EPA Public Listening Session on Hydraulic Fracturing Using Diesel Fuels
Friday, June 29, 2012

Meeting Summary

U.S. EPA Officials

Ronald Bergman, Chief, Prevention Branch, Drinking Water Protection Division, Office of Ground Water and Drinking Water
Bruce Kobelski, Geologist, Prevention Branch, Drinking Water Protection Division, Office of Ground Water and Drinking Water
Chitra Kumar, Hydraulic Fracturing Team Leader, Prevention Branch, Drinking Water Protection Division, Office of Ground Water and Drinking Water

Introductory Presentations

Patrick Field, (Consensus Building Institute) welcomed attendees and explained that he would facilitate the public listening session. Field noted that the meeting was being recorded and that a meeting summary would be prepared. He explained that EPA officials would provide an introduction to the meeting and then would listen and take notes without responding to individual comments or speakers.

Ronald Bergman (EPA) provided background information about the draft guidance that EPA has released, *Permitting Guidance for Oil and Gas Hydraulic Fracturing Activities Using Diesel Fuels - Draft*. He stated that the purpose of the draft guidance is to provide greater clarity on existing statutes and regulations. Bergman noted that EPA sought input from state, tribal, and federal governments; industry; public interest groups; and the general public in the development of the draft guidance. Bergman explained that the guidance is intended to clarify permitting practices and authorities for EPA permit writers where EPA is the permitting implementation authority. He added that that the majority of states have permitting primacy (primary enforcement authority) for the Underground Injection Control (UIC) Class II programs while the EPA is the permitting authority in eleven states, the District of Columbia, various territories, and all except for two Native American reservations. Finally, Bergman explained that EPA is particularly interested in receiving public comment about six key issues: the description of diesel fuels, the use of diesel fuels, permit duration and well closure, area of review, information submitted with the permit application, and monitoring.

Public Comments

Eleven individuals made comments about EPA's draft guidance and about shale gas extraction and hydraulic fracturing more broadly. These comments are summarized here in the order in which the speakers made them, and references to EPA's key issues are denoted using *(CAPITALIZED ITALICIZED PARENTHSES)*.

Ben Norris, Counsel, American Petroleum Institute (API):
Norris articulated API's request that EPA withdraw the draft guidance, calling it a "solution in search of a problem." He stated that EPA has found no evidence that use of diesel fuels in HF fluids presents threat to underground sources of drinking water (USDWs) in its review of coal bed methane operations and that coal bed methane operations are typically located closer to USDWs than are shale gas operations.

Norris articulated API's concerns about using the UIC Class II program to regulate the use of diesel fuels in HF: he stated that the UIC Class II program was never intended to apply to short duration injection operations such as takes place in HF and that the rules are not well suited to regulate this activity.

Norris posited that EPA's regulation of diesel fuels will divert EPA resources from other, actual threats to USDWs.

Finally, Norris stated that, if EPA does not withdraw the draft guidance, API urges EPA to initiate a formal rule-making process to avoid applying regulations intended for long-term injection to short-term activity. API has significant concerns how EPA has proposed to define diesel fuels. API agrees that the first three substances currently proposed in EPA's definition (diesel fuel, diesel #2, and home heating oil) should be included. On the other hand, API takes issue with the inclusion of kerosene, #4 fuel oil, and distillates in the definition. These latter three substances do not meet EPA's proposed definitional standard that, to be considered a diesel fuel, a substance must be able to run a diesel engine. Norris stated that EPA should also not periodically update the list. He said this was not Congress' intent in allowing for regulation of diesel fuels in the Safe Drinking Water Act, and this would create uncertainty for operators and service providers and may present a disincentive to innovation. *(DIESEL FUELS DESCRIPTION)*

Adam Carpenter, Regulatory Analyst, American Water Works Association (AWWA):
Carpenter stated that AWWA strongly supports the UIC program as part of the Safe Drinking Water Act (SDWA). Furthermore, the AWWA views the current draft guidance as necessary and required due to the exclusion of HF from the SDWA under the Energy Policy Act of 2005 save for those wells that employ diesel fuels. Accordingly, AWWA applauds EPA's efforts to clarify permitting procedures, set engineering procedures, and define diesel fuels.

