

# More of Bay Area May Be Vulnerable to Refinery Mishaps Than Previously Believed



For many residents of Point Richmond, the Chevron oil refinery is rarely out of sight. This photo was taken in 2014. (*Josh Cassidy/KQED*)

By **Ted Goldberg** MAY 22, 2017

The recent conclusion by local air regulators that malfunctions at [Chevron's Richmond facility sent toxic gas 11 miles across San Francisco Bay](#) late last year means that a larger part of the region may be vulnerable to refinery malfunctions than many previously believed, environmentalists and experts say.

“There’s a greater risk here than people realized,” said Patrick Sullivan, a spokesman for the Center for Biological Diversity. “We have to have a different calculus of how these refineries affect communities.”

Last week the Bay Area Air Quality Management District issued four notices of violation against Chevron for problems at the refinery in late December that prompted flaring, moments before residents in San Francisco complained of a sulfurlike odor. The district concluded that the smell was caused by releases of hydrogen sulfide from the Chevron refinery.

The mysterious smell in San Francisco came two months after dozens of Vallejo residents sought medical treatment [from an odor that spread through that city](#). The sickening fumes appear to have coincided with an oil spill on the other side of the Carquinez Strait near the Phillips 66 refinery in Rodeo.

And the district's announcement came less than two weeks after a [power outage at Valero's Benicia refinery](#) sent a huge plume of smoke and toxic gas into the sky. The initial flaring there sent at least 12 people to the hospital and prompted a series of evacuation and shelter-in-place orders.

The chances that a problem at a refinery on one side of the bay could send toxic gas to another depends in part on which way the wind blows.

"If the wind direction is not blowing the air towards you, you're not going to smell it," said Anthony Wexler, director of the Air Quality Research Center at UC Davis.

The winds the night of the Chevron malfunction were blowing between 5 and 10 mph from the north-northeast to the south-southwest, according to Jan Null, a meteorologist with Golden Gate Weather Services.

There are other weather facts at play, according to Wexler. If plumes of smoke and gas that erupt during refinery flaring don't mix well enough into the atmosphere, they can travel and affect a larger area, he said.

The Chevron case involved hydrogen sulfide, which smells like rotten eggs.

"Given that Chevron's own monitors apparently measured a high concentration of hydrogen sulfide shortly before people smelled an odor in San Francisco, and winds can blow a rotten smell 10 miles in 10-20 minutes, I strongly suspect the San Francisco odor was caused by Chevron's refinery," said Mark Jacobson, a professor of civil and environmental engineering at Stanford University and director of the school's Atmosphere and Energy Program.

Some residents of Richmond, Rodeo, Benicia and Martinez, cities where local refineries are located, have complained for years about unhealthy air coming from their oil industry neighbors.

But residents in large parts of the rest of the region might not feel a refinery can affect them.

“Unfortunately, the source at Chevron has had issues like this before. The difference here is that it affected a wider area, including San Francisco,” said John Gioia, a Contra Costa County supervisor and member of the Bay Area Air Quality Management District’s board of directors.

“We’ve been used to some of these odor issues in Richmond,” Gioia said.

The Center of Biological Diversity’s Sullivan says the Chevron incident means there’s a bigger risk to a larger part of the Bay Area.

“We’ve always viewed these refineries as a serious hazard to the people who live around them, often those are low-income people, people of color who seem to bear the brunt of this sort of pollution,” Sullivan said.

Chevron questions the air district’s findings, in part because its refinery is so far away from San Francisco.

“This is a complex issue, but given the small amount of H<sub>2</sub>S (hydrogen sulfide) released, the 11-mile distance across the bay, and the wide geography of the odor complaints, we believe it is unlikely that the flaring was the source of the odors,” Chevron spokeswoman Leah Casey said.

The distance made it tougher for local air regulators to identify the source.

“This was really a complicated issue because it did span quite a distance and affect a big part of the Bay Area,” said Tom Flannigan, a BAAQMD spokesman.

“When such a large area is affected, we really have to look closely at all the sources that could have caused it,” Flannigan said in an interview. “In this case that meant more time, that meant more energy, that meant more analysis. That meant more data review.”

San Francisco officials will now tackle the issue. Now that the air district investigation is complete, a Board of Supervisors committee is expected to hold a hearing on the refinery malfunction in the coming weeks.

“Chevron must be held accountable for the toxic gas that lingered in the air,” said Supervisor Mark Farrell, who called for the hearing. “Reforms must be implemented immediately to ensure this never happens again.”