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Office of Pollution Prevention and Toxics
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue NW
Washington, DC 20460–0001

Re: Hydraulic Fracturing Chemicals and Mixtures – Advance Notice of Proposed Rulemaking

Docket ID: EPA-HQ-OPPT-2011-1019

The Environmental Working Group submits these comments in response to the U.S. Environmental Protection Agency's advance notice of proposed rulemaking on chemical substances and mixtures used in hydraulic fracturing.[1] EPA issued the notice in response to a 2011 petition submitted by more than 100 public interest groups requesting that the agency develop and issue such rules under its existing authority under the federal Toxic Substances Control Act.[2] EPA has limited the rulemaking's scope to cover the identification, reporting, and disclosure of such chemicals and mixtures but not to require the substances to undergo toxicity testing or health and safety review.[3]

EWG is a non-profit, non-partisan organization that since 1993 has used the power of information to protect public health and the environment.[4] EWG conducts original research and reports on a range of environmental health issues, including those related to oil and natural gas drilling in the United States. EWG's research has focused on the impact on public health and safety of hydraulic fracturing, or fracking, and other types of well treatment technologies used to stimulate oil and gas well production. We have advocated for greater oversight of fracking at the federal and state levels and for strong public right-to-know provisions.

EWG strongly supports EPA's proposal to require disclosure of the chemicals used in fracking and other well treatment methods. A mandatory national registry of such chemicals — accessible to the public and free from undue industry influence — is an essential and long overdue resource that will play a significant role in protecting public health and the environment. Consequently, EPA should use its authority under the Toxic Substances Control Act to create such a resource to ensure transparency in the use of chemicals in fracking and uphold the public's right to know.

By drilling companies' own admission, oil and gas production and drilling operations are inherently risky activities that can cause significant damage to the environment and human health. In 2011, an EWG investigation revealed that drilling companies regularly disclose risks

[1] Hydraulic Fracturing Chemicals and Mixtures, 79 Fed. Reg. 28,664 (May 19, 2014).
[2] Id. at 28,664.
[3] Id. at 28,664-5.
[4] EWG, www.ewg.org (last visited June 24, 2014).

of spills, leaks, explosions, fires and blowouts to their shareholders in annual reports filed with the U.S. Securities and Exchange Commission.[5] These risks, and many others, are hardly speculative. The surge in oil and gas wells drilled in the United States over the past decade, largely driven by the expanded use of fracking, has been accompanied by numerous reports of water, air, and soil pollution, explosions at drilling sites and nearby homes, damaged roads, illegal dumping of toxic wastewater, spills of hazardous chemicals, threats to public health and many other destructive impacts.

Of particular relevance to the proposed rulemaking, EWG research also has revealed:

- At least 65 chemicals known to be used in fracking in Colorado, and presumably elsewhere, have been listed as hazardous under the federal Clean Air Act; the Clean Water Act; the Comprehensive Environmental Response, Compensation and Liability Act; the Superfund Amendments and Reauthorization Act of 1986; the Emergency Planning and Community Right-to-Know Act; and/or the Resource Conservation and Recovery Act. Three-fourths of the listed chemicals are known neurotoxins and approximately 45 percent are associated with cancer.[6] The Endocrine Disruption Exchange, a nonprofit scientific research organization that collaborated with EWG on the Colorado report, has documented the use of 632 chemicals in 944 products used in natural gas operations in the United States, but only 353 of the chemicals could be identified by Chemical Abstract Service numbers — evidence of the need for comprehensive identification, reporting and disclosure of all compounds used in fracking activities.[7]

- EPA knew as early as 1987 that fracking fluids of unknown composition from a natural gas well had contaminated drinking water in West Virginia — evidence that fracking fluids are capable of migrating from oil and gas wells to underground drinking water supplies.[8] However, the agency said nothing of this finding when Congress considered, and subsequently passed, the Energy Policy Act of 2005, which exempted fracking from virtually all provisions of the federal Safe Drinking Water Act.[9] By its silence, the agency allowed to go unchallenged the assertions by the oil and gas industry that fracking had never contaminated drinking water,[10] an argument the industry has used widely in its efforts to limit regulation of its use and disclosure of hazardous substances.

