

Oil and Gas Operation Impacts on Public Health

With the expansion of unconventional oil and gas operations during the past two decades and the use of hydraulic fracturing to access oil and gas in tight geologic formations, expanded oil and gas development has been conducted in 29 different basins across the U.S. and Canada. These basins are highlighted in the figure below and include several basins in New Mexico including the Delaware/Permian Basins in southeastern New Mexico and the San Juan/Raton Basins in northern New Mexico.

The San Juan Basin/Raton Basins are mainly natural gas production areas, while the Permian/Delaware Basins are mainly oil production areas. Enhanced oil and natural gas development in these basins has made New Mexico the 2nd largest oil and natural gas producing state in the United States (U.S.).

Oil and natural gas exploration and production operations include a broad spectrum of activities including;

- site and roadway development,
- drilling and hydraulic fracturing,
- oil and natural gas production and storage, and
- product and waste transportation and disposal.



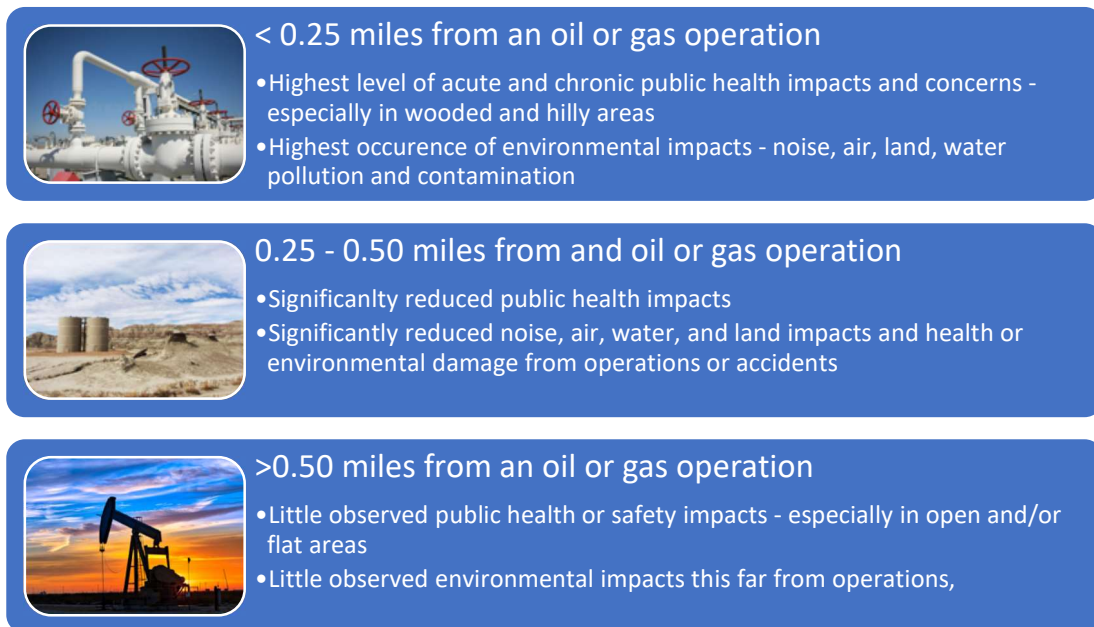
Each of these exploration, drilling, and production activities have associated environmental and public health risks and impacts that are monitored and governed by state and federal health, safety, and environmental laws and regulations. These include but are not limited to policies and regulations for:

- oil and gas operational safety and worker protection,
- dust and fugitive air emission control and treatment,
- noise pollution management and abatement,
- product transportation and pipeline safety,
- leak and spill monitoring and cleanup, and
- oil and gas waste management and disposal.

These regulations and safeguards are in place to minimize public and environmental exposure, risks, and impacts from oil and natural gas operations, but local and regional geography, climate, ecology, and population density also have an impact on overall public and environmental health and safety. For this reason, many studies have been conducted to evaluate the impact of climate, terrain, and the proximity to oil and gas operations, on public and environmental health and safety.

While much of the national expansion in oil and gas operations has been in the western U.S. some of this expansion has also occurred in the eastern and southeastern U.S. These are regions with much different climate, geography, botanical diversity, and population density than seen in most oil and natural gas production areas in New Mexico and the southwest. Therefore, we need to understand that the health and safety challenges and concerns from oil and natural gas operations in New Mexico could be different than those in the eastern U.S.

The Consortium has reviewed a compendium of almost 1000 evaluations and studies of the impact of oil and gas operations on public health and safety by Physicians for Social Responsibility [1]. They found that the impact on a person's health and safety was closely correlated with the proximity of their home to an oil or gas operation. Essentially, the closer a person lives to oil and gas operations, the more likely they are to experience acute or chronic health issues. These results are summarized in the figure below.



[1] The Compendium of Scientific, Medical, and Media Filings Demonstrating the Risks and Harms of Fracking, as presented at Physicians for Social Responsibility-COLORADO, 2nd Symposium - Health Effects of Oil and Gas Development, December 4, 2020.

Therefore, individuals living greater than a half-mile from oil and gas operations should see little observed health or safety issues from oil or gas operations, while those living closer than one-quarter mile to oil or gas operations will have a much higher likelihood of public health issues, especially in wooded or hilly terrain that can trap or concentrate fugitive air emissions or liquid spills.

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Questions: Contact the Consortium at nmpwrc@nmsu.edu