

Editor's Comment: This is the eighth in a series of articles addressing issues associated with oil and gas development in San Miguel County. The articles were written by participants in PROTECT San Miguel county, a local all-volunteer grass-roots organization. The group has been working with the county's oil and gas task force for three years, has toured several existing oil and gas producing facilities, and has been collecting extensive research on the issues. More information is at <http://PROTECTsmc.org>.

Author: For the past 35 years Brad Turk has investigated problems with air quality, ventilation, and energy in buildings, conducted and directed environmental measurements and surveys, and performed some of the founding research in this field as a scientist at Lawrence Berkeley National Laboratory. He is currently president of Environmental Building Sciences, Inc.

### **Noise Pollution from Oil and Gas Development**

**Brad Turk <Turkmwta@aol.com> (505) 454-8073**

“Our own dog does not make noise, it only barks” (Kurt Tucholsky). We can imagine that the oil and gas industry has a similar opinion of the sounds produced by their equipment and facilities. However, noise associated with oil and gas development, like other industrial facilities, is a significant issue for nearby residents, domestic animals, and some types of wildlife. For oil and gas operations, noise levels are typically highest during the weeks- to months-long periods of road construction, site preparation, pipeline installation, and drilling and fracking.

The sources of noise include vehicle traffic, pumps, compressors, drill rigs, generators, stationary motors, and other mechanical operations. Meanwhile, some facilities such as compressors and compressor stations operate continuously for years or decades during the production phase, creating chronic noise pollution that can be heard miles away.

Interpreting noise information is complicated and confusing, with many different terms and units of measurement used interchangeably, and often incorrectly. Noise, or sound, levels are usually stated in decibels (dBA). Noise levels of 30 to 35 decibels are found in quiet, rural areas outside of Las Vegas. For every increase of 10 decibels in noise levels, the loudness will double for most people. As a reference, vacuum cleaners produce about 70 decibels, and lawn mowers about 90 decibel at five feet distance. An analysis by New York State estimates that noise levels at 250 feet from various oil and gas operations ranged from 62 to 90 decibels – or approximately eight to 60 times louder than the normal background in rural areas. The highest levels occurred during fracking operations. Re-fracking occurs at wells every few years, and will produce noise levels similar to those during the initial work.

Noise levels are affected by distance from the noise source, different types of terrain, wind speed and direction, air temperature and humidity, and sound-absorbing or deflecting barriers (for example, trees and buildings, or intentional sound insulating walls).

Health effects from exposure to elevated levels of noise and vibration, depend on sound levels and duration of exposure. The effects range from annoyance and sleep disturbance, hypertension and aggravation of heart diseases, to hearing impairment and changes in behavior. For many

people, any noise above the pre-existing background noise levels is perceived as a violation of their right to 'peaceful sanctuary'.

Only lands over federally-owned mineral property in our County have some regulatory protection from the noise of oil and gas equipment and activities. The State of New Mexico Oil Conservation Division has no requirements. It is left to local governments to establish rules limiting noise. In rare instances, private land owners have negotiated strict noise requirements, like the Vermejo Park Ranch near Raton that demands oil and gas equipment be inaudible around most of the habitable buildings.

To minimize degradation of the pre-existing noise environment, a County oil and gas ordinance must employ a range of regulatory approaches to plug the holes of weak or non-existent state and federal regulations. First, a noise impact assessment should be included with any application for an oil and gas permit. Then the ordinance should require a combination of: improved mufflers and motor exhaust stack design, use of remote well monitoring instruments to reduce vehicle traffic, increased distance set-backs of the noise sources from noise-sensitive areas, reduced usage factors (time equipment is in use throughout the day), use of sound-control structures or barriers, and use of quieter equipment. For example, replacing gas and diesel motors with electric motors will result in lower noise levels, and also reduce emissions of airborne exhaust contaminants.

The ordinance should also include performance-based requirements that allow the industry to choose the abatement technique that is most suitable for a particular situation, while at the same time achieving the noise level objectives. One approach is to limit increases in noise levels to no more than 1 to 3 decibels over average outdoor, pre-existing background (baseline) noise levels at the nearby noise-sensitive locations (e.g., residence, school, wildlife area, etc.) and at property boundaries. In addition, noise levels at a distance of 350 feet from the noise-producing equipment or activities must be below the limits established by the State of Colorado. Other requirements should restrict the levels of brief or intermittent, but potentially intense, noises.

This would necessitate that measurements of noise/sound levels be made at these locations before oil and gas development begins (baseline), and continue periodically for as long as the noise-producing equipment is operating. The noise monitoring would follow protocols similar to those required by the Province of Alberta, and be conducted by the County or their independent contractor, but paid for by the industry.

It's ironic that in order to maintain the peace and quiet of our County, we must be noisy in demanding strict limits and regulations on the oil and gas industry.