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THE TRUTH ABOUT NATURAL SHALE GAS EXTRACTION IN THE UPPER DELAWARE RIVER WATERSHED

What You Need to Know

Drilling for natural gas in Marcellus and other shales requires special methods. These special methods include:

- **Hydraulic fracturing:** “Fracking” (or “fracing”) is the practice of injecting fluid and sand into the rock formation to open fractures to release gas. Fracking markedly boosts production. Fracking fluids contain chemicals, many of them hazardous and carcinogenic - up to 154 hazardous contaminants (State of New Mexico).¹ In PA, public records show that formaldehyde, a human carcinogen, acids, pesticides that are toxic to fish and aquatic life, and at least 85 other hazardous materials are added to the fracking water being used (PADEP).² The drilling and fracking processes introduce chemicals into the well and also disturb, distribute, and bring to the surface chemicals/minerals from beneath called “flowback” (such as salts, sulfides, and “normally occurring radioactive materials” or NORMS, which occur in the region; NORMS have required decontamination elsewhere such as at 140 sites since 2005 in Texas’s Barnett Shale).³ The wastewater is stored in open pits at the well site posing air and water pollution risks.
- **Horizontal drilling:** The well bore is directed down and extended horizontally to access the shale. This expands the amount of gas that can be recovered from each well. It takes between 2 and 9 million gallons of water to frack a deep horizontal well.⁴ Amounts vary, depending on equipment, site specific conditions and the depth of the well (Marcellus shale wells are expected to be 5,000 to 8,000+ feet deep and to extend horizontally for about another mile).⁵ Multiple wells are often developed on each pad requiring 3-5 acre pads, miles of driveways and feeder pipelines, noisy and brightly lit construction sites, increased stormwater runoff, fragmented habitats, air polluting machinery and thousands of truck trips to the site.

These practices have impacts:

Environmental pollution is reported around the country near natural gas wells either from spills, accidents or well development practices⁶. However, gas drilling is exempt from many provisions of federal environmental laws.⁷ Virtually no human health studies are underway to assess the impacts on people. For instance, the situation is so severe that in Colorado a Health Impact Assessment has been called for due to pollution problems there.⁸ Examples of pollution:

- In Dimock Township, a residential drinking water well exploded without warning near a new gas well in January, 2009.⁹ PADEP sampling of this and other neighboring wells shows that natural

¹ www.emnrd.state.nm.us/OCD

² Don Hopey, “State concerned about waste water from new gas wells”, Pittsburgh Post Gazette, 12.21.08 and <http://www.riverreporter.com/issues/08-12-18/frac.pdf>

³ “Radioactive Waste Surfaces at Texas Gas Sites”, Peggy Heinkel-Wolfe, Denton Record-Chronicle, 11.11.07.

⁴ “Gas Well Drilling and Development, Marcellus Shale, June 12, 2008 Commission Meeting”, www.srbcc.net

⁵ “Gas Well Drilling and Development, Marcellus Shale, June 12, 2008 Commission Meeting”, www.srbcc.net

⁶ <http://www.earthworksaction.org/pubs/Spills.pdf>, <http://www.earthworksaction.org/oilgaspollution.cfm>

⁷ http://www.earthworksaction.org/COtoxics_reg_gaps.cfm

⁸ Witter, et al, “Potential Exposure-Related Human Health Effects of Oil and Gas Development: A White Paper”, Colorado State University, University of Colorado, page1 and 21.

⁹ Laura Legere, “DEP Probes Blast in Gas-drilling Region,” *Scranton Times-Tribune*, 1.3.09.

gas has mixed with at least four private water wells, fouling water. Several homes have been forced on temporary water tanks.¹⁰ PADEP tests show that the source of the gas in the well water is “production” gas, the type that is released when a gas well is drilled.¹¹

- In Arkansas, two major wastewater companies were shut down after high salt levels were found in a reservoir and fish kills occurred in a local creek.¹²
- Newsweek recounted a fracturing fluid spill that sent a worker to the hospital and is being investigated as the cause of his nurse’s near death illness¹³.
- Hydrogeologists discovered benzene 1,500 times the level safe for people in a water well near hydrofracked natural gas well fields in Wyoming.
- Over 100 water contamination reports have been documented in Colorado, Alabama, Ohio, and Pennsylvania.¹⁴

Wastewater from natural gas development, high in total dissolved solids, salts and containing toxins and “flowback” chemicals, must be disposed of but there are not enough facilities in the Marcellus Shale region. Sewage plants can’t handle the contaminated waste. A water quality emergency has arisen in the Monongahela River in PA due to discharge of inadequately treated drilling wastewater.¹⁵ Injection wells and mines are being considered as disposal sites.

