The Health Impact of Fracking on Vulnerable Populations: A Comparison Between Pennsylvania and Texas

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INTRODUCTION

 In America’s efforts to become more energy-independent, hydraulic fracturing (“fracking”) has been viewed as a viable option to help the country transition from non-renewable fossil fuels to renewable energy sources. As the BBC explains, fracking is the process by which highly pressurized and chemically treated-water called hydrofracturing, or fracking, fluid is injected deep into the ground to fracture rock formations, usually shale, to release any trapped natural gas. The gas is then forced upwards to the surface to be piped away and refined (2015, para. 3). This process is illustrated in Figure 1.

Figure : Diagram of fracking well site. Source: BBC News, 2015

More and more companies view fracking as more viable alternative to traditional oil and gas methods because of its reduced carbon emissions, which is viewed as more favorable to an increasingly environment-conscious government and public, and less stringent regulations on the construction, location, and function of the fracking well sites. Unsurprisingly, the number of fracking sites, and their wastewater wells, have exploded in states with previously untapped natural gas reserves such as Texas, Oklahoma, Pennsylvania, and the Dakotas. CNNMoney writer Matt Egan (2016) reports that, in 2015 alone, there were an estimated 300,000 fracking wells in the United States, up from only 23,000 in 2000. These wells collectively produce over 4.3 million barrels of fracking oil a day and account for about half of all the oil produced in the US daily. As a result, the US has become third to only Russia and Saudi Arabia in terms of oil production (para. 3). As such, it is prudent to explore what may result if fracking increases at the rate it is expected to in the United States.

BACKGROUND

While fracking has allowed the United States to be less reliant on foreign powers for fuel, one must first analyze the methods by which the country is achieving such a feat. When examined closely, fracking has been shown, time and time again, to negatively impact the communities where it is occurring and, as Johnston et al. (2016) prove over the course of their study, fracking well sites are more likely to be located in low-income, rural areas where most of the residents are people of color. They found that, from 2007 to 2014, the Texas Railroad Commission, the agency that regulates and issues permits for the building of fracking fluid disposal wells, was “disproportionately” likely to issue wastewater well building permits in high-poverty areas with a majority of the population being people of color (p. 550). These people are not alone and this injustice is not merely limited to Texas alone; rather, it is a systemic problem that these people have to deal with on a daily basis. They have been marginalized for a number of reasons, namely money. Simply put, the people there are too poor to protest decisions in court and any money they do have will go towards paying the medical bills for the adverse health effects of fracking and not towards legal fees. Realizing this, gas companies see that it is possible for them to make whatever decisions they want in terms of well placement and gas production without any true outcry or repercussions. Race also plays a factor in these decisions. Often, residents of high fracking-density areas are people of color, that is, African-Americans, Latinos/Hispanics, and Native Americans. People of color are consistently paid less for their work compared to their White colleagues, contributing to the poverty factor by reducing the amount of money these people have to begin with. Bienkowski (2015) adds that oil and natural gas companies often systematically target low-income communities with high amount of debt by offering them money or leases to allowing fracking on their property. These leases help to alleviate some of the short-term money problems residents have, but tend to be problematic for the people in the long-run because it opens the door for fracking-related pollution of their land (para. 20). The blame is not to be place on the residents however. When one is under significant financial strain, as many of the people in high fracking density regions are, any kind of relief is welcome – even if the short-term relief may be cause for more problems in the future. Further, these people do not have as much access to information about fracking or legal representation as their counterparts in more urban areas due to the severe shortage of resources and personnel in rural areas. All these factors taken together create a perfect storm of conditions for fracking to take place in vulnerable communities.

