EARTHJUSTICE

ALASKA CALIFORNIA FLORIDA MID-PACIFIC NORTHEAST NORTHERN ROCKIES
NORTHWEST ROCKY MOUNTAIN WASHINGTON, D.C. INTERNATIONAL

September 12, 2014

VIA FEDERAL eRULEMAKING PORTAL:
http://www.regulations.gov
Gina McCarthy, Administrator
Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460-0001

Re: Comments on Advance Notice of Proposed Rulemaking – Hydraulic Fracturing Chemicals and Mixtures, Docket ID No. EPA-HQ-OPPT-2011-1019, 79 Fed. Reg. 28664 (May 19, 2014)

Dear Administrator McCarthy:

On behalf of the 107 organizations, businesses, and governmental bodies listed at the end of this letter, and pursuant to the Advance Notice of Proposed Rulemaking ("ANPR") published by the U.S. Environmental Protection Agency ("EPA") under Docket ID No. EPA-HQ-OPPT-2011-1019, we respectfully submit these comments on "the information that should be reported or disclosed for hydraulic fracturing chemical substances and mixtures and the mechanism for obtaining this information." 79 Fed. Reg. 28664, 28664 (May 19, 2014). The comments begin with an introduction and then directly address the questions asked in the ANPR.

I. Introduction

In enacting the Toxic Substances Control Act ("TSCA"), Congress recognized that "human beings and the environment are being exposed each year to a large number of chemical substances and mixtures." TSCA § 2(a)(1), 15 U.S.C. § 2601(a)(1). With the recent expansion of oil and gas development into populated areas, those exposures—including exposures to chemicals used in hydraulic fracturing—are rapidly increasing.[1] The information available to EPA and the public about the health, safety, and environmental impacts of oil and gas exploration and production has not kept pace with the industry's explosive growth. We therefore urge EPA to expedite a rulemaking pursuant to TSCA that will enable it to develop data about chemical substances and mixtures used in those industrial activities. *See id.* § 2(b)(1), 15 U.S.C. § 2601(b)(1). Without all of that data, it will be impossible for EPA "to regulate

[1] Recent data show that hydraulic fracturing has been used on a million wells since 2007, with 35,000 wells fractured annually at this point. Moreover, oil wells are being refractured after only three years in service, because recovery rates can be as low as five percent and, tight oil production declines steeply over time. *See* Anna Driver & Ernest Scheyder, *Refracking Brings 'Vintage' Oil and Gas Wells to Life*, Reuters, Aug. 20, 2014, http://www.reuters.com/article/2014/08/20/us-energy-refracking-insight-idUSKBN0GK0CC20140820.

chemical substances and mixtures which present an unreasonable risk of injury to health or the environment, and to take action with respect to chemical substances and mixtures which are imminent hazards." *Id.* § 2(b)(2), 15 U.S.C. § 2601(b)(2).

A. EPA Should Promulgate Rules That Respond Directly to the Rulemaking Petition That Prompted this ANPR.

Although TSCA has many well known limitations as a vehicle for protecting public health and the environment, the statute does authorize EPA to promulgate rules requiring the submission of information about chemicals and related health and safety studies. On August 4, 2011, more than one hundred organizations filed a rulemaking petition under TSCA (the "TSCA Petition"), seeking to ensure that full information about the chemical substances and mixtures used in oil and gas exploration and production ("E&P Chemicals"), including chemical substances and mixtures used in hydraulic fracturing ("HF Chemicals"), and their health, safety, and environmental effects would at the very least be reported to EPA. The petitioners understood that, without a rulemaking requiring submission of that information to EPA, the manufacturers and processors of those chemicals would continue to assert that the ingredients of their products were trade secrets or confidential business information("CBI"), and there would be no entity with both the authority to demand that information on a national basis and the ability to use the reported data to assess the risks those products pose to public health and the environment. The petitioners also hoped, of course, that once EPA collected all of the information, and evaluated any CBI claims, the agency would disclose to the public the maximal amount of information permissible, with integrated toxicity analyses, in a format that would be maximally useful to communities in oil and gas development regions.

We urge EPA to advance the purpose of the TSCA Petition by focusing first and foremost on the significant gaps that remain in well-specific HF Chemical disclosure mechanisms that have been implemented in many states.[2] Importantly, very few states require any factual substantiation of claims that HF Chemical information is CBI and should be withheld from the public.[3] Rather than focusing on well-by-well disclosure from oil and gas operators and service providers, EPA therefore should prioritize rules that require reporting to the agency of all HF Chemicals and relevant health and safety studies, allowing the agency to evaluate the toxicity and exposure risks these chemicals pose and to provide the public with as much of this information as is legally permissible in the context of a TSCA rulemaking.

B. The Proposed Rulemaking Should Cover *All* Chemical Substances Used in Oil and Gas Exploration and Production.

The TSCA Petition sought a rulemaking to protect public health and the environment from the risks presented by E&P Chemicals. EPA granted the petition but only under sections 8(a) and

[2] For an overview of these shortcomings, see Matthew McFeeley, *Falling Through the Cracks: Public Information and the Patchwork of Hydraulic Fracturing Disclosure Laws*, 38 Vt. L. Rev. 849 (2014).
[3] *See id.* at 887-896.

8(d) of TSCA and only as to HF Chemicals. EPA excluded from the scope of the proposed rulemaking chemical substances and mixtures used in drilling wells, other forms of well stimulation, well maintenance and workovers, and processing oil and gas before transportation to market, even though there are even fewer mechanisms for disclosure of information about those chemicals than there are for disclosure of HF Chemicals. For example, FracFocus (which is far from the ideal system for disclosure of information to the public) provides some data about HF Chemicals but does not even purport to provide information about other stages of the well development and hydrocarbon production processes.[4]

We know, however, that some of the excluded chemicals present threats to public health and the environment.[5] In defense of its failure to include those chemical substances and mixtures within the scope of the proposed rulemaking, EPA cited concerns expressed specifically about hydraulic fracturing, the petitioners' focus on that process, and the need for a better understanding of the incremental value added by a broader rule. Because none of those reasons is adequate, EPA should reconsider its decision to narrow the scope of the rulemaking.

Public concern about "fracking" extends far beyond the stimulation process, and the term commonly is used to refer to the entire series of exploration and production activities, of which hydraulic fracturing is just one part.[6] For example, some groundwater contamination events have occurred when wells were drilled, before fracturing began.[7] In addition, other well stimulation techniques, including acidizing, can present the same environmental and public health risks as hydraulic fracturing and should be regulated similarly. When the TSCA Petition was filed, however, the signatories had no choice but to focus on incidents and information sources related to well stimulation, because so little information was available about contamination incidents caused by other stages or processes of oil and gas development. Three

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[4] A useful summary of many of the limitations of FracFocus.org can be found in: U.S. Dep't of Energy, Sec'y of Energy Advisory Bd., *Task Force Report on FracFocus 2.0* 2 (Mar. 28, 2014), *available at* http://energy.gov/sites/prod/files/2014/04/f14/20140328_SEAB_TF_FracFocus2_Report_Final.pdf [hereinafter *FracFocus Report*].

[5] *See* Environmental Integrity Project et al., Petition to Add the Oil and Gas Extraction Industry, Standard Industrial Classification Code 13, to the List of Facilities Required to Report under the Toxics Release Inventory, Docket ID No. EPA-HQ-TRI-2013-0281, 14 (Oct. 24, 2012), *available at* https://federalregister.gov/a/2013-31484 ("TRI Petition").

[6] *See, e.g.*, Tip of the Mitt Watershed Council, *Oil and Gas Development Using High Volume Hydraulic Fracturing*, http://www.watershedcouncil.org/learn/hydraulic-fracturing/ (last visited Sept. 12, 2014) ("The oil and gas industry defines hydraulic fracturing, or fracking, as the actual process of injecting fluids to create underground fractures. . . . However, the public uses the term fracking to encompass all activities associated with oil and gas drilling, including well construction, hydraulic fracturing, and oil and gas production.").

[7] *See, e.g.*, Consent Order and Settlement Agreement, *In the Matter of Cabot Oil & Gas Corp.*, Finding F (Dec. 15, 2010), *available at* http://files.dep.state.pa.us/OilGas/BOGM/BOGMPortalFiles/OilGasReports/Determination_Letters/EAST/CO258482-1_Redacted.pdf ("The Department has determined that eighteen (18) drinking water supplies that serve nineteen (19) homes within the Dimock/Carter Road Area have been affected from the drilling activities at the Dimock/Carter Road Gas Wells . . . .").

years later, FracFocus still is limited to HF Chemicals, and there is no other system collecting information about chemical substances and mixtures to which people and other living things may be exposed during earlier and later phases of the hydrocarbon extraction process. Industry's continuing refusal to disclose information about drilling muds and processing additives was precisely what prompted the TSCA Petition signatories to seek a broad scope for the rule, and EPA's insistence on narrowing the scope perpetuates the problem.

For example, what we now know about chemical substances and mixtures used for drilling oil and gas wells suggests that those chemicals also should be included within the scope of any rulemaking undertaken in response to the TSCA Petition.

> Drilling involves the use of muds to keep the drill bit cool and lift the rock cuttings out of the well bore. Muds may be water-based, oil-based or synthetic. They typically contain bentonite clay (or a synthetic polymer substitute), as well as other chemical additives that alter the mud properties (thickness, weight, bacteria proliferation, etc.).
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> Releases of drilling muds and additives to the environment can occur at the well site (spills, leaks from drilling reserve and waste pits/tanks), or mud injected underground can move through formations and contaminate surface or groundwaters.[8]

Drilling muds may include diesel oil or hydrotreated light petroleum distillate, which contain the carcinogenic chemical benzene.[9] A recent patent application showed that drilling muds contained high levels of barium.[10] Drilling in Pennsylvania caused a release into ground and surface water of the surfactant Airfoam HD, which contains the highly toxic chemical 2-Butoxyethanol.[11] As several industry members admitted: "Gone are the days when drilling fluid—or mud as it is commonly called—comprised only clay and water. Today, the drilling

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[8] Earthworks, *Contaminated Pathways*, *The Drilling Process*, http://www.earthworksaction.org/issues/detail/contaminated_pathways#.U_-r0_SkqaQ (last visited Sept. 12, 2014).

