

THE RECORDER

Effects of Fracking



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There are few issues that have been more contentiously debated than the long- and short-term benefits of fracking. In this “discussion,” which at times has been as controversial as the abortion debate, proponents of fracking claim that fracking will solve most of the country’s energy problems and curb global warming — all without any significant effects on the environment. Opponents of fracking argue that it causes water and air pollution as well as earthquakes, and promotes global warming. The absence of federal laws regulating

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fracking, or requiring that relevant information concerning the process be disclosed, does not help resolve the debate.

One of the most controversial aspects of the fracking debate is its effect on global warming. Fracking is the process by which a well is drilled first vertically and then laterally into rock formations with the hope of finding trapped natural gas and petroleum. During this process, water, chemicals and sand are released into the formation in order to create tiny fractures that allow the trapped oil or gas to be released and captured. Unfortunately, not all of the gas is recovered during the process, and some of the gas, such as methane, can escape to the surface.

The effect of release of methane, classified by EPA as a greenhouse gas, on global warming is at the center of the debate regarding the effect of fracking. New EPA regulations entitled “New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants,” (Rule) which become effective on Oct. 15, will, for the first time, require natural gas producers to flare or capture surface emissions. 74 FR 49489 (Aug. 16). The rule does not directly apply to methane. But EPA has stated that a side benefit of the new rule will be the capture or flaring of significant methane gas releases.

The net effect of use of coal or natural gas produced by fracking is

critical in order to determine a national strategy for reducing greenhouse gases. According to EPA, electricity production is currently the primary source of greenhouse gas emissions. In April 2012, for the first time in 30 years, utilities generated as much power from natural gas as from coal. The oil and gas industry claims that the switch to natural gas resulted from the price reduction of natural gas spurred by the increased supply generated by fracking. It is not unreasonable to expect, therefore, that the use of natural gas will increase in the future.

The scientific debate about the effect of methane fracking releases centers around two professors from Cornell University with opposing positions. In a March 2011 peer-reviewed study, Professor Robert Howarth concluded that the net effect of fracking was a higher contribution to global warming than the use of coal as a substitute energy source. Howarth, et al., “Methane and the Greenhouse-Gas Footprint of Natural Gas From Shale Formations,” *Climatic Change* (2011). Howarth does not dispute that natural gas has a much lighter carbon footprint than coal. However, he believes that the fracking process must also be taken into account in order to determine the true carbon footprint of natural gas. Of critical significance to his opinion is the effect methane has on global warming versus greenhouse gases

released by coal. Howarth concludes that methane has a far greater “global warming potential” than carbon dioxide, the primary greenhouse gas produced from coal. When methane releases are taken into account, any advantage the use of natural gas may have over coal is eliminated and natural gas produced from fracking creates a net increase in greenhouse gases and global warming.

Howarth’s conclusions were directly contradicted by his colleague at Cornell, Lawrence Cathles III, in a commentary published one year later. Cathles III, et al., “A commentary on ‘The greenhouse-gas footprint of natural gas from shale formations by R. W. Howarth, et al.’” 113 *Climatic Change* 525 (2012). Cathles concluded that Howarth made several incorrect assumptions in reaching his conclusions. Among his mistakes was the failure to consider the use of “green technologies” used by the industry to capture or flare methane, an overestimation of actual methane releases, and the failure to take into account that carbon dioxide persists in the atmosphere far longer than methane. As a result, Cathles concluded that fracking produced natural gas had a carbon footprint that was between a third and a half of coal.

While the debate regarding the relative merits of fracking is ongoing, both Cathles and Howarth agree that methane is a potent greenhouse gas that has a negative impact on global warming. This is where the new EPA regulations step in. The purpose of the rule is to regulate and reduce the potential release of volatile organic compounds into the atmosphere during oil or gas production. In order to minimize the release of

volatile organic compounds, oil and gas producers are required to either capture or flare their emissions. As it relates to fracking, operators are required to capture and condensate the gas that reaches the surface as a result of the fracking process. EPA predicts that the use of available technology will result in a 95 percent reduction of volatile organic compound emissions. A positive side effect is that the captured condensate will produce a valuable product that could generate almost \$20 million dollars.

Methane is absent from the volatile organic compounds that are being regulated by the EPA. However, because methane is entrained in the volatile organic compounds that are being eliminated, EPA claims that when the industry complies with the rule, the implementation will lead to a significant reduction in the release of methane gas. EPA has estimated that the methane release will be approximately 1 million tons.

One of the significant criticisms of the rule by the environmental community is EPA’s failure to regulate methane. Specifically, because the Clean Air Act requires regulation of all dangerous pollutants emitted by sources in the oil and gas source category that are more than de minimis, the argument is that methane should have also been included in the rule. EPA’s response to the criticism is instructive as to the future of methane regulation. EPA made clear that the rule may not be its last word on methane regulation.

EPA stated: “In this rule, we are not taking final action with respect to regulation of methane. Rather, we intend to continue to evaluate the appropriateness of regulating methane with an eye toward taking

additional steps if appropriate.” Specifically, EPA pointed to new reporting requirements for the petroleum and natural gas industry under the Greenhouse Gas Reporting Program. The program requires annual reporting of greenhouse gases from petroleum and natural gas facilities. The greenhouse gases that are required to be reported include methane. According to EPA:

“The data submitted under the [Greenhouse Gas Reporting Program] ... will provide important information on the location and magnitude of [greenhouse gas] ... emissions from petroleum and natural gas systems and will allow petroleum and natural gas facilities to track their own emissions, compare them to similar facilities and aid in identifying cost-effective opportunities to reduce emissions in the future.”

EPA intends to use the data to determine the effect of the rule on the release of methane and to determine if additional regulations are necessary. The implementation of the rule or future regulations may render the scientific debate between Cathles and Howarth moot. Howarth noted that there are currently available green technologies that could reduce methane emissions by more than 90 percent. He did not take into account the effect of the rule or assume the wide spread use of green technologies. Whether the rule or green technologies resolve the debate will only be known when EPA reports the findings of the Greenhouse Gas Reporting Program.