VIEWS FROM THE FIELD

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GRANT MAKERS IN HEALTH

Is the Energy Boom in Your Backyard? Oil and Gas Extraction Threatens Health and Communities Across the United States

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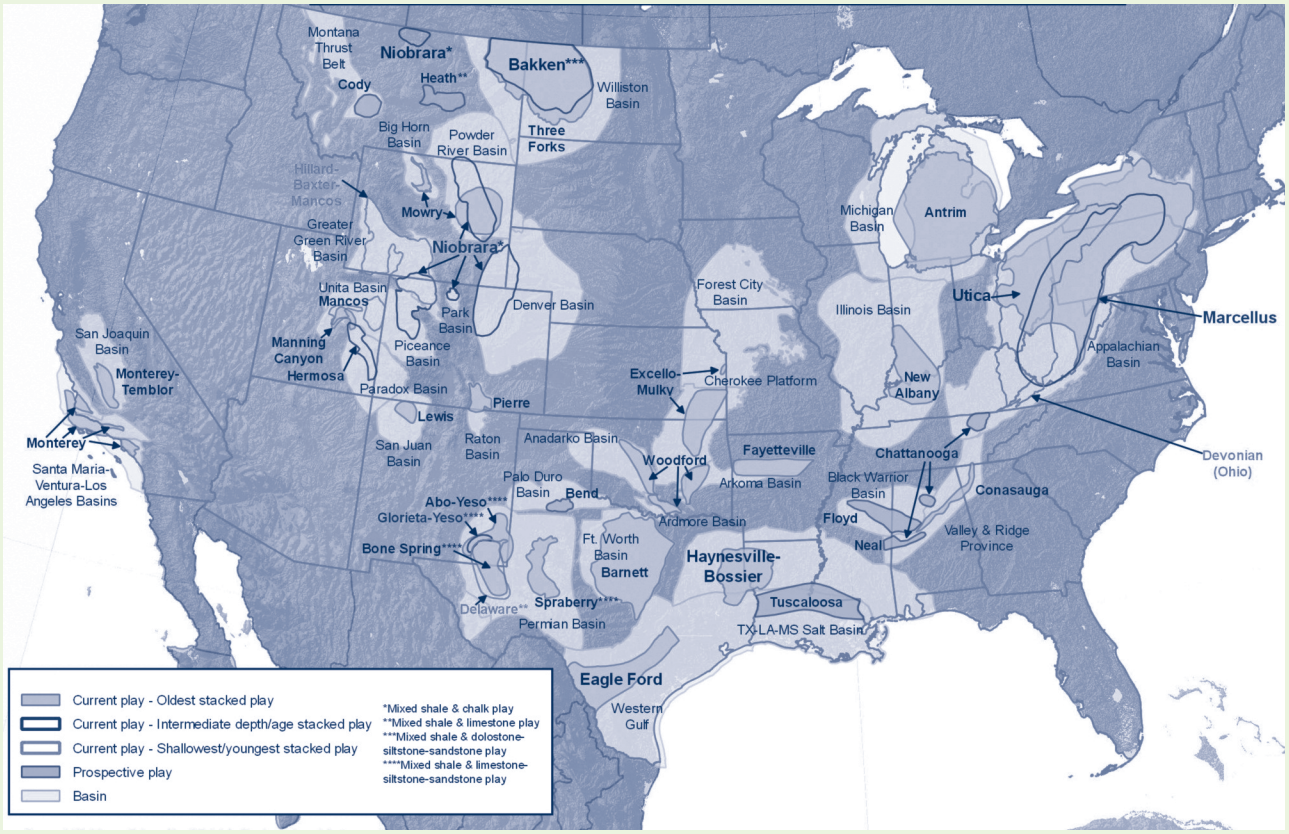
In 2013, *The Wall Street Journal* published an article entitled "Energy Boom Puts Wells in America's Backyards." It described how the increasing use of a process called hydraulic fracturing–commonly called fracking–was transforming not only the nation's energy supply, but also its landscape. According to the investigation, more than 15 million Americans live within a mile of wells. Many homes, neighborhoods, schools, and communities are near fracking wells (Gold and McGinty 2013). The scale, pace, and magnitude of development are systemic. Since 2000, the oil and gas industry has fracked thousands of new wells in numerous states including Texas, Pennsylvania, California, and Colorado. As of 2014, FracTracker Alliance estimated that there were 1.1 million active oil and gas wells in over two dozen states.

