

Health Risks to Children from Shale Gas Development

What are commonly reported symptoms?^{1,2}

- Sleep disruption
- Stress/anxiety
- Inability to concentrate



Created by alimasykurm from the Noun Project

- Headache
- Itchy/painful eyes
- Sinus problems



Created by Yazmin Alanis from the Noun Project

- Shortness of breath
- Cough
- Wheezing
- Sore throat



Created by Binpodo from the Noun Project

- Fatigue
- Drowsiness
- Nausea
- Skin rashes and irritation



Created by Pixelicatom from the Noun Project

If you or your child experiences these symptoms, consider talking to a trusted health professional or a school nurse, principal, or daycare provider, as symptoms may be from exposures to SGD.



Photo courtesy of Paulo Sousa from NounProject.com.

What are the dangers of shale gas development?

Shale gas development (SGD), sometimes called fracking, produces significant emissions at every stage of the process through planned emissions and accidental leaks. Emissions are released from well pads, pipelines, condensate tanks, compressor and metering stations, processing plants, and other infrastructure. The emissions from these facilities contain dangerous chemicals, such as fine particulate matter (PM_{2.5}), volatile organic compounds (VOCs) (like benzene and toluene), nitrogen oxides (NO_x), radon gas, and many others. These harmful emissions can then pollute air, water, and soil in surrounding areas.

Data shows that there are over 12,000 schools and daycares within half a mile of an active oil and gas well.³ Children in daycare centers or schools near SGD may be exposed to the toxic pollutants these facilities release through contamination in the nearby air, water, or soil. Children can be exposed to contaminants while being outside during recess or gym class, or when commuting to and from school. Contaminates can also enter buildings through open doors, windows, and ventilation systems, and can be carried inside on clothing and shoes.

Why are children more vulnerable?⁴

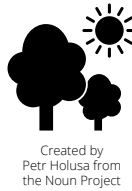
- Children accumulate more toxic chemicals in their bodies than adults. Due to growth and development, children don't clear toxics from their bodies as efficiently as adults.
- Children have higher breathing rates. When exposed to air contaminants, children breathe in more toxics per pound of body weight than adults.
- Children spend more time engaged in vigorous activity outside, so they breathe in more than they would if they were sitting still.
- Children's brains are still developing. Toxic agents used in SGD are known to interfere with brain development.

What to do?

AIR

Outdoor

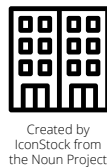
Check the air quality in your area by visiting airnow.gov and entering your zip code. AirNow analyzes air quality data to determine whether the current air quality is healthy or unhealthy.



- In the event of an unhealthy air quality day, children and other vulnerable populations (elderly, those with health conditions, pregnant individuals, etc.) should stay inside or limit going outdoors to short intervals.
- If you sense that the air in your area is not right even though AirNow indicates it is healthy, keep children inside. There may be localized pollution emitted from a nearby site.

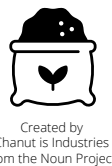
Indoor

- On unhealthy outdoor air days, keep windows closed to minimize air pollution entering the building.
- Limit indoor pollutants, such as molds and chemicals in air fresheners, cleaning supplies, and some paints.
- If possible, get an air filter to remove some particulate matter (PM) and chemicals from the air. Information on recommended air filters, as well as how to make your own at home, can be found on EHP's website.



WATER & SOIL

- Knowing the quality of your residential groundwater is important for protecting your health. Consider testing your well water often to ensure that it is clean.



- If your water is contaminated, consider using an alternative source of water like bottled water for drinking, cooking, and making baby formula. Additionally, consider using a water filter, and when showering and ventilating rooms where you are using water.
- Test your soil, especially in areas where children play or where food is grown.
- Build raised beds to grow any foods you will eat and wash fruits and vegetables thoroughly before eating.
- Remove shoes upon entering your residence to reduce the spread of contamination.
- For more recommendations about how to protect your health and monitor your air, water, and soil quality, visit environmentalhealthproject.org

Childhood Asthma

In the U.S., more than 25 million people, including four million children, have asthma.⁵ While the link between air pollution and asthma exacerbations is well understood, some research suggests that exposure to air pollution, especially early in life, may play a role in developing the disease.⁶

A study conducted by Willis et al. (2018) in Pennsylvania found that children and adolescents exposed to newly built SGD wells had 25% greater odds of being hospitalized for asthma compared to children and adolescents not exposed to SGD wells. The study found increases in odds of hospitalizations for years after the initial SGD drilling began. These findings suggest that exposure continues even after drilling has ended and wells are in operation.⁷

¹ U.S. Environmental Protection Agency. (2022, August 5). *About the State School Environmental Health Guidelines*. <https://www.epa.gov/schools/about-state-school-environmental-health-guidelines#importance>

² Environmental Health Project. (2023). *Health Impacts of Shale Gas Development: A Collection of Research*. https://www.environmentalhealthproject.org/_files/ugd/a9ce25_feddf7415ba4d3b894e94821aa40aab.pdf

³ Earthworks, FrackTracker Alliance. *The Oil & Gas Threat Map*. Retrieved March 22, 2023, from <https://oilandgasthreatmap.com/threat-map/>

⁴ Webb, E., Moon, J., Dyrszka, L., Rodriguez, B. J., Cox, C., Patisaul, H. B., Bushkin, S., & London, E. (2018). Neurodevelopmental and neurological effects of chemicals associated with unconventional oil and natural gas operations and their potential effects on infants and children. *Reviews on Environmental Health*, 33(1), 3–29. <https://www.degruyter.com/document/doi/10.1515/reveh-2017-0008/html>

⁵ Centers for Disease Control and Prevention. (2022, December 13). *Most Recent National Asthma Data*. https://www.cdc.gov/asthma/most_recent_national_asthma_data.htm

⁶ American Academy of Allergy Asthma and Immunology. *Your Questions Answered on Air Pollution and Asthma*. Retrieved April 20, 2023, from <https://www.aaaai.org/tools-for-the-public/conditions-library/asthma/your-questions-answered-on-air-pollution-and-asthma>

⁷ Willis, M., Jusko, T., Halterman, J., Hill, E. (2018). Unconventional natural gas development and pediatric asthma hospitalizations in Pennsylvania. *Environmental Research*, 166, 402–408. <https://www.sciencedirect.com/science/article/abs/pii/S001393511830183X>

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724.260.5504 ■ www.environmentalhealthproject.org ■ info@environmentalhealthproject.org