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[5] EWG, Drilling Doublespeak: Gas Drillers Disclose Risks to Shareholders – But Not to Landowners (2011), http://static.ewg.org/pdf/Drilling_Doublespeak.pdf.
[6] EWG, Colorado's Chemical Injection (2008), http://www.ewg.org/research/colorados-chemical-injection.
[7] Theo Colburn et al., Natural Gas Operations from a Public Health Perspective, 17 Hum. & Ecological Risk Assessment: Int'l J. 1039, 1045 (2011), http://cce.cornell.edu/EnergyClimateChange/NaturalGasDev/Documents/PDFs/fracking%20chemicals%20from%20a%20public%20health%20perspective.pdf.
[8] EWG, Cracks in the Façade: 25 Years Ago, EPA Linked "Fracking" to Water Contamination 3 (2011), http://static.ewg.org/reports/2011/fracking/cracks_in_the_facade.pdf.
[9] Id. at 6.
[10] See id. at 9.

- Despite a provision in the Safe Drinking Water Act banning the use of diesel fuel in fracking without a permit — the only fracking chemical not exempted by the Energy Policy Act — drilling companies are injecting both diesel and toxic petroleum distillates quite similar in chemical composition to diesel in thousands of wells nationwide.[11] Congressional investigators reported that between 2005 and 2009, drilling companies injected 32 million gallons of diesel or diesel-laced fluids in hydraulic fracturing operations in 19 states.[12] The investigators found that none of the companies obtained permits for injecting diesel under the Safe Drinking Water Act.[13] Further, an investigation by *Energywire* in 2012 found that hundreds of wells listed on the industry-funded FracFocus.org website had used diesel as defined by EPA.[14] Diesel and similar petroleum distillates contain toxic chemicals such as benzene, toluene, ethylbenzene and xylene. These chemicals are known to cause serious health problems, including nervous system disorders and liver and kidney damage. The presence of benzene is particularly troubling as it is a known carcinogen that can contaminate drinking water supplies at concentrations as low as five parts per billion.[15] In a worst-case scenario, the petroleum distillates used to frack a single well could contain enough benzene to render more than 100 billion gallons of water unsafe for drinking.[16]

In an effort to address federal regulatory gaps with respect to fracking, a number of states have enacted, or are considering, their own laws on the reporting and disclosure of the chemicals used in fracking and other well treatment technologies; yet many others have not, and the rules that have been adopted vary from state to state. Mounting evidence of the hazardous nature of the chemicals used and the potential for contamination of water, air and soil demands that, in the interest of providing protection to public health and the safety of residents of all 50 states, EPA should develop and issue strong baseline federal regulations. At the same time, states should still remain free to establish regulations that are more stringent where local conditions and concerns demand.

Although EPA must do more to guard against the risks posed by fracking, EWG applauds the agency's proposal to establish a federal registry for the identification, disclosure, and reporting of chemicals used in fracking. As EPA contemplates such a registry, EWG urges the agency to incorporate several essential components that will make it a more effective resource for protecting public health and the environment. As a model, EWG recommends that the agency

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[11] EWG, Drilling Around the Law 2-3 (2010) http://www.ewg.org/sites/default/files/report/EWG-2009drillingaroundthelaw.pdf.
[12] Henry A. Waxman, Edward J. Markey & Diana DeGette, Letter to Administrator Jackson, Democrats Committee on Energy and Commerce 1 (Jan. 31, 2011), http://democrats.energycommerce.house.gov/sites/default/files/documents/Jackson-Diesel-Hydraulic-Fracturing-2011-1-31.pdf.
[13] Id.
[14] Mike Soraghan, Diesel Still Used to 'Frack' Wells, FracFocus Data Show, Energywire (Aug. 17, 2012), http://www.eenews.net/energywire/stories/1059968900.
[15] EWG, supra note 13, at 10-11.
[16] Id. at 2.

look to the provisions adopted by California under Senate Bill 4 (SB 4),[17] which became law in January 2014, and to the draft regulations implementing SB 4 issued by the California Division of Oil, Gas, and Geothermal Resources in June 2014.[18] Although California's law and the draft regulations do not go as far as we and other public interest groups would recommend, a number of the provisions do represent significant advances in the public's right to know.