AWWA encourages EPA to expand the definition of diesel fuels beyond the six Chemical Abstract Service (CAS) registry numbers that are currently proposed in the definition to include

all other substances that have similar chemical properties. AWWA urges EPA to give regions and any other permitting agencies that adopt the draft guidance the discretion to examine the properties of other chemicals to determine whether they have properties similar to the chemicals already identified. In addition, the current proposed definition is premised on "substances used to run a diesel engine." Carpenter noted that HF fluids are not used for, nor intended to run diesel engines, and this factor should not be relevant to this definition in this context. Furthermore, Carpenter stated that biodiesel is a form of diesel, regardless of its origins, and that there is no reason to believe that biodiesel also does not present a risk to water supplies. AWWA believes that biodiesel should also be included in the guidance. Finally, Carpenter posited that any concentration of contaminants, however small, is relevant since water utilities are often testing for contaminants at the most minute levels. Therefore, the *de minimis* standard proposed in the draft guidance is not appropriate and any quantity of diesel should trigger the requirements of the UIC permitting process. *(DIESEL FUELS DESCRIPTION)*

Lastly, Carpenter stated that there are numerous other substances that also threaten USDWs. AWWA urges the EPA to use its full authority to protect USDWs and urges Congress to remove its exemption from regulation for HF fluids.

<u>Andrew Yates, Osage Minerals Council:</u>
Yates stated that the oil and gas extraction activities that take place under Osage tribal lands provide approximately $75 million for approximately 6,000 head-right holders and also supports the payment of income and property taxes that contribute to the public welfare. Yates noted that just about every oil and gas well is fracture treated and fracture treatment is integral part of oil and gas extraction and any attempt to restrict this process is viewed with alarm by the Osage mineral community.

Yates stated that the current draft guidelines are unclear. For example, if the definition of diesel fuel only includes diesel, then there is no problem. But if the definition includes distillates, then it would restrict key substances used in the HF process and would impede oil and gas extraction. *(DIESEL FUELS DESCRIPTION)*

Yates stated that the Osage Minerals Council estimates that the proposed guidelines would require additional staffing at EPA Region 6, which regulates extraction on Osage lands, of at least 12 and 20 people due to increased demands on regulators for processing permit applications.

Yates also stated that, since there are no documented instances in which HF has contaminated USDWs, the draft guidelines appear to be a solution in search of a problem.

Finally, Yates stated that the EPA intends to regulate fracture treatment as Class II injection wells, but the Osage UIC regulations prohibit permitting pressures in excess of the fracture gradient. Therefore, the proposed guidelines would amount to a *de facto* prohibition of hydraulic fracturing. If this is EPA's ultimate goal, then the agency should say so openly.

Lynn Thorp, National Campaigns Coordinator and Senior Policy Specialist, Clean Water Action (CWA):
Thorp noted that CWA welcomes EPA's draft guidance as necessary because the rules and guidance currently in place were not designed for permitting HF operations. Regulators need the proposed guidance in order to carry out their responsibilities under the law. Thorp stated that the use of diesel in HF poses public health risk, particularly due to the presence of BTEX compounds, which are associated with a wide array of health effects and are highly mobile in water.

Thorp stated that CWA believes that the EPA has the authority to prohibit the use of diesel in HF and should do so. Such a prohibition would be consistent with the recommendations made in the 90-Day and 180-Day Reports of the Secretary of Energy Advisory Board, Shale Gas Production Subcommittee. If the EPA does not prohibit the use of diesel fuel in HF, then EPA should finalize the proposed guidance and undertake rule-making on this issue. Furthermore, EPA should set the strictest possible requirements for Area of Review, monitoring, well construction, and other parameters to protect USDWs. *(AREA OF REVIEW) (MONITORING)*

CWA supports a broad definition of diesel fuels. The definition should be guided by chemical composition and should not be restricted to certain CAS registry numbers or only those substances that can run a diesel engine. Furthermore, CWA does not support allowing a *de minimis* amount of diesel to be used without regulation. *(DIESEL FUELS DESCRIPTION)*

Finally, Thorp stated that current Class II requirements are not suitable to high-volume hydraulic fracturing and that EPA should develop new a class for UIC regulations governing HF.

Victor Ciuccio, representing himself:
Cuiccio noted the key role that the EPA played in cleaning up streams contaminated from run-off from coal mines in Pennsylvania. He stated his concern for those streams today due to shale gas extraction, particularly for trout populations.

Cuiccio stated that, as he reads and understands the Energy Policy Act of 2005, the Act excludes the underground injection of diesel fuel and he does not understand how EPA can regulate something that is excluded under the Act and is therefore not allowed.

