

## The Unseen Health Crisis in Fracked Communities

Willis, M. D., Campbell, E. J., Selbe, S., Koenig, M. R., Gradus, J. L., Nillni, Y. I., Casey, J. A., Deziel, N. C., Hatch, E. E., Wesselink, A. K., and Wise, L. A. (2024). Residential Proximity to Oil and Gas Development and Mental Health in a North American Preconception Cohort Study: 2013–2023. *American Journal of Public Health* 114. <https://doi.org/10.2105/AJPH.2024.307730>

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### Background

In heavily fracked counties across the country, dirty air, loud industrial activity, and bright lights at night are a constant stressor. Shale gas development (SGD), of which fracking is just one phase, is known to pollute nearby air and water, leading to adverse respiratory and skin conditions, endocrine disruption, and even cancer. A less obvious, but just as critical, health outcome is also closely tied to shale gas development: mental health. Previous research has shown that living near shale gas activity can profoundly affect the mental health of those living, working, and going to school nearby.

In the context of SGD, exposure to these activities can contribute to the [manifestation of depression, anxiety, and psychological distress](#). This stress response can manifest from a range of tangible and intangible factors. Noise and vibrations from heavy trucking traffic cause a constant disturbance to sleep and peacefulness in the home. Bright lights from facilities at night can also contribute to significant psychological stress.

One [resident in southwestern Pennsylvania](#), who lived amid the drilling of fracked wells in the Marcellus shale, reported:

“People couldn’t sleep at night because of the light and the noise and the vibrations from the drilling. Residents showed me photos and videos of the insides of their houses looking like daylight at night, of their houses vibrating from the activity at the pad.”

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Some of the more intangible factors that can contribute to anxiety include uncertainties about health risks, environmental impacts, and economic security. Because some of the toxic chemicals used in fracking are considered trade secrets, it is impossible to know exactly what is contaminating the air and water supply around shale gas operations, causing fear of the unknown potential impacts. Shale gas development can also introduce a slew of economic uncertainties – in the heavily fracked Ohio River Valley, for example, empty promises from oil and gas development companies have been associated with an overall decline in job security, [with a loss in over 10,000 jobs regionally](#).

Those living near oil and gas facilities often experience feelings of powerlessness and frustration. Residents perceive a lack of transparency and limited avenues for voicing concerns about health, economic, and environmental security. One resident living approximately [1,000 feet from a fracking site in Colorado](#) said:

"This was a public hearing... and they turned it over to [an oil company] to give their slideshow... [The oil company] proceeded to do about a two-hour presentation, so there was no time for public input. So four or five people out of a hundred people who wanted to protest got a chance to talk. It's very hard to be heard."

This testimony highlights the powerlessness that can lead to mental health difficulties in the face of oil and gas giants who often dictate policy. Meanwhile, the industry continues to expand into communities, threatening to increase the mental and physical health burden; [shale gas extraction has boomed](#) from 1.9 trillion cubic feet of gas in 2007 to 32.5 trillion cubic feet in 2022.

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## New Evidence on the Mental Health Link

[A recent study by Willis et al.](#) provides additional context to the understanding of the mental health outcomes of residential proximity to oil and gas activity. The study looked at data from the Pregnancy Study Online (PRESTO), a large prospective cohort of reproductive-age women in the United States and Canada who were planning pregnancy.

The researchers assessed self-reported mental health metrics to get baseline mental health information for the cohort. Exposure to sources of health impacts was determined based on mapping residences to known oil and gas wells using publicly available data as well as the researcher's own data. Participants were grouped by distance from the nearest oil and gas site in four categories: less than 2 km, 2 to 10 km, 10 to 20 km, and 20 to 50 km.

After adjusting for sociodemographic and neighborhood-level covariates—such as age, education, income, race/ethnicity, and others—researchers found that living within 2 km of an oil or gas facility was associated with:

- A **27% higher prevalence** of depressive symptoms (Prevalence Ratio [PR] = 1.27, 95% CI: 1.11–1.45);
- A **16% higher prevalence** of elevated perceived stress (PR = 1.16, 95% CI: 1.05–1.29); and
- An 11%, not statistically significant, increase in psychotropic medication use (PR = 1.11, 95% CI: 0.97–1.28).