HEALTH IMPLICATIONS

 Fracking poses a major threat to the quality of the environment, water in particular, due to the hazardous chemicals present in the fracking fluid. Bharadwaj and Goldstein (2015) state that the increase in fracking has led to newer and more potent chemicals being added to the fracking fluid in hopes of increasing gas production. While they have boosted gas recovery rates in the rock formations, these new chemical cocktails have also increased concerns of groundwater contamination (para. 7). As a result, the most pressing environmental concern regarding fracking is the growing evidence that fracking wastewater contaminates underground water supplies. Powers et al. (2015) studied the perceptions of residents in Pennsylvania’s Bradford County, the most heavily drilled county in the United States, in regards to fracking in their communities and found that approximately 30% of all residents were concerned about the amount of water being directed towards fracking sites and of the potential contamination risk associated with fracking (p. 539). Their fears are well-founded. Shonkoff, Hayes, and Finkel (2014) conducted a review of both peer-reviewed and credible non-peer-reviewed research on fracking and determined that shale gas development (i.e. fracking) has negatively contributed to the quality of the water in areas surrounding fracking sites (p. 787). Johnston et al. (2016) also provide backing for some of the fears of Bradford County residents about the disproportionate impact of fracking on low-income and rural communities. They found that the water in the Eagle Ford region of South Texas, another high-fracking density area, had exceeded the EPA-mandated limits in terms of chromium, mercury, and arsenic levels and had higher than normal levels of chlorine and bromine (pp. 550, 553). All three scholarly articles come to same conclusion: Residents in communities where fracking is present are at higher risk of multiple health problems. They also cite the need the for more research and tougher regulations on fracking in the United States. Scientists do not know the full extent of fracking’s health effects due to the lack of regulations, weak enforcement, and the natural gas companies’ failure to disclose what *exactly* is in the fracking fluid that contaminates the area’s water. Scientists do know, however, how the hazardous wastewater gets into the drinking supply of the area. Bienkowski (2015) and the Environmental Studies Department at Swarthmore College (2016) both report that the protective cases around the wastewater pipes underground tend to crack and leak dangerous chemicals into the water table, which most residential water wells tap into (para. 2; para. 9). These leaks lead to higher rates of cancer, skin and eye irritation, respiratory complications, nosebleeds, and headaches (Bharadwaj & Goldstein, 2015, p. E99). Figure 2 illustrates the Environmental Exposure Pathway as theorized by Shonkoff et al. (2014). The Pathway explains the methods by which pollutants can enter the body and cause numerous health problems and how those health effects are directly affected by factors such as concentration of the pollutant in the dose and the length and type of exposure received.

Figure : Environmental Exposure Pathway. Source: Shonkoff et al. (2014)

The increased rate of medical complaints by residents of fracking areas serves to underscore what groundwater contamination can really do to people in these areas and how vital it is to develop methods to stop the contamination.

METHODOLOGY

 Scientists and environmental activists in the United States and around the world have all seen the effects of fracking on vulnerable members of the population and have chosen to study the subject in one of two ways. The first method is through the study of anecdotal response of residents in high-density fracking areas. The 2010 documentary *Gasland*, and its 2013 sequel *Gasland Part II*, by environmental activist Josh Fox uses this method to bring attention towards the injustices caused by the fracking industry against residents in Colorado, Wyoming, Utah, and Texas. The film is credited with sparking the anti-fracking movement and directing immense celebrity and political attention towards the subject. While there are not as many “hard numbers” associated with this type of study, it does humanize the subject and make the problems facing vulnerable communities more “relatable.” Original, peer-reviewed empirical research is the second method used to study fracking’s health effects. Scientists often consider this second method to be more effective, especially in legal disputes or in politics, as it provides numerical data that can be analyzed and replicated by other researchers. Analytical study is often based on medical histories of residents of relatively large, high-density fracking areas and environmental quality markers such as the EPA’s regular air and water quality measurements.

CASE STUDY #1: PENNSLYVANIA

 In 2009, residents of Susquehanna County, Pennsylvania sued Cabot Oil and Gas for water supply contamination. The Ely and Hubert families, along with 40 of their neighbors, stated that Cabot Oil and Gas built faulty natural gas wells that leaked methane gas into their water supply. Cabot denied responsibility and claimed that there was already methane gas in the water before it started drilling. To hold the company accountable, the families filed a lawsuit alleging breach of contract, fraud, personal injury, loss of property value, and private nuisance as a result of the contaminated water. All charges except for the private nuisance allegation were dismissed by a federal district court judge in a pretrial hearing due to insufficient evidence. Then, in 2012, 40 of the plaintiffs agreed to a settlement with the company for an undisclosed amount of money. On March 10, 2016, a federal court awarded the families a total of 4.24 million dollars. Cabot Oil and Gas plans to appeal the verdict (Wile, 2016).

CASE STUDY #2: TEXAS

 The Parr family of Wise County, Texas sued Aruba Petroleum, a major Texas oil drilling company, in 2011 after it had established 22 fracking well sites near their ranch. The family stated that pollution resulting from fracking had sickened them and forced them to sell their home and ranch animals. Ms. Parr told reporters at a press conference in 2012 that the family experienced severe nosebleeds, rashes, and headaches as a result of the land, air, and water pollution from the fracking well sites. On April 24, 2014, the Texas county court awarded the family $2.925 million for pain and suffering, past and future damages, and mental anguish. Aruba Petroleum appealed the verdict, which is still being heard in the legal system (Visser, 2014). Nevertheless, this case marked the first time in US history that a verdict was reached in a fracking pollution case; most cases are settled out of court and plaintiffs are often required to sign extensive non-disclosure forms that prevent them from appealing or speaking with the media about the case.