[9] *See* Schlumberger, Oilfield Glossary: Drilling Fluid, http://www.glossary.oilfield.slb.com/en/Terms/d/drilling_fluid.aspx (last visited Sept. 12, 2014); Halliburton, Material Safety Data Sheet, EZ-Mud (a copy of which is annexed hereto as Exhibit A); Envtl. Working Gp., *Drilling Around the Law* 4 (2009), *available at* http://www.ewg.org/sites/default/files/report/EWG-2009drillingaroundthelaw.pdf.

[10] Chemical Co-Precipitation Process for Recovery of Flow-Back Water, Produced Water and Wastewater of Similar Characteristics, Application No. US20140124453 (filed Nov. 8, 2014) (published May 8, 2014) (Table 4), http://www.google.com/patents/US20140124453.

[11] Pa. Dep't of Envtl. Prot., Press Release: *DEP Fines Pennsylvania General Energy Co. LLC $28,960 for Illegal Surfactant Discharge to Pine Creek in Lycoming County* (Feb. 2, 2011), http://www.portal.state.pa.us/portal/server.pt/community/newsroom/14287?id=16152&typeid=1; Material Safety Data Sheet for Airfoam HD (July 11, 2005), *available at* http://oilandgas.ohiodnr.gov/portals/oilgas/_MSDS/stingray/Airfoam%20HD%20(Soap).pdf.

engineer designing a mud program chooses from a comprehensive catalog of ingredients."[12] The public is entitled to know, and EPA should require manufacturers and processors to report, what that "comprehensive catalog" means for health and the environment.

Similarly, manufacturers and processors of chemical substances and mixtures used in processing gas prior to pipeline transport to market should be covered by any rules promulgated in response to the TSCA Petition. "Two of the most common methods involved n natural gas processing are 'dehydration,' in which the gas is exposed to a glycol to remove water vapor, and 'sweetening,' in which the gas is exposed to an amine solution and heated to remove hydrogen sulfide."[13] The most common glycols used are ethylene glycol, monoethylene glycol, highly toxic diethylene glycol, and triethylene glycol.[14] For sweetening, "[p]iperazine has been used . . . as an additive, primarily with methyldiethanolamine (MDEA), for well over 20 years."[15] Other amines presenting various degrees of health risks also may be used.

The undersigned organizations therefore ask EPA to reconsider its limitation and instead to apply its rulemaking to *all* E&P Chemicals. These comments recognize the current scope of the ANPR, however, and address the specific questions posed by EPA. The responses therefore refer exclusively to HF Chemicals, but the recommendations offered in these comments should be understood to apply to all E&P Chemicals.

C. The Proposed Rulemaking Should Include Strict Rules for Confidentiality Claims.

EPA's principal focus should be on fulfilling Congress's mandate to obtain data about the health and environmental effects of chemical substances and mixtures that the public currently does not have and that is long overdue. The undersigned organizations strongly urge EPA to adopt rules that will be effective in securing the reporting and public release of such information with respect to HF Chemicals. Doing so would be consistent with the repeated recommendations of the Secretary of Energy Advisory Board ("SEAB"), which unanimously adopted recommendations of a recent Task Force report recommending "full disclosure of all known constituents added to fracturing fluid with few, if any exceptions."[16]

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[12] Ben Bloys et al., *Designing and Managing Drilling Fluid*, Oilfield Rev. 33 (Apr. 1994), http://www.slb.com/~/media/Files/resources/oilfield_review/ors94/0494/p33_43.pdf.

[13] TRI Petition, *supra* note 5, at 14 (footnote omitted).

[14] *See* Energy Info. Admin., Office of Oil and Gas, *Natural Gas Processing: The Crucial Link Between Natural Gas Production and Its Transportation to Market* 4 (Jan. 2006), http://www.eia.gov/pub/oil_gas/natural_gas/feature_articles/2006/ngprocess/ngprocess.pdf; Torsten Katz et al., *The Effect of Glycols on the Performance of the Acid Gas Removal Process* 3 (undated), http://www.gastechnology.org/Training/Documents/LNG17-proceedings/Process-15-Torsten_Katz.pdf.

[15] Optimized Gas Treating, Inc., *Piperazine—Why It's Used and How It Works*, 2(4) The Contactor 1, 1 (2008), http://www.ogtrt.com/files/contactors/vol_2_issue_4.pdf.

[16] *FracFocus Report*, *supra* note 4, at 2.

That recommendation echoed earlier concerns of an SEAB Subcommittee on Shale Gas Production, released only one week after submission of the TSCA Petition. The Subcommittee stated:

> 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.[17]

Complete transparency should be the goal, and EPA should establish a high bar for industry seeking to withhold information about HF Chemicals from disclosure. Companies should not be permitted to assert CBI claims as a means of avoiding scrutiny and public pressure to reduce their distribution of toxic chemicals.

In general, TSCA bars EPA from releasing to the public any reported information that qualifies as CBI. *See* TSCA § 14(a), 15 U.S.C. § 2613(a) (citing the fourth exemption from disclosure requirements under the Freedom of Information Act, 5 U.S.C. § 552(b)(4), which protects trade secrets or privileged or confidential commercial or financial information). CBI must be disclosed, however, when EPA determines that disclosure is "necessary to protect health or the environment against an unreasonable risk of injury to health or the environment." *Id.* § 14(a)(3), 15 U.S.C. § 2613(a)(3). TSCA also does not prohibit the disclosure of health and safety studies with respect to chemical substances and mixtures offered for commercial distribution, including any data related to those chemicals that EPA obtains from such studies. *See id.* § 14(b)(1)(A)(i), 15 U.S.C. § 2613(b)(1)(A)(i). In releasing health and safety studies, or data obtained from the studies, EPA is directed not to disclose the processes used in manufacturing or processing the chemicals or the portions of each chemical substance in a mixture. *See id.* § 14(b), 15 U.S.C. § 2613(b).

To ensure that there is no withholding of information under TSCA other than that specifically mandated by Congress, EPA should expedite the CBI determination process under TSCA. This rulemaking provides an opportunity for EPA to promulgate regulations requiring that all CBI claims—especially with respect to HF Chemicals—be accompanied at the outset by clear and convincing documentary evidence proving that the information qualifies for protection from disclosure. *See id.* § 14(c)(1), 15 U.S.C. § 2613(c)(1) (authorizing EPA to prescribe the manner for designation of CBI by manufacturers, processors, and distributors in commerce). A similar

[17] U.S. Dep't of Energy, Secretary of Energy Advisory Bd., *Shale Gas Production Subcommittee 90-Day Report* 24 (2011), http://www.shalegas.energy.gov/resources/081111_90_day_report.pdf.

process already is in effect for the Toxics Release Inventory ("TRI") program.[18] Creating an analog under TSCA would facilitate EPA's speedy compliance with the statutory notice provisions. *See id.* § 14(c)(2), 15 U.S.C. § 2613(c)(2). Because the oil and gas industry has not been included among the sectors subject to TRI reporting requirements, it is all the more important that EPA release as much information about HF Chemicals, with as little delay, as is legally permissible under TSCA.[19]

II. Requested Comments

A. Overall Approach to Reporting and Disclosure of Chemical Substances and Mixtures Used in Hydraulic Fracturing

EPA has requested comment on what information should be reported to the agency or disclosed to the public. *See* ANPR, 79 Fed. Reg. 28666. Although EPA also states that it "is seeking comment on whether and how data that are claimed to be trade secrets, or CBI, could be reported to EPA (or a third-party certifier) and then aggregated and disclosed while protecting the identities of individual products and firms," *id.*, none of the questions presented in the ANPR actually appear to address that issue.[20] In the absence of specific questions, we maintain that the identity of chemical substances and mixtures is not to be protected from disclosure, at least in health and safety studies, and the identities of firms manufacturing or processing HF Chemicals never should be withheld from the public.

1. Should all information be required to be reported or should there be a voluntary mechanism for some or all information?

TSCA grants broad authority to EPA to promulgate rules requiring the reporting of information about chemical substances and mixtures. *See* TSCA § 8(a)(1)(A)-(B), 15 U.S.C. § 2607(a) (1)(A)-(B) (authorizing mandatory reports of such information as the Administrator "may reasonably require" or that is "necessary for the effective enforcement" of the statute). Examples of information that may be included in mandatory reports include:

> (A) The common or trade name, the chemical identity, and the molecular structure of each chemical substance or mixture for which such a report is required.
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> (B) The categories or proposed categories of use of each such substance or mixture.

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[18] *See* U.S. Envtl. Prot. Agency, Toxics Release Inventory (TRI) Program, *Trade Secret Submission Forms and Instructions*, http://www2.epa.gov/toxics-release-inventory-tri-program/trade-secret-submission-forms-and-instructions (last visited Sept. 12, 2014).

[19] The undersigned organizations also urge EPA to grant the TRI Petition, *supra* note 5.

[20] We note that the aggregative approach to CBI that EPA appears to contemplate can function only if information about the additives used for hydraulic fracturing of particular wells is incorporated into the disclosure tool developed by EPA for HF Chemicals.

> (C) The total amount of each such substance and mixture manufactured or processed, reasonable estimates of the total amount to be manufactured or processed, the amount manufactured or processed for each of its categories of use, and reasonable estimates of the amount to be manufactured or processed for each of its categories of use or proposed categories of use.
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> (D) A description of the byproducts resulting from the manufacture, processing, use, or disposal of each such substance or mixture.
>
> (E) All existing data concerning the environmental and health effects of such substance or mixture.
>
> (F) The number of individuals exposed, and reasonable estimates of the number who will be exposed, to such substance or mixture in their places of employment and the duration of such exposure.
>
> (G) In the initial report under paragraph (1) on such substance or mixture, the manner or method of its disposal, and in any subsequent report on such substance or mixture, any change in such manner or method.

