

Testimony on HB 64 – OPERATING BUDGET

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SENATE FINANCE SUBCOMMITTEE ON CORRECTIONS

MAY 21, 2015

Senator Uecker, members of the subcommittee, thank you for the opportunity to speak as an interested party to sections 1509 and 3750 of the budget bill, sections that would transfer chemical disclosure responsibilities under EPCRA from the SERC-Ohio (Ohio's State Emergency Response Commission) to ODNR (Ohio Department of Natural Resources) for the special case of materials used by the oil and gas industry in Ohio.

The proposed legislation should be withdrawn and abandoned. Wedging chemical disclosure regulations into a budget bill is an inadequate response to the accidents that have occurred in Ohio, the Statoil well pad fire in Monroe County in June 2014 an important example. The proposed legislation would move independent chemical disclosure functions related to EPCRA from SERC-Ohio to ODNR, an agency with already divided interests. Much like the old Atomic Energy Commission's role in nuclear power, ODNR both regulates and promotes oil and gas development in Ohio and is not the appropriate agency for emergency management.

I have developed a particular interest in chemical disclosure of well completion materials as I have followed shale gas and oil development in Ohio since my retirement from Denison University as a chemistry professor in December 2007. I wish to draw your attention to three categories of chemical disclosure: (1) materials used in well completion, (2) materials stored on a well pad and therefore of interest to first responders, and (3) materials anticipated for use in well completion and therefore of interest to nearby property owners concerned about a new well affecting their water quality.

Well drilling and completion are a complex mixture of technology and art, a conclusion confirmed by information in ODNR's oil and gas databases and the picture below of an active well pad in Noble County. An effective chemical disclosure record of a few pages is much easier to create than the drilling and water testing records that are submitted to ODNR for each well. More than 1,000 pages of information were generated by water testing related to the development of the Statoil wells on the Eisenbarth well pad that caught fire. Although chemical disclosure is constrained by the drillers' need to protect their "art," patterns of timely and reliable chemical disclosure can be established even as discussions over trade secret boundaries continue.



Noble County well pad near latitude 39.90714, longitude -81.324923. Google Earth, accessed May 19, 2015.

Category 1. Chemical disclosure of materials used in well completion.

Drillers in several states are required to use FracFocus, a web-based registry that now contains records for almost 100,000 wells and is managed by representatives of the oil and gas industry. Ohio drillers have the option of reporting in FracFocus or in the ODNR database. Well records in FracFocus are easily confirmed and accessed. The ODNR database cannot be searched to determine the presence of chemical disclosure records. A portion of the first page of the FracFocus record of one of the wells on the Statoil well pad that had a fire in June 2014, Eisenbarth 5H, is presented in Appendix A. Appendix B contains an example of the filing alternative, ODNR's Form 8B. The example is the first page of the record of a Hilcorp well in Mahoning County, a well potentially associated with earthquakes. The presence of this record could only be discovered by "manually" opening the well report for each Hilcorp well to determine if the Form 8B pdf file was attached. In this case its absence was corrected several months after well completion when I found an ODNR representative who would send the record to me. I have concluded that ODNR is not effectively monitoring chemical disclosure records from Ohio drillers either on the ODNR database or on FracFocus.

The release of FracFocus disclosure data to the public in machine-readable (SQL) format has just been announced. Is it fair to expect ODNR to make a similar announcement and if so when will it happen? The easier option would be

to require FracFocus as the single registry for chemical disclosure of well completion materials by Ohio drillers. The logic for the absence of this requirement is not apparent.

Analysis of FracFocus chemical disclosure information for three wells on the Statoil well pad that had the fire is presented in Appendix C. Until the release of the latest version of FracFocus managers of the registry actively sought to discourage aggregation and analysis. Generating similar information from three of ODNR's Form 8B's would be extraordinarily time-consuming, effectively requiring manual entry of the Form 8B information.

There remain important limitations to FracFocus as a chemical disclosure registry but the limitations of the ODNR database are even more fundamental. ODNR should not manage chemical disclosure information for emergency responders.