ANALYSIS

 While justice was served in the short-term for these two plaintiffs and the fracking companies were held responsible for their actions, the companies may have had the last laugh. However large the awarded amount may be, a large percentage of the money the plaintiffs received will likely go towards paying their attorneys’ legal fees and, at the end of the day, the money leftover will likely not be enough to cover all the medical bills the families have to pay as a result of the contaminated water. In addition, the money will probably be tied up in the courts while the appeals process goes through and it may be years until the families actually get ahold of the award money. Moreover, 4.24 million dollars or 2.925 million dollars is like a drop in the bucket for a companies like Cabot and Aruba and will likely not be enough to stop them from doing something like this to another community.

SOLUTIONS

Solutions to the problems created by fracking in vulnerable communities and preventing them from happening in the future must be multifaceted; there is no one silver bullet that will make fracking the cleanest energy option available, but there are steps that can and need to be taken to make it safer and more effective. The introduction of better suited legislation and more effective enforcement of said legislation is absolutely critical to preventing various injustices and environmental disasters listed above. Currently, there are multiple loopholes in environmental protection laws that exclude the fracking from government oversight. As Johnson et al. (2016) point out, the Energy Policy Act of 2005 shields fracking companies from the Safe Water Drinking Act because it does not put the regulation – what little there is – of fracking fluid or fracking wastewater under the jurisdiction of the EPA (p. 553). Instead, gas companies are expected to regulate themselves and it is up to them to decide whether or not their profits should come before the health of the community. This is not a reliable or safe method of preventing hazardous chemicals from entering the public water supply and increases the likelihood of cover-ups about the true extent of fracking-related pollution. Action has to also come from residents; too often, community members are told that it is too late in the legislative process to stop an unwanted company from building a fracking site near their homes. To prevent this, residents must take it upon themselves to be active in the legislative process for their communities, so that they have a say in the placement of the fracking sites before it is too late in the process to prevent an unwanted well from being built. Legislation about the number and placement of fracking wells should also be passed to ensure that communities are not taken advantage of if they do agree to allow fracking on their land.

Additionally, there must be more planning to avoid building fracking and wastewater disposal sites on fault lines and contaminating water supplies. Than (2016) indicates that geological stress maps can be used to avoid fault lines in areas that companies propose to frack. By doing so, there will be fewer fracking-related earthquakes and companies can still access natural gas reserves (para. 8). Safer construction of the fracking and its disposal sites will also prevent wastewater contamination of nearby water supplies. Johnston et al. (2016) state that fracking wastewater water is not considered hazardous waste, even though it contains many of the same carcinogenic and endocrine-disrupting components, and its disposal wells are not subject to the same kinds of rigorous standards as hazardous waste disposal sites (p. 550). By changing this classification, newer wells and retrofitted older wells will be better able to prevent leaks. However, the biggest prevention method, by far, would be moving away from fossil fuel-based energy sources in general. The country, as a whole, needs to invest in more viable renewable fuels. While this may seem like a pipe dream, the reality is that fossil fuels **will** run out in the future and the US needs to be able to support itself when that does happen.

 Putting pressure on the fracking companies to be more transparent about the contents of the fracking fluid is central to mitigating the damage done by fracking. This will allow researchers and regulators to have access to the fracking fluid “recipes” to provide an independent review about the toxicity of the components and help determine effective clean-up methods for any spills that occur. Overall, it is imperative that more funding and support is put towards empirical, peer-review research studies about fracking to better understand the toll extractive economies take on the environment and how to lessen their effect. In that same vein, contributing to a fracking-related spill or pollution disaster should come at a significant financial cost to the company associated with it. The current fines for creating a spill are a slap on the wrist to companies that make millions of dollars a year and often don’t push the companies into making any real change in their fracking operations. If the fines are high enough to effectively dissuade companies from cutting corners, it will decrease the number of repeat offenders and the severity of fracking-related pollution. This will also drive companies to look for and invest in cleaner alternatives to the more hazardous compounds found in their fracking water. Instituting these changes will hopefully lead to a more environmentally-friendly industry and minimize the fracking-related human rights injustices in the United States.

CONCLUSION

 In the fight against fracking-related environmental and human rights violations, there has been some progress. As a result of increased backlash against the industry as a whole, some companies have taken to developing “greener” methods of conducting fracking and disposing of its wastewater. Jordan (2015) reports that, in recent years, fracking companies have increased the recycling and reusing of fracking wastewater instead of injecting into the ground after one cycle of fracking. This is in spite of the fact that the recycling process is not as cost-effective as the standard injection procedure (para. 21). This is a step in the right direction and, in the future, will hopefully lead to fewer environmental and human rights violations as a result of fracking.

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