**Fracking: An Ingenious Solution or a Dirty Fuel in a Green Façade?**

Think about your everyday routine. You probably wake up, eat, and then get in your car to head to work. Maybe you drive your kids to school or you go to dinner after a long day of work. Now think about your daily schedule again, but try to imagine completing it without using fossil fuels. You couldn’t turn on your lights when you woke up. Matter of fact, you couldn’t even have an alarm to wake you up, because that alarm is powered by electricity, which comes from a power plant (that most likely uses fossil fuels). Finally, you most definitely could not drive your car anywhere. Your entire daily life would come to a halt if fossil fuels were not around.

Despite our obvious dependence on fossil fuels for the functioning of our society, recently there has been great worry in regards to running out of our coal and oil resources. That is, until it was discovered that the shale reserves that lie under thirty-four states could be accessed with hydraulic fracturing to obtain natural gas. The discovery of this method has exponentially increased the amount of energy that is available to the world (*FrackNation*). It is said that it will provide “cheap, abundant and reliable energy to millions, even billions of people” (*FrackNation*). The “United States has enough natural gas from shale alone to supply the entire country for about 90 years” (Burnett and Weber 1). Due to these facts, natural gas seems like the solution to all of our energy problems.

If it is cheap and will last for a while, then why shouldn’t we use it? It has even been said that “natural gas may lead to the development of economically viable and efficient alternatives to fossil fuels” (Stroup). This shows that it is a transition source of energy. It will transition us from the use of fossil fuels to, hopefully, renewable, clean energy. Is natural gas the efficient and clean transition fuel that is the answer to our problems? Or is it merely a dirty fuel hiding under a green façade? In order to determine this, it is essential to look deeper into its history, the process of fracturing, the pollution that it inflicts on our air and water, and the regulations that oversee it. In addition, the economic benefits and jobs it creates, the increase in national security, and the fact that it burns “cleaner” must be examined in order to determine if it is the holy grail of fuel.

The history of natural gas was not always successful. Natural gas did not gain popularity until after World War II. This was due to the fact that there was a “lack of technological development and insufficient infrastructure, [which meant] producers could not get natural gas to markets in a feasible manner, and it was often burned off or allowed to vent into the air on site” (Stroup). Then World War II occurred, causing pipelines to be constructed across the United States in order to ensure energy security during the war. After the War, these pipelines were leased to natural gas companies because there was not a great need for them anymore (Stroup). This shows that there was now a feasible way to transport natural gas, which caused the demand for it to increase, and increase it did. “In 2000, unconventional natural gas resources contributed to only 1 percent of the U.S. natural gas supply. Today, however, they represent 20 percent and could grow to 50 percent by 2035” (Stroup). This shows that the use of natural gas is steadily growing.

In order to analyze the benefits and drawbacks of fracking, it is first important to have an understanding of the process and how it works. The process of fracking began in 1949; however, the true research into it did not begin until the 1970s when petroleum production shortages resulted from tensions between the United States and Iran (*FrackNation*). This demonstrates that these shortages made turning attention back to the extraction and production of natural gas a necessity. As mentioned previously, there are thirty-four states in North America that harbor stores of natural gas deep underground (*FrackNation*). The goal of fracking is to release natural gas that could not be accessed through conventional drilling methods. In simplified terms, the process of fracking involves drilling a well deep into the earth. After this, chemically treated water and sand are injected through the well into shale rock. The sand breaks up the shale rock, causing natural gas to be released into the pipes of the well. Finally, everything is pumped back to the surface and the natural gas is separated from the water and sand (Prichard). This sounds like a pretty great process, right? All we are doing is busting up some rocks deep below the surface to release natural gas that we can use to power our daily lives. Well, the interesting thing about fracking is that the efficiency and safety of the process varies depending on who you ask. On one hand, if you ask those opposed to it, such as Josh Fox who made the famous and controversial Gasland film, you hear about the dangers and atrocities inflicted by the fracking process. On the other hand, if you ask the gas companies, they say the process is safe and efficient. Looking into both of their descriptions provides a deeper understanding of the process.

