

DULUTH

Report: Husky Superior oil refinery explosion 'could have been avoided'

Lack of industry knowledge, safety processes detailed as reasons behind the blast.

By **Jana Hollingsworth** (<https://www.startribune.com/jana-hollingsworth/7756704/>) Star Tribune |

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DULUTH — When the former Husky Superior oil refinery reopens this year under new management, it faces heightened scrutiny as regulators have said the accident that caused \$550 million in damages and injured nearly 40 workers was avoidable.

A final federal report on the 2018 Husky Energy refinery explosion in Superior, Wis., was released last week, and it details a slew of safety issues that led to the incident, along with recommendations for the new plant. The 200-page U.S. Chemical Safety and Hazard Investigation Board (CSB) report identifies six areas that show likely cause for the explosion, which resulted in the release of 39,000 pounds of flammable hydrocarbon vapor into the air.

"This accident could have been avoided," board chair Steve Owens said in a statement.

The spring morning explosion led to black, acrid plumes of smoke seen for miles as the refinery burned into the night. More than 2,500 residents in the city of 27,000 were evacuated along with businesses and schools, leaving roads gridlocked as people fled the city. In neighboring Duluth, officials told residents to shelter in place because of the smoke.

The explosion occurred while the refinery was shutting down its fluid catalytic cracking unit for planned maintenance. The unit is a common piece of equipment at oil refineries used to refine crude oil into higher octane fuels.

A worn valve inside the unit allowed air to mix with hydrocarbons, leading to the explosion of two outdated vessels, spraying metal fragments up to 1,200 feet away and puncturing a nearby asphalt storage tank. About 17,000 barrels of hot asphalt spilled and ignited, causing multiple fires.

Although it did not happen, the release of highly toxic hydrogen fluoride, also known as hydrofluoric acid, was a potential danger, with tanks full of the chemical stored near enough to the explosion to have also been punctured by debris.



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The Husky Energy refinery following a 2018 explosion in Superior, Wis. A final report on the incident was released last week.

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The oil refinery, which has yet to reopen, is now part of Calgary, Alberta-based Cenovus Energy, which bought Husky in 2021.

Refineries with fluid catalytic cracking units should review the board's findings to prevent similar disasters during shutdowns and startups, Owens said in the statement.

The report lays out several problems, some already shared (<https://www.startribune.com/hole-in-valve-triggered-explosion-fire-at-superior-wis-refinery/502598281/>) since the incident: a lack of safeguards and industry guidance around its fluid catalytic cracking unit, outdated equipment that failed and issues with emergency preparedness.

"We call on refineries, trade groups and regulators to examine our final report and apply the key lessons to help ensure safe operations at facilities throughout the country," said board member Sylvia Johnson.

After the explosion, residents demanded the removal of hydrogen fluoride from the refinery and federal investigators advocated for a review (<https://www.startribune.com/hole-in-valve-triggered-explosion-fire-at-superior-wis-refinery/502598281/>) of its use. Cenovus this week said that when the refinery reopens early this year, it will continue to use the chemical needed for producing high octane gasoline, which requires the use of hydrogen fluoride in its alkylation process.

Spokeswoman Kim Guttormson said improved safety equipment and processes for the hydrogen fluoride unit, including remote-control water cannons and installation of a rapid acid transfer system, were behind the decision. Each of the CSB's recommendations have been incorporated into the rebuild, she said, including a new control system, training materials and improved safeguards in the fluid catalytic cracking unit.

The cost to rebuild the refinery has grown to \$1.2 billion (<https://www.startribune.com/costs-to-rebuild-burned-superior-oil-refinery-keep-growing/600168511/>) — three times the original estimate. The 72-year-old plant, which employs about 200, is a major source of gasoline and other oil products, including asphalt, in the Twin Ports.

The effects of its closure in 2018 were many: water rates increased for Superior residents with the loss of the city's biggest customer, and refinery workers lost jobs. But transient contract workers helping to rebuild the refinery have boosted hotel and restaurant revenue every year, said Mayor Jim Paine, and their departure will be noticed.

But a working refinery offers a more stable economic impact, he said, with residents soon to see their water bills decrease and refinery jobs once again filled. City officials will have work to do assuring people that the plant, still containing hydrogen fluoride, is safe, Paine said.

"There will be lots of anxiety around the reopening," he said. "The community went through a very traumatic event."

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