Id. § 8(a)(2), 15 U.S.C. § 2607(a)(2). Moreover, the entities required to report under the rules need not have actual knowledge of the information that must be reported but rather may be required to submit reports as long as that information is "reasonably ascertainable." *Id.*

EPA should require reporting of all of the information listed above with respect to HF Chemicals. With respect to category (B), EPA should ensure that the description of use is specific enough to identify the function of each chemical and mixture within the hydraulic fracturing fluid (*e.g.*, is it used to inhibit corrosion, to improve viscosity, to reduce friction, or to achieve some other purpose?). Information that is not known directly to manufacturers and processors is reasonably ascertainable from their customers, and EPA should require that reporting entities make the requisite inquiries from parties down the supply chain. Without mandatory reporting of the full complement of information, EPA will be unable to develop the comprehensive picture of those chemicals, their potential health and environmental impacts, and the extent and pathways of exposure to them that is needed to assure the public that HF Chemicals "do not present an unreasonable risk of injury to health or the environment." *Id.* § 2(b)(3), 15 U.S.C. § 2601(b)(3).

EPA should not create a wholly voluntary program. Allowing voluntary reporting of any reasonably required category of information offers no assurance that the data collected will be complete. Indeed, the voluntary chemical disclosure systems that currently exist for the oil and

gas industry—such as the use of FracFocus by some states—prove that, without a regulatory mandate, participants cannot be trusted to provide full and accurate information about their operations.[21] To ensure public confidence in any system introduced pursuant to this rulemaking, EPA should not leave it to the generous impulses of industry to provide fundamental information about potentially harmful HF Chemicals.

Requiring reporting of the full range of information will not be unnecessarily duplicative. Service providers asked to disclose information about hydraulic fracturing additives often hide behind CBI claims made by the HF Chemical manufacturers and processors, including in the Material Safety Data Sheets ("MSDSs") that serve as the principal disclosure mechanism in some states. Additionally, a Harvard University Law School study of disclosures on FracFocus found that CBI claims made are sometimes inconsistent, falsely attesting to the confidentiality of certain chemical identities that have been disclosed in other states.[22] EPA is the only agency with the authority to evaluate CBI claims on a nationwide basis to ensure that information is not arbitrarily withheld from the public. Companies that assert such claims reasonably can be required to report to EPA all chemical information about their own products and to obtain from their customers other required information that is not directly known to the CBI claimants. If there is duplication of reporting, it is hardly likely to be significantly burdensome; once a company has obtained information, sending it to more than one office is a trivial addition to expense. Any claims of burden therefore should be scrutinized with some skepticism. Requiring full reporting will enable EPA to create a national database of all of the information needed for evaluating the health and safety of HF Chemicals, the benefits of which will far outweigh any potential burden.

2. Would a combination of mandatory reporting and voluntary disclosure be effective? If so, what would that combination consist of? Why?

There should be mandatory reporting of all information described in the response to Question II(A)(1). Only by merging all of this information into a single database capable of aggregating data and identifying areas with excessive exposure to toxic HF Chemicals will EPA be able to assess whether any of those chemicals "present an unreasonable risk of injury to health or the environment, and to take action with respect to chemical substances and mixtures which are imminent hazards." *Id.* § 2(b)(2), 15 U.S.C. § 2601(b)(2).

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[21] *See* Envtl. Integrity Project, *Fracking Beyond the Law* 2 (August 2014) ("Through its investigation, EIP learned that some well operators have replaced—and continue to replace—their original FracFocus disclosures (that reported the injection of diesel fuel) with new disclosure that no longer indicate injection of diesel fuel."), environmentalintegrity.org/wp-content/uploads/Fracking-Beyond-the-Law.pdf; *see id.*, *Well Data*, environmentalintegrity.org/archives/6934 (providing spreadsheet identifying altered disclosures).

[22] Kate Konschnik et al., Harvard Law School Environmental Law Program Policy Initiative, *Legal Fractures in Chemical Disclosure Laws: Why the Voluntary Chemical Disclosure Registry FracFocus Fails as a Regulatory Compliance Tool* 9 (April 23, 2013).

Voluntary reporting should be acceptable only for information that EPA cannot legally demand. Reporting of information that currently escapes disclosure because of exemptions in other federal laws, including the Safe Drinking Water Act and the Emergency Planning and Community Right to Know Act ("EPCRA"), would add substantially to the power of a database created pursuant to TSCA. In particular, voluntary reporting by the oil and gas industry through EPA's highly regarded TRI program should be encouraged—at least until EPA acts on the pending TRI Petition. The undersigned organizations are skeptical, however, that any voluntary reporting would be effective in eliciting much information, because the oil and gas industry has been fighting hard to avoid disclosing it.

3. What types of information, if any, should be required to be reported? Why?

See response to Question A(1).

4. How could any required reporting activities be designed to better facilitate compliance?

The reporting should take place through a state-of-the-art internet-based system that is easily and inexpensively utilized by reporting entities. Compliance with reporting requirements is likely to be less a matter of design, however, than of rigorous auditing of submissions and vigorous enforcement of the law.

5. What types of information, if any, should be reported and/or disclosed voluntarily? Why?

See response to Question A(2).

6. What are the best management practices for the generation, collection, reporting and/or disclosure of information from or by companies?

An information collection and disclosure system that is designed to guarantee the public's right-to-know about potential exposure to toxic chemicals must have at least the following five key components: (1) mandatory reporting, (2) standardized data, (3) identification of reporting companies, (4) reporting at regular intervals, and(5) a primary purpose of reducing risks.[23] To achieve full standardization of data and identification of companies, CBI claims must be scrutinized carefully and interpreted as narrowly as legally permissible. The data also should be disclosed to the public through a mechanism that allows aggregation and analysis across multiple parameters of concern.

[23] Archon Fung et al., *The Political Economy of Transparency: What Makes Disclosure Policies Sustainable?* 3 (2002), *available at* http://www.transparencypolicy.net/assets/whatnakesdisclosureeffective.pdf.

> The right-to-know approach means that corporations are under mandate to publicly report their pollution, but after the reports are filed and published, citizens, employees, consumers, shareholders and managers are left to respond as they see fit. For the right-to-know approach to improving corporate environmental performance to have any chance of success, you need to have stakeholders with access to the information, the ability to interpret the information, and the capacity and incentive to respond to the information.[24]

In addition, the system should be subject to regular and rigorous oversight, quality assurance, and auditing, especially if companies self-report data. There should be strict limits on the reporting company's ability to amend data after submission.

7. Are there particular systems in place that already use these best management practices? Please identify these systems.

EPA pioneered many high quality management practices in its own TRI program. TRI includes the five components identified above, and it allows minimal CBI exemptions from disclosure. The system also discloses released substances and the full contents of mixtures in meaningful quantity units—weight, in pounds (*i.e.,* masses, not concentration). In addition, EPA has developed extensive guidance and assistance for TRI reporting. All of these features should be replicated in a HF Chemical disclosure system.

TRI also has some shortcomings that could be improved in a database for public disclosure of HF Chemicals.[25] Because TRI relies on unaudited self-reporting of releases, based on engineering estimates, it is not a model for quality assurance. TRI also designates broad categories for chemicals and chemical groups, both for metals and organic compounds, even though toxicity within these categories can vary by many orders of magnitude. The grouping of chemicals creates challenges for or requires additional assumptions by TRI users seeking to obtain meaningful risk assessments. Any HF Chemical database should clearly identify different chemical substances and mixtures, through the use of Chemical Abstract Service ("CAS") numbers whenever possible, to ensure that the health and environmental effects of the chemicals can be readily assessed. Using CAS numbers as well as common names and trade names will help to facilitate linking across complex and potential disparate datasets.

In addition, TRI also does not adequately track changes in corporate ownership of reporting entities. Given the remarkable fluidity of the oil and gas industry at this time, it will be important for EPA to track those changes closely with respect to HF Chemical manufacturers

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[24] Political Econ. Research Inst., Interview with James Boyce & Michael Ash (Mar. 2006), http://www.peri.umass.edu/343.

[25] For a more detailed critique of the TRI system, see Political Econ. Research Inst., *How Accurate Are the RSEI Data on Toxic Air Pollution?*, http://www.peri.umass.edu/accurate/.

and processors. There should be clear identifiers of the companies responsible for reporting and the ultimate parent company of the reporting firm. The responsibility for reporting changes in corporate ownership should be shared by all parties to the transaction, a penalty policy should be developed for the failure to report, and penalties should be publicized.

8. To what extent are these best management practices widely adopted? Please provide evidence regarding the extent of use of best management practices.

According to EPA, the TRI model increasingly has been used by countries around the world as a model for pollutant release and transfer registers.[26]

9. How could incentives be structured to ensure effective voluntary disclosure of information on chemical substances and mixtures used in hydraulic fracturing?

We do not support voluntary disclosure of information that may be required under TSCA. There is no reason to believe that such a system would be effective, and a voluntary program would be likely to defeat the intent of Congress in enacting TSCA. By contrast, maximal reporting and disclosure of information that EPA may require will enable the public to focus attention on companies that are not required to report and encourage them to disclose information voluntarily. Public pressure, combined with increasing state regulation, is what prompted the creation of FracFocus. Improvements to FracFocus also have come as a result of pressure from government agencies and the public, although persistent problems with public access to information on that site demonstrate the limitations of a system in which non-regulatory entities determine the extent of disclosure. FracFocus is not a good model for EPA, but it may be suggestive of what can be expected from a voluntary system disclosing information of acute interest to the public.

10. Are there incentives that could be used in combination with regulatory requirements for information disclosure to promote practices that go beyond compliance (e.g., incentives that encourage reporting in addition to that required by regulation)?

See Response to Question A(9).

[26] U.S. EPA, *TRI Around the World*, http://www2.epa.gov/toxics-release-inventory-tri-program/tri-around-world (last visited Sept. 12, 2014).

11. What information collection tools and resources are available to support and promote safer chemical use and other sustainable practices (e.g., some form of cradle-to-grave chemical management)? Please explain.

We know of no tool or resource that collects either HF Chemical information or health and safety studies pertaining to those chemical substances and mixtures from every HF Chemical manufacturer and processor. The active concealment of such information by some manufacturers and processors is precisely what prompted the TSCA Petition. We strongly urge EPA to counteract the industry secrecy by promulgating rules under sections 8(a) and 8(d) of TSCA and by creating a web-based tool or resource that will maximize disclosure of the collected information.

