

Refinery smoke blew past air monitors

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The canisters that were deployed during and after the Chevron fire to collect air samples to be brought back to the lab for testing at the Bay Area Air Quality Management District lab in San Francisco, Calif., Thursday, August 16, 2012. Photo: Jason Henry, Special To The Chronicle / SF



Smoke from a Chevron Oil refinery fire fills the sky above Richmond Calif., Monday August 6, 2012. Photo: Lance Iversen, The Chronicle / SF



The plume of smoke from the Chevron refinery fire blew past equipment used by the Bay Area Air Quality Management District that isn't designed to measure particulates found in a fire. Photo: John Storey, Special To The Chronicle / SF

Smoke and soot from the fire at Chevron's refinery in Richmond spread across a densely populated area, sickening thousands. But while the material found its way into lungs and bloodstreams, it did not find an air quality system that could measure it in a meaningful way.

The network of air monitors run by the Bay Area Air Quality Management District is designed to track everyday levels of pollutants like ozone and carbon monoxide, part of an effort to meet government health standards.

The network is not - as it demonstrated Aug. 6 - geared for disasters like refinery fires. It couldn't provide much data in real time, and may never provide good numbers on the particulate fallout from the smoky blaze.

Health officials believe those particulates were responsible for numerous emergency room visits by residents complaining of breathing problems. By the end of last week, the number of such visits totaled 11,000.

"The coverage was just ridiculously bad compared to the thousands of lungs, noses and eyes experiencing effects of the toxic soup that was released," said [Greg Karras](#), a senior scientist with Communities for a Better Environment, a nonprofit clean-air advocacy group in Richmond. "If you don't look for the pollution, you don't find the pollution."

The district maintains 40 monitors across the region, five of which are in western Contra Costa County.

Some change may be coming. The fire - which started when a leak in a pipe ignited, sending a plume of smoke thousands of feet into the air - has fomented community pressure.

[John Gioia](#), a Contra Costa County supervisor from Richmond who chairs the air district's board of directors, said he will propose more monitoring of the Bay Area's five refineries and other operations capable of big emissions.

"There needs to be additional monitoring," Gioia said. "We all have a right to know, as accurately as possible, what the air quality is after a release. We'll probably never know exactly, because you can't put a monitor on every block. But I think we can do better."

Discussions are already under way at the air district, said spokeswoman [Lisa Fasano](#), but they touch on complex issues. Among the questions are what monitoring tools would be most helpful and whether taxpayers or potential polluters should pay for them. Another challenge is making the information valuable in real time during a disaster.

"We're always looking at how we might improve our monitoring network, but this incident has made us refocus," Fasano said. "Is there technology out there that would allow us to provide better information? We're looking into that right now."

Portable canisters deployed

Environmentalists said the fire offered a one-day window into a monitoring system that is inadequate every day.

After the fire started, as residents were warned to shelter indoors, there was an effort to gauge what was in the air. Air district and county workers began using eight bowling ball-size portable canisters to take downwind air samples, looking for 23 toxic compounds, including benzene, which can cause cancer.

The district said just one sample showed a contaminant exceeding state health guidelines - acrolein, which can cause skin, eye and respiratory tract irritation.

However, the canisters do not test for particulate matter, which can irritate the eyes, nose and throat, and aggravate asthma and lung disease. In the long term, particulates can reduce lung function and prompt chronic bronchitis.

Measurement 2 miles away

Nor were particulates measured by Chevron employees who were dispatched to take samples after the fire. The only authoritative monitor of particulates in the area was in San Pablo, at an air district station 2 miles from Chevron.

That filter-based monitor runs once every six days for 24 hours. Coincidentally, it ran the night of the fire, starting at midnight, 5 1/2 hours after ignition. The district said it needed two weeks to analyze the results, which haven't come back yet.

The monitor, which looks a bit like R2-D2, the "Star Wars" robot, runs just once every six days because that offers a solid statistical sample, officials said.

The Chronicle asked Mike Jerrett, chairman of environmental health sciences at the UC Berkeley School of Public Health, to analyze air quality following the fire. But after looking at the available data from the district, Jerrett, who has conducted extensive research on refineries in Canada, said there wasn't enough of it.

"The truth is, for this plant, and for many others, we really don't (know)," he said. "We need a better ongoing monitoring system ... in and around the industrial locations. If we're going to understand the impact of the pollution, we need to be more informed."

Meaningful monitoring would require analysis of "dozens or hundreds of compounds," Jerrett said.

Karras said environmentalists and residents have pushed for years for real-time monitoring of particulates downwind of Chevron. Karras said that would allow people - and their doctors - to make informed choices on what to do after a release. Residents could also use the information to recoup damages from polluters, he said.

"The company has resisted giving more resources to locals and to government agencies," Karras said, "and when they're criticized, they offer to do their own monitoring as an alternative. The trouble is, people don't trust the fox guarding the henhouse."

In a statement, Chevron officials disagreed, saying that they work with more than 30 regulatory agencies under some of the nation's strictest pollution rules and have reduced pollution by 65 percent since the 1970s. They noted that vehicles and wood burning were far bigger sources of emissions.

They also said that they were augmenting their own three ground-level monitors within the refinery - adding devices on the fence line and working with neighbors in North Richmond, Atchison Village and Point Richmond to find spots for monitors whose results would be posted online.

"We are always reviewing efforts to improve air quality data and better inform the public," a company statement said.

Difficult to analyze

The Aug. 6 fire's emissions were difficult to analyze because the plume of smoke shot high into the air before spreading out and following the wind, according to the manager of the air district's laboratory, where samples are analyzed.

"We've sometimes sent firefighters in there with their coats and masks to take a sample for us, and then you get a really strong sample," lab manager Jim Hesson said. "But hydrocarbon fires burn so hot that you often can't."

The eight canisters the district used after the Chevron fire had to be brought back to the San Francisco lab for analysis. Officials have looked into buying portable monitors that could spit out results in the field, but they don't think the technology is yet up to snuff, Hesson said.

"You can do it - it won't be as good," Hesson said. "The portable instruments are getting better and better. ... But it will probably still be five to 10 years."

One tool the district has considered is a 30-pound portable chromatographer that looks like a "Ghostbusters" backpack. It costs \$130,000, is 50 times less precise than the canisters and doesn't measure particulates, Hesson said.

"Do we want to spend that kind of money on something that doesn't work very well?" he asked.

For particulates, regulators mulled using portable devices as well, which cost a few thousand dollars. But they found the Bay Area's famous fog would cause inaccurate readings.

Dan Jacobson, legislative director for the nonprofit Environment California, said he was unaware of any region in the country with robust monitoring of industrial emissions.

"This is sort of like drug testing on athletes - we're always behind the game," he said. "What we need is information constantly, and we need access to the information all the time. We shouldn't be waiting for an accident and then trying to find out how bad it is."

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