A Colossal Fracking Mess

The dirty truth behind the new natural gas. Related: A V.F. video look at a town transformed by fracking.

By Christopher Bateman • Photographs by Jacques del Conte
WEB EXCLUSIVE June 21, 2010
Former Bush EPA Official Says Fracking Exemption Went Too Far; Congress Should Revisit

by Abraham Lustgarten
ProPublica, March 9, 2011, 1:21 p.m.

When Benjamin Grumbles was assistant administrator for water at the Environmental Protection Agency in the George W. Bush administration, he oversaw the release of a 2004 EPA report that determined that hydraulic fracturing was safe for drinking water. Then he watched as Congress used those findings to bolster the case for passing a law that prohibited the EPA from regulating fracking under the Safe Drinking Water Act.

In two interviews with ProPublica -- the first on June 29, 2009, soon after he left the EPA, and the second on March 5, 2011 -- Grumbles pondered the criticism leveled at the 2004 study and suggests that it's now time for Congress and the EPA to take another look at hydraulic fracturing. Our questions, and his answers, have been combined and edited for length to the version you see here. Grumbles is currently on the board of the Clean Water America Alliance, a group focusing on water sustainability issues. He has also served as head of Arizona's Department of Environmental Quality.
WHY IS HYRAULIC FRACKING NOW A PROBLEM?

- Exploration in new geographic areas
- Severed Minerals Estates
- Highly Technical Process
- Misinformation from Press
- Incomplete water well testing
- Lack of Information from Oil and Gas Companies
- Trade Secrets from Service Companies
The “FracAct” is Dormant

EPA and BLM are very active
EPA

- Regulate HF under the UIC and Air Programs
  - Issue Guidance for wells using Diesel
  - Guidance on Seismic Sensitive Areas
  - Notification under the Air Program
Our Challenge

- Show the scientific data
  - Levels of protection (UIC)
  - Geologic information (confining zones)
  - Engineering data
  - Chemical composition of additives
  - Defined regulations protecting groundwater
  - Public outreach

Hydrofracked? One Man’s Mystery Lead to a Backlash Against Natural Gas Drilling

*Louis Meeks’ well water contains methane gas, hydrocarbons, lead and copper, according to the EPA’s test results. When he drilled a new water well, it also showed contaminants. The drilling company EnCana is supplying Meeks with drinking water. (Abrahm Lustgarten/ProPublica)*
Initiative of the GWPC and IOGCC
• Provides fact based information about hydraulic fracturing to the public
• Provides centralized upload are for Operators to load timely, consistent chemical data
• Allows users to search for fracturing records using multiple criteria then presents them in a standardized format
Hydraulic Fracturing: How it Works

History of Hydraulic Fracturing

Hydraulic Fracturing: The Process

Site Setup

Fracturing Fluid Management

Looking for information about a well site near you?

FIND A WELL
Groundwater Protection

Hydraulic Fracturing Water Usage

Groundwater & Aquifers

Groundwater Quality & Testing

Well Construction & Groundwater Protection

Fluid Flow in the Subsurface (Darcy's Law)

Looking for information about a well site near you?

Search for nearby well sites that have been hydraulically fractured to see what chemicals were used in the process.
Regulations By State

State Contact Information

Choose a state to see local contact information.

* When you click links marked with the * symbol, you will leave the FracFocus website and go to websites that are not controlled by or affiliated with this site.
WHY CHEMICALS ARE USED

Given today's technology, chemicals must be used in hydraulic fracturing to ensure the producing formation is effectively treated. The chart shown below depicts generic hydraulic fracturing chemical usage including the types of chemicals, their uses in the process and the consequences of not using them.

WHAT CHEMICALS ARE USED

As previously noted, chemicals perform many functions in a hydraulic fracturing job. Although there are dozens to hundreds of chemicals which could be used as additives, there are a limited number which are routinely used in hydraulic fracturing. The following is a list of the chemicals used most often. This chart is posted schematically by the...
You have questions. We have answers.

Find out what you'd like to know about hydraulic fracturing. And if you don't find your answer here, drop us a line using our "Ask a Question" section.

How hydraulic fracturing works

General

Which companies participate in FracFocus?

What information is contained in the hydraulic fracturing records?

How can my company become a FracFocus participating company and begin entering records?

Why can't the system show me the information on more than one well at a time?

