

IADC Briefing Book: Hydraulic Fracturing



Hydraulic fracturing is the process of drilling and injecting fluid into the ground at a high pressure in order to fracture shale rocks to release the oil and natural gas inside. It involves forcing a fluid that is typically 99+ percent water and sand and less than 1 percent chemical additives into the shale at high pressure. This creates threadlike fissures in the rock creating space into which the oil and natural gas can flow easily. Used with directional and horizontal drilling, hydraulic fracturing is unlocking vast tight and shale gas resources across the world. Hydraulic fracturing is used mostly onshore, but can be used offshore as well. In most countries where the practice is being utilized, there has been strong opposition from environmentalists and other groups, who question the safety of such a practice. [1] [2]

Key Messages

- The oil and gas industry has used this technique safely for more than 60 years to recover natural gas and oil. In the US alone, hydraulic fracturing is used in around 35,000 wells a year. The technique has been used in more than one million wells. [1]
- In the US, studies by the Environmental Protection Agency, the Massachusetts Institutes of Technology, and the United State Government Accountability Office have supported the oil and gas industry's position that hydraulic fracturing can be performed safely and in accordance with existing regulation. [3] [4] [5]
- In 2015 in the US, the number of hydraulically fractured wells totaled more than 300,000, accounting for more than 53 billion cubic feet per day of marketed gas, making up 67% of the total natural gas output in the US, according to the U.S. Energy Information Administration.
- Existing well construction practices effectively protect underground sources of drinking water from impacts related to oil and gas E&P activities. [6]
- Fracturing fluids are primarily fresh or produced-water based fluids with additives for special purposes. The industry is working on water use alternatives like water recycling, and the use of seawater and wastewater. Many of the chemicals used in fracturing fluids are the same as those used in food products and the cosmetic industry. [1]

Other Resources

1. Hydraulic Fracturing: Just the Facts (Energy in Depth): <http://energyindepth.org/just-the-facts/>
2. The Process of Hydraulic Fracturing (US Environmental Protection Agency): <http://www.epa.gov/hydraulicfracturing/process-hydraulic-fracturing>
3. US Environmental Protection Agency (EPA): [Assessment of the Potential Impacts of Hydraulic Fracturing for Oil and Gas on Drinking Water Resources](#)
4. Massachusetts Institute of Technology: [The Future of Natural Gas](#)
5. United States Government Accountability Office: [Information on Shale Resources, Development, and Environmental and Public Health Risks](#)
6. U.S. Energy Information Association: <http://www.eia.gov/todayinenergy/detail.php?id=26112>