

## Disasters and Accidents Of Horizontal Slickwater Fracking -Unacceptable

Below is a list of problematic environmental incidents involving Fracking throughout the United States.

\*Colorado -206 chemical spills were linked to 48 cases of water contamination in 2008 alone. In Parachutte, CO, 1.6 million gallons of fracking fluid leaked and were transported by groundwater. According to state records, it seeped out the side of a cliff, forming a frozen waterfall 200 feet high. It melted into a tributary of the Colorado River. (ProPublica and Vanity Fair).

\*Durango, Colorado -an emergency room nurse almost died of organ failure after handling the clothes of a rig worker who had been splashed in a fracking fluid spill. The doctors were unable to learn the chemical makeup of the fluid because the information is proprietary -companies are not required to disclose the contents of chemicals used. (ProPublica, 11/13/08, Abrahm Lustgarten)

\*New Mexico -toxic fluids seeped into water supplies at over 800 drilling sites in 2008. (Vanity Fair, "A Colossal Fracking Mess" June 21, 2010).

\*Wyoming -benzene, a common chemical used in fracking, was discovered throughout a 28-mile long aquifer. (ProPublica, 12/31/09)

\*Wyoming -Upper Green River Basin reported ozone levels above those of Los Angeles on its worst days. The Wyoming Department of Environmental Quality urged the elderly and children to avoid strenuous outdoor activity. (AP news article printed in TC Record Eagle, March 2011)

\*Sublette, Wyoming -toxic compounds used in fracking including benzene were found at 1500 times safe level in 88 drinking water wells, documented by the US Bureau of Land Management in July, 2008. Researchers returned in September to take more samples. They were unable to open the water wells monitors showed they contained so much flammable gas that they were likely to explode. (Pro Publica, "Buried Secrets: Is Natural Gas Drilling Endangering US Water Supplies?" Abrahm Lustgarten, Nov 13, 2008).

\*Dish, Texas -Mayor Calvin Tillman describes how carcinogenic air pollution from drilling has ruined the quality of life for residents, who report problems with nausea, headaches, breathing difficulties, chronic eye and throat irritation and brain disorders. Trees are dying and horses have fallen ill. The town hired an environmental firm to collect air samples and found high levels of 15 chemicals used in fracking fluid, including benzene, toluene and xylene. In June, 2010, tests by the Texas Railroad Commission showed high levels of arsenic, barium, chromium, lead and selenium in residential water wells. (Texas Oil and Gas Accountability Project).

\*Texas Commission on Environmental Quality found pollutants from methane gas drilling in the Barnett Shale were greater than those produced by all vehicular traffic in the Dallas/Fort Worth area.

\*Texas -a hospital system in six counties with gas drilling reported a 25% asthma rate for children. This is over three times the state average. (New York Times article 2/26/11, "Regulation Lax As Gas Wells Tainted Water Hits Rivers")

\*Texas -The Endocrine Disruption Exchange (TDEX) independent research organization based in Colorado analyzed the health effects of 61 chemicals used in fracking in Texas in April, 2009. Of the tested chemicals, ¼ were classified as volatile, meaning they can become airborne and can be swallowed, inhaled, or can reach skin. More than 90% are harmful to brain, nerves, lungs and digestive system. 80% affect the heart, blood and kidneys. 67% affect the immune system. (Texas Oil and Gas Accountability Project).

\*Arkansas -The US Geological Survey has reported more than 800 earthquakes in central Arkansas from September 2010 to January 2011. The earthquakes have caused damage to homes such as cracks in walls and driveways. Geologists believe the earthquakes could be the result of frack fluid waste disposal in injection wells. A 6-month moratorium was established in January on the building of new injection wells.

Louisiana -16 cattle mysteriously and abruptly dropped dead after drinking fluid adjacent to a gas drilling rig. (ProPublica, Abrahm Lustgarten, 4/30/09).

\*Clearville, Pennsylvania -livestock dropped dead after suffering motor skill breakdowns, likely resulting from high arsenic levels in the soil due to flowback fluid leaks.

\*Dimock, PA -New Years Day, 2009, a well exploded from leaked gasses due to improper cementing of the well casing (according to the PA Department of environmental Protection.) A similar explosion which occurred in Ohio blew a house off its foundations and left a neighborhood with no drinkable water.

\*Dimock, PA -in Sept., 2009, 8,000 gallons of fracking fluid leaked from faulty supply pipes into wetlands poisoning streams and killing fish. Drinking water turned brown and corrosive and would ignite when a match was held to it as it came out the tap. People reported dizziness, headaches and skin sores from showering. In October 2009, the PA Dept. of Environmental Protection shut down water wells in the area due to major contamination of the aquifer. (Source Watch - Marcellus Shale).

