



WHAT IS HYDRAULIC FRACTURING?



Hydraulic fracturing is the use of fluid and sand or similar material to create or restore small fractures in a formation in order to stimulate production from new and existing oil and natural gas wells. The resulting paths increase the rate at which fluids can be produced from reservoir formations, in some cases by many hundredths of a percent.

— TODAY, MORE THAN —
750 TRILLION
CUBIC FEET OF SHALE GAS

— AND —

24 BILLION BARRELS
OF SHALE OIL RESOURCES EXIST.



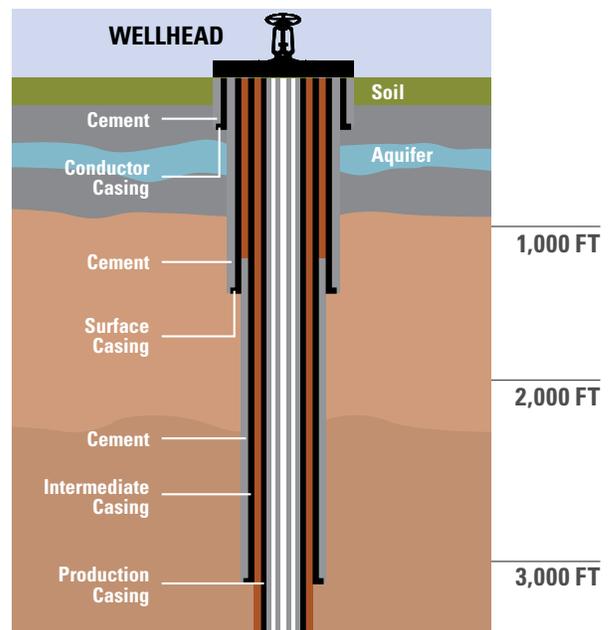
The U.S. Energy Information Agency (EIA) reports that more than 750 trillion cubic feet of technically recoverable shale gas and 24 billion barrels of technically recoverable shale oil resources currently exist in discovered shale plays. Responsibly developing these resources creates jobs and fuels our economy. Horizontal drilling combined with hydraulic fracturing provides the key to unlocking these resources.

HYDRAULIC FRACTURING PROCESS

Hydraulic fracturing begins once the well has been drilled and a safety system of steel casing and cement have been put in place.

The well casing process includes numerous steps to protect fresh water aquifers. Multiple layers of steel casings (pipes within pipes) are inserted into the well to depths of between 1,000 and 4,000 feet. The space between these casing "strings" and the drilled hole (wellbore) is then filled with high-pressure cement. The completed structure ensures neither the fluid pumped through the well, nor the oil and natural gas collected, ever enter the water supply.

Once the cement has set, drilling continues from the bottom of the surface or intermediate cemented steel casing to the next depth. Depending on the subsurface geology, an additional 1-7 layers are added, using smaller steel casing each time, until the oil and natural gas-bearing reservoir is reached (generally 6,000 to 10,000 ft.).

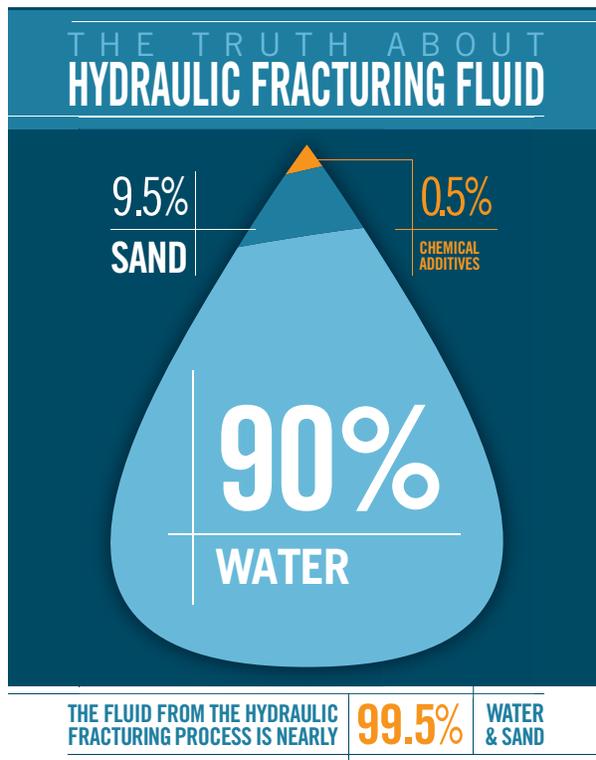




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Once the drilling is complete, a device perforates the horizontal part of the production pipe to make small holes in the casing, exposing the wellbore to the reservoir. Then a mixture of water, sand and other additives are pumped into the well under high pressure to create micro-fractures in the formation that will free natural gas or oil. Water and sand make up 98-99.5 percent of the fluid used in hydraulic fracturing. In addition, a minimal amount of chemical additives are used. The exact formulation varies depending on the well, but the chemicals used are chiefly agents that help reduce friction and prevent corrosion, and are found in many household products.



With the fracturing complete, the fissures, or fractures, are left propped open by the sand, enabling the oil or natural gas to flow freely into the wellbore and allow producers access to obtain it.

FRACFOCUS: WWW.FRACFOCUS.ORG

FracFocus is a website providing the public access to reports on chemicals used for hydraulic fracturing in their area.

Oklahoma producers voluntarily participate in this national online chemical registry for hydraulic fracturing. At FracFocus.org, oil and natural gas producers have uploaded the chemical usage associated with more than 68,000 well sites across the country.

The FracFocus site publishes detailed information concerning chemicals used in hydraulic fracturing on a well-by-well basis. The disclosure registry is managed by the Ground Water Protection Council and the Interstate Oil and Gas Compact Commission.

For more facts about hydraulic fracturing and the latest technological developments, visit OERB.com/industry/hydraulicfracturing101

LEARN MORE

To learn more about Hydraulic Fracturing, please visit the following sources:

Assessment of the Potential Impacts of Hydraulic Fracturing for Oil and Gas on Drinking Water Resources. Environmental Protection Agency, July 2014. http://www2.epa.gov/sites/production/files/2015-07/documents/hf_es_erd_jun2015.pdf

FracFocus.Org Chemical Disclosure Registry <https://fracfocus.org/groundwater-protection>

Hydraulic Fracturing and Shale Gas Production: Technology, Impacts and Regulations. Argonne National Laboratory, Environmental Sciences Division, 2013 http://www.afdc.energy.gov/uploads/publication/anl_hydraulic_fracturing.pdf

Ground Water Protection Council <http://www.gwpc.org/programs/water-quality/source-water-protection>

International Energy Agency, Oil, Gas and Coal Technologies for the Energy Markets of the Future, 2013. <http://www.iea.org/publications/freepublications/publication/Resources2013.pdf>