12. What factors should be considered for distinguishing among different types of companies for the purpose of incentives?

We urge EPA to devote its resources to promulgating rules under TSCA that mandate submission of the information and studies authorized under the statute. We believe that no incentives will be adequate to produce voluntary submission of reliable information and express no opinion on this question.

13. What information collection tools and resources are available to support, incentivize, and promote safe and sustainable practices? Please explain.

We dispute the assumption that use of HF Chemicals for well stimulation can be "safe and sustainable." At most, the currently used suite of HF Chemicals can be made less toxic, methods can be developed that reduce the use of toxic chemicals, and their management can be improved to reduce risks to health and the environment. Safe and sustainable development of a fossil fuel is an oxymoron. See also Response to Question A(11).

That said, there are information collection and disclosure tools and resources that have been designed to support, incentivize, and promote safer and more sustainable practices in other industries, and have successfully done so, notable examples of which we discuss below. These success stories demonstrate the importance of mandatory public disclosure of information in an accessible digital format and demonstrate how information provided in such a format has been utilized in other contexts to encourage the adoption of practices that reduce environmental and health risks.

a. Toxics Release Inventory

Probably the best model for what EPA might do in a rulemaking pursuant to TSCA is the agency's own TRI program. EPCRA requires facilities of certain industries to file annual reports with EPA disclosing the volume of specified toxic chemicals that they release to the air, water,

or land, or otherwise manage through recycling, energy recovery, or treatment. This information is then posted to the TRI database maintained by EPA. Notwithstanding the shortcomings of TRI noted in our Response to Question A(7) above, the public disclosure of that information has been credited with sizable reductions in environmental pollution. In 1991, an environmental manager at Dow Chemical acknowledged that TRI's "mandatory disclosure has done more than all other legislation put together in getting companies to voluntarily reduce emissions."[27] Carol Browner, then EPA Administrator, maintained in 1996 that TRI "is quite simply one of the most effective means we have in this country for protecting the health of our people, the health of our environment."[28]

Praise for the TRI program is supported by concrete results. After learning of the magnitude of its reportable emissions just before the first reporting deadline in 1988, major chemical manufacturer Monsanto pledged to limit its worldwide air emissions 90 percent by the end of 1992.[29] In fact, the company was able to reduce its TRI-reportable emissions by nearly 94 percent by that time.[30] Other companies, such as Monsanto competitor DuPont, post their progress in reducing TRI-reportable emissions on their websites.[31]

Releases reported and posted to TRI have decreased over the years. EPA noted that from 1998 to 2003, reported on- and off-site disposal or other releases from facilities declined by 42 percent;[32] from 2003 to 2012, releases generally decreased by 19 percent.[33] EPA attributed the

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[27] Archon Fung & Dara O'Rourke, *Reinventing Environmental Regulation from the Grassroots Up: Explaining and Expanding the Success of the Toxics Release Inventory* 5 (Dec. 31, 1998), http://switchboard.nrdc.org/blogs/lgreer/effectiveness%20of%20TRI.pdf (citation omitted).

[28] *Id*.

[29] Mary Graham, *Regulation by Shaming*, Part Two, *The Atlantic Online* (Apr. 2000), http://www.theatlantic.com/past/docs/issues/2000/04/graham2.htm.

[30] Wolfram Schlenker & Jason Scorse, *Does Being a 'Top 10' Worst Polluter Affect Environmental Releases? Evidence from the U.S. Toxic Release Inventory* 1 n.1 (2012), http://www.miis.edu/media/view/28620/original/top_10_worst_polluter-scorse_schlenker_july_2012.pdf.

[31] DuPont, *DuPont Position Statement on Toxic Release Inventory* (Feb. 2014), http://www.dupont.com/corporate-functions/our-company/insights/articles/position-statements/articles/toxic-release-inventory.html. Boeing also published progress on its website. The General Accounting Office ("GAO") highlighted these examples in a 2007 report. GAO, *Toxic Chemical Releases: EPA Actions Could Reduce Environmental Information to Many Communities*, GAO-08-128 (Nov. 2007), http://www.gao.gov/assets/270/268454.pdf.

[32] U.S. EPA, *2003 Toxics Release Inventory (TRI) Public Data Release Report* (May 2005), http://www2.epa.gov/sites/production/files/documents/2003_national_analysis_overview_brochure.pdf. Although the reporting requirement began in the late 1980s, the TRI program was expanded in 1998 to require additional industries to report – including electric utilities, mines, chemical wholesale distributors, and petroleum terminals. The 42 percent figure reflects analysis only of chemicals with reporting required during the entire period. For example, the analysis excluded data about persistent, bioaccumulative, and toxic chemicals that has been reported only since 2000.

[33] U.S. EPA, *2012 Toxics Release Inventory National Analysis Overview* 4 (Feb. 2014), http://www2.epa.gov/sites/production/files/2014-01/documents/complete_2012_tri_na_overview_document.pdf.

decline in the past decade mainly to changes in the electricity sector, which has seen an increased use of emission controls or shifts away from coal.

Some studies have concluded, however, that reductions observed in TRI data could be at least partly linked to public disclosure. One report found that companies on a publicized Top 10 polluter list, compiled with data from the public TRI database, were more likely to take action to reduce their emissions than those that were not on the list.[34] The analysis not only shows the benefits of public disclosure, but also highlights the importance of a tool that easily can be mined for effective communications. The information has to be easily digestible and accessible, so the public can fully understand the risks it faces, and industry knows it is under public scrutiny.

b. Safe Drinking Water Act Consumer Confidence Reports

The Safe Drinking Water Act Amendments of 1996 requires that community drinking water suppliers mail Consumer Confidence Reports to customers. The reports provide information on contaminant levels in drinking water and violations of drinking water standards and procedural requirements. According to one study, the requirement lowered total violations by larger Massachusetts water utilities by 30-44 percent and reduced the more severe health violations by 40-57 percent.[35] The authors speculated that this was because the utilities were motivated to avoid adverse customer reactions. Knowing that people will see evidence of health risks posed by industry is a good incentive for industry to limit those risks.

c. State-level Chemical Use Reporting

The efficacy of disclosure requirements as a means of inducing improved industry behavior is apparent at the state level, too. Prominent examples include New Jersey and Massachusetts laws requiring facilities to report chemical use to the state and to plan how to reduce their usage. Under both laws, the data and summaries of the plans must be publicly available. Massachusetts also collects a fee for toxics use, and both states require the submission of plan updates or progress reports on attaining reductions published in the plans.

Both states' laws have been successful in securing toxic chemical use reductions over the years. A New Jersey Department of Environmental Protection report found that industry sectors reporting to the state under the 1983 Worker and Community Right To Know Act reduced their

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[34] *See* Schlenker & Scorse, *supra* note 30.

[35] *See* Lori S. Bennear & Sheila M. Olmstead, *The Impacts of the "Right to Know": Information Disclosure and the Violation of Drinking Water Standards* 56 J. Envtl. Ex. & Mgt. 117, 118 (2008), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=939590 (pre-publication manuscript, page 2).

toxic chemical usage by 31 percent from 2000 to 2009, after accounting for production changes.[36] Massachusetts enacted the Toxics Use Reduction Act in 1989. Looking at facility categories that were subject to reporting during the same period, the most recent Massachusetts Department of Environmental Protection report calculated that toxic chemical usage decreased in the state by 21 percent from 2000 to 2009, after adjusting for changes in production.[37] Over the life of the program, the data show that companies covered by the law reduced releases of toxic chemicals by 90 percent between 1990 and 2000 and by 73 percent between 2000 and 2012. They reduced toxic chemical use by 40 percent between 1990 and 2000 and by another 23 percent between 2000 and 2012. They reduced toxic waste by 58 percent between 1990 and 2000, and an additional 42 percent between 2000 and 2012.[38]

d. California's Proposition 65

California's Safe Drinking Water and Toxic Enforcement Act, commonly known as "Prop. 65," is a different but also successful example of a law that uses mandatory disclosure as an inducement to reduce risks. Enacted as a ballot initiative in 1986, Prop. 65 requires businesses to provide "clear and reasonable warning" before exposing people to carcinogens or reproductive toxicants.[39] One notable victory accredited to Prop. 65 was a change in soft drink ingredients used by Coca Cola Company and PepsiCo, which had for decades used caramel coloring in Coke and Pepsi that was contaminated with a carcinogen, 4-methylimidazole.[40] California listed the contaminant on its Prop. 65 list in 2011, and the companies removed it from the soda they sold in California.[41]

e. Beach Report Cards in California

California requires county health departments to monitor beach water quality on a weekly basis for three types of bacteria.[42] With the California State Water Board's endorsement, the nonprofit

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[36] NJ Dep't of Envtl. Prot., *Community Right to Know and Release and Pollution Prevention Report for Reporting Year 2009 and an Analysis of Materials Accounting Data for Reporting Years 2000 to 2009* 2, 4 (Mar. 2012), http://www.state.nj.us/dep/opppc/rules/Final%20Report.pdf. In this report, usage is calculated by adding three reported figures: "the amount consumed, the amount shipped as (or in) product, and the amount generated as nonproduct output." *Id.* at 5.

[37] Mass. Dep't. of Envtl. Prot., *2009 Toxics Use Reduction Information Release* 7 (Jul. 2011), http://www.mass.gov/eea/docs/dep/toxics/priorities/09relfin.pdf. Massachusetts requires reporting of quantities of toxics that are manufactured, processed, or otherwise used, and aggregates this data to calculate total usage. *See id.* at 11.

[38] Communication from data analyst Heather Tenney, Toxics Use Reduction Institute, University of Massachusetts at Lowell.

[39] Cal. Health & Safety Code § 25249.6.

[40] Caroline Cox, Center for Environmental Health, *State Action, National Change* 7 (Aug. 2013), http://www.ceh.org/wp-content/uploads/2013/08/p65-successes-digtl-natl.pdf.