EWG sees the following elements as essential components of a federal registry of the chemicals used in fracking:

- The public's right to know about chemicals and mixtures used in fracking and other well treatments and the precautionary principle — acting to protect public health and safety due to the possibility of exposure, even if definitive evidence of harm is lacking — should be the paramount principles of the registry's design, scope, function and ongoing operation. These principles should take precedence over considerations of industry profits, convenience, compliance burden and attempts to avoid or limit disclosure under claims of trade secrets or confidential business information.

- Disclosure should be required for all individual chemicals and mixtures of chemicals in all phases of fracking, including transport, storage, injection, reuse and disposal. Not only should disclosure include a chemical or mixture's brand name (or a proprietary name used by a company) but also reference the chemical or mixture's scientific name and Chemical Abstract Service number.

- Disclosure should further include the volume and concentration of the chemicals used. There should be no volumetric thresholds regarding chemical use below which disclosure is not required.

- Disclosure of the amount of water used to treat each well, the source of the water and how it is disposed of should also be required. As the U.S. Department of Energy's recently released report *The Water-Energy Nexus: Challenges and Opportunities* notes, "producing oil and natural gas through horizontal drilling and hydraulic fracturing has the potential for localized water *quantity* and quality impacts . . ."[19] An analysis by the Ceres investor network of the information provided to FracFocus.org estimates that 97 billion gallons of water were used in fracking operations between January 2011 and May 2013.[20] (FracFocus.org is funded in part by America's Natural Gas Alliance and the American Petroleum Institute, and, as discussed below, the data reported has been demonstrated to

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[17] 2013 Cal. Stat. 87.
[18] Calif. Dep't of Conservation, SB 4 Interim Well Stimulation Treatment Regulations, http://www.consrv.ca.gov/dog/Documents/Final%20Interim%20Regulations.pdf.
[19] U.S. Dep't of Energy, The Water-Energy Nexus: Challenges and Opportunities vii (2014), http://www.energy.gov/articles/department-energy-releases-water-energy-nexus-report (emphasis added).
[20] Monika Freyman, Ceres, Hydraulic Fracturing & Water Stress: Water Demand by the Numbers 5 (2014), http://www.ceres.org/resources/reports/hydraulic-fracturing-water-stress-water-demand-by-the-numbers/view.

be substantially incomplete.[21]) According to Ceres, more than 36 percent of wells treated in that period overlay regions that the U.S. Geological Survey says are experiencing groundwater depletion. More than half of the wells reported to FracFocus in that period were in areas experiencing drought. In California and Colorado, more than 95 percent of the wells reported in that period were in areas rated by the World Resource Institute as regions of "high" or "extremely high" water stress.[22]

- The reporting and disclosure mechanism and database should not be controlled by or subject to inappropriate influence of the oil and gas industry. Some states and regulatory agencies, including the U.S. Bureau of Land Management, have allowed or proposed disclosure of fracking chemical use through FracFocus.org.[23] Public interest groups and other institutions have raised numerous concerns about the management and structure of FracFocus. FracFocus is not managed by a government entity or entities responsible for ensuring compliance with state and federal laws; does not present data in an easily searchable format; does not allow for the aggregation of data across well sites or states; and has been found to contain inaccurate and incomplete data. For example, a *Bloomberg* investigation found that more than half of new wells treated in the last 10 months of 2011 in Texas, Oklahoma, and Montana were not listed in FracFocus, and that more than 90 percent of the companies that drilled new wells in that period did not list any wells on FracFocus.[24] We recommend that the federal registry be funded by fees paid annually by drilling companies, based on the number of wells and volume of chemicals used, and that there should be an advisory board consisting of equal numbers of representatives from industry and citizens of states where fracking occurs. In addition, the operation of the registry should be subject to congressional review and oversight.

