

racking takes a huge toll on affected communities, generates massive volumes of toxic waste, creates hazardous air pollution problems, poses long-term risks to vital drinking water resources and threatens to lock in catastrophic changes to our climate. We need to ban fracking now.

The term "fracking" is shorthand for hydraulic fracturing. After drilling down to a rock formation that holds oil or natural gas, and then drilling sideways through this targeted layer of rock, operators inject, under extreme pressure, millions of gallons of water mixed with sand and chemicals to fracture (or "frack") the rock. Without these fractures, oil or natural gas would remain tightly held in the rock, unable to flow up the well.2

In the public debate over the future of the U.S. energy system, fracking has come to mean much more than just the specific process of high-volume hydraulic fracturing of long horizontal wells to extract shale gas, tight gas and tight oil. To the public, fracking represents all that the specific process of hydraulic fracturing entails: marred landscapes and fragmented forests; roads crowded with heavy-duty trucks carrying water; chemicals and toxic waste; earthquakes related to disposal of this waste, and a legacy of air pollution, water pollution, climate pollution and public health problems.

Fracking and other unconventional methods of extracting oil and gas threaten to prolong our destructive dependence on fossil fuels. We can, instead, meet our energy needs with clean, renewable and abundant resources.3 But without a ban on fracking, the oil and gas industry will continue to stand in the way.



PHOTO CC-BY-SA © PLAZAK / COMMONS.WIKIMEDIA.ORG

# Fracking brings economic costs to local communities — hidden in plain sight

While Big Oil and Big Gas enjoy huge profits, padded by billions of dollars a year in taxpayer-funded subsidies,<sup>4</sup> communities across the country pay the price:

- Rents are rising with the influx of transient oil and gas industry workers, pushing out local residents of affected communities<sup>5</sup>;
- Agricultural lands are being lost, either taken out of production to make room for oil and gas wells, pipelines and other infrastructure,<sup>6</sup> or contaminated — either directly or via groundwater — in the aftermath of inevitable explosions, leaks and spills<sup>7</sup>;
- Tourism and agricultural brands are under threat as drilling and fracking operations mar scenic landscapes, fragment forests and leave a legacy of pollution that especially undercuts organic farms, wineries and breweries<sup>8</sup>;
- Heavy-duty trucks hauling toxic wastes are clogging and damaging roads at the public's expense, adding to the nonstop noise and light pollution from drilling and fracking rigs and leading to accidents<sup>9</sup>;
- Homeowners are seeing their property values decline, getting shortchanged on royalties and having difficulty selling their homes since banks are refusing to offer mortgages when drilling and fracking are close by<sup>10</sup>;

- Workers are being poisoned, injured and even killed from accidents and harmful exposures to toxins<sup>11</sup>;
   and
- Crime and other demands on social services are on the rise in affected communities, with emergency services and schools stretched thin.<sup>12</sup>

## Fracking prolongs our dependence on dirty and dangerous energy resources

Drilling and fracking amount to a large, uncontrolled public health experiment. The oil and gas industry is:

- Producing massive volumes of toxic and even radioactive waste, the disposal of which is causing earthquakes and risking drinking water resources<sup>13</sup>;
- Causing thousands of accidents, leaks and spills
  each year that threaten rivers, streams and shallow aquifers<sup>14</sup>;
- Pumping hazardous pollutants into the air, at the expense of local communities, families and farms<sup>15</sup>;
- Turning homes into explosive hazards by contaminating water wells with methane and other harmful gases<sup>16</sup>;
- Consuming millions of gallons of water for each fracked well, and competing with farmers for local water supplies<sup>17</sup>;



