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## From the Instructor

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In their first paper, students in WR 150, “The World’s Waters,” tackle the debate about water as a commodity versus a human right. Is privatization of water the remedy to waste of this finite resource? What are the implications for industry if water is viewed as a human right? Questions such as these motivate claims that seek to enlarge knowledge or address the gap between conflicting viewpoints on water as a public good. Most academic papers across the disciplines engage conceptual problems to advance arguments about how we should think.

In the arena of public policy, however, writers are called to respond to questions about what we should do. “What don’t we understand about competing demands on the Ogallala Aquifer?” leads to a fundamentally different claim than “What can we do about the depletion of the Ogallala Aquifer?” Policy arguments, whether in the form of congressional testimony, memoranda that advise elected officials, or op-ed pieces that aim to sway public opinion on a particular issue, advocate a course of action, offering practical solutions to public problems.

Therefore, for their second assignment in “The World’s Waters,” students took on the alternative genre of public testimony to argue for or against hydraulic fracture, a natural gas technology that offers a less expensive energy source than oil or coal, but also poses serious risks to the water supply. The assignment required that students rethink their approach to argument. They had to decide which hat they were wearing: future taxpayer, voter, or environmental advocate? They had also to consider their audience: federal or state; legislative or executive? Writing as stakeholders in a real-life debate pushed students in a fundamentally new direction; they drew on evidence, first-hand experience, and exhortative language to persuade their audience. Addressing his comments to the Congressional committee with EPA oversight, Yash—speaking as an environmental advocate—makes the case that federal regulation of fracking operations is insufficient. Though the genre was unfamiliar to Yash, his meticulous research and diligent editing resulted in testimony of a quality on par with that delivered by experts in the field. The reader is left to decide if Yash has made a persuasive argument; clearly the editors of WR believe he did!

— Melanie Smith

WR 150: The World’s Waters

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## From the Writer

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Upon learning that one of our research topics would be hydraulic fracturing, I was intrigued since methods of addressing the present energy crisis are a subject of great interest to me. I was already familiar with some technical and environmental aspects of such methods. However, this assignment allowed me to consider fracking through the new perspective of public policy as I attempted in my testimony to reconcile its environmental and public health risks with its economic benefits. As my claim was a practical proposal rather than a conceptual clarification, not only did I research the status quo of regulations on fracking, but I also sought to propose a compromise whose terms would be reasonable and acceptable to all the parties involved. Finally, I spent some time simplifying the wording by revising clunky constructions and instances of passive voice that complicated my writing to arrive at my testimony's present state.

— Yash Soni

## FURTHER FRACKING REGULATION: A PROPOSAL FOR GREATER REGULATION OF A GROUNDBREAKING TECHNOLOGY

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*Testimony before the House Committee on Energy and Commerce,  
Subcommittee on Energy and the Economy, U.S. House of Representatives*

I thank the Chair and Members of the Committee for the opportunity to offer testimony today regarding hydraulic fracturing, one of the most controversial topics related to clean energy today. I consider it my duty as an American citizen to participate in our democracy by offering my opinion regarding this critical issue in the hope that it will help the federal government address this matter. In my testimony, after briefly reviewing the current technology of fracking, I will examine the disadvantages and advantages of fracking as it is conducted, and I will propose more stringent federal regulation to diminish its disadvantages while maintaining its benefits.

Hydraulic fracturing (fracking), a process used to access pockets of natural gas trapped in rock deep underground, entails drilling boreholes several thousand feet deep until the drill makes contact with shale containing natural gas. Immense amounts of fracking fluid (water containing sand and toxic chemicals to facilitate drilling) are propelled at great pressure down concrete-encased pipes placed in the boreholes in order to crack the shale and release the natural gas. Fairly recently, a new method of horizontal drilling, which involves drilling along a layer of rock, has become possible, allowing a single borehole to yield significantly more natural gas.<sup>1</sup>

This groundbreaking technology often endangers the lives of millions of people nationwide. Consider the case of Cathy Behr, a nurse from Durango, Colorado, who treated a worker who had spilled fracking fluid on his clothes. After spending just ten minutes near the fumes emanating from the worker's clothes, she was unable to smell anything. Within a week, multiple vital organs, such as her heart, liver, and lungs, began to fail. The fracking company's refusal to disclose its fluid's ingredients made it difficult for her doctors to treat her. Although Behr eventually recovered almost fully, the toxic fracking fluid caused her to remain in the intensive care unit for more than 24 hours.<sup>2</sup> Though fracking fluid may not always trigger such an acute reaction, the chemicals within it are clearly deleterious.

