

HEALTH AND PUBLIC WELFARE

▶ NOISE

- ▶ New York State Department of Environmental Conservation, Supplemental Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program (September 2011), pg. 6–293. Available at: http://www.dec.ny.gov/docs/materials_minerals_pdf/rdsgeisch6b0911.pdf. (The full SGEIS can be found at: <http://www.dec.ny.gov/energy/75370.html>)

▶ AIR POLLUTION DURING FLOW–BACK

- ▶ U.S. Environmental Protection Agency. 2011. Oil and Natural Gas Sector: Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution, Office of Air and Radiation, July 2011 at 4–7. Available at: <http://www.epa.gov/airquality/oilandgas/pdfs/20110728tsd.pdf>

▶ METHANE IN WELL WATER

- ▶ Osborn SG, Vengosh A, Warner NR, Jackson RB. Methane contamination of drinking water accompanying gas–well drilling and hydraulic fracturing. Proc Natl Acad Sci USA. 2011;108:8172–8176. Available at: <http://www.nicholas.duke.edu/cgc/pnas2011.pdf>

NOISE

According to the NY SGEIS on the oil and gas regulatory program,

- ▶ **the cumulative noise created during drilling is 76dBA at the source, dissipating to 44dBA at 2,000 feet.**
- ▶ **The cumulative noise of the 20 pumper trucks operating is 128 dBA dissipating to 72dBA at 2,000 feet.**

NOISE

Table 1. Oil and Gas Noise Limits

ZONE	7:00 am to next 7:00 pm*	7:00 pm to next 7:00 am
Residential/Agricultural /Rural	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

**During this period, an operator may exceed the limits posted above by 10 db for no more than 15 minutes in any one hour period.*

AIR POLLUTION DURING FLOW-BACK

Uncontrolled Emissions Estimates from Oil and Natural Gas Well Completions and Recompletions

Well Completion Category	Emissions (Mcf/event)	Emissions (tons/event)		
	Methane	Methane	VOC	HAP
Natural Gas Well Completion without Hydraulic Fracturing	38.6	0.8038	0.12	0.009
Natural Gas Well Completion with Hydraulic Fracturing	7,623	158.55	23.13	1.68

BOTTOM LINE: 240 times more air pollution from uncontrolled oil and natural gas well completions

METHANE IN WELL WATER

On average, methane concentrations were **17-times higher** in water wells that were within 1 km (3,280 ft) of active drilling and extraction areas than in water wells outside of 1 km from active drilling.



Industry and NGO BMPs

MODEL REGULATORY FRAMEWORK FOR HYDRAULICALLY FRACTURED ONSHORE HYDROCARBON EXPLORATION AND PRODUCTION WELLS

- ▶ Southwestern Energy
- ▶ Environmental Defense Fund

A collaborative effort of environmental NGOs and over ten oil and gas companies.

- ▶ Surveyed all U.S. state standards (Texas was foundational in many respects),
- ▶ incorporated BMPs from the American Petroleum Institute, Underground Injection Control Rules
- ▶ and received ideas from numerous conversations with petroleum engineering consultants.

*Being used as a “foundational” document
by State of Ohio*

In the rare instances where there has been ground water contamination there have been three primary causes:

1. the oil and gas producing layer is adjacent or close to ground water,
2. gas and other pollutants make their way through incomplete casing cement, or
3. ground water is contaminated through a spill, leaking waste pits, or through poor disposal practices.

Framework requirements:

1. Database of quality water sources and oil and gas wells.
2. Permit conditions to protect water sources
3. Pre-drilling water quality sampling
4. Well construction (drilling) standards
5. Well completion standards
6. Production and well monitoring
7. Plugging and abandoning