\*Clearfield County, PA -June 2010, a gas well blew out, releasing over one million gallons of gas and drilling fluid before being contained nearly 16 hours later.

\*Avella, PA -fumes escaping from tanks holding 21,000 gallons of flammable fluid exploded, producing 200-foot flames and burning for 6 hours. Three workers were injured.

\*Bradford County, PA -A Chesapeake Energy well blew near the surface, probably from a cracked well casing. Thousands of gallons of fracking fluid spilled over the containment walls into fields, farms, areas where cattle graze. Some of the fluid found its way into Towanda Creek, a tributary to the Susquehanna River. Seven families were evacuated from their homes. (4/20/11 AP news and Huffington Post).

\*New York Times 2/27/11 -internal documents obtained from the EPA revealed that wastewater from deep shale drilling contains radioactivity at hundreds or even thousands of times the maximum allowed by the federal standard for drinking water. This wastewater is often hauled to sewage plants which are not designed to treat it, and then discharged into rivers. Here in Michigan, the wastewater or flowback fluid will be dumped into injection wells where the upward migration into drinking water and aquifer is highly possible (refer to Arkansas earthquakes -two fault lines run through Northern Michigan. Also refer to Chris Groebbel paper on injection wells in Michigan. Thousands of previously drilled wells could act as a conduit for the upward migration of toxic and radioactive fracking waste into ground water aquifers).

## Contaminated Water and Exploding Houses by Robert Myers, Lock University

- In April 2004 the Colorado Oil and Gas Conservation Commission (COGCC) fined Encana Oil and Gas a record \$371,200 for contaminating water supplies in West Divide Creek, Colorado. COGCC found methane, benzene, toluene, and m,p xylenes in wells, and blamed Encana for "inadequate cementing of the well," which "resulted in a loss of well control" (COGCC, "[West Divide Creek Gas Seep](#)" (4/14/04), COGCC, "[Notice of Hearing](#)" [8/04]).
- In December 2007 the basement of a home in Bainbridge Township, Ohio exploded. Fortunately, the owners, Richard and Thelma Payne, who were asleep upstairs, were not injured. Subsequently, 19 area homes were evacuated because of natural gas. The [Report by the Ohio Department of Natural Resources](#) (9/1/08) concluded that the explosion and contamination was caused by "inadequate cementing of the production casing" by the drilling company, Ohio Valley Energy Systems, which led to migration of natural gas into natural fractures in the bedrock below the drilling casing.
- In February 2009 Cabot Oil & Gas was responsible for methane contamination of nine water wells in Dimock, Pennsylvania. Methane built up in the well of Norma Fiorentio and when the pump switched on, it blew up the concrete foundation of the well house (PA DEP "[Notice of Violation](#)" [2/27/09]). The Pennsylvania DEP has blamed the problems on "defective casing and cementing" (DEP, "[DEP Reaches Agreement](#)" [11/04/09]). On April 15, 2010 the DEP fined Cabot \$240,000 for violating the November agreement and suspended their drilling operations in PA until they resolve the Dimock contamination (DEP, "[DEP Takes Aggressive Action](#)" [4/15/10]). Recently, the DEP and Cabot came to a settlement, whereby Cabot will pay \$4.1 million to the residents of Dimock and \$500,000 to the state to offset the costs associated with investigating this incident. This settlement does not affect the federal lawsuits that the residents of Dimock have filed, but some residents believe that Cabot is trying to use it to scuttle the lawsuit (DEP, "[Dimock Residents](#)" [12/16/10], dailyreview.com "[Dimock Residents](#)" [12/18/10]).
- In July 2009, the Pennsylvania DEP investigated complaints of water contamination in Roaring Branch, Lycoming County. Four homes were provided with drinking water, 18 were tested, and one home was evacuated after residents complained that two nearby creeks were bubbling with methane gas. The DEP eventually issued a Notice of Violation to East Resources for "excessive casing seat pressure" (DEP, "[2009 Marcellus Violations--violation #569930](#)"; *Wayne Independent*, "[Methane Contamination Linked to Drill Site](#)" [7/30/09]; *ProPublica*, "[More Gas Contamination Affects Pennsylvania Residents](#)" [8/04/09]).

