSB an opportunity to present the recommendation information at their upcoming public meeting as well as a point of contact to work with for follow-on actions.

Following the meeting, the CSB provided OCC with additional youth outreach information; specifically, the CSB educational outreach video, "*No Place to Hang Out: The Danger of Oil Sites*"¹ and its associated press release.² An additional teleconference occurred on December 5, 2022, to discuss the details of what the recommendation requires as well as details for the upcoming public meeting and follow-on actions.

As OCC has renewed their intentions to implement the requirements of the recommendation and provided a point of contact who is working with the CSB, the Board voted to change the status of CSB Recommendation No. 2011-H-1-R3 to: "Open – Acceptable Response or Alternate Response."

¹ <https://www.youtube.com/watch?v=v5CU-qW4zxE>

² <https://www.csb.gov/csb-releases-video-no-place-to-hang-out-focusing-on-deaths-of-teenagers-in-oil-site-explosions/>