

Hydraulic Fracturing:
Economic Necessity or Environmental Calamity?

© 24 May 2015

By Allen Kline

Reprinted 2015

By *Aquosus Potentia*

www.aquopotent.net

Hydraulic Fracturing

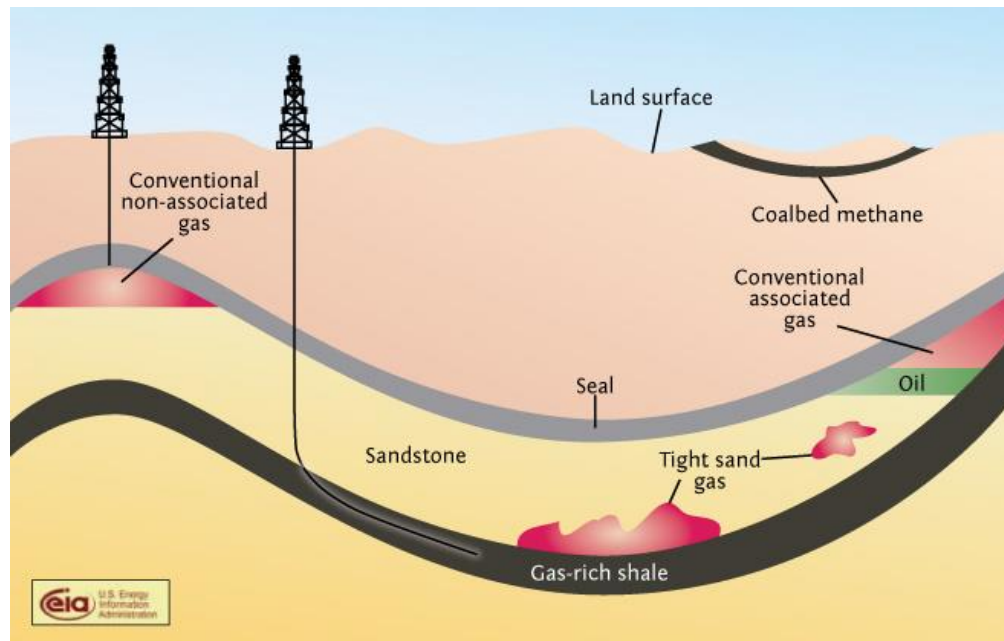


Figure 1--(US EIA 2010).

Hydraulic fracturing (known commonly as fracking) is a process that fractures large rocks so that water, chemicals and sand can be injected inside, forcing the rock to split apart; natural oil and gas are then extracted from the opened rock. (See Figure 1.) America has greatly benefited from hydraulic fracturing in many ways: it provides energy, jobs, and economic security. The only problem with fracking, however, is the environmental threat that it holds on the earth. Alanis Obomsawin argues,

When the last tree is cut, the last fish caught, and the last river is polluted; when to breathe the air is sickening, you will realize, too late, that wealth is not in bank accounts and that you can't eat money.

Despite how much hydraulic fracturing has benefited the economy, the bad greatly outweighs the good. Knowing the history, pros and cons of this procedure can help America create a safer and more effective alternative.

Although hydraulic fracturing has become more of an issue in recent years, this procedure is nothing new. The process of fracking first started during the Civil War in the year 1862 when Edward A.L. Roberts decided to throw dynamite into an opening in the earth's surface in order to retrieve fluid from large rock masses. This experience then inspired Roberts to create an even more effective way of retracting natural oil and gas through a process called "fluid tamping." This procedure of finding oil was done by lowering a large torpedo deep into a water-filled well, then exploding it; it sounds ineffective, but it worked. Creating a larger explosion greatly increased the chances of finding veins in the rock that contained oil ("Shooters - A 'Fracking' History"). The problem with this process, however, was its successive pattern of liquid nitroglycerin accidentally exploding on its own. This chemical was used even after Roberts' death until the last liquid nitroglycerin plant had exploded in 1990. Would hydraulic fracturing be continued? Would an alternative method be created? The end of this procedure had panicked many Americans until a new method was created.

