

Marcellus Shale natural gas

Impacts on Air Quality, Public Health and Climate



Creates Main Ingredients of Smog

Every stage of natural gas production and delivery causes air pollution. Shale gas operations can interfere with a region's ability to meet air quality standards or cause local air quality issues.

Anytime a fuel burns, pollution is emitted. Whether burning natural gas or diesel, massive engines at compressor stations emit many tons of harmful pollution each year, including nitrous oxides (NOx) and volatile organic compounds (VOCs). After drilling, gas is typically flared off at the well pad, emitting high concentration of VOCs, methane and NOx.

Diesel engines are used to drill, and to pump water, silica, and chemicals deep into the ground. Diesel trucks work around the clock to transport massive amounts of water or fluid mixtures to and from drilling sites and release exhaust. VOCs and Nitrous Oxides "bake" in sunlight to form ground-level ozone, which is the main ingredient of smog.

Public Health Impacts

Ground-level ozone is particularly damaging to children, the elderly, and people with preexisting health issues. Ozone can trigger a variety of health problems including chest pain, coughing, throat irritation, and congestion. It can worsen bronchitis, emphysema, and asthma, and it can permanently burn and scar lung tissue.

Natural gas in the Marcellus Shale has one of the highest concentrations of cancer-causing naturally occurring radioactive materials as compared to other types of shale deposits.

Silica dust used to prop open cracks in the shale deposit is known to cause silicosis. The National Institute for Occupational Safety and Health (NIOSH) identified airborne silica exposure as a health hazard to workers at fracking operations.

Accelerates Climate Change

Natural gas is composed largely of methane, which is 72 times more potent a greenhouse gas than carbon dioxide in the 20 year time frame and therefore will have a significant impact on climate change in the most critical years.

Greenhouse gases (GHGs) from oil and gas operations include vented emissions, combustion emissions and fugitive emissions. Carbon dioxide and methane ("CH₄") are the most prevalent GHGs emitted from oil and gas operations, and the industry is the largest human-made source of CH₄ emissions globally.

Studies estimate that 3.6% to 7.9% of the methane from shale-gas production escapes to the atmosphere in venting and leaks over the lifetime of a well. Compared to coal, the footprint of shale gas is at least 20% greater and perhaps more than twice as great on the 20-year horizon and is similar when compared over 100 years. A more recent study determined that methane leakage throughout the natural gas life cycle is even higher than these studies indicate and that reduction in leakage are necessary to maximize the touted climate benefits of natural gas.

Scientists estimate that a warmer climate will increase the frequency of days with unhealthy levels of ground-level ozone.

How can one person make a difference on this issue?



- Work on local campaigns aimed to protect public health from local air pollution sources
- Sign up for clean air action alerts and follow Clean Air Council on facebook
- Comment on natural gas equipment and rulemaking
- Report potential pollution issues or complaints such as odors, visible emissions or noises
- Request trainings on air quality and health impacts of natural gas operations
- Request trainings on researching natural gas permits and community organizing
- Organize campaigns in your own community
- Attend and testify at PA DEP public hearings
- Share your own personal story

For more information, please contact Matt Walker at mwalker@cleanair.org or 215-567-4004 ext. 121