[41] *See id.*

[42] Cal. Health & Safety Code § 115880(d); Cal. Code Regs. tit. 17, §§ 7958, 7961; Heal the Bay, *FAQ: How Are the Grades Determined?*, http://brc.healthebay.org/?tabid=4#grades (last visited Sept. 12, 2014).

group Heal the Bay generates an online report card – in weekly and annual form – for beach water quality.[43] Over the past 10 years, Heal the Bay Beach Report Cards have shown an overall increase in the percentage of beaches receiving As, and an overall decrease in Fs. Although water quality in California may have improved in part because of drier weather (and therefore less stormwater pollution) in recent years, there is evidence that some of the improvement is a result of the Beach Report Cards. For example, a spokesperson for Santa Cruz commented on the "disappointing news," when the city's efforts to prevent pollution failed to keep its beaches off the report card's "Beach Bummer" list of the 10 dirtiest beaches in California.[44] Avalon Bay, which was recently at the top of the Beach Bummer list, made sewer infrastructure improvements and no longer is on the list.[45]

14. How could collected information be used to better inform safe and sustainable practices? For example, would providing information or guidance on improved chemical use across different types of firms involved in hydraulic fracturing better inform safe and sustainable practices?

See Response to Question A(13). There are many ways that collected information could reduce risks from unsustainable practices. For example, disclosure of collected information could reveal that HF Chemicals currently competing in the marketplace present a range of health and environmental hazards, and public pressure could be exerted to compel service providers and well operators to use the least hazardous HF Chemicals. Second, landowners leasing their mineral rights could use the information to prevent the use of chemicals that pose particularly acute risks before agreeing to allow oil and gas activities on their property. In addition, if the information collection discloses that some HF Chemicals are significantly less toxic than others available to serve key well stimulation requirements, the most hazardous chemicals would inherently "present an unreasonable risk of injury to health or the environment," enabling EPA to take regulatory action to prohibit their manufacture, processing, or distribution or otherwise to reduce their threats. TSCA § 6, 15 U.S.C. § 2605. State or local governments also could take action to strengthen rules and regulations, if they know that the toxicity of chemicals being used warrants more protective safeguards.

15. What mechanisms could be developed to make information that is reported to EPA publically disclosed and available?

In addition to a web-based system adopting the best features of TRI and improving on its shortcomings, it would be useful to develop an analog to EPA's Risk-Screening Environmental Indicators ("RSEI") tool. If EPA could pull geocoded data from FracFocus or encourage well-

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[43] Cal. EPA State Water Res. Control Bd., *Welcome to the California Beach Water Quality Information Page*, http://www.swrcb.ca.gov/water_issues/programs/beaches/beach_water_quality/ (updated June 10, 2013).
[44] J.M. Brown, *Santa Cruz Beach Has West Coast's Dirtiest Water*, Santa Cruz Sentinel, May 23, 2014, http://www.mercurynews.com/science/ci_25819910/santa-cruz-beach-has-west-coasts-dirtiest-water.
[45] *Id*.

specific reporting of HF Chemical usage by service providers and well operators, the RSEI might be modified to provide an integrative assessment of the potential health risk from exposure to HF Chemicals at well sites. Even short of such an assessment, EPA should incorporate into any tool it develops a peer-reviewed toxicity weighting system such as that employed in RSEI, to facilitate comparisons among different chemical substances and mixtures that are used for specific purposes during hydraulic fracturing. EPA also should provide clear categorizations, in plain English, of the types of health effects associated with HF Chemicals (*e.g.*, cancer, nerve disorders, endocrine disruption).

Facilitated expert access, through well documented application programming interfaces and downloadable rectangular database tables, is essential to empower informational intermediaries to perform their function. Such intermediaries, including academic researchers and non-governmental organizations, are essential for full use of the disclosure tool, because ordinary people often lack the expertise to make use of sophisticated data resources. The experts can process the information and produce accessible analysis, either on demand or in regular reports, for interested parties. Swift, reliable, and complete access by such intermediaries will be especially important if EPA does not provide easily understood and integrated analyses of HF Chemical toxicity directly to the public.

16. How could information reported and/or disclosed under any such mechanism be used to better inform research and development of chemical substances and mixtures used in hydraulic fracturing?

An integrated toxicity analysis of HF Chemicals, by function in the hydraulic fracturing process, will enable manufacturers and processors to identify the least toxic substance and mixtures available for particular purposes and to reformulate products to reduce toxicity. Disclosure of toxicity information also may serve as an incentive to develop HF Chemicals that will cause less harm to public health and the environment.

B. Who should report or disclose information on chemical substances and mixtures used in hydraulic fracturing?

EPA has asserted that "a variety of companies . . . could be subject to reporting under TSCA section 8(a)", including "chemical manufacturers, chemical suppliers who engage in processing, service providers mixing chemicals on site to create the hydraulic fracturing fluids, and service providers responsible for injecting the hydraulic fracturing fluid into the well to fracture the formation." ANPR, 79 Fed. Reg. at 28667. EPA has requested comment on whether all of those companies should be required to file reports under section 8(a) or a subset of those companies should be subject to mandatory reporting, while others are encouraged merely to report voluntarily.

1. If any companies are required to report, should different types of companies be required to report different data elements? Please explain.

All companies subject to the requirements of TSCA should be required to report the full complement of information listed in section 8(a)(2). Full reporting will allow EPA and the public to cross-check submissions against each other to evaluate the quality, consistency, timeliness, and completeness of information from different categories of companies and from different companies within the same categories. Once several rounds of reports have been submitted by all covered companies, and EPA is assured of the quality of the information it has received, the agency will be in a position to decide whether and how to amend the regulations to eliminate unnecessary duplication.

2. Should manufacturers (including importers), processors, or both be required to report under TSCA section 8(a)? Why or why not?

See Response to Question B(1). It will not be possible for EPA reliably to determine whether manufacturers and processors genuinely have access to different categories of information about HF Chemicals, until several rounds of reports have been submitted by all of the companies subject to regulation under TSCA. Requiring reporting by both manufacturers and processors also will reveal which companies are seeking to conceal from the public information about HF Chemicals and what information they are seeking to hide. Moreover, when two parties are required to report the same information, the completeness and accuracy of the information can be compared, and the reports therefore serve a quality assurance function.

3. Are there additional NAICS codes in addition to 2111 (oil and gas extraction) and 2131 (support activities for mining) that would need to be included in order to cover chemical manufacturers (including importers) and processors in a potential reporting and/or disclosure program?

Any segment of the oil and gas industry that manufactures or processes HF Chemicals should be covered by this rulemaking. Toward that end, EPA should include the following NAICS codes: 211111 (Crude Petroleum and Natural Gas Extraction), 211112 (Natural Gas Liquid Extraction), 213111 (Drilling Oil and Gas Wells), 213112 (Support Activities for Oil and Gas Operations).[46]

[46] *See* NAICS Ass'n, *NAICS Identification Tools*, http://www.naics.com/search.

4. **In what ways do the responsibilities of manufacturers and processors (Ref. 6) overlap? What activities associated with hydraulic fracturing are carried out by the well operator at the well site? EPA understands that service providers or well operators often process chemicals at the drilling site.**

It is not clear to what "responsibilities" EPA is referring in this question. If EPA is referring to responsibilities that may arise under rules promulgated under sections 8(a) and 8(d) of TSCA, it would not seem possible to determine in the abstract the extent to which the responsibilities of manufacturers and processors would overlap. Processors of HF Chemicals will prepare mixtures of chemicals obtained from manufacturers of HF Chemicals. In some cases, the processor also may manufacture component chemicals. The extent of overlap of responsibilities thus appears to depend on how often processors manufacture the chemicals they incorporate into mixtures, as opposed to purchasing them from independent manufacturers.

We understand that hydraulic fracturing fluids—the specific combination of water, HF Chemicals, and proppant used to stimulate a particular oil or gas well—typically are mixed at the well site. Some of the HF Chemicals used at the site may come in the form of multi-component additives that are processed at off-site facilities and then delivered to the well site for use in stimulation. In any event, the service provider or well operator will be responsible for obtaining the necessary HF Chemicals, storing them at the well site prior to use, mixing them with water and proppant for underground injection, cleaning up any spills or other releases, removing any unused products, and managing the wastes produced after hydraulic fracturing. Some service providers, including Halliburton, Schlumberger, and Baker-Hughes, also are manufacturers or processors of additives they use and market for hydraulic fracturing and therefore should be subject to any rules that EPA promulgates pursuant to sections 8(a) and 8(d) of TSCA.

5. **Would manufacturers (including importers), service providers, well operators, or all three, know how a chemical substance or mixture is used at well sites? If all types of firms have this information, which type, if any, should be required to report? If neither well operators, nor service providers, nor manufacturers (including anyone who imports chemicals or otherwise undertakes activities that meet the definition of "manufacture" at 40 CFR 704.3) know how a chemical is used at well sites, who would know and how might that information be obtained?**

All manufacturers either know directly or easily can learn whether their products are being used for hydraulic fracturing and what function the product performs. The companies actually conducting hydraulic fracturing at the well site—typically service companies—certainly know which additives are used for each well and for what specific purpose. Companies that manufacture the additives they use to fracture wells clearly possess the information raised in this question.

HF Chemical manufacturers and processors that are not also service companies or well operators market their products for use in hydraulic fracturing, sell them to oil and gas companies engaged in hydraulic fracturing, and cannot claim ignorance of how their products are used. Several states now require well-by-well reporting of all HF Chemicals, either directly to state regulatory authorities or through FracFocus. Although FracFocus suffers from many deficiencies as a disclosure mechanism, it contains enough information to enable chemical manufacturers and processors to determine whether—and to some extent, by which companies, when, and where—the substances and mixtures they produce are being used for well stimulation. Moreover, the manufacturers and processors could collect all of that information from their customers as a condition of sale.

For those reasons, all HF Chemical manufacturers and processors should be required to file the reportable information. Some manufacturers and processors (*e.g.*, Baker Hughes) claim to be disclosing the full contents of their products to the public already.[47] Mandatory reporting and disclosure through EPA should be a minimal burden for such companies. Moreover, if those companies can reveal the complete ingredients of their hydraulic fracturing additives, and other TSCA-reportable information, it is difficult to understand why other HF Chemical manufacturers and processors cannot do so as well. Those who wish to keep information secret should be required to provide full factual substantiation of any claims that information is legitimate CBI, regardless of the cost.

