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21st Century Guide to Hydraulic Fracturing, Underground Injection, Fracking, Hydrofrac, Marcellus Shale Natural Gas Production Controversy, Environmental and Safety Risks, Water Pollution

U.S. Government, Environmental Protection Agency (EPA), Department of Energy, U.S. Geological Survey

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21st Century Guide to Hydraulic Fracturing, Underground Injection, Fracking, Hydrofrac, Marcellus Shale Natural Gas Production Controversy, Environmental and Safety Risks, Water Pollution U.S. Government, Environmental Protection Agency (EPA), Department of Energy, U.S. Geological Survey Authoritative compendium of official documents about the process of hydraulic fracturing, also known as hydrofrac or fracking, to extract natural gas, along with gas exploration and production in the Marcellus shale field of New York, Pennsylvania, West Virginia, and Ohio. There is comprehensive coverage of all aspects of the issue, including the ongoing controversy about the environmental and safety risks arising from possible water pollution and drinking water contamination. Contents include material from the EPA, USGS, Department of Energy, U.S. Congress, and others. There is a complete reproduction of EPA public meeting comments from events in Texas, Colorado, Pennsylvania, and New York, offering valuable insight into the controversy. Technical documents and regulations provide unique details and understanding.

While limited production has occurred in the Marcellus Shale to date, drillers in the Barnett Shale of Texas have demonstrated that new technology in the form of horizontal drilling and hydraulic fracturing of the shale (fracturing through the use of high pressure liquids) has helped overcome the flow capacity problem of gas shales. Horizontal drilling is a technique used to expose long sections of the reservoir rock to the wellbore. While a conventional vertical well penetrates and exposes only the thickness of a pay zone (e.g., 50 to 300 feet in the Marcellus shale), horizontal drilling can expose over a mile of reservoir rock for production by steering a drill bit to follow the pay zone. Hydraulic fracture stimulation creates additional flow paths to the well. In this process, fluid is pumped into the formation at high enough pressures and rates to split the rock. Sized particles such as sand are also mixed with the fracturing fluid to hold the crack open once pumping stops. In addition, wells can be oriented to intersect natural fractures that occur in many formations. As the oil and gas industry applies this technology to more wells in more parts of the country, it is important to ensure that the process is safe and environmentally sound. Environmental organizations, public health groups, and local communities have expressed concerns about the potential impact of the injection of hydraulic fracturing fluids in wells located in or near underground sources of drinking water. Others have raised concerns about the quantity of water needed to hydraulically fracture oil and gas wells and the disposal of contaminated wastewater from fracturing operations.

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