Despite the terrible mishaps Roberts' company encountered, it is still in existence today. However, new and safer methods have been created to replace the deadly explosives. Water, chemicals and sand are all that are needed to fracture large rocks, not by erosion, but by the materials being forced into the rocks at intense pressure. After the fractures are created, the oil is retrieved simply by letting the fluid-filled well settle for a few days until the gas and oil flows up to the surface (Dunn, 2014).

Although the new and improved method of hydraulic fracturing doesn't usually require explosives and is more effective than the old procedure, it's far from being safe for the environment. It has been known for causing earthquakes, contaminating large amounts of water, promoting droughts and even changing the climate. In all reality, is it fair to trade our health and safety just for some oil? Also, if the practice of fracking has been done for so many years, why is it more of a problem now than before?

It can be easy to think “why not just get rid of fracking and not worry about it?” Unfortunately, the problem with getting rid of fracking is that although it may be safer and more environmentally friendly, many feel that the United States would have an economic downfall without it. For example, in 2011 alone, the US produced 8,500,983 cubic feet of just shale gas retrieved by hydraulic fracturing; this amount of oil was estimated to earn at least \$36 million dollars (Hassett & Mathur, 2014). In addition, imagine all of the jobs needed for engineers, truck drivers, equipment operators and accountants, just to name a few. Fracking provides jobs to hundreds of thousands of people with and without experience; in the absence of fracking all those people would be left unemployed.

Not only does fracking affect America by providing jobs, but it also fuels over 30 percent of the country (“How Much of America's Natural Gas?”). This percentage is expected to continue growing, which will most likely result in lower fuel costs and could then lower the prices of food, creating less poverty, following could be price drops of almost everything we buy. Hydraulic fracturing has affected many other industries in the US as well, such as electricity-generating plants. Many electrical plants have switched from using coal to generate electricity to using natural gas because of its recent cheaper price and its lesser produced carbon dioxide. The electricity-generating plants now claim to give off almost half as much CO₂ when using natural gas in replacement of coal. Many other industries are affected in a positive manner because of the large supply of shale oil, such as fertilizer producers, chemical industries, steel plants and aluminum plants (Environmental Protection Agency). Another benefit of hydraulic fracturing is that if it weren’t discovered, a majority of our natural gas would have to be imported from other countries, which would nearly double the price of gas. The economy has benefited greatly from fracking; it has provided North America with jobs, money, and has benefited many other industries besides its own, but could we benefit even more without it (Hassett & Mathur, 2014)?

The state of Oklahoma is known for being one of the largest fracking sites in North America because of its rich resource of shale oil. Unfortunately, hydraulic fracturing is claimed to be one of main causes for earthquakes in Oklahoma and other states with large amounts of fracking. One of the reasons for the increased earthquakes is an assumption that comes from viewing the pattern of earthquakes over the years. Between the years 1990 and 2008, Oklahoma had an average of only three earthquakes per year. On the other hand, in 2013 alone, 109 earthquakes were recorded and had increased to 238 by mid-2014 (“9 Good Reasons,” n.d.). According to State Impact, a reporting project of Texas, the idea that fracking being the cause of so many earthquakes isn’t just a crazy assumption. Cliff Frohlich, a research scientist at the Institute for Geophysics at the University of Texas at Austin claims that pumping water in wells miles deep below the surface can cause the faults to slip, resulting in an earthquake (“Fracking 101: Breaking Down,” n.d.).

Another downside to fracking is the droughts that it has been proven to cause. Remember, one of the main resources needed in the fracking process is water, nearly 8 million gallons per well drilled. The United States is estimated to have an estimated 500,000 drilling sites total, and each site is used at least 18 times, which amounts to a total of 72 trillion gallons of water for each well to be maintained. This has caused many crops to die due to lack of water and food prices in some areas to spike (“Fracking 101: Breaking Down,” n.d.).

