

WHAT'S THE BIG DEAL ABOUT MARCELLUS SHALE GAS DRILLING?

- 1) **This is not your daddy's gas well, it's heavy industry.**
 - a. Slickwater hydrofracturing with horizontal drilling is a new combination of technologies that has only emerged in the last 15 years¹, and it has never been fully investigated for its effects on human health and the environment². However, enough disturbing problems have emerged to raise a whole platoon of red flags^{3,4,5}.
 - b. The well pads are larger (20 acres on average), and massive amounts of space are cleared for additional infrastructure such as holding ponds and condensate tanks. Communities with many wells will also see the addition of compressor stations, gathering and processing facilities, and miles of new pipelines.
- 2) **Some things should never be made, and others should just stay deep in the ground where they were made. None of it should be dumped in our drinking water.** Slickwater hydrofracturing adds tons of toxic chemicals to the frackwater⁶. When the wastewater comes back out, it is full of even more toxic chemicals that occur naturally in the Marcellus Shale formation.
 - a. Benzene, toluene, ethylbenzene, xylene (BTEX)
 - b. radioactive elements including radium, barium, strontium, and uranium;
 - c. heavy metals including lead and arsenic;
 - d. high levels of mineral salts such as bromides and chlorides.

This wastewater is being dumped with little or no treatment into the same rivers and streams from which we draw our drinking water⁷.
- 3) **We really don't know enough about geology and groundwater flows to guarantee the millions of gallons of toxic stuff isn't going to seep out where it can hurt people⁸.**
- 4) **It already has hurt people.** Wherever Marcellus development has occurred in Pennsylvania, reports of poisoned water, sick kids, and dead animals have followed^{9,10,11}. And in addition, every month or so there is another major blowout or explosion. These things don't happen at every well – but they happen often enough that we should be very concerned.
- 5) **Intensive deep shale drilling out west, using the same techniques that are being used in the Marcellus, has caused air pollution as bad as Los Angeles in remote areas of Wyoming, Texas, Oklahoma, etc..** It gives off massive amounts of particulates and volatile organic compounds, which combine to form ozone and smog.^{12,13,14} We already have unhealthy levels of these pollutants in our region. Unhealthy means higher numbers of deaths from lung and other cancers, higher rates of death from heart disease, and higher rates of asthma and other respiratory distress, especially in children¹⁵. If we add Marcellus air pollution to the mix, it will cause a massive public health crisis.
- 6) **Air emissions are acutely toxic near well sites and any infrastructure that handles the gas or its byproducts.** Those toxic organic chemicals we mentioned earlier? They evaporate any chance they get. It's very difficult to handle such high volumes of these volatile chemicals safely in any case, but drilling infrastructure today is like a car without a seatbelt, airbag, or emergency brake. Leaky valves abound at the well site; wells are flared into the open air for days to test their contents; wastewater full of volatile organic compounds is left in huge open-air ponds near home sites. People who live near well sites, compressor stations, or wastewater treatment facilities, are likely to be exposed to high levels of toxic air pollutants. Out west, many cases have been documented where residents developed debilitating illnesses after drilling moved in. Symptoms include nosebleeds, skin problems, chronic fatigue, confusion, and nervous system damage. People who spend more time in the home – often women and children – see the worst effects.
- 7) **The industry is exempted from normal environmental protection laws.** It is exempt from the Clean Water Act, the Clean Air Act, the Safe Drinking Water Act, and almost every other federal law protecting environmental health. These exemptions were created by Dick Cheney's energy task force in 2004. Halliburton profits from shale drilling.
- 8) **State legislators and regulators are at worst throwing open the doors regardless of consequences, and at best behind the curve.** After two years of intensive drilling in PA, the DEP just asked drillers to

voluntarily cease dumping untreated frackwater into our rivers. Rendell, Corbett, and many legislators have received hundreds of thousands of dollars in campaign contributions from drillers. It seems to be working. Those who took the money voted against the severance tax last fall, those who didn't take the money voted for it.¹⁶

- 9) **Few of the promised thousands of jobs are available to Pennsylvanians; and anyways who wants a dirty, dangerous, job that is either temporary or requires constant travel?** Companies are bringing trained workers from Texas and Oklahoma rather than hiring Pennsylvanians. The chemical toxicity problems are magnified for workers.
- 10) **The Marcellus industry is pushing more sustainable industries out of Pennsylvania.** Tourism and organic farming are growth industries that offer sustainable economies for rural areas. Organic farming really doesn't work if the water and air are toxic; consumers in adjacent states are already losing confidence.¹⁷ And nobody wants to take a vacation to a toxic industrial site.
- 11) **We've seen this before with coal mining and heavy industry.** The long term effect is boom then bust, with a legacy of environmental destruction that compromises the region's quality of life and economic potential for future generations. And somehow, the folks who profit from it are never around to clean it up.

