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harmful or harmless? fracking in america

human beings’ need for energy has long been the cause of many environmental problems: dams create unnatural flooding, nuclear power plants can meltdown, and coal releases toxic chemicals. like all sources of energy, the environmental impact is weighed against the demand for energy. as some industry analysts predict that global oil production will peak by 2018, new and alternative methods for creating energy are necessary (lamb). despite little being known on the long-term environmental impacts, the potential of hydraulic fracturing to produce an enormous amount of energy has made the practice very controversial. particularly in the united states, politicians, environmental activists, and citizens are at odds with each other over hydraulic fracturing. until more environmental evidence is reported, a determination on the worth of fracking is premature.

across america pockets of bedrock are infused with rich deposits of natural gas—reserves so large the united states could become energy independent. but the process of extracting the gas has become immensely controversial. once mundane tasks, such as driving to the store, now bring a bombardment of political ideology: cars with “fracknation” bumper stickers get passed by cars with “stop fracking” scribbled across the rear window. an argument is powering up across the united states and energy is at the foundation.

hydraulic fracturing, often shortened to fracking, is a method of extracting natural gas from shale deposits deep below the earth’s surface. the term hydraulic fracturing was first used in 1948 in the oil & gas journal. the journal states: “the hydraulic fracturing process...shows distinct promise of increasing production rates from wells producing from
any type of formation” (“Hydrofracturing”). This first reference shows that since the idea of fracking was conceived, experts understood the practice would revolutionize the oil and natural gas industries. While engineers and oil companies immediately understood the production potential, environmentalists would not become aware of the potential impacts for many years.

In 2013, the National Geographic Society explained the process of creating a fracking well (How Hydraulic Fracturing Works). In the beginning, it is similar to a traditional well that extracts crude oil. A drill digs deep into the ground, then fills the recently made hole with mud to prevent the walls from collapsing. After the hole is thousands of feet deep, the drill and mud are removed and the sides of the hole are stabilized with a steel tube. The tube is then lined with concrete and various tests are conducted to ensure that the seal is water- and air-tight in order to prevent groundwater contamination. Several more linings are placed in this initial shaft. Next, a specialized drill is inserted into the well and begins to change the trajectory of the hole. The well changes from a vertical shaft to a horizontal one. Once the horizontal portion of the well is at the desired length, the same rigorous lining procedures are applied to the new section. A device that is able to puncture the linings is then sent down the shaft where it blasts holes into the horizontal linings and creates small fissures in the shale bedrock. These newly punched holes allow hydraulic fracturing fluids to seep from the well into the bedrock, and, under high pressure, the shale severely fractures. The fluids are removed and natural gas particles move from the shale into the tubing and are able to be extracted, processed, and used.
Many environmental activists are quick to question the types of fluids that are used to fracture the shale. One of the leading organizations that promotes fracking, Energy from Shale, states that the hydraulic fluids are 99.5% water and sand ("Energy"). They say that the other 0.5% of chemicals used in the fracking process is “common household items” ("Energy"). These items include ethylene glycol, guar gum, and isopropanol. Activists question whether these “common” chemicals are actually damaging the aquifers. Ideally, fracking takes place far below aquifers making the probability of contamination very unlikely, but possible. John Hanger, the former secretary of the Pennsylvania Department of Environment Protection addressed these concerns saying, “it’s our experience in Pennsylvania that we have not had one case in which the fluids used to break off the gas from 5,000 to 8,000 feet underground have returned to contaminate ground water” ("Energy"). Environmentalists disagree. Since Hanger’s statement, fracking chemicals have been found in Pennsylvanian water (St. Fleur). Further, some neighborhoods in the Keystone state are beginning to find a correlation between fracking and hospital visits (Hoffman).