Almost every amount of environmental damage fracking has done has led to a domino effect of problems. Because of the droughts, the climate has noticeably changed in the north and northwest states of America. Since so much water has been taken to fill wells, fracking has disturbed the natural water cycle. Without enough water in large bodies of water, clouds can’t form as easily and rain can’t feed crops, leaving many areas with plenty oil, but not enough food and water. America has always stressed its citizens to “go-green” by recycling, designing electric cars, and simply not leaving the water running too long when brushing one’s teeth, and yet so many don’t seem to be bothered by the risks

involved with fracking. Even if someone lives miles away from a fracturing well, they are still at risk of the harm that can be done from hydraulic fracturing. When taking into account all of the harm fracking causes, it really damages the economy more than it helps.

The way many people view hydraulic fracturing is that we can't live with it and we can't live without it. In many areas of the United States, it has become an outright political war if fracking should be banned or accepted. Without fracking, many feel that America would have an economic downfall, and many people would lose their jobs and a cheap way to obtain a valuable resource. On the other hand, if fracking were to remain, earthquakes would continue to increase, droughts would become more widespread, and food shortages would continue to grow. If fracking continues on, then its effects will gradually become worse, or we can use a safer and more efficient method.



Figure 2--(Real Infrastructure Capital Partners)

Solar and wind energy are efficient, never wasteful and effective. In past years, renewable resources have been considered to be unpractical and not cost-effective because the price was way too much for what it could accomplish. In more recent years, however, solar and wind technology have dramatically increased (See Figure 2), resulting in more companies producing wind turbines and solar

cells, which in turn make it easier for the government to purchase and benefit from. Clean Line Energy Partners mentions that “the United States has some of the best wind resources in the world, with enough potential energy to produce nearly 10 times the country's existing power needs” (“Wind and solar,” 2015). Wind and solar energy is not only safer, cheaper and more effective, but it also employs well over 100,000 people in creating and installing these renewable resources. The employment rate, low cost and effectiveness are expected to grow intensely if wind and solar energy continue to be supported.

Hydraulic fracturing has aided America economically by providing jobs and preventing high fuel costs, but when compared to the harm it has caused, the fracking process is just not worth it. It may be hard for the United States to do without at first, but if the states are slowly weaned off of fracking and transferred to more effective methods of generating power using wind and the sun's rays, the earth will greatly benefit.

References

- 9 good reasons to ban fracking immediately. (n.d.). *Reader Supported News*. Retrieved May 29, 2015, from <http://readersupportednews.org/opinion2/277-75/26367-9-good-reasons-to-ban-fracking-immediately>
- Dunn, S. (2014, January 5.). Fracking 101. *GreeleyTribune.com* Retrieved May 29, 2015, from <http://www.greeleytribune.com/news/9558384-113/drilling-oil-equipment-wellbore>
- Fracking 101: Breaking down the most important part of today's oil, gas drilling: How oil and gas disposal wells can cause earthquakes. (n.d.). *stateimpact.npr.org*. Retrieved May 29, 2015, from <http://stateimpact.npr.org/texas/tag/earthquake/>
- Hassett, K., & Mathur, A. (2013, April 4). Benefits of hydraulic fracking. Retrieved from <https://www.aei.org/publication/benefits-of-hydraulic-fracking/>
- How much of America's natural gas comes from fracking? (n.d.). *Intellectual Takeout*. Retrieved from <http://www.intellectualltakeout.org/faq/7-how-much-americas-natural-gas-comes-fracking>
- Shooters - A "fracking" history. (2015, April 19). *American Oil & Gas Historical Society*. Retrieved from <http://aoghs.org/technology/hydraulic-fracturing/>
- Wind and solar. (2015). *Clean Line Energy Partners*. Retrieved from <http://www.cleanlineenergy.com/technology/wind-and-solar>

Graphic illustration

- Shale gas extraction fig 1. (n.d.) *Credo Reference*. Retrieved from http://media.credoreference.com/berkseco2011/fig_ShaleGasExtraction_Fig1.jpg