

Living near oil and gas wells tied to low birth weights in infants

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Living near active oil and gas wells may put pregnant people at higher risk of having low birth weight babies, especially in rural areas, finds a new study of birth outcomes in California.

The study, funded by the California Air Resources Board, is one of the largest of its kind and the first in the state. It analyzed the records of nearly 3 million births to people living within 6.2 miles (10 kilometers) of at least one oil or gas well between 2006 and 2015. Unlike previous studies, it examined births in both rural and urban areas, and people living near both active and inactive oil and gas sites.

The study found that, in rural areas, pregnant people who lived within 0.62 miles (1 kilometer) of the highest producing wells were 40% more likely to have low birth weight babies and 20% more likely to have babies who were small for their gestational age compared to people living farther away from wells or near inactive wells only. Among term births, babies were 1.3 ounces (36 grams) smaller, on average, than those of their counterparts.

People living near active wells in urban areas also had slightly increased odds of having small for gestational age babies than their counterparts. The study did not find a significant relationship between proximity to oil and gas wells and premature births.

"Being born of low birth weight or small for gestational age can affect the development of newborns and increase their risk of health problems in [early childhood](#) and even into adulthood," said Rachel Morello-Frosch, a professor of public health and of [environmental science](#), policy and management at the University of California, Berkeley, and senior author of the paper. "When you see a shift of over 30 grams of birth weight among term infants, from an individual clinical perspective, it may not seem like a lot. But when you see that kind of large population shift in birth weight—that can have significant population level implications for infant and children's health."

The findings, published June 3 in the journal *Environmental Health Perspectives*, add to a growing body of evidence linking proximity to oil

and [gas wells](#) to a variety of adverse birth outcomes, including premature birth, heart defects and low birth weight.

Oil production in California has generally declined over the past three decades, and Gov. Gavin Newsom last year issued stricter regulations on new fracking permits in the state. However, the state issued 24 new fracking permits in early April, and another 282 are awaiting review.

"This study is the first to characterize the implications for perinatal health of active oil and gas production in the state, and I think the results can inform decision-making in regulatory enforcement and permitting activities." Morello-Frosch said. "Results from health studies such as ours support recent efforts to increase buffers between active well activities and where people live, go to school and play. This scientific evidence of adverse health effects facing vulnerable populations, including pregnant women, should be taken into account as Californians debate the extent to which we want to expand oil and gas drilling in our state."

A long history of oil production

Previous research linking oil and gas production to adverse birth outcomes has examined people living near fracking sites in Colorado, Pennsylvania, Oklahoma and Texas. Oil production in California differs from some of these other regions because the infrastructure is generally much older, and the state has a high number of inactive wells.

In addition, because of the geology of the region, many of the sites use enhancement techniques, including fracking and steam and water injection, to access oil reserves, said study lead author Kathy Tran, a graduate student in environmental health sciences at UC Berkeley,

"Even though the California oil and gas industry dates back to the early

1900s, there hasn't been any analysis looking at potential health effects related to oil and gas exposure," Tran said.

Both active and inactive oil and gas sites create a myriad of environmental hazards that have the potential to impact perinatal health, including air and water pollutants, noise and excessive lighting. However, with limited access to the production sites themselves, it can be hard for researchers to pinpoint precisely what factors might be contributing to adverse birth outcomes.

"A lot of the equipment that's being operated on site is a contributor to air pollution, but how much air pollution is an unknown because the inventory industry reports are estimated based on emissions factors, as opposed to measured emissions levels." Tran said. "We assume that with greater production volume, the equipment is being used more intensively. And for that reason, that may be a significant contributor to why we see some impacts related to adverse birth outcomes."

The study corrected for a variety of demographic factors that might also impact birth outcomes, including race, ethnicity, socioeconomic status, maternal education and other neighborhood-level factors, including other sources of air pollution.

While it's unclear why the differences in [birth](#) weight were more pronounced in [rural areas](#) than in [urban areas](#), the researchers hypothesize that other factors—such as differences in indoor air quality, maternal occupation or housing conditions—may have impacted the results.

In the future, Tran hopes that measurements of people's actual exposure to potentially toxic pollutants from oil and gas sites will help pinpoint the culprits behind these findings.

"Because researchers don't have direct access to the actual oil and gas sites, it's hard to get a good estimate of what people actually experience," Tran said. "Obviously, things like wind direction and water movement and other environmental conditions factor into personal exposure, as well. And for that reason, the more in-depth exposure assessment we can get, the more we can really understand why we are seeing the effects that we see."

More information: *Environmental Health Perspectives* (2020). [DOI: 10.1289/EHP5842](https://doi.org/10.1289/EHP5842)

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