Service companies that do not manufacture or process the additives they use for hydraulic fracturing may not possess the information for which reports would be required under TSCA, because additive manufacturers and processors often claim that the information is CBI. Such claims frequently appear on the MSDSs provided to service companies, and the TSCA Petition was designed principally to address this problem. It therefore is essential that EPA promulgate rules that apply to all manufacturers and processors of HF Chemicals. Even if EPA is unable to disclose to the public information that genuinely qualifies as CBI under TSCA, at least the agency will have the information and be able to use it in an assessment of health and environmental risks posed by the chemicals in question.

6. If voluntary mechanisms are used for obtaining information, what mechanisms (e.g., incentive programs) should EPA consider in order to encourage consistent reporting and/or disclosure from different types of companies? Would some mechanisms be more effective for one type of company than another?

EPA should not use voluntary mechanisms for obtaining information that Congress has authorized the agency to collect on a mandatory basis. The undersigned organizations are not aware of any voluntary reporting regime that has been adopted widely by every company in an industry. We therefore doubt that any incentives will be adequate to encourage complete and

[47] *See, e.g.*, Baker Hughes, *Hydraulic Fracturing Chemical Disclosure Policy*, http://public.bakerhughes.com/shalegas/disclosure.html (last visited Sept. 12, 2014).

accurate reporting. Information about HF chemicals is particularly critical because these chemicals are used close to homes and drinking water sources, and should therefore be subject to mandatory reporting. The signatories do not have the information necessary to determine, if there are effective mechanisms, whether some would be more effective for one type of company than another.

If EPA chooses to use any voluntary information collection mechanisms, all entities that choose to participate should be required to certify under penalty of perjury that, to the best of their ability, they have provided complete and accurate information in every reportable category. If an entity wants the public relations benefit of perceived transparency, it must ensure that reality matches the perception. No participant should be permitted to pick and choose what it will disclose. Information about participation should be readily available on EPA's website and publicized widely, so the public can ascertain whether an entity is hiding information about its products and exert pressure on nonparticipants to be more forthcoming.

7. Should there be different incentives for different types of companies (e.g., manufacturers vs. processors)?

We oppose the use of voluntary mechanisms for reporting of information that may be required under TSCA and express no opinion in response to this question.

8. What information collection tools and resources are available to support and promote safe and sustainable practices? Please explain.

See Response to Question A(13).

C. Scope of Reporting or Disclosure of Information on Chemical Substances and Mixtures Used in Hydraulic Fracturing

EPA describes items 1-8 below as "[i]nformation that could be required from manufacturers (including importers) and processors under a potential reporting program," but no questions are asked in those items. ANPR, 79 Fed. Reg. at 28667. The undersigned organizations agree that all of this information would be extremely useful in implementing TSCA with respect to HF Chemicals. Our responses to EPA's questions begin with item 9.

1. Basic company information (i.e., company name, mailing address, Web site, and technical contact information).

2. Steps involved in processing chemicals or mixtures on site before injection. Typical composition and performance standard of hydraulic fracturing fluid as an end use product, before injection.

3. Steps involved in processing chemicals or mixtures for reuse, recycling, and/or reprocessing in the hydraulic fracturing operation.

4. **Hydraulic fracturing fluid composition:**

    i. **Common name or trade name of each chemical product in the hydraulic fracturing fluid and a description of each product's function.**

    ii. **Chemical identity (chemical name and Chemical Abstracts Service Registry Number) of each chemical substance in each product.**

    iii. **Total volume of the carrier fluid and percentage of the carrier fluid that makes up the total hydraulic fracturing fluid (e.g., water volume and percentage of water in the hydraulic fracturing fluid).**

    iv. **Actual amount of each chemical substance or product in the hydraulic fracturing fluid in order to understand the loading (e.g., mass or volume).**

5. **Production type (i.e., gas and/or oil).**

6. **Frequency of use of the chemical substance or mixture for hydraulic fracturing (e.g., number of times or per fracture stage or number of wells).**

7. **Number of workers exposed or likely to be exposed to the chemical substance or mixture.**

8. **All existing data concerning the human and environmental health effects of the chemical substance or mixture.**

9. **Some chemical substances and mixtures used in hydraulic fracturing may react to create other chemical substances and mixtures as products within an on-site mixing apparatus or in the well that is being fractured. EPA is requesting comments on which reporting elements should be included:**

    i. **If EPA were to require reporting, how should EPA address chemical substances and mixtures which are formed on site? Why?**

To identify chemical substances and mixtures that are formed as a result of reactions among HF Chemicals mixed at the surface, sampling and characterization of the fracturing fluid would be required prior to injection. To the best of our knowledge, no one is conducting that sampling. If mixing occurs in the well, sampling and characterization would be required of flowback after

the post-fracturing waste emerges at the surface. Currently, to the best of our knowledge, flowback is rarely sampled. In the absence of sampling, information on "byproducts resulting from the . . . use" of HF Chemicals may not be "reasonably ascertainable" by manufacturers or processors. TSCA § 8(a)(2). In our view, EPA should not require reporting of byproducts created by on-site mixing.

ii. Is there other information obtainable under TSCA section 8(a) that should be included in a proposed TSCA section 8(a) rule?

EPA should focus in the first instance on obtaining all of the information specifically listed in TSCA section 8(a)(2).

iii. What are the chemical safety benefits (e.g., potential reduction of risk to human health and environment) of obtaining this information? Explain.

N/A

iv. Should EPA consider including reporting on any combination of water and/or chemicals introduced or intended to be introduced into an oil or gas well for the purpose of maintaining or improving the function and productivity of the well, including recovery methods, (e.g., acid treatments, corrosion inhibitors, scale reducers, biocides)? Why or why not? EPA is interested in information regarding the frequency, duration, concentration, and volume of use of such chemicals or chemical mixtures to enhance the Agency's understanding of well maintenance practices, in order to evaluate the need for additional disclosure.

The undersigned organizations share EPA's interest in information regarding the frequency, duration, concentration, and volume of use of chemicals used in well stimulation, maintenance, and treatment (including acid treatments, corrosion inhibitors, scale reducers, and biocides) and agree that the information would enhance the Agency's understanding of well maintenance practices, the ability to protect health and the environment, and the public's knowledge of the risks present in their communities and near their drinking water sources. Therefore, EPA should require reporting with respect to all E&P Chemicals. To the extent that such information is not within the categories listed in section 8(a)(2), EPA could encourage voluntary reporting.

10. While EPA could require manufacturers and processors to report this information, the Agency could also encourage companies engaged in hydraulic fracturing to voluntarily disclose it. EPA is requesting comments on reporting elements which should be included:

i. Which elements (as discussed earlier in Unit IV.C.), if any, may benefit from being proposed as part of a TSCA section 8(a) rule? Which elements, if any, may benefit better from being reported and/or disclosed under a voluntary program?

All of the items above that also are listed specifically in TSCA (*e.g.*, common name and chemical identity) should be part of a mandatory reporting program. Only items that cannot be *required* under section 8(a)(2) of TSCA or other statutes administered by EPA should be the subject of voluntary reporting programs.

ii. Are there data elements (from those discussed earlier in Unit IV.C.) for which a hybridized reporting and/or disclosure system (e.g., some regulatory elements, some voluntary elements) would be more efficient or beneficial?

See Response to Question C(10)(i) above.

D. Use of Third-Parties

1. Should EPA consider implementing third-party certification (for certifying reporting, practices and other aspects) and/or third-party collection of information about hydraulic fracturing operations in addition to or in lieu of a mandatory reporting or voluntary disclosure program?

We do not support the use of third-party certification or information collection. EPA is best equipped to collect, maintain, and disseminate data about HF Chemicals. Third parties can be important sources of data analysis and integration, but they are not well placed to collect and maintain primary data on HF Chemicals.

Third parties are more prone than EPA to industry influence, which can facilitate loophole seeking in reporting rules and the erection of barriers to public access in disclosure tools. Such obstacles include providing data in aggregates or in formats that are not easily tabulated or compared (such as pdfs). Third-party data collection also is less likely to provide comparability across space, time, company, and function. Third parties also are less likely to adapt in citizen-friendly ways to new developments in information management, whereas EPA is subject to evolving federal government data standards that provide comprehensive, low-cost access to public information.

FracFocus is a good example of the deficiencies of a third-party disclosure system. The data is incomplete, is rife with CBI claims, can easily be changed by participating companies, and is not audited for quality. The disclosure system uses pdf files, making data compilation and tabulation prohibitively time-consuming and expensive.

There are some third-party information collection systems that function better than FracFocus. WERCS successfully acquires information about ingredients in a wide range of formulated products directly from the manufacturers. WERCS is able to obtain this data, however, because major retailers with global market power, such as Walmart, refuse to carry products of manufacturers that do not provide the information to WERCS. There would not appear to be an analog to Walmart in the oil and gas industry. Moreover, WERCS principally serves the corporate sector and, to some extent, government agencies, but it does not provide a mechanism for disclosure of information to the public.

Because we do not support third-party certification, we express no opinion on Questions 2-6 of this section.

E. Reporting Threshold and Frequency of Reporting or Disclosure

1. Are there thresholds that might be appropriate to limit reporting by small manufacturers or processors under either a regulatory or a voluntary program (e.g., the thresholds that define "small manufacturer" in 40 CFR 704.3 and 712.25)? Why? If available, how would the recommended reporting threshold affect cost to the reporting entity? How might different reporting thresholds affect the usefulness of the data provided?

Under section 8(a), a "small manufacturer or processor" is exempt from reporting requirements imposed on larger companies, unless the requirement is promulgated pursuant to other statutory provisions not relevant to this ANPR. The thresholds set for small manufacturers or processors of HF Chemicals should be no less stringent than the current regulatory thresholds.

2. Given possible changes in the composition of hydraulic fracturing fluids over time and changes in ownership of a well, how often and when should an entity report information to EPA or publicly disclose it?