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Interestingly, these results were observed when researchers restricted the data to individuals without a history of depression, indicating that depression onset could stem from exposure to oil and gas development. The results show that even in relatively healthy populations, close residential proximity to oil and gas facilities may increase the risk of poor mental health outcomes.

The results confirm those from previous studies. One [previous study](#) indicated that the most reported unique health impact from those living in proximity to SGD was stress. Another study [asserted that the overarching theme](#) defining the meaning of health among the participants was a sense of powerlessness over changes related to the shale gas drilling industry in their community. Willis et al.'s findings expand on the current understanding of the literature by offering strong quantitative support for the mental health toll that shale gas development takes on nearby residents.



## The Need for Policy Protections

The mental health consequences of SGD on nearby residents are cause for policy to safeguard communities in the face of industry expansion. Communities located near drilling sites are [often the most socioeconomically vulnerable](#), with little political or economic power to stand up to industry giants. With fewer resources to address health risks or access critical care, stress can compound, leading to a feedback loop of mental health challenges. This burden requires policy-level protections in order to properly

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secure public health outcomes. These actions could include:

- Integrating mental health and stress indicators into Health Impact Assessments, permits, and other actions that take place ahead of the approval of new oil and gas development
- Expanding monitoring and surveillance to allow communities to understand the impact of oil and gas development in their areas
- Addressing non-chemical exposures and features of community, including social cohesion, trust in regulators, environmental quality, and industry transparency, and incorporating resident feedback and involvement in the approval of new oil and gas projects
- Encouraging long-term and wide-reaching studies to assess the relationship between shale gas operations and health.

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## To learn more about this study, explore these links:

Ferrar, K. J., Kriesky, J., Christen, C. L., Marshall, L. P., Malone, S. L., Sharma, R. K., Michanowicz, D. R., & Goldstein, B. D. (2013). Assessment and longitudinal analysis of health impacts and stressors perceived to result from unconventional shale gas development in the Marcellus Shale region. *International Journal of Occupational and Environmental Health*, 19(2), 104–112. <https://doi.org/10.1179/2049396713Y.0000000024>

Gee, G. C., & Payne-Sturges, D. C. (2004). Environmental health disparities: A framework integrating psychosocial and environmental concepts. *Environmental Health Perspectives*, 112(17), 1645–1653. <https://doi.org/10.1289/ehp.7074>

Malin, S. (2020). Depressed democracy, environmental injustice: Exploring the negative mental health implications of unconventional oil and gas production in the United States. *Energy Research & Social Science*. 70, 101720. <https://doi.org/10.1016/j.erss.2020.101720>

Malin, S. (2020). Fracking takes a toll on mental health as drilling and truck traffic rattle neighborhoods. *The Conversation*. <https://theconversation.com/fracking-takes-a-toll-on-mental-health-as-drilling-and-truck-traffic-rattle-neighborhoods-146528>

O’Leary, S. (2023). Frackalachia Update: Peak Natural Gas and the Economic Implications for Appalachia. *Ohio River Valley Institute*. <https://ohiorivervalleyinstitute.org/frackalachia-update-peak-natural-gas-and-the-economic-implications-for-appalachia/>

Resick, L. K., Knestrick, J. M., Counts, M. M., Pizzuto, L. K. (2013). The meaning of health among mid-Appalachian women within the context of the environment. *Journal of Environmental Studies and Sciences*. 3(290–296). <https://doi.org/10.1007/s13412-013-0119-y>

United States Energy Information Administration. (2023). *U.S. Oil and Natural Gas Wells by Production Rate*. <https://www.eia.gov/petroleum/wells/>

Willis, M. D., McKenzie, L. M., Hystad, P., Thomas, D., Flower, K. M., Farland, L. V., Ford, J. B., & Williams, P. L. (2024). Residential proximity to oil and gas development and mental health in a North American preconception cohort. *Environmental Health Perspectives*, 132(3), 037002. <https://doi.org/10.1289/EHP12917>

Zwickl, K. (2019). The demographics of fracking: A spatial analysis for four U.S. states. *Ecological Economics*. 161(202–215). <https://doi.org/10.1016/j.ecolecon.2019.02.001>