

Study uses satellite data to pinpoint widespread oil industry 'flaring'

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Flaring off natural gas. Credit: blake.thornberry on Flickr CC BY-NC-ND 2.0

A new study by San Francisco State University Assistant Professor of Health Education Lara Cushing and colleagues at the University of Southern California Keck School of Medicine shows that satellite data can be used to effectively track the potentially harmful, underreported oil and gas industry practice known as "flaring."

When companies drill in areas without the infrastructure needed to capture and transport the large amounts of natural gas that can be a byproduct of oil extraction, it is cheaper and easier for them to simply flare—or burn off—the gas instead. This contributes to [greenhouse gas emissions](#), wastes energy and could cause health impacts to people living nearby, according to Cushing and the study's authors. Yet the practice and its impacts are rarely monitored closely.

"The data that's out there doesn't systemically track what people are being exposed to," said Cushing. "By using [satellite observations](#) taken from space, we can see where and when the flaring is happening."

Cushing and her partners on the study examined [satellite data](#) developed by the National Oceanic and Atmospheric Administration (NOAA) Earth Observation Group for the Eagle Ford Shale Region of south Texas for the years 2012 to 2016. The area was a good fit for the study because of a large oil production boom there starting in 2010.

"We wanted to get an idea of how much flaring was occurring in order to determine whether the situation could be harmful," Cushing said. "We know flaring can release a wide variety of harmful air pollutants, including things like [particulate matter](#) and volatile organic compounds. These substances all have well-documented long- and short-term health effects."

Flaring can lead to high levels of airborne particulate matter, which are associated with respiratory ailments, [cardiovascular disease](#) and adverse birth outcomes, for instance. The practice can also release [volatile organic compounds](#) such as benzene, a known carcinogen.

The NOAA data documented widespread gas flares, which appear as circles of light that are bright in the center and dimmer at the edges. Cushing and her colleagues identified more than 43,000 flares over the

five-year period. By comparing the satellite flaring data to well permit data in the area, the researchers revealed that the majority of flares were associated with the oil-producing and horizontally-drilled wells associated with fracking.

"We estimate four-and-a-half billion cubic meters of gas were burned off in that five-year period, enough to heat about 2.5 million homes for a year," Cushing said.

More information: Meredith Franklin et al, Characterizing Flaring from Unconventional Oil and Gas Operations in South Texas Using Satellite Observations, *Environmental Science & Technology* (2019). DOI: [10.1021/acs.est.8b05355](https://doi.org/10.1021/acs.est.8b05355)

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