

A Sustainable Environment: Our Obligation to Protect God's Gift

by
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Natural Gas is Important but Not From “Fracking”

The use of natural gas for electricity generation has become very important as the combustion of natural gas releases about 50% of the emissions from the combustion of coal. So the electricity generating companies are switching from coal-fired power plants to natural gas as quickly as possible. However, while extracting natural gas from the wells, a major concern is the potential leakage of methane, by far the largest component of natural gas, into the atmosphere. Methane gas is about 30 times more detrimental to climate change than carbon dioxide which is the result when burning methane.

On the other hand, with natural gas being less expensive than coal, ironically this can cause another problem with respect to mitigating climate change. A recent study published in the journal *Environmental Research Letters*, finds that between 2013 and 2055 the use of natural gas could reduce cumulative emissions from the electricity sector by no more than 9 percent, a reduction the authors say will have an insignificant impact on climate. In addition, the cheap natural gas could delay the further implementation of renewable energy sources like solar and wind. But that is a different story.

The abundance and low price of natural gas is primarily due to the process being used to extract natural gas, a process called hydraulic fracturing – or “fracking” for short. In order to extract oil and gas from shale deposits, drillers inject millions of gallons of fracking fluids made of water, chemicals and sand into the underground rock formations. This is done at extreme pressure to create cracks in the rock and thus allowing any oil or gas exposed by the fractures to escape and flow into the wells inserted by the drillers.

These fracking fluids contain about 100 different chemicals each of which has a specific purpose. For instance, these chemicals help dissolve the minerals to create the crack, prevent clays from swelling and shifting, eliminating bacteria, prevent corrosion of the pipes, maintains fluid viscosity as the temperature changes, and many more. Many of these chemicals are toxic, and they contaminate water resources when spilled or leaked. The gas itself can also leak through the ground into nearby water wells, which presents a safety hazard because the gas is highly flammable. If you have an opportunity, watch the movie “Gasland” (check your local library) which has a scene where a homeowner lights a flame from the kitchen faucet because of the natural gas that contaminated their water supply. The exact composition of the fracking fluids is confidential as the companies using them consider the application as proprietary.

After the drilling company uses the fracking fluids, this is nothing but a wastewater with no good disposal option. After a well is fracked, a portion of the water remains underground and the rest is recovered as wastewater. This wastewater not only

contains the fracking chemicals, but also consists of dissolved solids and radioactive material from the underground. The typical wastewater treatment plants are not prepared to handle this kind of wastewater.

Another problem with fracking is the potential of causing earthquakes. Between the years 1973–2008, there was an average of 21 earthquakes of magnitude three and larger in the central and eastern United States. This rate jumped to an average of 99 M3+ earthquakes per year in 2009–2013, and the rate continues to rise. In 2014, alone, there were 659 M3 and larger earthquakes. And the majority of these earthquakes were in the State of Oklahoma where there is an excessive amount of fracking taking place.

Given the potential problems caused by producing natural gas via fracking and the questionable benefit of mitigating climate change, it seems very apparent that we should curtail this process as soon as possible and focus our efforts on renewable energy sources like solar, wind, hydropower, and geothermal.