Cuiccio explained that he has read that government scientists under-calculated the level of air pollution in Colorado's Front Range by 50 percent. This leads him to think that the same could occur with diesel fuels and that EPA could have drastically under-calculated the impact of diesel fuels.

In describing the volume of diesel that is being used in shale gas operations, Cuiccio described a road in rural Pennsylvania that had become bumpy due to the large number of diesel trucks that are using it.

Cuiccio stated that the push for gas drilling is due to the purported "energy crisis" that the United States has. Although other measures of the Energy Policy Act discuss conservation and reducing the idling of vehicles, the public never hears about those kinds of measures.

Cuiccio stated that he would like to see the EPA take a comprehensive look at all aspects of diesel fuel use in the oil and gas industry, not just the isolated components that the agency is currently considering. For example, the particulate from diesel trucks will also enter the drinking water supply, and all of these issues need to be addressed.

Aaron Mintzes, Policy Advocate, Earthworks Action (EA):
Mintzes articulated EA's support for EPA's efforts to provide regulatory certainty, improve compliance, and strengthen protections under law and posited that the best and simplest way for EPA to achieve these ends would be to ban the use of diesel in HF operations. He noted that, Congress recognized the extraordinary dangers presented by diesel in allowing the EPA to regulate it under the SDWA and that the Secretary of Energy Advisory Board, Shale Gas Production Subcommittee also recommended that diesel fuel use be banned.

Mintzes stated that there are two key issues that EA is concerned with in relation to the use of diesel in HF: lack of compliance and dearth of enforcement capacity. On the issue of compliance, Mintzes noted that a report by Congressmen Waxman, DeGette, and Markey found that industry injected 32.2 million gallons of fracturing fluid containing diesel fuel between 2005 and 2009 into the ground and they did so without permits. In addition, of over 400 letters of violation that have been issued by authorities in New Mexico, companies have complied with only about 50% of letters after two years, and the rates of compliance are similar in other states. On the issue of enforcement capacity, regulatory bodies have very limited capacity to enforce compliance with current regulations. For example, in response to 515 spills that were reported in Colorado last year, only five fines were levied. In general, the number of wells is increasing and number of inspections is decreasing, leading to poor and worsening compliance with regulations.

Mintzes added that if EPA does not ban the use if diesel in HF, the second best way to ensure regulatory certainty and ensure compliance would be to go through a formal rule-making process.

With regards to the definition of diesel used in the guidance, EA urges the use of a very broad definition. The organization's key concern with regards to a narrow definition is that companies have sought proprietary protection for the substances they use and that slight changes could be made to chemical molecule chains in order to evade the EPA's definition of diesel. *(DIESEL FUELS DESCRIPTION)*

Lisa Rokoff, Sierra Club (SC):
Rokoff stated that the Sierra Club appreciates EPA's decision to issue guidance on use of diesel fuel but asks that EPA go further and consider banning the use of diesel and diesel by-products in HF. In addition, the SC also asks EPA to issue new regulations in addition to the permit guidance to ensure USDWs are adequately protected under SDWA. Rokoff cited a 2004 EPA

report that documented that the use of diesel fuels presented the greatest threat to USDWs due to the presence of BTEX compounds, which are human carcinogens.

Rokoff noted that drilling companies have long promised that use of diesel fuels in HF was virtually nonexistent. She added that despite these claims, a congressional investigation last year found widespread use of diesel in HF—over 32 million gallons injected into the ground between 2005 and 2009. Because companies used diesel without permits and because regulatory agencies were not monitoring this activity, she said, there is no way to determine how much of a threat this activity presents and how much harm will be caused.

Rokoff cited the Secretary of Energy Advisory Board, Shale Gas Production Subcommittee finding that there are no compelling reasons to use diesel fuels in HF since alternative substances are available that are safer than diesel. *(DIESEL FUELS USE)*

Deborah Thomas, Organizer, Powder River Basin Resource Council:
Thomas thanked the EPA for taking on regulation of diesel fuels in HF and asked EPA to strengthen the rules and ban the use of diesel fuels in HF. She stated that she knows that there is a lot of controversy over exactly which chemicals and substances cause harm, but the need for stronger regulations is clear.

Thomas stated that she speaks from the experience of living in an area with heavy oil and gas development and that this development has caused significant adverse impact on water quality, air quality, and quality of life.

