

# Hydraulic fracturing essays example

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Hydraulic fracturing is a method that allows natural gas and oil to have free movement from the rock pores to a low permeability rock formation where they are trapped to come to the surface. The technology came into place in the 1940s and had been operational in most of the drilling stations. The method uses water, ceramic beads or sand, and other chemicals, as the main materials for the exercise. The mixture is pumped into the surface under high pressure and causes fractures in the rock that extends outward from the bore (Michael 2011). The main function of using the proppant such as sand or ceramic bead is to hold an open space from closing again. The beads or sand are permeable, and they allow oil and natural gas to pass through to the production well. The usage of the method has increased in the US because almost 90 percent of drilling done use the method and has resulted to be effective.

### **Legal mechanisms**

The Congress is very instrumental in hydraulic fracturing activities; the states are the controllers of the oil and gas industries. The gas industry now enjoys immunity from the federal laws and other states laws. The regulations that are enacted by the federal government are articulated below and state the immunity to the oil and natural gas mining (Kiparsky et al. 2013).

### **The Safe Drinking Water Act**

In 1974, the Safe Drinking water Act (SDWA) was enacted by the Congress to ensure protection to the quality of water for the American Citizens. The law applies to all “ waters that are available” in the country be it from the underground or above the ground sources so as the water is designed for

human consumption. The law is like any federal environmental laws, and the Environmental Protection Agency (EPA) has the responsibility of implementing it in the member states. In the part C of the regulation, the EPA is required to apply minimum regulations in relation to State Underground Injection Control (UIC) programs (Michael 2011). The regulations must include “ the required programs that are necessary for the prevention of underground injection that harms the safety of drinking water” the State has a mandate to have a permit for any underground injection. The underground injection must adhere to the regulation through allowing inspection, monitoring, reporting, and record keeping for any underground injection. The State has no authority to promulgate any rule that allows underground injection that endangers water for drinking. The State must be compliant to all the set conditions to obtain enforcement and responsibility to perform underground injection activity.

### **The Resource Conservation and Recovery Act (RCRA)**

The RCRA was enacted in 1976 gives the EPA authority under Subtitle C to regulate the treatment, generation, storage, transportation and disposal of hazardous wastes. The action is commonly known as “ cradle to grave” that controls resource conservation. In the Subtitle D of the act, there is a framework of regulating the nonhazardous solid wastes. The Subtitle C had a criterion for listing hazardous wastes where drilling fluids, the resultant water from the drilling and other wastes that arise from drilling natural gas and oil were not included among hazardous wastes. EPA conducted regulatory determination to determine where to include the wastes from the oil and natural gas drilling. Before the determination, Congress enacted the Solid

Waste Disposal Act (SWDA) in 1980, which exempted drilling wastes from hazardous wastes causing Subtitle C to be invalid to the oil drilling industry. Subtitle D was applicable because it required solid wastes to be stored in a place where it cannot result to fire, spillage or safety hazard. The process of oil and natural gasses drilling adhered to the regulation by storing the wastes in tanks and surface pits. The Subtitle D has fewer regulations than C because it does not specify the method of transportation and storage defined by C (Kiparsky et al. 2013).

## **The Emergency Planning and Community Right-To-Know Act**

The Act's main function is to protect the health, and safety of the environment to ensure that the communities are protected through national legislation. The Act requires the EPA to collect and analyse information about the listed toxic chemicals that are emitted, manufactured and processed by industries. The information also must relate to the point of release, underground injections, transfer of wastes and management procedures. The collected information must be released to the public through the EPA's Toxics Release Inventory. The oil and gas industry is not included in the industries that are eligible to give the data on their wastes.

## **The Clean Water Act**

The Act was initially known as the Federal Water Pollution Control Act, the Clean Water Act (CWA) Articulates a mechanism of regulating discharges of harmful substances into United States waters and regulating the water quality standards. It is unlawful for anybody to discharge pollutants to water from a point of source without having a permit. The amendment of the Clean

Water Act by the Congress required the EPA to develop a program for regulating storm water runoff. The mining operations and oil and gas drilling were exempted from the regulation provided all the runoffs in the site passed through conveyances like channels and pipes which do not contaminate with waste products or on-site materials. In applying the exemption, the EPA asserted that the stormwater from the oil and gas construction sites constituted pollutant. The Congress in 2005 amended the Clean Water Act through an Energy Policy Act and included the activities of oil production to include construction activities (Michael 2011).