Category 2. Chemical disclosure of materials stored on a well pad and therefore of particular interest to emergency responders. First responders should approach a well pad having specific information about the identity of the materials they are going to encounter and at least a qualitative understanding of the amounts of these materials. MSDS information arrives at the well pad as materials are delivered. Communication and data handling resources should not be a barrier to similar real time information being available to local fire departments, Local Emergency Planning Committees and SERC-Ohio.

SERC-Ohio published its first information specific to the oil and gas industry reporting of hazardous materials in January, 2015 (<http://www.epa.ohio.gov/dapc/serc/invforms.aspx>). There has been little accommodation to the special circumstances of well pads. The reporting requirements do not recognize the special circumstances of a well pad:

"1) Within 90 days of acquiring any hazardous chemical (crude oil), submit a list of these chemical(s) to the SERC, Local Emergency Planning Committee (LEPC), and jurisdictional fire.

2) Within 60 days of acquiring the threshold planning quantity (TPQ) of an EHS (extremely hazardous substance), notify the SERC, LEPC, and fire department of the name of the EHS and the name of the facility emergency coordinator.

3) Annually submit a Tier 2 Emergency and Hazardous Chemical Inventory Report by March 1."

Well completions in less than three weeks are not unusual. Reporting time limits of 60-90 days (8 to 12 weeks) could miss most of the material transfer and storage on a well pad. Materials arriving at a well pad are likely to have been pumped down the well and contributing to flowback water within 60 days. Annual reporting has no meaning. The specific material movements unique to an oil and gas well pad must be acknowledged if emergency responders are really going to be protected. Pennsylvania has made a start by requiring a report within 5 business days of the material's delivery to the well pad.

Category 3. Chemical disclosure of materials whose use is anticipated at a well pad. Operators test water near the drilling site because regulatory requirements call for baseline parameters for water in the area. Although these tests are extensive and reported on the ODNR database, many of the materials used in well completion are not represented in these tests. Neighbors beyond the 5000 foot regulatory boundary, potentially affected by a new well, should be informed of the materials, both inorganic and organic, to be used in drilling and well completion. This information would guide landowners in their water testing decisions as they establish baseline information for their water. Legislation is required to establish such regulations.

Conclusion. Timely, accessible and accurate chemical disclosure should be a goal of all stakeholders as development of Ohio's shale resources continues. For the next few years FracFocus, for all its limitations, will be the *de facto* standard by which other chemical disclosure regimes will be evaluated. The ODNR database is clearly inferior for use in chemical disclosure. Ohio drillers should be required to report well completion materials to FracFocus. There is no evidence that ODNR is capable of either handling the information management standards of FracFocus or meeting the requirements of first responders. SERC-Ohio should remain responsible for meeting the information needs of first responders and for assuring that a community's right to know is honored. The proposed legislation would render Ohio unique among the states by eliminating important EPCRA inspired communication and education patterns and burden ODNR with the development of expertise in emergency management.

Addendum. Development of energy resources from shale has created a complex set of issues. "The Real Cost of Fracking, How America's Shale Boom is threatening our Families, Pets, and Food" written by Michelle Bamberger and Robert Oswald [Beacon Press, Boston, 2014] offers case studies from Pennsylvania that describe how current best practices and regulatory regimes have failed to protect the public. The book represents the remarkable commitment of two informed citizens, commitment which would not have been required if the industry and regulators were more effectively responding to the challenges of shale development. Are committed citizens going to have to write the first complete analysis of the Statoil fire? I urge members of the subcommittee to read the book and then decide whether their decisions are protecting the people of Ohio whom they represent.

Respectfully submitted,

Thomas A. Evans, Ph.D.