Thomas stated that she would like to see EPA collaborate more fully with residents of areas where oil and gas extraction is taking place as these residents on the ground can see the situation much more clearly than regulators who are only visiting sites periodically. She added that oftentimes local residents can identify problems before they happen and working with local residents could prevent problems.

Hugh MacMillan, Senior Researcher, Food & Water Watch (FWW):
MacMillan focused on two points in his comments on behalf of FWW. First, he stated that EPA has an obligation under the SDWA to issue permitting guidance on the use of diesel in HF such that such use prevents endangerment of USDWs.

MacMillan's second point focused on Area of Review. MacMillan stated that, by today's mathematical and computational standards, the modified Theis equation in section 146.6 of the Code of Federal Regulations that illustrates a means of calculating the zone of endangering influence for a specific injection well and injectate should be improved upon to better ensure protection of USDWs from high-pressure drilling and HF. MacMillan stated that FWW is hopeful that EPA's direct engagement with experts at Lawrence Berkeley National Laboratory, Sandia National Laboratories, and Pacific Northwest National Laboratory will harness modern computational science and further EPA's understanding of long-term risk posed by diesel in HF.

MacMillan noted that problematic connectivity between two Class II wells that are further than ¼-mile apart is not unprecedented, and so permitting guidance that describes four options, all based on the ¼-mile approach, is not adequately protective. He expressed concern that the draft permitting guidance does not more strongly encourage the use of numerical models. He suggested that the ¼-mile standard for the Area of Review is somewhat simplistic and arbitrary and not based on today's science, particularly bio-geo chemistry and fluid dynamics.

MacMillan suggested that more realistic computational models should be used to arrive at more accurate zones of endangering influence for injections sites, ideally drawing from the work of experts involved in ongoing study of the wells. While this would require well-specific data collection, the cost of such data collection would be outweighed by the cumulative benefits to the public of environmental protection that is based on the best-available science. In addition, MacMillan stated that the computational burden of more realistic numerical modeling should not be a concern because robust algorithms for modeling and for quantifying uncertainty can be developed quickly and then be applied to different sites; the necessary computational power is cheap; and because the oil and gas industry has a long history of using applied mathematicians and computational geologists to optimize recovery of resources through modeling reservoir dynamics. MacMillan suggested that oil and gas companies have the know-how to perform modern calculations in order to determine well-specific zones of endangering influence and he urged the EPA to ensure that tight oil and shale gas developers exercise such precautions. *(AREA OF REVIEW)*

Rachel Jones, Law Student, University of Tulsa:
Jones expressed her understanding that the guidance would apply to federal permit writers during the UIC permitting process and that states that hold primacy for permitting would be "encouraged" to follow the federal guidance. Jones noted that "encouragement" can take many forms, and said that she would like to know more about what "encouragement" would mean in this context, both in the immediate future and over the long run. Jones also asked about what repercussions states with primacy would face if they choose not to follow federal guidance.

Madeleine Foote, League of Conservation Voters (LCV):
Foote stated that the LCV has significant concerns about HF and its environmental implications. The LCV encourages the EPA to use the full extent of its authority under the SDWA to regulate the use of diesel fuels in HF in order to protect public safety and environmental health. Foote stated that EPA's draft guidance is an important first step in updating guidelines that were not designed to deal with HF and the risks that it presents.

Foote explained that the LCV considers the regulation of diesel in HF to be very necessary. She noted that an investigation by members of the House of Representatives found that over 30 million gallons of fracturing fluids containing diesel were injected into the ground between 2005 and 2009 and that diesel contains BTEX compounds that are known to be highly toxic, even at very low levels, and are very mobile in water.

Speaking on behalf of LCV, Foote urged the EPA to go beyond issuing guidance for diesel fuel injection and ban the use of diesel, particularly since safer alternatives are available.

Foote stated that, if EPA cannot implement a ban, the agency should use a broad definition of diesel, one that would include distillates and chemical combinations that contain BTEX compounds *(DIESEL FUELS DESCRIPTION)*. In addition, EPA should enact the strictest possible requirements for use of diesel in HF, including public notification of the use of diesel in HF.

Finally, Foote urged that all loopholes for HF in the Safe Drinking Water Act, the Clean Water Act, and the Clean Air Act be closed.

Closing

EPA officials thanked participants for their input and comments and requested that all concerned parties submit formal consultation comments in writing by July 9. [The comment period was subsequently extended to August 23.]