Are the records from FracFocus available in a digital format such as Excel?

I know there are wells in my area that have been fractured, but when I search for them I get no results. Why?

The operator name on the well list does not match the name of the operator on the fracturing record. Can you tell me why?

Not finding your answer?

Ask a question.

Name *

Phone

Email *

State *

- Select -

Question *

What code is in the image? *

Enter the characters shown in the image.

Ask
### Hydraulic Fracturing Fluid Composition

**Note:** This mockup does not represent the requirements of any particular state regulation.

<table>
<thead>
<tr>
<th>Trade Name (Additive)</th>
<th>Supplier</th>
<th>Purpose</th>
<th>Ingredients</th>
<th>Chemical Abstract Service Number (CAS #)</th>
<th>Maximum Ingredient Concentration in Additive (% by mass)**</th>
<th>Maximum Ingredient Concentration in HF Fluid (% by mass)**</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acid 1,2,3</td>
<td>Acme</td>
<td>pH Adjuster</td>
<td>Hydrochloric acid</td>
<td>7647-01-0</td>
<td>60.00%</td>
<td>0.08940%</td>
<td></td>
</tr>
<tr>
<td>FEAC-20</td>
<td>Acme</td>
<td>Iron control</td>
<td>Acetic acid</td>
<td>64-19-7</td>
<td>35.00%</td>
<td>0.00180%</td>
<td></td>
</tr>
<tr>
<td>LAI-20</td>
<td>Acme</td>
<td>Corrosion inhibitor</td>
<td>Citric acid</td>
<td>77-92-9</td>
<td>35.00%</td>
<td>0.00100%</td>
<td></td>
</tr>
<tr>
<td>FR-3</td>
<td>Acme</td>
<td>Friction reducer</td>
<td>Methanol</td>
<td>67-66-1</td>
<td>100.00%</td>
<td>0.00080%</td>
<td></td>
</tr>
<tr>
<td>LSI-20</td>
<td>Acme</td>
<td>Scale inhibitor</td>
<td>Propargyl alcohol</td>
<td>107-19-9</td>
<td>100.00%</td>
<td>0.00020%</td>
<td></td>
</tr>
<tr>
<td>Bio-clear 5000</td>
<td>Extrachem</td>
<td>Biocide</td>
<td>Petroleum distillate</td>
<td>Proprietary</td>
<td>100.00%</td>
<td>0.01950%</td>
<td>Acme***</td>
</tr>
</tbody>
</table>

**Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS**

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Ingredients</th>
<th>CAS Number</th>
<th>Maximum Ingredient Concentration in Additive (% by mass)**</th>
<th>Maximum Ingredient Concentration in HF Fluid (% by mass)**</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bass fluid</td>
<td>Fresh water</td>
<td>00-56-0</td>
<td>54.27%</td>
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<tr>
<td>Bass fluid</td>
<td>Produced water</td>
<td>00-56-9</td>
<td>27.20%</td>
<td></td>
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<tr>
<td>Proppant</td>
<td>Sand</td>
<td>N/A</td>
<td>13.00%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biocide</td>
<td>Hemisuccinol enzyme concentrate</td>
<td>Proprietary</td>
<td>1.00%</td>
<td>Extrachem***</td>
<td></td>
</tr>
<tr>
<td>Friction reducer</td>
<td>Mineral oil</td>
<td>95-18-4</td>
<td>2.00%</td>
<td></td>
<td></td>
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<tr>
<td>Biocide</td>
<td>Glutaraldehyde</td>
<td>111-30-8</td>
<td>1.50%</td>
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<td></td>
</tr>
<tr>
<td>Biocide</td>
<td>Guar gum</td>
<td>9003-70-8</td>
<td>1.00%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Information is based on the maximum potential for concentration and thus the total may be over 100%**

**Name of company or individual that requested proprietary status under a state or federal law**

N/A means Not applicable

Proprietary means a chemical that is non-disclosable under a state of federal law protecting confidential business information or trade secrets.

Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from the suppliers Material Safety Data Sheets (MSDS).
First year = Nearly 50% of all wells fractured in the U.S.
The Future of FracFocus

1. Easier search and record access capability
   - Dates
   - Chemical names
   - Chemical Abstract Service numbers

2. Administrative tools to help operators upload and manage their records

3. Communication with state database systems
   - Automatic notification of submissions to state
   - Links from state data files to FracFocus disclosures
Drivers of the Update

- Regulatory agency needs and changes
- Data Quality of Excel Submissions
- Future Expansion of Compliance Needs
- Centralize Data System Management
- Lessen Support to Operators
- Provide for Smaller Operators
- Submission compliance notification
Enter CAS Number

123-01-1

Look Up CAS Number:
http://ull.chemistry.uakron.edu/erd/

Cancel  Apply
Date Filter

Job Date Filters

Start Date

Between Start & End Dates

Enter a date when a job was active. Disclosure jobs reported that were being performed during that date will be returned.

End Date

Greater Than Date

Less Than Date

Cancel  Apply
## FracFocus 2.0

Generated PDF: Example

### Hydraulic Fracturing Fluid Product Component Information Disclosure

#### Hydraulic Fracturing Fluid Composition:

<table>
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<tr>
<th>Trade Name</th>
<th>Supplier</th>
<th>Purpose</th>
<th>Ingredients</th>
<th>Chemical/Abstract Service Number (CAS #)</th>
<th>Minimum Ingredient Concentration (b)</th>
<th>Maximum Ingredient Concentration (c)</th>
<th>Comments</th>
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<td>Water</td>
<td>Operative</td>
<td>Carrier</td>
<td>Water</td>
<td>1234-56-7</td>
<td>100.00%</td>
<td>0.00%</td>
<td>SmartCare Product</td>
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<tr>
<td>Alpine 1407</td>
<td>Brucom</td>
<td>Division/Dispensed Additives</td>
<td>Calcium Chloride</td>
<td>1234-56-7</td>
<td>0.00%</td>
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<tr>
<td>E Brine</td>
<td>1234-56-7</td>
<td>0.00%</td>
<td>0.00%</td>
<td>SmartCare Product</td>
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<td></td>
</tr>
<tr>
<td>Pioneer Hudson Reservoirs Pumping Services LLC</td>
<td>Guanidinamide</td>
<td>Quaternary Ammonium Compound</td>
<td>Guanidinamide</td>
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<td>Calcium Chloride</td>
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<tr>
<td>Friction Reducer</td>
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</tbody>
</table>

*Total Water Volume sources may include fresh water, produced water, and/or recycled water.*

*Information is based on the maximum potential for concentration and thus the total may be over 100%.*
E&P Dashboard

Representative Home

Add & Manage Supervisors
Add & Manage Data Submitters
Add & Manage Service Companies
Add & Manage Agents
Operator Defaults

Download the Excel Template

Proceed to Submit Chemical Disclosure
Upload FracFocus XML
Pending Disclosures
Edit Account

NEW 2.0 Features in RED Boxes
FracFocus 1 vs. FracFocus 2

- **Version 1:**
  - Searchable PDFs (data not stored in a database)
  - Load through excel

- **Version 2:**
  - Database
  - Increased search capabilities
  - Transfer data to States when desired
  - Serv. Prov. & Registered agents can load to Operator portion of FracFocus
  - Load through XML
Regulatory Agency Data Delivery

- Online on demand download of data to Regulatory Agency for integration into internal systems
- Tracking of Amendments and Deletions through Unique Record ID’s to assure Compliance

Agency Download Chemical Disclosures

Use the form below to download Chemical Disclosures for your state. Choose the appropriate filters settings and click the "Download Now" button.

Filter Your Download

Submission Date From: 9/1/2012
Submission Date To: 9/30/2012

Download Now

You may download up to 180 days worth of disclosure data at a time.
FracFocus 2.0 Timeline

- October 1, 2012- One month test period
  - [http://fracfocusbeta.all-llc.com](http://fracfocusbeta.all-llc.com)
- November 1, 2012- Go live date for real data submission
- Beta site will remain live for continued testing
- November 1 to ????? Dual submission system (FF 1.0 and 2.0) available
Training During Roll-Out

• Train the trainer sessions – focused on trade groups and agencies
• Live sessions in each State; open to Operators, Service Providers, Agencies, and Registered Agents
• Webinars
• Posted training on the FracFocus Website
• **Conclusion**

- FracFocus will continue to evolve
- Supported by:
  - NGO’s
  - Industry Trade Associations
  - US Dept. of Energy
  - States