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*By Stephanie Kurose**

Many people are concerned about the risks that hydraulic fracturing ("fracking") poses to groundwater due to the extremely high pressure in which fracking fluid is injected into natural gas wells.[1] The process involves the use of a specially blended liquid (i.e. fracking fluid) which is pumped into a well under extreme pressure causing cracks, or fractures, in underground rock formations to stimulate production from new and existing oil and gas wells.[2] As oil and gas companies work to fix fracking's public image with regard to water contamination, states are considering what level of transparency to demand from the oil and gas industry.[3] One way to address contamination concerns is to require the use of well-specific tracers in fracking fluid so that alleged contamination can be traced back to its source.[4] Such a policy would put the public at ease and provide an incentive for industry to use the best available technology when extracting natural gas from the earth.[5] By requiring the use of tracers in fracking fluid, both the States and the U.S. Environmental Protection Agency ("EPA") can hold drillers accountable for any groundwater contamination resulting from their operations.[6] Under current federal law, the EPA regulates fracking under the Safe Drinking Water Act's ("SDWA") Underground Injection Control ("UIC") program but can only do so when diesel fuel is used.[7]

"Tracers" are harmless chemicals that make the fluids used in drilling every gas well individually identifiable, thus making it easier to prove the source of any water contamination in the drilling area.[8] The particles used in tracers can bear unique magnetic signatures tailored to each fracking company and has the potential to clarify the debate over whether and how oil and gas extraction damages water supplies.[9] A tiny amount of a tracer would leave unique markers in several million gallons of fracking fluid that if found in an aquifer or local drinking well can be traced back to the drilling operator and its specific leaking well.[10] Although tracer technology is still largely in the hypothetical stage, its potential use at actual drill sites could resolve the debate over whether deep injection of water and chemicals causes contamination of underground drinking water sources.[11]

BaseTrace, a startup company formed by a group of Duke University graduates, has developed what its founders believe is a "fail-safe" tracer (also named BaseTrace) with no dangerous side effects.[12] They have developed a well-specific, DNA-based tracer that can be added to fracking fluid to determine whether connectivity exists between drilling sites and ground or drinking water.[13] Each tracer has its own unique sequence, and each well would be assigned its own tracer, providing insight into the entry point of contamination.[14] A second tracer company, FracEnsure, has developed a tracer using nano rust, which is also harmless and detectable at low concentrations, but also remains detectable for at least several weeks—making it easier to detect a slow-moving problem.[15] Current tracer technology usually dilutes too quickly.

The concept of requiring tracers in fracking fluid can be appealing to both environmentalists and the oil and gas industry.[16] Tracers have the potential to expose water contamination and the ability to trace the leak back to a given well and the fracking company that owns the well.[17] Where lawsuits arise, tracers can help plaintiffs support claims of water contamination by oil and gas development as opposed to other causes.[18] On the other hand, tracer technology can also help industry defendants prove they are not the source of pollution.[19] The oil and gas industry is bombarded with complaints, allegations, and lawsuits over its practices and many doubt that fracking, in any form, is safe.[20] This extra measure is an assurance that will put the public's mind at ease and could, as a result, potentially create more opportunities for companies to pursue natural gas drilling in light of the more favorable public opinion.

Fracking regulations, both state and federal, are increasing, and larger oil and gas companies are eager to demonstrate to policymakers and the public that they are using management practices that use best available technology and show environmental stewardship.[21] New tracer technology could also help regulators avoid mandating companies to disclose the specific ingredients in their fracking fluid—which industry often regards as proprietary information—and which has also been a hot debate amongst interested parties.[22] Industry may be more willing to let an outside party trace their fluid than give away their specific formula for fracking fluid.[23] Moreover, the water management and agricultural industries could benefit from a reliable tracer technology to improve understanding of how water sources interact underground.[24]

Information on the source of fracking fluid contamination is important whether you are an environmentalist, a regulator, or a regulated industry. While tracers cannot fix the problems associated with fracking fluid water contamination, the ability to pinpoint the source of that contamination can establish legal liability as well as incentivize companies to use the best available technology to prevent fracking fluid leaks.[25]

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Endnotes: Requiring the Use of Tracers in Hydraulic Fracturing Fluid to Trace Alleged Contamination

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