In an attempt to persuade Americans that fracking is harmful to the aquifers, some activists turned to the big screen. In fact, one of the main pieces of propaganda against fracking is the documentary GasLand, which is not entirely truthful. The film’s provocative footage of Coloradoans being able to ignite tap water shocked millions. Shortly after being released, similar videos from across the country went viral of people lighting their tap water on fire. The film suggested that fracking fluids were contaminating the ground water and making its way to the tap. So much fervor rose from the videos in GasLand that various states that had allowed fracking opened investigations. The state of Colorado’s Department
of Natural Resources issued a statement confirming that there were methane particles in the water but that the methane responsible for the ignition was “naturally present” and was not caused by fracking (Department of Natural Resources). After coming under scrutiny for its dubious claims, GasLand issued a correction for suggesting fracking was responsible and the director was later quoted saying, “I’m sorry, but art is more than politics” (“Debunking”).

GasLand is not the only source of misleading information in the war on fracking. Pro-fracking organizations are also culpable of drawing inadequate conclusions. On the surface, Energy From Shale has a trustworthy façade, much like GasLand. A casual viewer to the website may believe the information provided; however, the organization’s facts are likely unreliable. Although Energy From Shale is backed by many experts and trade organizations, the website interestingly shares a video of the “Top 10 Reasons to Choose Natural Gas,” which was produced by the antithesis of a natural gas expert. YouTube user “trafficg64” began his online career making search engine tutorial videos and has become a self-taught fracking authority. This bizarre citation to “trafficg64” raises questions about the reliability of information provided by Energy from Shale.

The problems arising from hydraulic fracturing are not limited to the chemicals used; many opponents believe the concept of shattering the bedrock is dangerous as well. After the hydraulic fluids are removed from the fractured shale, sand particles mixed into the solution are designed to remain in the shale fissures and to support thousands of feet of earth and life above. This system, however, does not always work as intended and the sand particles can move or be crushed under the immense pressure.
Further, after the hydraulic fluids are used, the liquid is sent into waste wells deep below the surface. While the Environmental Protection Agency has found that these waste fluids were not contaminating the aquifers, some experts believe the wastewater acts as a lubricant between the fractured bedrock ("Assessment of the Potential Impacts..."). When the sand fails and/or the fluids cause rocks to shift, noticeable earthquakes begin to occur. On September 3, 2016, an earthquake that measured 5.6 on the Richter scale radiated from Oklahoma, a hotbed of fracking and waste wells. After the dust settled, state officials suspended all fracking (Hopewell).

Everywhere fracking exists, a similar trend is occurring. Earthquakes are becoming either more frequent or more powerful. The United States Geological Survey (USGS) has found that since 2011, the number of earthquakes stronger than magnitude 3.0 on the Richter scale have skyrocketed from about 1,000 to over 3,000 per year (United States). Despite this enormous uptick in noticeable tremors, Energy from Shale insists that an overwhelming majority of the earthquakes caused by fracking are undetectable by humans ("Fracking and Earthquakes"). Further complicating the issue, USGS admits, “hydraulic fracturing does not play a key role in the increase” of human-induced seismic events (United States). Rather, the increase is attributable to waste wells. Proponents of fracking dismiss the correlation between fracking and strong earthquakes as inconclusive by citing an industry-funded study (Cuadrilla Resources).

Another aspect that comes under scrutiny by both proponents and antagonists of fracking is the potential for the United States to become energy independent. According to the CIA’s World Factbook, as of 2014 the United States became the world’s top producer of natural gas. Pumping out 728.2 billion cubic meters of natural gas per year, the U.S.
narrowly far out paces Russia and produced roughly five times more natural gas than the entire European Union (“Natural Gas”). While this massive level of production drives down prices and allows America to be closer to energy independence, it also depletes the world’s reserves at a much quicker rate.

Much information and bias surrounds hydraulic fracturing. The arguments both for and against the right of private companies to frack can seem reasonable at times and disappointing at others, but there is not currently enough reliable information to draw a realistic conclusion. Both sides are guilty of lying, exaggerating, and using political bias to influence the discussion—though this is not unusual. The difference between most other industries and hydraulic fracturing is the dire consequences associated with fracking. Earth shaking faults and toxic chemicals are just the beginning of the long list of controversial practices associated with fracking. Pending definitive and unbiased evidence on the safety of hydraulic fracturing, wholeheartedly endorsing one side is foolish.
Works Cited


<http://cogcc.state.co.us/Announcements/Hot_Topics/Hydraulic_Fracturing/GASLAND%20DOC.pdf>.