### **Clean Air Act**

The Clean Air Act (CAA) is a federal statute that is in place to regulate the air emissions from both the stationary and mobile sources. The Act compels the EPA to control hazardous emissions to protect public health through establishing National Ambient Air Quality Standards (NAAQS). All the states adhere to the regulations through developing states implementing plans and ensuring the pollutions from industrial sources are stopped or regulated. The Act requires the EPA to establish standards that are achievable. Major sources are the stationary sources stationed in a contiguous area under common control that emits about 10 tons per year or 25 in combination of hazardous air pollutants. While area source is a stationary source which is not a major source. The wastes that come from the oil and gas industry are not defined under major source because they do not have the capacity to reach the threshold set for major source.

## **The Comprehensive Environmental Response, Compensation, and Liability Act**

The Act was enacted in 1980 by the Congress and amended in 1986 its main obligation is to enable the federal superfund to pay for the disposal of the hazardous waste sites. The fund also pays for the cleanup of spills, accidents and another emergency release of hazardous waste. The EPA has a mandate under the CERCLA to ensure that the people responsible are financially liable for the costs of cleanup or to direct private party when responsible party is known. CERCLA defines hazardous wastes from different statutes in the constitution of America. The oil and gas mining industry wastes cleanups are exempted from the Act, this means that any spillage of accidents occurring in the oils and gas industry does not call for measures by the CERCLA.

## **The National Environmental Policy Act**

The National Environmental Policy Act (NEPA) came into place in 1969 put in place a framework for protecting the environment. The Act required all the government branches to regard environmental impact as a major federal action and to adhere to the actions in regard to the environment. Federal agencies take a hard look to the environmental impacts through preparing Environmental Assessments to determine whether the intended action results to the environmental impact. The major intention of this Act is to ensure the results are significant and alternative that require public involvement.

States have the freedom of regulating hydraulic fracturing as they deem it fit, but all the regulations must comply to the minimum regulations of the federal regulations. The approach to oil and gas industry has led to

variations and high levels of complexities. Some states have specific rules while others have general rules under oil and gas permitting requirements (Kiparsky et al. 2013).

### **The state of Colorado**

In Colorado Oil and Gas Conservation Act (OGCA) is the major statute governing the development of the State. The statute is responsible for governing the productions, utilization and balanced development of the natural resources in a manner that is consistent too with protection of public health, welfare and safety, including wildlife resources and the environment. The Act allows Colorado to regulate the oil and gas operations to mitigate and protect adversely environmental hazards that can affect water, air, soil and other biological resources taking into consideration cost-effectiveness and technical feasibility.

### **The state of Texas**

The Texas Railroad Commission is the main regulatory that is in texas to administer the regulations to the Oil and Gas division for the activities related to oils and gas drilling. Any individual or operator who could wish to drill oil or gas must apply for a permit to drill. It is instructed that all well casings isolate usable water zones to prevent contamination of water or causing harm to the water used by the public. The operators should also desist from contaminating surface or subsurface water that is found in the state. The operator must obtain a permit for the disposal of the drilling wasted and use pits to dispose of the wastes. The commission gives the permit once they are convinced that the pit cannot cause any pollution to

surface of sub-surface water. The operators are allowed to dispose of low chloride fluids by spreading them on the ground or by burial. A permit is required for other disposals that include more dangerous substances. The underground injection of all oil and gas wastes is allowed provided they are separated from the beds that give rise to fresh water (Michael 2011).

## **Effects of hydraulic fracturing**

The utilization of the hydraulic fracturing to exploit oil and natural gas in the US raises major concerns about the effect to the human health and the environment. The major concerns lie in four operations that make a pathway to pollution of drinking water. Firstly there are fears that chemicals from wells can spill into the water due to improper construction of wells. Secondly there is a concern that the large amount of wastes that the industry sends to public treatment areas will pollute the water. Third, the drilling operations are among the activities that can lead to leaching of harmful waste products to ground water. Lastly, the fracturing of underground rock structure may result to communication of underground water and oil (Michael 2011).

## **Conclusion**

The economy of the country depends on oil and natural gas. The country benefits from the high returns that the oil and natural gas provide. It is evident that the United State has a large amount of oils and natural gas. The US has been employing the processes of hydraulic fracturing for decades to exploit the valuable natural resources. Although, there are high profits that arise from the process there are significant concerns that impact on the air and ground water pollution. There is a heated debate concerning the process



that has been in place for some time, and there are no projections of the debate ending soon. The regulations in place both in the federal government and the states do not completely address the economic and environmental impacts of the oil and gas exploration. Shale gas now accounts to only a quarter of the natural gas and projections show that it will double in 2035.

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