### The Pennsylvania Natural Gas Industry Wall of Shame

- On February 2, 2009 Cabot spilled 100 gallons of diesel fuel at Dimock, PA (DEP, "[2009 Marcellus Violations--violation #575007](#)"; iStockAnalyst, "[Trucking Firm Ordered](#)" [2/24/09]).
- In May 2009 a leaking waste water pipe from a Range Resources gas well polluted a tributary of Cross Creek Lake in Washington County, PA. The spill killed fish, salamanders, crayfish, and aquatic insects (*Pittsburgh Post Gazette* "[Waste from Marcellus](#)" [6/05/09]; DEP, "[2009 Marcellus Violations--violation #564165](#)"; [Range Resources Report](#)).
- On October 22, 2009, PA DEP fined Cabot \$56,650 for three separate spills of a water/liquid gel mixture into Stevens Creek and a wetland near Dimock, PA. The spills totaled 8,000 gallons (DEP, "[DEP Fines Cabot](#)" [10/22/09]; DEP "[2009 Marcellus Violations--violations #572252, 572258](#)").
- On January 20, 2010 the Pennsylvania DEP fined M.R. Dirt \$6000 for spilling 7 tons of "gaswell drilling wastewater sludge" in Avis, PA. The dump truck driver drove away even though he saw the spill (DEP "[DEP Fines M.R. Dirt](#)" [1/20/10]).
- On February 1, 2010 the Pennsylvania DEP fined Fortuna Energy \$3500 for various infractions at a Bradford County site, including the discharge of fracking fluid into a tributary of Sugar Creek (DEP, "[DEP Fines Fortuna](#)" [2/1/10]; DEP "[2009 Marcellus Violations--violations #565284-87, 564580-88, 569257-61](#)").
- On March 15, 2010, a foamy substance, was detected running into Pine Creek, near Waterville. The DEP has determined that the substance was Airfoam HD, a chemical used in the drilling process. The substance came from a drilling site run by Pennsylvania General Energy. Almost a year later, the DEP fined the company \$28, 960 (DEP, "[DEP Fines](#)"; "[2010 Marcellus Violations--violations #583315-38](#)").
- On March 26th, 2010, Anadarko Petroleum spilled 8,000 to 12,000 gallons of synthetic-based mud at a drilling site in the Sproul State Forest in Clinton County (DEP, "[2010 Marcellus Violations--violations #583988, 584932, 584934](#)"; *LH Express*, "[Drilling Mud](#)" [4/9/10]).
- On April 23, 2010, The Pennsylvania DEP fined Stallion Oilfield Services of Canondale, PA \$6,500 for operating an illegal fracking water transfer station. Inspectors found a 450 square foot area where fracking water had spilled onto the ground (DEP, "[DEP Fines Stallion](#)" [4/23/10]).
- On May 13, 2010, PA DEP fined Rex Energy of State College, PA \$45,000 for various environmental violations at its Clearfield County site (DEP, "[DEP Fines Rex](#)" [5/13/10]; DEP, "[2010 Marcellus Violations--violations #595298-99, 583061](#)").
- On May 14, 2010, PA DEP fined Range Resources \$141,175 for spilling 250 barrels of fracking fluid into a high-quality waterway in Washington County in October 2009. Range failed to report the spill immediately (DEP, "[DEP Penalizes Range](#)" [5/14/10]; DEP "[2009 Marcellus Violations--violations #573283-4, 574350](#)").