Appendix A. FracFocus record (page 1 of 3) Eisenbarth 5H, Monroe County, OH

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	6/22/2014
Job End Date:	6/28/2014
State:	Ohio
County:	Monroe
API Number:	34-111-24288-00-00
Operator Name:	Statoil USA Onshore Properties Inc.
Well Name and Number:	Eisenbarth 5H
Longitude:	-80.89902100
Latitude:	39.69764400
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	6,405
Total Base Water Volume (gal):	2,497,577
Total Base Non Water Volume:	0



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Fresh Water	Operator	Base Fluid					
			Fresh Water	7732-18-5	100.00000	85.90127	Density = 8.330
Proppant 30/50	Halliburton	Proppant					
			Crystalline silica, quartz	14808-60-7	100.00000	8.49713	
Proppant - 20/40	Halliburton	Proppant					
			Crystalline silica, quartz	14808-60-7	100.00000	3.00340	
Proppant - 100M	Halliburton	Proppant					
			Crystalline silica, quartz	14808-60-7	100.00000	1.17294	

Appendix B. Ohio well completion report, Form 8B (page 1 of 3).

Well Stimulation Additives Report (Form 8B)

Ohio Department of Natural Resources Division of Oil and Gas Resources Management 2045 Morse Road, Bldg F-2, Columbus, OH 43229-6693	Telephone: (614) 265-6922 Fax: (614) 265-6910
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County:	Mahoning
API Number:	34-099-23200-0000
Operator Name:	Hilcorp Energy Company
Well Name and Number:	PCLL2 - 3H
Total Water Volume (gal)*:	10627512
Total Volume of Recycled Fluid (gal):	0
Source of Recycled Fluid:	

Fluid Composition:

Trade Name	Supplier or Source	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by Mass)**	Total Volume (gallons/pounds)	Maximum Ingredient Concentration in HF Fluid (% by Mass)**	Comments
Water Volume (Clean)	Hilcorp	Carrier Fluid	Water	7732-18-5	100.00	10627512 gal	87.663429	
Sand (Natural)	Universal Well Services, Inc.	Proppant	Silica	14808-60-7	99.90	12409100 lbs	12.086993	
HCL (7.5%)	Universal Well Services, Inc.	Formation Damage Removal	Hydrochloric Acid	7647-01-0	7.50	172973 gal	0.109286	
Unihib-G	Universal Well Services, Inc.	Corrosion Inhibitor	Short chained glycol ether	112-34-5	60.0000	172.9 gal	0.000783	
			Ethoxylated alcohol	68002-97-1	35.0000		0.000457	
			Methanol	67-56-1	5.00000		0.000065	
			Acetophenone	98-86-2	1.0000		0.000013	
			Formaldehyde	50-00-0	1.0000		0.000013	
			Thiourea	62-56-6	1.0000		0.000013	
EC6116A	Universal Well	Biocide	Dibromoacetonitrile	3252-43-5	5.0000	2605 gal	0.001321	

Appendix C-1. Quantitative information about Eisenbarth wells 5H, 6H, and 7H from their FracFocus files and the Statoil 30-day report.

**Quantitative Analysis of Statoil FracFocus Records
Ohio Wells Eisenbarth 5H, 6H, and 7H**

Excel 2008

Job End Date:	6/28/2014	Job End Date:	6/27/2014
State:	Ohio	State:	Ohio
County:	Monroe	County:	Monroe
API Number:	34-111-24288-00-00	API Number:	34-111-24419-00-00
Operator Name:	Statoil USA Onshore Pr	Operator Name:	Statoil USA Onshore Properties Inc.
Well Name and Number:	Eisenbarth 5H	Well Name and Number:	Eisenbarth 6H
Longitude:	-80.89902100	Longitude:	-80.89898600
Latitude:	39.69764400	Latitude:	39.69766200
Datum:	NAD27	Datum:	NAD27
Federal/Tribal Well:	NO	Federal/Tribal Well:	NO
True Vertical Depth:	6,405	True Vertical Depth:	6,408
Total Base Water Volume (gal):	2,497,577	Total Base Water Volume (gal):	2,124,196

**Well Pad Totals
MSDS Materials
(lb)**

59,442,105	Fresh Water	
5,596,088	Crystalline silica, quartz*	total sand (lb) 8,403,245
2,035,852	Crystalline silica, quartz*	
771,306	Crystalline silica, quartz*	
78,694	Guar gum*	
74,303	Hydrochloric acid*	
20,360	Isopropanol*	
13,184	Hydrotreated light petroleum distillate*	
11,588	Tributyl tetradecyl phosphonium chloride*	
10,597	Terpenes and Terpenoids, sweet orange-oil*	
383	Methanol**	
177	Sodium persulfate**	
173	Propargyl alcohol**	

* Indicates the material is listed in the Statoil 30 day report.