*Gasland* is a documentary filmed by Josh Fox, who researched the fracking process after gas companies offered to buy his land to frack for natural gas. This film brings up many alarming factors in the process that is used to frack. First of all, the water that is used for fracking includes a mixture of more than 596 chemicals that are not disclosed to the public. Many of these chemicals are dangerous or their effects on human health and the environment have not been studied. In addition, every time a new well is drilled, it requires 1 to 7 million gallons of water to frack it. If the well is returned to later to be fracked again, it needs another one to seven million gallons of water to be re-fracked. A well can be re-fracked 18 times, this equals about 126 million gallons of water per well. In addition to this, the wastewater that comes back up along with the highly desired natural gas is being illegally dumped onto fields and streams (Gasland). This shows that all of the chemicals that were originally mixed with the water for fracking purposes are now polluting water and land. This can not only affect the wildlife, but humans as well. In a world that is rapidly running out of fresh water resources, it would seem that this is not exactly an efficient strategy. When evaluating the information given about the process of fracking in the Gasland documentary, it is important to recognize the bias that is present here. The documentary was created by a man who did not want companies to buy out his land for hydraulic fracturing. Due to this, some of the information may be overstated or exaggerated in order to make viewers feel a strong opposition towards the process.

On the other hand, the oil companies have a very different description of the fracking process. The video states that the wells are drilled so deep down that it is equivalent to 200 school buses, which is far away from our water supply (*FrackNation*). This shows that supposedly, there should be no contamination of the dangerous and unknown fracking fluids in the water supply. In addition, the video mentions that there are only “small cracks” created by the injections of sand and chemical water that allows for the natural gas to seep in through the pipes (*FrackNation*). This, again, shows that the process does not inflict that much damage, and not nearly enough damage to contaminate our water supply. It is important to note while the fracking pipes can be placed a length of two hundred school buses down, they *can* be placed a “hundred feet from homes or drinking water supplies” (Thompson 12). This fact was conveniently not mentioned in the *FrackNation* documentary. The process is described as very efficient and a beautiful farm and house are shown right next to the fracking sight. When considering the facts from this video, it is very important to look at the source. This video was funded by oil and shale lobbyists. This shows that they are going to want to promote the fracking industry, because that means more money in their pockets. Essentially, both the producers of *Gasland* and *FrackNation* have their own personal interests, so it is important that this is taken into account when analyzing the information presented in both.

After analyzing the process of fracking itself and some general problems associated with it from these radical, opposing sources, it is crucial to research deeper into them through academic journals that contain less of a bias. One of the first serious problems associated with the fracking process is the pollution that it causes to water. As previously mentioned, the companies that carry out fracking deny that there is any possible way that the chemicals used in the fracking process could get into our water supply; however, in 2011 the EPA issued the first report that scientifically linked fracking with underground pollution. It proved that there were “thirty-three abandoned wastewater pits that were leaching fracking chemicals” (Thompson 27). This was a milestone in the fight against fracking because it provided actual evidence that fracking contaminates our water, a fact that was denied for many years. In addition to this, in 2010 the EPA took samples of residents’ drinking water in Wyoming and discovered that it was no longer safe to drink. They also determined that the levels of methane that were found in the water could cause an explosion (Thompson 30). Finally, the EPA drilled two wells in November 2011 to confirm their findings. The results of this test proved that “high levels of carcinogenic chemicals such as benzene, and butoxyethanol” were present in the water (Thompson 30*)*. This data is significant, because it shows that fracking does have harmful effects to our water supplies, despite the gas companies guarantees that it is safe and does not contaminate water.

While water contamination is the main concern when it comes to fracking, air pollution is another area of worry. “Researchers have found potentially toxic chemicals- including cancer-causing benzene- in the air near fracking sites, and they estimate a higher risk of health problems for individuals who live near those wells” (Thompson 33). Benzene is known to “irritate eyes and cause headaches, sore throats or difficulty breathing” (Thompson 35). In addition, in Colorado emissions from fracking wells included “methane and volatile organic compounds that react with heat and sunlight to form ozone” (Thompson 34). These results show that fracking does emit harmful chemicals into the air. These affect the environment and human health.