MARCELLUS SHALE FRACKING OPERATION SITE / PHOTO COURTESY OF U.S. GEOLOGICAL SURVEY

- Putting vital aquifers at risk for generations, because scientists simply do not know how drilling and fracking hundreds to thousands of new wells in a region will ultimately change the way contaminants not just the cancer-causing fracking chemicals but also hydrocarbon gases and even radioactive brines mix and move deep underground, over long periods of time<sup>18</sup>;
- Changing the climate on which we all depend, by emitting carbon dioxide from burning natural gas and petroleum products, leaking the potent greenhouse gas methane from drilling and fracking operations and related infrastructure, and locking in future emissions with sunk costs in infrastructure<sup>19</sup>; and
- Spending millions on lobbying and deceptive public relations campaigns, delaying the remaking of the U.S. energy system around energy conservation, energy efficiency and renewables necessary to ensure a livable planet for our children and grandchildren.<sup>20</sup>

#### Take action

Meeting our energy needs with clean, renewable and abundant resources is the only responsible path forward. It is the only way to deliver long-term energy security and energy independence at the national, state and local levels.<sup>21</sup> It is the path that leads to broad-based economic prosperity and that spares us from the huge but hidden costs that come with our dependence on fossil fuels.<sup>22</sup> But advocates of fracking and

other unconventional methods for extracting fossil fuels stand in the way, protecting their enormous profits at all of our expense.<sup>23</sup>

Join the movement to Ban Fracking Now and help keep dirty fuels safely underground!



### **Endnotes**

- U.S. Environmental Protection Agency (EPA), Office of Research and Development. "Plan to study the potential impacts of hydraulic fracturing on drinking water resources." November 2011 at 22; Smrecak, Trisha A. "Understanding drilling technology." Marcellus Shale, iss. 6. January 2012 at 3 to 4; U.S. Department of Energy, National Energy Technology Laboratory. [Brochure]. "Shale gas: Applying technology to solve America's energy challenges." March 2011 at 5; U.S. House of Representatives. Committee on Energy and Commerce. [Minority Staff report]. "Chemicals used in hydraulic fracturing." April 2011 at 2.
- 2 EPA (November 2011) at 15.
- 3 Deng, Yvonne Y. et al. "Transition to a fully sustainable global energy system." *Energy Strategy Reviews*, vol. 1. August 2012 at 109 and 116 to 119; Mark Z. Jacobson and Mark A. Delucchi. "A plan to power 100 percent of the planet with renewables." *Scientific American*. October 26, 2009.
- 4 Cox, Ramsey. "Menendez: Big Oil subsidies are 'a big waste'." The Hill. May 3, 2013.
- 5 Goldenberg, Suzanne. "North Dakota oil boom: Thousands pin their dreams on striking it rich." *The Guardian*. May 14, 2012; Hudson, Kris. "Oil-boom byproduct: Unaffordable housing." *The Wall Street Journal*. April 4, 2013; Dahl, Gerald et al. [Prepared for the Colorado Department of Local Affairs]. "Oil and gas regulation: A guide for local governments." 2010 at 6;

- Williamson, Jonathan et al. Center for the Study of Community & the Economy, Lycoming College. "Marcellus natural gas development's effect on housing in Pennsylvania." September 31, 2011 at 1.
- 6 Sloneker, E.T. et al. "Landscape consequences of natural gas extraction in Bradford and Washington Counties, Pennsylvania, 2004-2010." U.S. Geological Survey. [Open-file report 2012-1154]. 2012 at 22; Drohan, P.J. et al. "Early trends in landcover change and forest fragmentation due to shale-gas development in Pennsylvania: A potential outcome for the Northcentral Appalachians." Environmental Management, vol. 49, iss. 5. May 2012 at 1070 to 1073; Myers, Morgan. "Drilling for the truth: Residents attend screenings for education, fun." Williamsport Sun-Gazette (PA). June 20, 2013.
- "1 worker critically hurt in Pa. gas well explosion." Associated Press. February 24, 2011; "Crews stop flow of drilling fluid from Pennsylvania well." Associated Press. April 22, 2011; Miller, Jeremy. "The colonization of Kern County." Orion Magazine. January/February 2011 at 7; Magill, Bobby. "Spilled and released: Oil accidents no rarity in Northern Colorado." Coloradoan. June 17, 2013; Magill, Bobby. "Malfunction sends crude oil spraying 850 feet from well near Severence." Coloradoan. July 22, 2013; Entrekin, Sally et al. "Rapid expansion of natural gas development poses a threat to surface waters." Frontiers in Ecology, vol. 9, iss. 9. October 2011 at 508.
- Rumbach, Andrew. [Prepared for the Southern Tier Central Regional Planning and Development Board (New York)]. "Natural gas drilling in the Marcellus Shale: Potential impacts on