Explosions, accidents, fires, and emergencies come with natural gas exploration and well development. These are not planned but require municipal emergency response. But in some ways municipalities are being prevented from having controls over gas drilling operations within their borders -- gas companies are suing Pennsylvania towns to stop local regulation, such as stormwater, wellhead, floodplain and zoning ordinances.¹⁶

- Examples of emergencies:
 - In Leidy Township, Clinton County, PA, a gas well exploded into flames Sept. 14, 2008; special firefighters from Texas were brought in to contain the fire, which was expected to burn for weeks.¹⁷
 - In Appomattox County, also on September 14, a Williams Gas Co. pipeline that runs from the Gulf Coast to New York exploded without warning, destroying 2 homes and damaging 6 others, hurting 5 people, causing the evacuation of a neighborhood of hundreds, and leaving a 50 foot crater behind.¹⁸
 - In Greene County, PA a worker was killed and another badly injured when a coalbed methane gas well exploded.¹⁹
 - In Ohio, one home exploded, another home narrowly averted an explosion, and 46 wells in the area are contaminated by methane gas that leaked from a Ohio Valley Gas Company well into the aquifer. The problem is still unresolved and homes are on bottled water and some are vacated while water lines are built to the neighborhood.²⁰

What you can do: Sign up for action alerts at www.delawariverkeeper.org

Learn the **WHOLE STORY** about natural gas extraction, development and production at www.delawariverkeeper.org and tell your elected officials that you want to protect the Delaware River Watershed from the damaging effects of the practices the industry uses to extract shale gas. **PROTECT THE DELAWARE RIVER! WE CANNOT SACRIFICE OUR WATER FOR GAS!**

¹⁰ Tom Wilbur, “Houses near gas drilling in Dimock hooked to temporary water supply,” *Binghamton Press & Sun-Bulletin*, 1/21/2009

¹¹ Tom Wilbur, “DEP zeros in on gas tainting water” *Binghamton Press & Sun-Bulletin*, 1/30/

¹² Lauren Trager, “Department of Environmental Quality Tells Two Wastewater Companies to Shut Down”, *KARK News*, 12.15.08

¹³ Jim Moscou, “A Toxic Spew?” *Newsweek*, 8.20.08.

¹⁴ Abraham Lustgarten and ProPublica, “Drill for Natural Gas, Pollute Water”, *Scientific American*, 11.17.08.

¹⁵ PADEP News Release 10.22.08, “DEP investigates source of elevated total dissolved solids in Monongahela River”,

<http://www.ahs.dep.state.pa.us/newsreleases/default.asp?ID=5337&varQueryType=Detail>

¹⁶ Brief of Amici Curiae, Nockamixon Township, the Delaware Riverkeeper, Delaware Riverkeeper Network, American Littoral Society, and Damascus Citizens for Sustainability in Support of Appellants, In the Supreme Court of Pennsylvania, Western District, July 8, 2008.

¹⁷ Jim Runkle, “Gas Well Fire Could Burn for Weeks”, *Loch Haven Express*, 9.16.08

¹⁸ Candice Nelson, Carrie Sidener, “Gas Company Talks to Families about Explosion”, *WSLS and Lynchburg News and Advance Reporter*, 9.16.08, and Candice Nelson, “Community Moves Forward after Appomattox Explosion”, 9.16.08.

¹⁹ Don Hopey, “Gas Well Incident Claims 1 in Greene County”, *Pittsburgh Post-Gazette*, 12.3.07.

²⁰ Joan Demirjian, “Home near gas well on brink of explosion” *Chagrin Valley Times*, 10.22.08.

<http://www.chagrinvallytimes.com/NC/0/274.html>