There is no doubt that fracking does contaminate our air and water, but there is also a bigger issue at hand: regulation. As previously mentioned, the occurrence of hydraulic fracturing has exploded with the discovery of these once unreachable reserves. Due to this quick increase, regulations have not been able to keep pace, resulting in dangerous pollutions and health risks (Thompson). It is important to note that in 2005 the oil and gas industries were exempt from the rules and regulations laid out in the Safe Drinking Water Act, Clean Air Act, and Clean Water Act. This was made possible through the Halliburton Loophole (*Gasland*). It is ironic that the companies that handle the supplies that can do the most damage to our environment are exempt from the rules.

While regulation is not a complete solution, an increase in it would improve the dangers present in the fracking process. For example, “the methane, can be captured using the right equipment, toxic waste can be managed in safer ways, and gas wells can be made stronger to reduce the risks of drinking water contamination from blowouts and other problems” (Thompson 59). This shows that there are many steps that can be taken to make the fracking process safer. So if there are these options, then why are they not being utilized? For one, often the technology to make equipment “greener” is very costly. This cost would either have to fall on the company itself, or the consumers. While no one wants rising prices, the price that the world will pay for our mistakes regarding lack of regulation will be much greater. This is something that must be taken into extreme consideration.

While it is obvious that fracking has its drawbacks, it is important to note the benefits that are reaped from natural gas. One of the main benefits that come from fracking is the increase in jobs. In 2010, the fracking “industry supported more than 600,000 U.S. jobs” (Thompson 58). This shows that fracking positively impacts the American economy by bringing jobs to its citizens. In addition, since the gas is fracked in the United States, imports from another country are not needed. This keeps the money circulating in the United States economy. While the fracking process obviously does increase jobs, it is important to note that the jobs brought to the communities where the fracking occurs often do not employ the citizens of that specific community because many of them do not have the skillset to operate the drilling equipment (Kelsey 1).

Another aspect of this is the success of the economy for the community where the fracking is taking place. This new influx of people does help the economy of the community due to the fact that all these new people require places to stay, eat, and shop. On the contrary, when the drilling is done these workers move out. This may cause a shock to the economy, because of the sudden decrease in sales. In addition, the extra workers that were hired to help deal with the increased sales may now be fired (Kelsey 3). This shows that while fracking is occurring, the economy flourishes; however, when the fracking is over, the economy busts and it may end up in a situation even worse than where it began. With this in mind, is the fracking helping communities? Or is it merely a short term benefit that leads to greater harm in the long term? It seems that the second choice is the more applicable one.

 It is key to note that while fracking brings jobs into the US economy, so could other forms of energy. For example, if the United States was to switch over to a reliance on solar or wind power, jobs would still be created. In addition, it must be noted that the jobs “based on non-renewable resources such as that with unconventional oil and gas development are unsustainable, and will end” (Kelsey 4). This shows that it is actually more beneficial to put money towards researching renewable energy resources, because once created, those jobs will last (essentially) forever. Oil, coal, and natural gas may be producing a plethora of jobs now, many of which provide hefty salaries, but when these resources run out, so do the jobs that accompany them. These jobs have a time stamp. And when it is that time, there will not only be an energy crisis, but an unemployment crisis as well.

Another important benefit of fracking deals with global relations. “In the past five decades the United States has relied increasingly on the Middle East for its oil,” but with natural gas that is all about to change (*Climate Change*). The discovery of natural gas could push the United States to be the “world’s biggest oil producer by 2017” (*Climate Change*). This would change international relations in a dramatic way. This means that the United States would no longer be reliant on the Middle East for oil and the tensions between our two countries might dissipate. For example, there is the saying that when they “‘drill a well, [they] bring a solider home’” (Russell 1). This once again demonstrates how the reliance on natural gas is supposed to increase our natural security by showing that there would be less of a demand for soldiers.

