

Shale drilling activity linked to increased sexually transmitted infections in Texas

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Shale Gas Industry. Credit: Yale School of Public Health

Researchers at the Yale School of Public Health have found that rates of two sexually transmitted infections (STIs), gonorrhea and chlamydia, are 15% and 10% higher, respectively, in Texas counties with high shale drilling activity ("fracking"), compared to counties without any fracking.

No association, however, was observed between drilling and STI rates in Colorado or North Dakota. Also, rates of a third STI, syphilis, were not elevated in any of the states.

The findings are published in the journal *Sexually Transmitted Diseases*.

"The findings in Texas add to the evidence of the social impacts in communities hosting the shale gas industry," said senior author Nicole Deziel, Ph.D., assistant professor at the Yale School of Public Health. "The associations between shale drilling and chlamydia and gonorrhea in Texas specifically may reflect the higher level of drilling activity and a greater number of densely populated [metropolitan areas](#) compared to other regions."

The extraction of oil and natural gas from

unconventional sources such as deep shale rock formations using techniques including horizontal drilling and high-volume hydraulic fracturing has helped position the United States as the leading global producer of both crude oil and natural gas.

In 2018, these techniques accounted for ~60% of both oil and [natural gas](#) production. This expansion has been suggested to increase employment and stimulate the local economy. But others raise concerns about poorer air and water quality, transportation infrastructure, potential earthquakes and increased noise.

Shale gas extraction often involves the influx of specialized workers into rural areas to meet the labor demands of the drilling rigs. This mobile workforce is largely composed of young men living in temporary workcamps with limited connections to the community. In this setting, workers may have opportunities to seek new sex partners, thereby changing sexual networks and increasing [disease transmission](#) in the community.

The lack of an association between shale [drilling](#) activity and rates of syphilis may be because this STI occurs most commonly in men who have sex with men, which compose only a small proportion of the male population, making it difficult to study.

The study examined reported STI cases over 2000-2016; this long follow-up period covered both pre- and post-fracking periods to account for any pre-existing trends in STI rates. The [study design](#) examined industrial changes at the county level, which corresponds to the geographic scale at which policy changes could be implemented.

"These findings point to the potential importance of shale extraction as a social determinant of health, one that alters communities in a way that increases risk for STI transmission," said co-author and STI researcher Linda Niccolai, Ph.D., professor at the Yale School of Public Health.

The results may be useful in informing local public health officials and policymakers; the inter-state differences underscore the need for local epidemiology to prioritize community health policies, said Nicholaus Johnson, MPH, a Yale School of Public Health postgraduate associate and the study's lead author.

"Future research should focus on improving an understanding of the transmission patterns present between nonlocal oil and gas workers and community members, without stigmatizing workers."

More information: Nicholaus P. Johnson et al, A Multi-Region Analysis of Shale Drilling Activity and Rates of Sexually Transmitted Infections in the United States, *Sexually Transmitted Diseases* (2020). DOI: [10.1097/OLQ.0000000000001127](https://doi.org/10.1097/OLQ.0000000000001127)

Provided by Yale School of Public Health

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