This incident highlights many of the issues with the current methods of the fracking industry. Companies often conceal the ingredients of the fracking fluid, which can prevent those who have been exposed to it, such as Cathy Behr, from receiving proper treatment. Worse still, the toxic pollutants in the fluid, as well as methane released from the shale, can enter aquifers and contaminate groundwater. Indeed, a Duke University study reported that in wells used for drinking water less than one kilometer from fracking operations, "methane levels . . . were seventeen times higher than in wells further away."<sup>3</sup> This is likely not a coincidence since "the chemical compositions of the methane contamination found in wells near the drilling site closely matched the type of gases extracted by the fracking process."<sup>4</sup> Yet, the government cannot hold companies responsible for such contamination because it cannot link the pollutants back to the companies' fracking fluid since the fluid's composition is unknown.<sup>5</sup> Furthermore, few federal regulations exist to control companies' activities. While state governments have the authority to regulate these companies, even when state governments introduce regulations, they are often unable to enforce them due to a shortage of inspectors compared to a vast number of wells. For example, in West Virginia, there are only 17 inspectors assigned the task of regulating the over 55,000 oil wells in the state. Consequently, inspectors must prioritize the wells that they visit, "which leaves some wells unchecked for years, and sometimes even decades."<sup>6</sup> To make matters worse, state governments are susceptible to economic pressures from natural gas companies. For instance, following

the Cathy Behr incident, the government of Colorado sought to require the natural gas company to disclose its fracking fluid ingredients. However, when the company threatened to leave the state (and prevent the state from gaining future tax revenue from the company), “Colorado reached a compromise where the industry would only report the ingredients of fluid that were stored in 50 gallon drums or larger.”<sup>7</sup> Such susceptibility to pressure from companies endangers not only public health but also the environment. Horizontal drilling in each well requires between 2,000,000 and 4,000,000 gallons of water, which are mixed with between 15,000 and 60,000 gallons of toxic chemicals, rendering the water unfit for any other purpose after fracking.<sup>8</sup> According to one estimate, between 17,000 and 35,000 new natural gas wells will be created each year between 2012 and 2035, which exacerbates concerns about the process and its drawbacks.<sup>9</sup>

Despite the many environmental and health-related concerns associated with fracking, the process entails significant economic and environmental benefits. According to Terry Engelder who works in the Pennsylvania State University Department of Geosciences, “fracking accounts for 50% of locally produced natural gas . . . and the gas industry in America accounts for US\$385 billion in direct economic activity and nearly 3 million jobs.”<sup>10</sup> Moreover, because natural gas well productivity decreases very sharply, companies must constantly dig new wells to maintain their natural gas output. As a result, any legislation to discontinue fracking even temporarily would immediately harm the US economy.<sup>11</sup> Furthermore, fracking enables the US to access 42 trillion cubic meters of natural gas, enough to last the US 65 years at the 2011 rate of consumption. According to journalist Daniel McGlynn who wrote for the *CQ Researcher*, “The United States consumed 24 trillion cubic feet of natural gas in 2010, 90 percent of it produced domestically . . . [And] over the past 60 years . . . domestic production has more than tripled.”<sup>12</sup> By providing a readily available domestic energy source, fracking decreases US dependence upon foreign oil, reducing US vulnerability to fluctuations in the prices of such sources. Moreover, burning natural gas in power plants instead of coal can halve the power plants’ emissions of greenhouse gases. Because natural gas is much cleaner than other fossil fuels, it can serve as a temporary “bridge fuel” to meet energy needs “until renewable or nuclear energy carry more of the workload.”<sup>13</sup> Clearly, a solution to avoid the

downsides of fracking cannot involve stopping it altogether and forgoing its many benefits.

