



U. S. Chemical Safety and Hazard Investigation Board

RECOMMENDATION STATUS CHANGE

SUMMARY

Report:	Husky Energy Superior Refinery Explosion
Recommendation Number:	2018-02-I-WI-R15
Date Issued:	December 29, 2022
Recipient:	American Petroleum Institute (API)
New Status:	Closed - Acceptable Alternative Action
Date of Status Change:	May 13, 2026

Recommendation Text:

Incorporate lessons learned from the FCC Unit Explosion and Asphalt Fire at Husky Superior Refinery incident into the appropriate API products (for example, API RP 2023, Guide for Safe Storage and Handling of Heated Petroleum-Derived Asphalt Products and Crude Oil Residua, or API RP 2021, Management of Atmospheric Storage Tank Fires). At a minimum, topics shall include the flammability of heated material such as asphalt and the ignition risk of pyrophoric material inside asphalt storage tanks. Include a reference to this CSB investigation in the document's bibliography.

Board Status Change Decision:

A. Rationale for Recommendation

On the morning of April 26, 2018, the primary and sponge absorber of the Husky Energy Superior Refinery exploded during the planned shutdown of the facility's fluidized catalytic cracking (FCC) unit. Debris from the explosion struck an asphalt storage tank approximately 200 feet away. Asphalt leaked from the damaged tank and over the containment wall spreading into the FCC and crude unit operating areas before eventually catching fire. Husky Superior Refinery reported that 39,000 pounds of a flammable hydrocarbon vapor mixture as well as approximately 17,000 barrels of asphalt were released during the incident.

36 refinery and contract workers received medical treatment as the result of the incident. Of those 36 injuries, 11 met the criteria to be considered OSHA recordable. None of the injuries suffered were deemed life-threatening. It was reported that the explosion shook buildings up to a mile away. The plume from the burning asphalt was visible from neighboring communities. An evacuation order was issued by county officials to protect the public from the smoke plume and as a precaution for fear the incident would escalate.

As a result of the incident the facility was destroyed. The incident resulted in \$550 million of on-site and \$110,000 of off-site property damage. This incident was recorded as having the 33rd largest adjusted property damage loss in the hydrocarbon extraction, transport, and processing

industry since 1974¹. In September 2019 a permit was issued to rebuild the refinery and construction began soon after. Husky Energy merged with Cenovus Energy, Inc., a Canadian oil and natural gas company, on January 1, 2021. The refinery is expected to resume operations in 2023 as Cenovus Superior Refinery.

The U.S. Chemical Safety and Hazard Investigation Board (CSB) investigated the incident and found several safety issues including ineffective transient operation safeguards, a lack of process knowledge, ineffective process safety management systems, a lack of available industry knowledge and guidance, and failures in emergency preparedness. As a result of these findings, the CSB issued seven recommendations to Cenovus Superior Refinery. This status change summary addresses CSB Recommendation No. 2018-02-I-WI-R15.

B. Response to the Recommendation

API Published the 4th Edition of API Standard 2610 *Design, Construction, Operation, Maintenance, and Inspection of Terminal and Tank Facilities* (API STD 2610) during March 2026². This revision addresses the majority of the recommendation's requirements including adding information on the hazards of heated asphalt storage tanks. They also added a reference to the Asphalt Institute's *Pyrophoric Material Formation in Heated Asphalt Storage Tanks*³ for those interested in further information and included this document in the standard's bibliography. They did not, however, include a reference to the CSB investigation in the standard's bibliography.

C. Board Analysis and Decision

API revised API STD 2610 to address the flammability hazards of heated material such as asphalt and the ignition risk of pyrophoric material inside asphalt storage tanks. They also provided a resource for those interested in further information. The new language added to this revision of API STD 2610 satisfied the objectives envisioned by the Board in issuing the recommendation.

The CSB appreciates the work of the API, and its Subcommittee on Aboveground Storage Tanks (SCAST)⁴, in revising this critical industry standard. Based upon the information above, the Board voted to change CSB Recommendation No. 2018-02-I-WI-R15 to: "Closed – Acceptable Alternative Action."

¹ Marsh JLT Specialty, "100 Largest Losses in the Hydrocarbon Industry," 2022. [Online]. Available: <https://www.marsh.com/us/insights/research/100-largest-losses-hydrocarbons-industry-html>. [Accessed 5 October 2022].

² <https://www.apiwebstore.org/standards/2610>

³ https://www.asphaltinstitute.org/wp-content/uploads/AI-Fire-Safety_rev2.pdf

⁴ SCAST is a subcommittee of API's Committee on Refinery Equipment (CRE). They are responsible for the technical content of API STD 2610.