TSCA does not authorize mandatory reporting of "changes in the composition of hydraulic fracturing fluids over time," as opposed to changes in the composition of HF Chemicals. To the extent that EPA encourages voluntary well-specific reporting and disclosure of the composition of hydraulic fracturing fluids, the reporting should occur no more than 30 days before fracturing and reporting and disclosure of actual fluid components should occur no more than 30 days after fracturing.

3. What would be the effect of changes in the frequency of reporting and/or disclosure on the overall cost of reporting or disclosure? What would be the effect of changes in level of aggregation or other aspects of reporting and/or disclosure?

HF Chemical manufacturers and processors should be able to absorb the cost of reporting at intervals already applicable to chemical manufacturers and processors that are required to file reports under section 8(a) of TSCA with respect to other substances and mixtures. The failure to report information at reasonable intervals allows manufacturers and processors of HF Chemicals to externalize costs of their toxic products. This rulemaking should help to ensure that HF Chemical companies absorb the health, safety, and environmental costs of distributing their products in commerce.

F. Data Collection Efficiency

1. EPA requests comment on how best to minimize duplicative reporting and/or disclosure requirements, particularly for companies that may also report to the BLM, state agencies, and to other parties. For example, should EPA limit its data collection to items not collected by other parties? How much overlap is acceptable?

The best way to eliminate duplication is to require all HF Chemical manufacturers and processors to report to EPA all of the information that may be required under TSCA and to allow them to avoid reporting the same information through other systems. Using high quality identifiers, including identifiers harmonized across federal agencies, can reduce the need for redundancy in data collection. Those identifiers also will facilitate linking to both private and state data sources. EPA should not defer, however, to those voluntary systems or to mandatory systems that are not national in scope. EPA is best placed to administer and to audit a comprehensive system that collects data from a diversity of sources throughout the country and discloses it to the public in a user-friendly tool.

Unless manufacturers and processors of HF Chemicals also are fracturing wells, they are unlikely to be reporting or disclosing that information to any federal or state agency at this time. Manufacturers and processors that *are* fracturing wells, and are disclosing it voluntarily or pursuant to state requirements, will not incur an unmanageable expense by reporting it to EPA. EPA also could eliminate duplication by working with state agencies that obtain *complete* information about HF Chemicals (including information claimed to be confidential) and developing systems for automatic transfer of that information to EPA. Duplication should not be an excuse for depriving EPA and the public of a consistent, national system for collection of relevant data and for maximum disclosure of information and analysis to the public in a user-friendly format; nor should information collection under TSCA preclude states from enforcing more extensive reporting and disclosure requirements.

2. How can the Agency achieve the goal of efficient data collection while also maximizing transparency and public understanding?

EPA should have all information reported directly to it, process CBI claims in accordance with the recommendations in these comments, and develop a state-of-the-art web-based disclosure tool in accordance with the standards described in our Responses to Questions A(6) and A(15).

3. In order to encourage transparency and information sharing while minimizing duplication, what information collection repository or database should EPA use? Should EPA develop a repository or use an existing one such as FracFocus (Ref. 7) or http://www.data.gov? If an existing repository is recommended, indicate which repository and why. Are any changes or enhancements recommended to this existing repository?

EPA should create a database for this disclosure of this information or expand an existing EPA-administered database for that purpose. EPA should *not* utilize a third-party repository, including FracFocus, because the agency should have control of information that it will need to audit for quality, including timeliness, completeness, and accuracy.

FracFocus, in particular, is a poor vehicle for disclosure under TSCA. FracFocus does not offer a mechanism whereby EPA can scrutinize CBI claims upon submission and reject unsubstantiated claims, which is a crucial omission, because 84 percent of reporting wells claim at least one trade secret exemption.[48] Moreover, the "systems approach" recommended as a solution to the extensive assertion of CBI claims, whereby chemical substances would be disclosed independently of the names of additives or products in which they are mixed, does not adequately serve the purpose of TSCA. The aggregated list of substances would be helpful to people living near fractured wells, but it would deprive EPA of process or portion information that may be needed to conduct a health, environmental, and safety analysis of formulated mixtures. FracFocus also inhibits sharing and aggregation of data needed for the types of analyses that researchers and members of the public want. Most importantly, it does not and cannot guarantee completeness or accuracy, because it is principally a voluntary program and will not offer reliable audits of data that is submitted mandatorily under state law.

[48] *See FracFocus Report*, *supra* note 4, at 2, 11. TSCA's provisions for processing CBI claims are far from ideal, but EPA is bound by them in this rulemaking, unless and until Congress amends them.

4. EPA believes that any TSCA reporting requirements should complement existing reporting programs and data sources, such as state databases and Web sites like FracFocus in order to avoid duplication. How could this be achieved?

The presumption should be that the most comprehensive and reliable database of information about HF Chemicals should be administered by EPA. Deferring to existing systems ensures that the data available to both the agency and the public will be incomplete, unreliable, and dispersed among multiple and potentially incompatible systems—making it nearly impossible to generate an accurate overall picture of chemical use, toxicity, and exposures, as TSCA requires. Moreover, contrary to TSCA, none of the existing systems obtain information about the health, safety, and environmental effects of HF Chemicals other than those minimally reflected in MSDSs. EPA can reduce duplication without perpetuating those problems by serving as the principal repository for information that may be required under TSCA and by working with industry and state governments to consolidate other information into the EPA database.

G. Health and Safety Studies of Chemicals and Mixtures Used in Hydraulic Fracturing

1. Should all manufacturers (including importers), processors, and distributors provide lists or copies of health and safety studies or should reporting only be required of some types of companies? Why or why not?

All manufacturers (including importers), processors, and distributors should provide lists or copies of health and safety studies. The goal is to maximize information reported to EPA and disclosed to the public. Because one segment of the industry may have access to relevant information not available to another segment, reporting by all segments should be required. To avoid duplication, reporting entities should not have to list or to submit copies of health and safety studies that have been posted on EPA's website.

2. Are there existing mechanisms in place, including non-regulatory mechanisms, for EPA to obtain these studies? If not, what would be an effective regulatory approach and/or voluntary mechanism for EPA to obtain these studies?

There are no such systems in place. EPA should promulgate rules requiring submission of the studies, including those conducted internally by companies and those that have not been peer-reviewed.

3. Is there an approach that more effectively encourages further health and safety studies?

Section 4 of TSCA provides a mechanism for requiring testing of HF Chemicals for which there are inadequate data and experience upon which to base an assessment of health and environmental effects. EPA denied the TSCA Petition's request for a rulemaking under section 4, but the information disclosed pursuant to mandatory and effective rules under sections 8(a) and 8(d) could help EPA determine which HF Chemicals have been inadequately tested for their health and environmental impacts. Once that determination has been made, EPA should require testing of inadequately studied HF Chemicals under section 4.

4. Some chemical substances and mixtures used in hydraulic fracturing are more studied than others. Some are considered to be well-characterized in terms of hazard and exposure information. If EPA were to require reporting, should EPA limit reporting requirements to the chemical substances and mixtures that EPA believes are not well-characterized? Why?

EPA should require ongoing reporting of all HF Chemicals. What we know about chemicals is constantly evolving, and EPA should not assume that what it believes now is the unalterable truth. The vastly increased exposures to toxic chemicals created by the expansion of oil and gas development into populated areas may change the current risk characterizations of some chemical substances and mixtures.

EPA should use its existing capacities and tools to rapidly evaluate HF chemicals for their intrinsic toxicity and exposure potential. Through EPA's new chemicals program and new initiatives, such as ToxCast and Tox21, EPA has developed a number of tools that could be used to rapidly evaluate the toxicity and exposure potential to individual chemicals and mixtures. For more than 30 years, EPA has been using tools such as structure activity relationships to predict chemical toxicity of new chemicals entering through the Premanufacture Notification Program. These tools could flag concerns for HF ingredients that could then be further evaluated before use. The new high throughput tools of ToxCast, Tox21, and other new rapid screening programs, provide an opportunity to identify red flags (early indicators of potential harm) for individual ingredients and mixtures. These tools, along with other existing sources of *in vivo* toxicity and exposure data, should be used by the agency to flag potential chemicals or mixtures of concern that should be further reviewed before use.

5. If a TSCA section 8(d) rule were promulgated, should it require reporting of studies for all chemical substances and mixtures used in hydraulic fracturing or only a subset? Why? If only certain chemicals should be included in the rule, which ones should EPA include?

As is discussed in section I(B) above, EPA should require reporting of studies for all E&P Chemicals. However, if EPA limits the scope of a rulemaking only to HF Chemicals, we

encourage EPA to collect studies as to all HF Chemicals. The public should have access to all of the studies available to HF Chemical manufacturers and processors and understand what studies have been withheld by industry to date.

6. Are there particular types of studies that should be required to be submitted or should all health and safety studies be required to be submitted? Why?

We encourage EPA to collect all types of studies that pertain to all HF Chemicals. The public should have access to all of the studies available to HF Chemical manufacturers and processors and understand what studies have been withheld by industry to date.

7. Are there studies that are of greater interest if they are conducted by a particular entity, e.g., service providers? For example, an assessment of environmental exposure may be viewed as more important because of the environment that is the focus of the study.

The public should have access to all of the studies available to HF Chemical manufacturers and processors and understand what studies have been withheld by industry to date.

8. Would it be more efficient (timely and cost effective) to submit health and safety studies to a third-party? Why or why not? If so, why and what type of third-party?

We do not support the use of a third-party for collection, but third-party information intermediaries should have ready access to the studies.

H. Safer Chemicals and Transparency

1. Are there other TSCA sections that could also further support the use and development of safer chemicals more effectively?

See Response to Question G(3) above. Required toxicity testing coupled with full disclosure of testing results is one of the best ways to encourage the development of safer HF Chemicals. EPA also could utilize section 5 of TSCA to obtain pre-manufacture reporting and section 6 of TSCA to prohibit or limit the use of the most hazardous chemicals. Doing so would provide incentives for the use and development of less risky additives.