** Indicates material is not listed in the Statoil 30 day report.

Appendix C-2.

Job End Date: 6/27/2014
 State: Ohio
 County: Monroe
 API Number: 34-111-24419-00-00
 Operator Name: Statoil USA Onshore Properties Inc.
 Well Name and Number: **Eisenbarth 7H**
 Longitude: -80.89897400
 Latitude: 39.69768000
 Datum: NAD27
 Federal/Tribal Well: NO
 True Vertical Depth: 6,414
 Total Base Water Volume (gal): 2,514,134

**Well Pad Totals
non-MSDS Materials**
(lb)**

559,607	Aluminum silicate	Total Mass (lb) Non-MSDS Mat'ls 653,862 excluding water
530,928	Water	
21,037	Alcohols, C12-16, ethoxylated	
20,360	Ethoxylated fatty acid°	
11,952	Fatty acid tall oil amide	
9,869	Ethoxylated fatty acid°	
8,599	Polyacrylamide copolymer°	
4,713	Reaction product of acetophenone, formaldehyde, thiourea and oleic acid in dimethyl formamide	
3,937	Bentonite, benzyl(hydrogenated tallow alkyl) dimethylammonium stearate complex	
3,560	Terpenes and Terpenoids°	
2,197	Ammonium chloride	
1,713	Sodium chloride	
1,520	Alcohols, C12-16, ethoxylated	
890	Fatty acids, tall oil*	
789	Surfactant mixture°	
764	Sodium sulfate	
662	Surfactant mixture°	
576	Silica gel	
440	Sorbitan, mono-9- octadecenoate, (Z)	
286	Sorbitan monooleate polyoxyethylene derivative	
193	Alcohols, C14-C15, ethoxylated	
90	Olefins	
52	Crystalline Silica, Quartz	
34	Olefins	
16	Olefins	
7	Olefins	

** None of these materials are listed in the Statoil 30-day report



A 5,300 gallon tank for catching rainwater
Corpus Christi, TX

Two of these tanks would be required to hold the fatty acid tall oil amide used.

Appendix C-3.

**Itemized list of well pad materials provided in the Statoil 30 day report
Only well completion materials are listed here. Statoil reported only MSDS materials.**

			Pre Incident	Post Incident		
			Estimated	Estimated		
	Chemical	CAS No.	Chemical Constituents on MSDS	Volume	Volume	Units
Halliburton	HCl (28%) Residual	7647-01-0	hydrochloric acid	250	0	gal
GasProm 1000	Surfactant (GasPerm 1000)	94266-47-4, 68647-72-3, 67-63-0, 2 proprietary	Citrus extract, Terpenes and Terpenoids, sweet orange-oil, Isopropanol, Polyoxyalkylenes	7040	0	gal
LCA-1 not in FracFocus	Solvent (LCA-1)	Not available	Paraffinic solvent	330	0	gal
LGC-36-UC	Gel (LGC-36 UC)	64742-47-8, 9000-30-0	Hydrotreated light petroleum distillate, Guar gum	1980	0	gal
BC-140 not in FracFocus	Crosslinker (BC-140)	26038-87-9, 107-21-1	Monoethanolamine borate, ethylene glycol	1770	660	gal
BE-9	Biocide (BE-9)	81741-28-8	Tributyl tetradecyl phosphonium chloride (TTPC)	3360	0	gal
WG-36	Gelling Agent (WG-36)	Mixture	Polysaccharides	38000	6000	lbs
FR-66	Friction Reducer (FR-66)	64742-47-8	Hydrotreated light petroleum distillate	4700	3650	gal
	Sand (SSA-2)	14808-60-7	Crystalline silica, quartz	5000	5000	sks

Note 1. FracFocus record is in pounds. These materials are reported as volumes except for WG-36.

Mixtures are not characterized quantitatively.

Note 2. No non-MSDS materials are reported.