¹ John A. Harper, "The Marcellus shale – An old 'new' gas reservoir in Pennsylvania," *Pennsylvania Geology* 38, no. 1 (2008): 2–12.

² Ian Urbina, "E.P.A. Struggles to Regulate Natural Gas Industry," *The New York Times*, March 3, 2011, sec. U.S., http://www.nytimes.com/2011/03/04/us/04gas.html?_r=1&ref=drillingdown.

³ Robert Donnan, "Tarnished Marcellus Gold: The Golden Alga," *Bob's Blog*, July 2010, http://www.donnan.com/Hickory-Tree-Series.htm#Tarnished_Marcellus_Gold:_The_Golden_Alga.

⁴ Wilma Subra, "Health Survey Results of Current and Former Dish/Clark, Texas Residents" (Earthworks' Oil and Gas Accountability Project, December 17, 2009), <http://earthworksaction.org/publications.cfm?pubID=439>.

⁵ Robert Donnan, "Hickory Tree Series," *Bob's Blog*, July 2010, <http://www.donnan.com/Hickory-Tree-Series.htm>.

⁶ Theo Colburn, *What you need to know about natural gas production* (The Endocrine Disruption Exchange, 2010), <http://www.endocrinedisruption.com/chemicals.video.php>.

⁷ David Caruso, "Pennsylvania alone allows waterways to serve as primary disposal sites for fracking waste," *Washington Observer-Reporter*, January 4, 2011, <http://www.observer-reporter.com/or/localnews/01-04-2010-GAS-DRILL-FRACK-9>.

⁸ Hazen & Sawyer Environmental Engineers, *Final Impact Assessment Report: Impact Assessment of Natural Gas Production in the New York City Water Supply Watershed* (New York City Department of Environmental Protection, December 22, 2009), http://www.nyc.gov/html/dep/pdf/natural_gas_drilling/12_23_2009_final_assessment_report.pdf.

⁹ PennEnvironment, *Marcellus Shale Stories*, 2011, <http://www.pennenvironment.org/marcellus-shale-videos>.

¹⁰ Anne DeFazio, Ben Fiorillo, and Jessica McPherson, "Serious Health Impacts of Marcellus Drilling in SW PA," *Rustbelt Radio*, February 14, 2011, <http://pittsburgh.indymedia.org/news/2011/02/36977.php>.

¹¹ Christopher Bateman, "A Colossal Fracking Mess," *Vanity Fair*, June 21, 2010, <http://www.vanityfair.com/business/features/2010/06/fracking-in-pennsylvania-201006>.

¹² Al Armendariz, *Emissions from Natural Gas Production in the Barnett Shale Area and Opportunities for Cost-Effective Improvements* (Dallas, Texas: Southern Methodist University, January 26, 2009), http://www.edf.org/documents/9235_Barnett_Shale_Report.pdf.

¹³ Wendy Koch, "Wyoming's smog exceeds Los Angeles' due to gas drilling," *USA Today*, March 9, 2011, <http://content.usatoday.com/communities/greenhouse/post/2011/03/wyomings-smog-exceeds-los-angeles-due-to-gas-drilling/1>.

¹⁴ Joseph Pinto, "Atmospheric Chemistry: Wyoming winter smog," *Nature Geoscience* 2, no. 2 (February 2009): 88–89.

¹⁵ Don Hopey, David Templeton, and Greg Oster, "Mapping Mortality," *Pittsburgh Post-Gazette*, December 2010, <http://www.post-gazette.com/pg/03001/1108747-209.stm>.

¹⁶ "Marcellus Money", 2011, www.marcellusmoney.org.

¹⁷ Anne DeFazio, Ben Fiorillo, and Jessica McPherson, "Impact of Marcellus Drilling of Sustainable Agriculture in PA," *Rustbelt Radio*, March 14, 2011, <http://pittsburgh.indymedia.org/news/2011/03/37103.php>.