2. What programs are appropriate to encourage the use of safer chemicals already on the market?

Strong rules under TSCA sections 8(a) and 8(d), combined with maximal disclosure of the health, safety, and environmental effects of HF Chemicals currently in use, will be the best first step to encourage the use of safer chemicals already on the market. EPA's Design for

Environment Program also might provide a model for support of the use of safer chemical ingredients for formulated products. By providing the criteria by which a safer ingredient is evaluated and requiring third-party verification, EPA has helped to inform and shape a marketplace for safer chemicals. This approach is not a substitute for regulations under TSCA that send a clear message of concern about HF Chemical risks and the need to adopt safer alternatives for specific functional uses of HF Chemicals, but it is an example of how a voluntary program can produce real benefits.

3. For this industry, are existing programs that encourage the development of safer chemicals appropriate? Could EPA change those programs to make them more effective in inducing well operators to use safer chemicals? How?

Existing programs plainly are not adequate to encourage the development of safer HF Chemicals. Extremely toxic substances and mixtures are still routinely used for hydraulic fracturing. The best inducement to use safer chemicals will be strict rules under TSCA sections 8(a) and 8(d), combined with maximal disclosure of the health, safety, and environmental effects of HF Chemicals currently in use.

EPA could expand its Design for Environment Safer Consumer Product Labeling approach, highly regarded by formulators, brands, and retailers, to encourage best-in-class alternatives for particular functional uses of ingredients in HF Chemicals. As a first step, EPA could analyze the function served by each component of HF Chemical mixtures, ascertain whether any specific function was unnecessary or subject to modification to reduce the use of chemicals presenting the greatest exposure risks, and develop criteria for safer chemicals serving any necessary functions. Based on those criteria, EPA could initiate a safer HF Chemical challenge program, whereby HF Chemical ingredients are third-party reviewed based on toxicity criteria and only those that meet the standard for a safer alternative are considered for listing on an EPA website, such as the Safer Chemical Ingredient List. This approach would allow formulators and mixers to understand which HF Chemical ingredients are safest for their functional use, which ingredients are potentially problematic, and which ingredients may not be necessary for performance. In cases where safer alternatives for particular functional uses do not exist, EPA could either initiate a green chemistry challenge, research grant through the Office of Research and Development (or use EPA resources to conduct research on alternatives).

III. Conclusion

We urge EPA to expedite review of the comments submitted on this ANPR and to propose actual rules under TSCA, as we suggest above, as soon as possible. We also ask EPA immediately to call in all records of significant adverse reactions to health or the environment alleged to have been caused by HF Chemicals, which the Administrator may do without promulgating any rules. *See* TSCA § 8(c), 15 U.S.C. § 2607(c).

Respectfully,

Deborah Goldberg

Deborah Goldberg
Managing Attorney

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Exhibit A

HALLIBURTON

MATERIAL SAFETY DATA SHEET

Product Trade Name: **EZ-MUD®**

Revision Date: 02-Dec-2013

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Trade Name: EZ-MUD®
Synonyms: None
Chemical Family: Blend
Application: Shale Inhibitor

Manufacturer/Supplier
Baroid Fluid Services
Product Service Line of Halliburton
P.O. Box 1675
Houston, TX 77251
Telephone: (281) 871-4000
Emergency Telephone: (281) 575-5000

Prepared By
Chemical Compliance
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

2. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	PERCENT (w/w)	ACGIH TLV-TWA	OSHA PEL-TWA
Hydrotreated light petroleum distillate	64742-47-8	10 - 30%	Not applicable	Not applicable

3. HAZARDS IDENTIFICATION

Hazard Overview
May cause eye, skin, and respiratory irritation. May cause headache, dizziness, and other central nervous system effects. May be harmful if swallowed.

4. FIRST AID MEASURES

Inhalation
If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult give oxygen. Get medical attention.

Skin
Wash with soap and water. Get medical attention if irritation persists. Remove contaminated shoes and discard.

Eyes
In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

Ingestion
Get medical attention! If vomiting occurs, keep head lower than hips to prevent aspiration.

Notes to Physician
Not Applicable

5. FIRE FIGHTING MEASURES

Flash Point/Range (F):	> 200
Flash Point/Range (C):	Not Determined
Flash Point Method:	PMCC
Autoignition Temperature (F):	> 392
Autoignition Temperature (C):	> 200
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined

Fire Extinguishing Media	Water fog, carbon dioxide, foam, dry chemical.
Special Exposure Hazards	Decomposition in fire may produce toxic gases. Use water spray to cool fire exposed surfaces.
Special Protective Equipment for Fire-Fighters	Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.
NFPA Ratings:	Health 2, Flammability 1, Reactivity 0
HMIS Ratings:	Health 2, Flammability 1, Physical Hazard 0 , PPE: B

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures	Use appropriate protective equipment.
Environmental Precautionary Measures	Prevent from entering sewers, waterways, or low areas.
Procedure for Cleaning / Absorption	Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

7. HANDLING AND STORAGE

Handling Precautions	Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Wash hands after use. Launder contaminated clothing before reuse.
Storage Information	Store away from oxidizers. Keep container closed when not in use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls	A well ventilated area to control dust levels. Local exhaust ventilation should be used in areas without good cross ventilation.
Personal Protective Equipment	If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.
Respiratory Protection	Organic vapor respirator with a dust/mist filter. (A2P2/P3) In high concentrations, supplied air respirator or a self-contained breathing apparatus.
Hand Protection	Impervious rubber gloves.

Skin Protection	Rubber apron.
Eye Protection	Chemical goggles; also wear a face shield if splashing hazard exists.
Other Precautions	Eyewash fountains and safety showers must be easily accessible.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Color:	White to gray
Odor:	Mild hydrocarbon
pH:	6-8
Specific Gravity @ 20 C (Water=1):	1.0
Density @ 20 C (lbs./gallon):	8.3
Bulk Density @ 20 C (lbs/ft3):	Not Determined
Boiling Point/Range (F):	347
Boiling Point/Range (C):	175
Freezing Point/Range (F):	Not Determined
Freezing Point/Range (C):	Not Determined
Vapor Pressure @ 20 C (mmHg):	0.002
Vapor Density (Air=1):	Not Determined
Percent Volatiles:	70
Evaporation Rate (Butyl Acetate=1):	< 1
Solubility in Water (g/100ml):	Partially soluble
Solubility in Solvents (g/100ml):	Not Determined
VOCs (lbs./gallon):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	Not Determined
Viscosity, Kinematic @ 20 C (centistokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined
Molecular Weight (g/mole):	Not Determined

10. STABILITY AND REACTIVITY

Stability Data:	Stable
Hazardous Polymerization:	Will Not Occur
Conditions to Avoid	Keep away from heat, sparks and flame.
Incompatibility (Materials to Avoid)	Strong oxidizers.
Hazardous Decomposition Products	Ammonia. Oxides of nitrogen. Carbon monoxide and carbon dioxide.
Additional Guidelines	Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure	Eye or skin contact, inhalation.

Sympotoms related to exposure

Acute Toxicity

Inhalation	May cause mild respiratory irritation.
Eye Contact	May cause mild eye irritation.
Skin Contact	May cause mild skin irritation.

Ingestion Aspiration into the lungs may cause chemical pneumonitis including coughing, difficulty breathing, wheezing, coughing up blood and pneumonia, which can be fatal. May cause central nervous system depression including headache, dizziness, drowsiness, muscular weakness, incoordination, slowed reaction time, fatigue blurred vision, slurred speech, giddiness, tremors and convulsions.

Chronic Effects/Carcinogenicity No data available to indicate product or components present at greater than 1% are chronic health hazards.

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Hydrotreated light petroleum distillate	64742-47-8	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	5.2 mg/L (Rat) 4 h

12. ECOLOGICAL INFORMATION

Ecotoxicological Information

Ecotoxicity Product

Acute Fish Toxicity: TLM96: >1000 mg/l (Pimephales promelas)
Acute Crustaceans Toxicity: TLM48: 98 mg/l (Acartia tonsa)
Acute Algae Toxicity: EC50: 16.70 mg/l (Skeletonema costatum)

Ecotoxicity **Substance**

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
Hydrotreated light petroleum distillate	64742-47-8	EC50(72h): > 10,000 mg/L (Skeletonema costatum) (ISO 10253)	LC50 96h): > 10,000 mg/L (Scophthalmus maximus) (OSPARCOM 1995)	No information available	LC50(48h): > 10,000 mg/L (Acartia tonsa) (ISO 14669)

12.2 Persistence and degradability
No information available

12.3 Bioaccumulative potential

Substances	Log Pow
Hydrotreated light petroleum distillate	7.5

12.4 Mobility in soil
No information available

12.5 Results of PBT and vPvB assessment
No information available.

12.6 Other adverse effects

13. DISPOSAL CONSIDERATIONS

Disposal Method Disposal should be made in accordance with federal, state, and local regulations.

Contaminated Packaging Follow all applicable national or local regulations.

14. TRANSPORT INFORMATION

Land Transportation

DOT
Not restricted

Canadian TDG
Not restricted

ADR
Not restricted

Air Transportation

ICAO/IATA
Not restricted

Sea Transportation

IMDG
Not restricted

Other Transportation Information

Labels: None

15. REGULATORY INFORMATION

US Regulations

US TSCA Inventory	All components listed on inventory or are exempt.
EPA SARA Title III Extremely Hazardous Substances	Not applicable
EPA SARA (311,312) Hazard Class	Acute Health Hazard
EPA SARA (313) Chemicals	This product does not contain a toxic chemical for routine annual "Toxic Chemical Release Reporting" under Section 313 (40 CFR 372).
EPA CERCLA/Superfund Reportable Spill Quantity	Not applicable.
EPA RCRA Hazardous Waste Classification	If product becomes a waste, it does NOT meet the criteria of a hazardous waste as defined by the US EPA.
California Proposition 65	All components listed do not apply to the California Proposition 65 Regulation.
MA Right-to-Know Law	Does not apply.
NJ Right-to-Know Law	Does not apply.
PA Right-to-Know Law	Does not apply.

Canadian Regulations

Canadian DSL Inventory	All components listed on inventory or are exempt.
WHMIS Hazard Class	D2B Toxic Materials

16. OTHER INFORMATION

The following sections have been revised since the last issue of this SDS
Not applicable

Additional Information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

*****END OF MSDS*****