The shale gas industry and its effects on community health is a topic of growing discussion and research. As grantmakers concerned about health, our work–and the health outcomes of

LOWER 48 STATES SHALE PLAYS



Source: U.S. Energy Information Administration based on data from various published studies. Updated April 13, 2015

those we serve–may be affected by the industry, whether around drilling sites, along railways or pipelines, or near refineries. A better understanding of the health research is key not just to funding appropriate health objectives, but to being able to interpret and act upon outcomes.

To date, the United States produces the majority of commercially available shale resources. Fracking refers to the process of directional drilling and hydraulic fracturing of geological formations deep underground to extract natural gas or oil. The technology enables the movement of fluids under high pressure through a wellbore that is drilled into subterranean shale rock. The process releases hydrocarbons that travel back up the well and are then processed into fossil fuels and chemical feedstocks. In addition to fracking, other unconventional oil extraction techniques include acidizing, steam injection, water flooding, and gravel packing. Shale energy resources exist across the world, including Europe, Asia, South America, Africa, and Australia.

As it transforms landscapes, hydraulic fracturing is also transforming public health research. Experts across the country are trying to understand if and how this fast-paced and large-scale industrial activity is affecting health and well-being. Over the past few years, hundreds of peer-reviewed medical and scientific papers have been published on a variety of topics relating to shale energy development. These include air pollution and water contamination, noise and light pollution, and stress and public health effects, as outlined in a recent compendium of research papers (Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking).

Studies include an epidemiology investigation by Yale University that found that proximity to shale wells was associated with a doubled risk for upper-respiratory conditions and four times the risk for dermal conditions in residents living within one kilometer of well pads in southwestern Pennsylvania, which is an epicenter of shale drilling (Rabinowitz et al. 2015). Another study, published by the University of Pennsylvania and Columbia University, found that hospitalizations for heart conditions, neurological illness, and other conditions were higher among Pennsylvanians who live near well pads in the northeastern portion of the state (Jemielita et. al 2015). In addition, studies from the Colorado School of Public Health, Johns Hopkins University, and the University of Pittsburgh have found increased associations between health issues in babies and proximity to fracking sites, including congenital heart defects, premature birth, and lower birth weights (McKenzie et al. 2014, Casey et al. 2015, Stacy et al. 2015).

Additional threats have emerged, including impacts to communities, health care, animal health, and agriculture. An analysis of heavily drilled communities in Pennsylvania and Ohio reported increases in violent crime and property crime, housing costs, traffic fatalities, drug abuse rates, and the rate of sexually transmitted diseases (Price et al. 2014). Case studies are finding reports from ranchers and farmers of death, disease, and failure to reproduce in animals exposed to fracking chemicals (Bamberger and Oswald 2015). In California, fracking waste has been injected into freshwater aquifers in agricultural areas, leading to concerns about contaminated water affecting food crops (Cart 2015).

Health and government officials have taken stock of emerging evidence, uncertainty, and the need for more research. Civic leaders have made decisions about managing risk for their constituents. Citing studies, reports, and case examples, New York State banned high-volume hydraulic fracturing in 2014. Maryland recently passed a two-and-one-half-year moratorium. Four eastern Canadian provinces have bans or have placed moratoria on fracking. Scotland and Wales have imposed moratoria. Germany has in place a de facto moratorium. France and Bulgaria have bans (Finkel et al. 2015). Some cities and municipalities, including Pittsburgh, have also banned the practice, called for setback distances, or required protective zoning ordinances to limit where wells and pipeline infrastructure can go.

Nearly two-thirds of Pennsylvania contains deep shales that now have thousands of wells–including many that are near rural, suburban, and urban populations, water supplies, and areas already dealing with air pollution. The Heinz Endowments is among a growing group of foundations working to help address public health and environmental impacts associated with the shale gas industry (Health and Environmental Funders Network 2016).

Is your foundation currently working on issues that may be affected by shale energy? As discussed here, shale energy development has been shown to contribute to or influence acute adverse health effects, create stressors to communities and healthcare, impose threats to vulnerable populations including children and the elderly, and affect agriculture and food systems. If these areas of impact are relevant to your work, you can access tools to help map active and prospective shale basins and pipeline infrastructure at www.eia.gov and www.fracktracker.org. If the energy boom is in your backyard, it may be affecting your grantmaking outcomes.

A funder working group and resources on fracking impacts are available through the Health and Environmental Funders Network (HEFN); see http://www.hefn.org/learn/climate_energy.

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