- Companies should not be allowed to withhold information about chemicals and mixtures of chemicals by classifying them as trade secrets. As in California's SB 4, disclosure should include the precise formulations of fracking fluids.[25] Drilling companies argue that detailed information about their formulas, if made public and available to other companies, will undermine their competitive advantage in using the formulas they find most effective. They point to trade secrecy laws protecting the formulas used in other products and processes. However, the formulations used in well treatment are of a different magnitude of concern than the formulas for soft drinks and other products. They are composed of substances that can cause immediate and long-term harm to human health, and protection of public health must take precedence over the industry's desire to keep such information secret. In March 2014, a task force of the Secretary of Energy Advisory Board recommended "full disclosure of all known constituents added to

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[21] Benjamin Haas et al., Fracking Hazards Obscured in Failure to Disclose Wells, Bloomberg, Aug. 14, 2012, http://www.bloomberg.com/news/2012-08-14/fracking-hazards-obscured-in-failure-to-disclose-wells.html.
[22] Id. at 6-7.
[23] Haas, supra note 24.
[24] Id.
[25] 2013 Cal. Stat. 87.

fracturing fluid with few, if any exceptions."[26] And in 2011, a subcommittee of the Advisory Board said "there is no economic or technical reason to prevent public disclosure of all chemicals in fracking fluids, with an exception for genuinely propriety information."[27] Moreover, the subcommittee concluded that the advantages of full disclosure to public health clearly prevailed over industry interests:

> The Subcommittee believes that the high level of public concern about the nature of fracturing chemicals suggests that the benefit of immediate and complete disclosure of all chemical components and composition of fracturing fluid completely outweighs the restriction on company action, the cost of reporting, and any intellectual property value of proprietary chemicals. The Subcommittee believes that public confidence in the safety of fracturing would be significantly improved by complete disclosure and that the barrier to shield chemicals based on trade secret should be set very high.[28]

The Advisory Board's report recommends "a 'systems approach' that reports the chemicals added separately from the additive names and product names that contain them." EWG strongly agrees with the analysis of the Advisory Board and urges EPA to set a high bar for companies to seek trade secret protection for any chemicals or mixtures used to treat wells.

- Uniform terminology should be required in describing all chemicals, chemical mixtures, the type of treatment a well receives, how chemicals were transported and stored, and all other processes in each phase of fracking or other forms of well stimulation. There should be no variation allowed from site to site or state to state in the terms used to describe or characterize well data. The registry should include a glossary clearly defining and explaining the terms used.

- Disclosure and public notice of planned well treatment and the chemicals to be used should be made *before* a well is fracked or otherwise treated. Such disclosure will give citizens the opportunity to perform baseline environmental tests, develop emergency plans for spills and accidents, and take other precautions to protect their health and their communities. An appropriate time frame should be no less than 30 days before fracking or other well treatment takes place. In addition to disclosure on the federal registry, notice of planned well treatment and the chemicals to be used should be made by registered mail to all residents, schools and daycare centers, hospitals and clinics, other residential facilities and businesses within one mile of the well to be treated.

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[26] Secretary of Energy Advisory Board, *Task Force Report on FracFocus 2.0*, U.S. Department of Energy, 2 (Mar. 28, 2014) http://energy.gov/sites/prod/files/2014/04/f14/20140328_SEAB_TF_FracFocus2_Report_Final.pdf.
[27] Natural Gas Subcomm. of the Sec. of Energy Advisory Bd., The SEAB Shale Gas Production Subcommittee Ninety-Day Report 3 (2011), http://www.shalegas.energy.gov/resources/081111_90_day_report.pdf.
[28] Id. at 24.

- The public should be able to easily search and aggregate all data in spreadsheets utilizing easy-to-use and commonly available software. This should include the ability to track and compare data by location; by well owner and/or operator; by companies contracted to treat the well (the service provider), if different from the owner/operator; by chemical; and by known all known hazards and health risks, including a chemical's listing on all relevant federal toxics registries. The website hosting the registry should include tutorials on how to use it. EPA should assign information specialists to the registry who can be easily reached through the website, and they should promptly respond to requests from the public for help accessing and understanding data in the registry.