- the tourism economy of the Southern Tier." July 2011 at 13 and 19; Marcus, Peter. "Local beer brewers craft message against 'fracking'." *The Colorado Statesman*. July 12, 2013; Hill, Michael. "Wine and fracking don't mix, say vineyard owners." *Associated Press*. October 23, 2012.
- Rumbach (July 2011) at 20; Henry, Terrence. "What Texas can do about roads damaged by drilling." NPR StateImpact.
  August 23, 2012; Christopherson, Susan and Ned Rightor. "How shale gas extraction affects drilling localities: what policy makers need to know." International Journal of Town and City Management. Spring 2012 at 11; Nicholson, Eric. "A fracking truck driver who ran over a 14-year-old boy in Fort Worth has been cleared of wrongdoing." Dallas Observer.
  August 6, 2013; Reppert, Julie. "Collision spills fracking fluid on state route." Williamsport Sun-Gazette (PA). December 27, 2011.
- 10 Heinkel-Wolfe, Peggy. "Drilling can dig into land value." Denton (Texas) Record Chronicle. September 18, 2010; Radow, Elisabeth. "Homeowners and gas drilling leases: Boon or bust?" New York State Bar Association Journal. November/ December 2011 at 20 and 21; Urbina, Ian. "Rush to drill for natural gas creates conflicts with mortgages." The New York Times. October 19, 2011; Lustgarten, Abrahm. "Unfair share: How oil and gas drillers avoid paying royalties." ProPublica. August 13, 2013.
- Occupational Safety and Health Administration (OSHA), National Institute for Occupational Safety and Health (NIOSH). "OSHA NIOSH Hazard Alert: Worker Exposure to Silica during Hydraulic Fracturing." June 2012 at 3; Centers for Disease Control and Prevention. "Oil and Gas Extraction, Occupational Safety and Health Risks." Available at http://www.cdc.gov/niosh/programs/oilgas/risks.html. Accessed August 15, 2013.
- 12 Perry, Simona. "Using ethnography to monitor the community health implications of onshore unconventional oil and gas developments: examples from Pennsylvania's Marcellus Shale." New Solutions, vol. 23, iss. 1. 2013 at 45; Korfmacher, Katrina Smith et al. "Public health and high volume hydraulic fracturing." New Solutions, vol. 23, iss. 1. 2013 at 18; Barth, Jannette M. "The economic impact of shale gas development on state and local economies: benefits, costs, and uncertainties." New Solutions, vol. 23, iss. 1. 2013 at 94.
- 13 Van der Elst, Nicholas J. et al. "Enhanced Remote Earthquake Triggering at Fluid-Injection Sites in the Midwestern United States" Science, vol. 341, iss. 6142. July 12, 2013 at 164 to 167; Lustgarten, Abrahm. "The trillion-gallon loophole: Lax rules for drillers that inject pollutants into the earth." ProPublica. September 20, 2012; 76 U.S. Fed. Reg. 66286, 66296 (October 26, 2011); Mall, Amy and Dianne Donnelly. Natural Resources Defense Council. "Petition for Rulemaking Pursuant to Section 6974(a) of the Resource Conservation and Recovery Act." September 8, 2010 at 8 to 9; Landsberger, S. et al. "Determination of 226Ra, 228Ra and 210Pb in NORM products from oil and gas exploration: Problems in activity underestimation due to the presence of metals and self-absorption of photons." Journal of Environmental Radioactivity. Available online March 17, 2013 at 1.
- 14 Finley, Bruce. "Drilling spills reaching Colorado groundwater; state mulls test results." *The Denver Post*. December 9, 2012; Soraghan, Mike. "Many mishaps among drillers, but few fines." *Energy & Environment News*. July 15, 2013.
- 15 Colborn, T. et al. "An exploratory study of air quality near natural gas operations." Human and Ecological Risk Assessment: An International Journal. Forthcoming. Accepted for publication November 8, 2012 at abstract; Pétron, Gabrielle et al. "Hydrocarbon emissions characterization in the Colorado Front Range: A pilot study." Journal of Geophysical Research, Atmospheres, vol. 117. February 21,