This international relations issue should also be viewed from an environmental standpoint. The importance of this is that with America relying on its own oil sources, “more than 90% of oil and gas from the Middle East could be sold to Asia, and chiefly to rapidly developing countries such as China” (*Climate Change*). This means that these countries would be emitting even more carbon dioxide into the atmosphere. This would be on top of the emissions that the United States would be producing. Essentially, this would make“curbing dangerous climate change beyond reach” and as Ed Matthew, director of the Thinktank Transform UK, warns : ‘Energy independence will not increase national security in the US if it leads to runaway climate change’” (*Climate Change*). This shows that while natural gas may decrease the United States reliance on the Middle East, hence increasing national security, the environmental effects are just not worth it. If we end up in water wars or wars over food, the natural security benefits reaped from the use of natural gas will be thrown out the window. Again, the United States could decrease its reliance on the Middle East by focusing on renewable energy sources produced right in the nation.

 Finally, there is the argument that natural gas is a cleaner source of energy than either coal or oil. This idea comes from the fact that natural gas mainly emits methane. “Methane generates less carbon dioxide than coal or oil when it is burned” and “the United States has seen the lowest level of carbon dioxide emissions since the 1990s” (Russell 3). These seem like an impressing statistic and makes natural gas seem like the way to go. However, it is important to note that methane leaks from the wellheads and “methane is 20 to 70 times more powerful than carbon dioxide” (Russell 3). So while it may burn “cleaner”, it has to be noted that methane is still a greenhouse gas that contributes to climate change.

While the debate on natural gas is highly controversial and the potential dangers of its effects vary on whom one asks, a few things are certain: fracking contaminates the air, fracking pollutes the water, and this pollution/contamination can cause human health effects. Despite these dangers, fracking does increase jobs, stimulates the economy, and increases national security. When weighing these costs and benefits one must decide if money matters more than our health and the environment? The answer to this may vary on whom one asks.

 In conclusion, while some may see natural gas as a transition fuel, it seems to be a procrastinator fuel. All of the money that is going into the process of fracking, which pollutes our air, water, and atmosphere, could be used to fund research on clean, renewable sources of energy such as wind, solar, and hydropower. So is the natural gas revolution the first step to renewable, clean energy production, or is it merely a way for the gas companies to prolong their profit-making under the guise of being green? Based on the evidence, it seems that the latter is true. Natural gas is not the solution to our fuel issues, but hopefully the controversy against it will spark a desire for our nation to create a renewable source of energy that is good for the environment and powers our society/economy.

Works Cited

Burnett, J. Wesley, and Jeremy G. Weber. "Is The Natural Gas Revolution All Its Fracked Up To Be For Local Economies?." Choices: The Magazine Of Food, Farm & Resource Issues 29.4 (2014): 1-5. Academic Search Complete. Web. 5 Nov. 2015.

"Climate change fears as US predicted to be world's top producer by 2017: Fracking may end reliance on oil from Middle East Huge geopolitical shift if IEA forecast is borne out." The Guardian (London, England) 2012: General Reference Center Gold. Web. 5 Nov. 2015.

Cullers, Robert. "Coal Mining Industry." Salem Press Encyclopedia (2013): Research Starters. Web. 13 Nov. 2015.

*FrackNation*. Dir. Phelim McAleer, 2013. Film

*Gasland.* Josh Fox, 2010. Film

Kelsey, Timothy W. "Unconventional Oil And Gas Development: Challenges And Opportunities For Local Governments." Choices: The Magazine Of Food, Farm & Resource Issues 29.4 (2014): 1-5. Academic Search Complete. Web. 5 Nov. 2015.

Pritchard, Joshua. "Fracking Overview." Salem Press Encyclopedia (2015): Research Starters. Web. 13 Nov. 2015.

Russell, Kathryn. "Will Fracking Bring The Soldiers Home?." Peace Review 25.4 (2013): 552- 560. Academic Search Complete. Web. 20 Sept. 2015.

Stroup, Laura J. "Natural Gas." Salem Press Encyclopedia (2015): Research Starters. Web. 13 Nov. 2015.

Thompson, Tamara. Fracking. Detroit : Greenhaven Press, [2013], 2013. Web. 13 Nov. 2015.