- EPA should work closely with local and state authorities to ensure that the information is easily accessed and shared between jurisdictions. This should include first responders and other emergency personnel. The model for requests by health providers should be the hazard communications standard for the U.S. Occupational Health and Safety Administration, 29 C.F.R. § 1910.1200.

- Information in the registry should be readily available to law enforcement personnel and admissible in court. If information in the registry is disputed, the burden of proof should lie with the owner, operator, or contractor who treated the wells.

- When treated wells are within one mile of a source of drinking water for people, cultivated agriculture or livestock, or within one mile of a stream or other water body that traverses an area designated by federal, state or local agencies as habitat for endangered, threatened or otherwise protected species, drillers must add a non-toxic tracer material to the fracking fluids. If the water source becomes contaminated, the tracer material can be used to establish whether the contamination came from the treated well. Oil and gas companies often add radioactive tracers to fracking fluids to track the distribution of injected fluids,[29] and the use of these materials should be disclosed, as provided for in California's SB 4.[30] Tracer chemicals have been used by the Colorado Oil and Gas Conservation Commission to establish that a fracking wastewater pit was the source of contamination of a spring that supplied drinking water.[31] An inexpensive DNA-based tracer that leaves a unique fingerprint when added to fracking fluid has been developed in the laboratory of a North Carolina start-up.[32] The efficacy of this and other tracer technology should be evaluated by the agency. Any tracer materials used should be disclosed in the registry alongside the chemicals used to treat the well.

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[29] Dick Ghiselin, Tracer Technology Enhances Production, E&P, Nov. 3, 2010, http://www.epmag.com/Production-Drilling/Tracer-technology-enhances-production_71796.
[30] 2013 Cal. Stat. 87.
[31] In the Matter of Alleged Violations of the Rules and Regulations of the Colorado Oil and Gas Conservation Commission by Oxy USA WTP LP, Garfield County, Colorado, Order No. 1V-347 (May 20, 2010), http://ogccweblink.state.co.us/DownloadDocument.aspx?DocumentId=2619260.
[32] Marisa Grant, Local Technology Could Help Ease N.C. Fracking Concerns, N.C. Health News, Jan. 9, 2014, http://www.northcarolinahealthnews.org/2014/01/09/local-technology-could-help-ease-n-c-fracking-concerns/.

- Disclosure of chemicals should not be limited to those used in fracking, but also to other types of unconventional well treatment or stimulation technologies, such as acidizing. Like hydraulic fracturing, acidizing and other processes used to stimulate production from oil and gas wells are not routine maintenance operations and should not be managed as such. Acidizing, a technique in widespread use, involves injecting highly corrosive acid into wells to dissolve rock, sediments, and mud solids, thereby opening up channels in reservoir rocks that enable oil and gas to reach the wellbore. Even though acidizing occurs at pressures lower than those used in fracking, many of the environmental and human health concerns that have been raised in the context of fracking are also associated with acidizing. Acidizing also poses unique risks, such as damage resulting from spills and leaks of the acids involved. Despite the many serious environmental and public health impacts associated with acidizing, the process is subject to little regulatory oversight at the state and federal levels.[33] All of the standards and disclosure elements for fracking should be applied to all other forms of well stimulation.

- There should be a national minimum standard for disclosure, but it should not preempt state regulations. States should remain free to set regulations that are more stringent where local conditions and concerns demand.

In summary, EWG again commends EPA for taking this important and overdue step toward ensuring the public's right to know about chemical hazards associated with fracking and other well treatment technologies. EWG urges the agency to make transparency and the protection of public health and the environment the paramount principles in the design, production, and operation of a national registry of such chemicals.

Sincerely,

Renee Sharp
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Thomas Cluderay
General Counsel

Bill Allayaud
California Director of Government Affairs

[33] Robert Collier, California Drillers Prefer Acidizing Over Fracking, Processing Magazine (August 8, 2013), http://thenextgeneration.org/blog/post/monterey-shale-series-distracted-by-fracking.