- 2012; McKenzie, L.M. et al. "Human health risk assessment of air emissions from development of unconventional natural gas resources." *Science of the Total Environment*, vol. 424. May 2012 at 79; Bamberger, Michelle and Robert E. Oswald. "Impacts of gas drilling on human and animal health." *New Solutions*, vol. 22, iss. 1. January 2012 at 51 to 77; Gilman, Jessica B. et al. "Source signature of volatile organic compounds (VOCs) from oil and natural gas operations in northeastern Colorado." *Environmental Science & Technology*, vol. 47, iss. 3. January 14, 2013 at 1297.
- "Tap water torches: How faulty gas drilling can lead to methane migration." NPR StateImpact. July 31, 2013; Ohio Department of Natural Resources. "Report on the Investigation of the Natural Gas Invasion of Aquifers in Bainbridge Township of Geauga County, Ohio." September 1, 2008 at 46 to 47; Jackson, Robert B. et al. "Increased stray gas abundance in a subset of drinking water wells near Marcellus shale gas extraction." Proceedings of the National Academy of Sciences. In press, published online June 24, 2013 at abstract.
- Nicot, Jean-Philippe et al. The University of Texas at Austin, Jackson School of Geosciences. [Draft Report Prepared for Texas Water Development Board]. "Current and projected water use in the Texas mining and oil and gas industry." February 2011 at 52-55; Finley, Bruce. "Colorado farms planning for dry spell losing auction bids for water to fracking projects." The Denver Post. April 1, 2012.
- 18 Myers, Tom. "Potential contaminant pathways from hydraulically fractured shale to aquifers." *Ground Water*, vol. 50. April 17, 2012 at 872; Dusseault, Maurice B. et al. "Why oilwells leak: Cement behavior and long-term consequences." Paper presented at the Society of Petroleum Engineers International Oil and Gas Conference and Exhibition, Beijing, China. November 7-10 2000 at 1; Lustgarten, Abrahm. "Injection wells: the poison beneath us." *ProPublica*. June 21, 2012.
- Bradbury, James et al. World Resources Institute. "Clearing the air: Reducing upstream greenhouse gas emissions from U.S. natural gas systems." April 2013 at 4; Pétron, Gabrielle et al. "Hydrocarbon emissions characterization in the Colorado Front Range: A pilot study." Journal of Geophysical Research, Atmospheres, vol. 117. February 21, 2012; Karion, Anna et al. "Methane emissions estimate from airborne measurements over a western United States natural gas field." Geophysical Research Letters. vol. 40, August 27, 2013 at 4393; Roberts, David. "Direct subsidies to fossil fuels are the tip of the (melting) iceberg." Grist. October 27, 2011; Nelder, Chris. "Reframing the transportation debate." SmartPlanet. October 19, 2011.
- 20 Sierra Club. "Clean energy under siege: Following the money trail behind the attack on renewable energy." August 2012 at 1 and 6; Carbon Tracker. "Unburnable carbon: Are the world's financial markets carrying a carbon bubble?" March 2012 at 6.
- 21 Food & Water Watch. "Energy Insecurity: Why Fracking for Oil and Natural Gas Is a False Solution." November 2012.
- 22 National Research Council. "Hidden Costs of Energy: Unpriced Consequences of Energy Production and Use." 2010 at 4, 5, 6, 8, 12 and 17.
- 23 Sierra Club (August 2012) at 1 and 6; Nelder, Chris. "Energy policy: Follow the money." *SmartPlanet*. August 8, 2012.

#### For more information:

 $\textbf{web:} \ www. food and water watch. org$ 

email: info@fwwatch.org

phone: (202) 683-2500 (DC) • (415) 293-9900 (CA)

Copyright © October 2013 Food & Water Watch