In recent years, Congress has engaged in the debate by attempting to legislate on fracking. In 2005, Congress passed an act (which detractors often refer to as the Halliburton loophole) that “exempts fracking from many of the nation’s major federal environmental-protection laws.”<sup>14</sup> However, in 2009 and again in 2011, legislators sought to repeal the Halliburton loophole with the proposed Fracking Responsibility and Awareness of Chemicals (FRAC) Act. Not only would the FRAC Act require fracking companies to reveal the various chemicals they include in their fracking water, but it would also allow the Environmental Protection Agency (EPA) to regulate fracking. However, Congress has not yet passed the FRAC Act.<sup>15</sup>

While the FRAC Act is a viable proposal, I have a broader proposal that entails more specific action on the part of the EPA. I recommend that the EPA strictly regulate fracking companies in order to universalize safety measures and better ensure company compliance. Specifically, it should specify a minimum distance from new fracking sites to human residences and wells in order to prevent humans from being exposed to fracking fluid containing pollutants. In order to further decrease the likelihood of fracking fluid leaking into groundwater supplies, I recommend that the EPA introduce rigorous regulations governing the thickness and durability of the concrete casings. Finally, I propose that the EPA require natural gas companies to divulge the contents of fracking fluid. This is essential to properly treating any who come into contact with the deleterious liquid and to ensuring the companies are held accountable for any adverse effects to health or property.

Natural gas companies oppose such federal regulation because they fear competitors may discover their formula for fracking fluid if they reveal its contents and because they feel that federal regulation would duplicate existing state regulation and raise costs for them. Their stance is valid considering they are profit-based enterprises. Indeed, a 2009 Department of Energy study predicted that extra federal regulations would cost companies \$100,505 for every new well.<sup>16</sup> However, greater federal regulation does not preclude the protection of industry interests. Federal regulation is required only because some states are unable to properly

enforce appropriate laws. The EPA need not impose further regulations on states that can prove to the EPA that they are already satisfactorily regulating fracking, which would substantially decrease the cost for many companies. Furthermore, the Department of Energy's study showed that "federal regulations would only increase costs for states that are not adequately protecting drinking water supplies and public health."<sup>17</sup> Since the regulations, which would not be redundant in those states, could prevent groundwater from becoming contaminated, they would be worth their cost. With regard to requiring chemical disclosure, companies would simply reveal which chemicals they use in their fracking fluid for the safety of the public and the treatment of those with fracking fluid-induced ailments. Companies would not need to publicize the exact proportions or uses of the substances, so competitors would not gain access to the companies' formulas.<sup>18</sup>

My proposed regulation would help address many concerns about fracking. According to journalist Chris Mooney, "faulty cementing is the leading suspect in possible sources of [groundwater] contamination" because the pressure of the released natural gas that drives the fracking fluid back up the well may also cause it to seep into aquifers through cracks in the well's cement casing.<sup>19</sup> By ensuring that the concrete casing of the well is strong enough to withstand the pressure that the fracking fluid and the rising methane gas may exert upon it, this regulation will help prevent the toxic liquid and methane from entering underground aquifers and consumers' bodies. The law concerning the proximity of fracking sites to human residences and wells will also help protect consumers from water contaminants since such pollutants from the fracking shafts are less likely to reach people farther away from the wells. Moreover, if the EPA regulated fracking, natural gas companies would be unable to apply economic pressure on lawmakers. If companies were required to disclose the ingredients of fracking fluid, doctors would be better able to treat any who have suffered adverse health effects because of the fluid.

The regulation I propose would enable natural gas companies to continue fracking, preserving the advantages of this profitable process. Consumers could continue to enjoy cheaper energy and companies could continue to make a profit with a diminished risk to the environment and to public health.

I hope lawmakers will consider my proposal and keep this testimony in mind as they determine how to address fracking. I trust that, after hearing this, lawmakers will act in the best interests of both the nation as a whole and the environment.

## NOTES

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