- On June 15, 2010, Anadarko Petroleum discharged 150 gallons of hydraulic fluid onto the ground at a drilling site in Centre County (DEP, "[2010 Marcellus Violations--violations #589566, 589952](#)")
- On June 3, 2010, a gas well that was being fracked by EOG Resources in Clearfield County experienced a blowout and raged out of control for 16 hours, shooting fracking fluid and gas 75 feet into the air. EOG, whose spokesperson insisted that protecting the environment is of "utmost importance" to the company, waited five hours before contacting the Department of Environmental Protection (*Centre Daily Times*, "[Gas Spews](#)" [6/4/10]). The PA DEP has determined that the accident was caused by "untrained personnel and the failure to use proper well control procedures," and they fined EOG and its contractor C.C. Forbes \$400,000 (DEP, "[Independent Report](#)" [7/13/10] DEP "[2010 Marcellus Violations--violations #589126-31, 589901-02](#)").
- On July 1, 2010, the PA Department of Agriculture quarantined 28 cows after they came into contact with drilling wastewater from a leaking containment pond that was part of a drilling site operated by East Resources in Tioga County (DEP, "[Cattle from Tioga County](#)" [7/1/10]; DEP, "[2010 Marcellus Violations--violations #588949-50](#)").
- On August 2, 2010, the DEP fined Talisman Energy USA \$15,506 for spilling 4,200-6,300 gallons of used fracking fluid into an unnamed tributary of the Tioga River in Bradford County (DEP, "[DEP Fines Talisman](#)" [8/2/10]; DEP "[2009 Marcellus Violations--violations #5777167, 577585-87](#)").
- On August 17, 2010, the DEP fined Atlas Resources \$97,350 for allowing used fracking fluid to overflow a waste water pit and contaminate a tributary of Dunkle Run, a high quality watershed in Washington County. Atlas failed to report the spill to DEP (DEP, "[DEP Fines Atlas](#)" [8/17/10]; DEP "[2009 Marcellus Violations--violations #577286-92](#)").
- In September 2010, the DEP began investigating the source of stray methane gas that was detected bubbling from the Susquehanna River and in six private water wells in Bradford County. The DEP believes that nearby wells drilled by Chesapeake Energy are the source of the problem (DEP, "[DEP Investigating](#)" [9/07/10]).
- On October 7, 2010, the DEP fined Seneca Resources \$40,000 for building an illegal impoundment on exceptional value wetlands in Tioga County (DEP, "[DEP Fines Seneca](#)" [10/7/10]).
- On October 25-27, 2010, the Pennsylvania State Police inspected 1175 fracking wastewater trucks as part of Operation FracNet. They issued 1057 traffic citations, and removed 207 trucks and 52 drivers from service due to safety violations. Earlier FracNets yielded similar results: in September 959 citations were issued, and 208 trucks and 64 drivers were removed; in June 669 citations were issued, and 250 trucks and 45 drivers were removed (PA State Police, "[Latest Operation FracNet](#)" [11/09/10]; "[State Police Place](#)" [10/6/10]; "[State Enforcement Blitz](#)" [6/23/10]).
- The Pennsylvania Land Trust (PLT) has reported that according to DEP records, PA natural gas drillers have amassed 1614 violations between January 2008 and August 2010. The PLT deemed 1056 of these violations as "most likely to harm the environment." That averages out to 80 violations/month, and 52 serious violations/month. (ConserveLand.org, "[Marcellus Shale Drillers](#)" [9/1/10]). DEP has recently made it easier to access their records so that we now can see all of the industry's violations (DEP, "[Marcellus Infractions](#)").
- On November 22, 2010, the DEP announced that it was investigating a large spill of hydraulic fracturing fluid at a site run by XTO Energy. The spill has been estimated to be 4,275 gallons, which contaminated a unnamed tributary of Sugar Run, a spring, and two private wells. A DEP investigator discovered an open valve that was discharging the fluid from an unattended tank. (DEP, "[DEP Investigating](#)" [11/22/10], Williamsport Sun Gazette, "[Cleanup Continues](#)" [12/15/10]).
- On January 6, 2011, the DEP fined Talisman Energy \$24,608 for a "large diesel fuel spill" in Bradford County (DEP "[DEP Fines Talisman](#)" [1/6/11]).
- On January 7, 2011, the DEP fined Chief Oil & Gas \$34,000 for illegally discharging 25,200 gallons of hydrostatic testing water at a pipeline project in Lycoming County. Chief also allowed "an unknown industrial waste" to mix with the water before it was discharged (DEP, "[Chief Oil and Gas](#)" [1/7/11]).
- On January 10, 2011, Minuteman Environmental Services was fined \$7000 for illegally dumping and storing natural gas drill cutting waste at two sites in Clinton and Union counties (DEP, "[DEP Announced](#)" [1/10/11]).
- On January 17, 2011, a well operated by Talisman Energy blew out and for several hours discharged sand and fracking fluid into state forest lands in Tioga County (timestribune.com, "[Talisman Cited](#)" [1/26/11]).
- On January 29, 2011, a truck carrying used fracking fluid from a well operated by Anadarko Petroleum, rolled off the road and spilled "a small amount" of fracking fluid above the headwaters of the South Renovo water supply in Clinton County (*LH Express*, "[Frac Water Truck](#)" [2/1/11]). On February 18th, a truck serving a different Anadarko well went off Route 664 and spilled 3,400 gallons of fracking fluid above Big Plum Run (*LH Express*, "[Drilling Concerns](#)" [2/23/11]).
- On April 19, 2011, seven families were evacuated from their homes after a Bradford County well that was being fracked by Chesapeake Energy blew out and spilled thousands of gallons of flowback fluid into a tributary of Towanda Creek, which runs into the Susquehanna River. The DEP confirmed that amphibians in a farm pond died as a result of the spill, which took 12 hours to contain (*Williamsport Gazette*, "[DEP to Chesapeake](#)" [4/26/11]; *Towanda Daily Review* "[Amphibians](#)" [4/28/11]).
  - Above from: Environmental Dangers of Hydro-Fracturing the Marcellus Shale
  - by Robert Myers (Lock Haven University) <http://www.lhup.edu/rmyers3/marcellus.htm>