

Featured Research Review:

Hays, J., McCawley, M., Shonkoff, S.B.C. (2017). [Potential health impacts for noise pollution from shale gas development](#)

November 1, 2022

Terms to know:

[Annoyance](#) – when an individual is in the state of feeling irritated.

[Sleep disturbance](#) – disorders that impact an individual’s ability to sleep, such as not being able to fall asleep or stay asleep, waking up frequently, or disruption of a sleep schedule.

[Noise pollution](#) – sound that exceeds normal limits and that could negatively impact health. This can be generated from industrial facilities, railways, highways, and other commercial sources.

Historically, health impact research on shale gas development (SGD) has been focused on methane emissions, air pollution, surface and groundwater contamination, and the identification of fracking chemicals in various stages of SGD. There are many studies regarding air pollution and water contamination associated with SGD, however, noise pollution related to SGD remains relatively unexplored.

Most existing studies involving noise pollution analyze associations between negative health effects and noise from airports, road traffic, and railways. The [Maryland Institute for Applied Environmental Health](#) states that throughout the various stages of oil and gas development, intermittent and continuous noise is produced.

Researchers have identified noise pollution as a main concern among residents in communities surrounding SGD infrastructure. A new study, “[Public health implications of environmental noise associated with unconventional oil and gas development](#)” (Hays, J., McCawley, M., Shonkoff, S.B.C., 2017) examines this issue. The study is a literature review that focuses on annoyance, sleep disturbance and cardiovascular health outcomes as the potential health impacts for noise exposure from SGD.

This study’s authors aim to expand on the existing research by highlighting what is currently known about the health effects of noise pollution and identify gaps and limitations in the existing literature, specifically as it relates to SGD. Due to the limited availability of peer-reviewed articles, the authors decided to use measurements and

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estimates of noise levels for SGD found in government reports and independent analyses. They took into account limitations such as differences in methodology and the type of oil or gas development for which the measurements were taken. They then identified two main sources of noise from SGD processes:

- Construction and preparation (which includes road construction, well pad preparation, and truck traffic)
- Production and completion (which includes flaring operations, drilling, hydraulic fracturing, and compressor stations)

This literature review found:

- Oil and gas operations have produced sound level measurements that could lead to annoyance, sleep disturbance, and cardiovascular health outcomes.
- There is more of a risk for annoyance and sleep disturbance since these health impacts occur at lower noise levels.
- Cardiovascular health outcomes may be less of a risk as they are known to be associated with chronic and continuous noise exposure (e.g., noise from compressor stations), which may contribute to conditions such as hypertension.
- Vulnerable populations that can be disproportionately affected by noise include children, the elderly, individuals more sensitive to noise, developing fetuses or newborn babies, and those with tinnitus, chronic health conditions, mental illness, or lower socioeconomic status.
- When examining noise levels, is it important to look not only at the type of source but also the distance, air temperature, humidity, wind patterns, and local topography.

The study concluded that noise impacts from SGD could cause physical health impacts. However, to better understand the impact of noise from SGD as a potential public health concern, additional research is warranted.

To learn more about this study, explore these links:

- Evans, J. M., Helmig, D. (2016). Investigation of the influence of transport from oil and natural gas regions on elevated ozone levels in the Northern Colorado Front Range. *Journal of the Air Waste Management Association*. <https://pubmed.ncbi.nlm.nih.gov/27629587/>
- Jackson, R.B., Vengosh, A., Carey, J. W., Davies, R. J., Darrah, T. H., O'Sullivan, F., et al. (2014). The environmental costs and benefits of fracking. *Annual Review of Environment and Resources*. 39, 327–362. <https://doi.org/10.1146/annurev-environ-031113-144051>
- Milton, D., Wilson, S., Jiang, C., Dalemarre, L., Sapkota, A., Sangaramoorthy, T., Boyle, M. (2014, July). . Potential Public Health Impacts of Natural Gas Development and

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Production in the Marcellus Shale in Western Maryland. Maryland Institute for Applied Environmental Health, School of Public Health, University of Maryland. <https://umd.app.box.com/s/4au0leksj6ld06o3d1ypatu9i8ub9ivc>.

- McCawley, M., & Shonkoff, S. B. (2017, February). Public health implications of environmental noise associated with unconventional oil and gas development. *Science of the Total Environment*, 580, 448–456.
<https://doi.org/10.1016/j.scitotenv.2016.11.118>
- Van Kamp, I., Davies, H. (2013). Noise and health in vulnerable groups: a review. *Noise & Health*, 15, 153–159.
<https://www.noiseandhealth.org/article.asp?issn=1463-1741;year=2013;volume=15;issue=64;spage=153;epage=159;aulast=van>

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