

**Notes from the interview with Bruce Baizel
on Water Quality Issues involved with Hydraulic Fracturing**

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Attendees: Bruce Baizel, Director, Oil & Gas Accountability Project
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Bruce has been a staff attorney with Earthworks Oil & Gas Accountability Project since 2002 and recently became Director of that organization. He is a Board member of STRONGER (State Review of Oil and Gas Regulations), a partnership of public, private and government stakeholders. STRONGER has reviewed oil and gas regulations in 34 states including Colorado and 25 of those states have concluded that there needs to be full public disclosure of chemicals used in fracking fluids.

Fracking has been done since the 1940s. He stated that the biggest single change in drilling for oil and gas has been the use of horizontal fracturing which allows wells to be placed in metropolitan areas – literally in people’s backyards. He also believes that drilling in the Marcellus Shale, some of which is within New York City’s drinking watershed, has raised public concern. These facts and the focus of the media and Hollywood, has caused a public awareness which is driving new regulations and practices.

According to a study conducted in six states, 2% to 6% of the approximately 40,000 wells drilled per year will have water or soil contamination that requires cleanup. Some of this contamination will get into water wells. In Colorado, operators are to report any spill over 5 barrels. However, it is estimated that spills are under-reported by as much as 30% to 40%.

Most water well contamination is from methane. There have been 4 documented cases of contamination from fracking fluids in West Virginia, Wyoming, British Columbia and Alberta. There have been no documented cases of water well contamination with fracking fluids in La Plata County but known cases of contamination from salts and methane gas. We have coal-bed methane formations in the County in which methane can move along coal seams and contaminate water supplies.

There have been reported cases of children having nose bleeds and nausea who lived in close proximity to wells. Studies show that individuals that live near a well are 60% more likely to have health problems. However, there have been no definitive studies

with testing of air emissions that link the health problems with the wells. Some areas are evaluating the use of fence-line monitoring of air emissions. He feels it is important for the local health department to apply for grant funding to evaluate potential health impacts of oil and gas. Another potential source of funding for studies could be health department fees on oil and gas drilling. At present San Juan Basin Health does not have anyone on staff who is following environmental health issues from oil and gas development due to budget cuts. The Southern Ute Indian Tribe is self-governing on air emissions and has more stringent regulations and fines than are in place by CDPHE.

The COGCC passed a new rule requiring tests of up to four water wells within half a mile of a new gas or oil well before drilling. Companies will have to follow up with two more tests of those wells within a year and then five or six years after that. The tests will look for heavy metals, salts, arsenic, lead, pH, etc. There is no requirement to look for exotic fracking chemicals. Industry does not report chemicals used until after the well is drilled, so it is not possible for owners to test wells for specific frack fluids prior to drilling, although it might be possible for drillers to post the chemicals they expect to use, then follow up after fracking with a corrected list if changes were made.

There are documented cases of the fracking process resulting in seismic activity in the Raton Basin, Oklahoma, Arkansas, Ohio and the United Kingdom. In Oklahoma, garage doors were knocked off homes and in Ohio objects fell off shelves. In the late 80s and early 90s, the biggest complaint in La Plata County related to drilling was changing of water color. Seismic activity can cause water turbidity resulting in changes of water color. If seismic activity causes tectonic plates to shift, new pathways could also open up for water movement.

If there is human contamination in a spill of fracking fluids, the local Emergency Response Team is called to assist. If there is a spill offsite with no human contamination, the state police HAZMAT team is dispatched for containment; onsite, the operator and the COGCC respond. Fines are seldom issued and the dollar amount of fines has not changed since the 1930s. The operator is supposed to demonstrate that the contamination has been cleaned up, but the system is mostly voluntary. Reported spills can be viewed on the COGCC website.

Should a surface owner have concerns, the COGCC has a complaint process. The county has responsibility for surface issues; the COGCC deals primarily with water issues; the CDPHE and local health board deals primarily with air emissions concerns. Baizel mentioned that establishment of a 'hotline' or similar that citizens could call if they see activity they want explained. At the present time, it is very difficult to get an answer for questions like 'What is that truck dumping into that pond down the road?'

There are alternatives to using water and chemicals in the fracking process and the industry is working hard to develop and evaluate options. Nitrogen foam has been used

and at least one well in Montezuma County has been drilled with that substance. Measurements of air emissions need to be taken to determine its impact on the environment. Propane gel has been used for drilling in the Marcellus Shale Formation but there are risks of air pollution and explosions. New York State has passed regulations to assess the toxicity of and evaluate environmentally friendly fracking fluids. There is work being done but we are early in the process of developing reasonable alternatives to current fracking fluids.

In La Plata County, most injection wells were drilled for that specific purpose, i.e., they are new wells. However, retired production wells can also be used. There are currently over 70 injection wells in the county. A recent study of 9 injection wells and the use of water from drilling to disposal was done as a senior project at Ft. Lewis College. Baizel is sending a copy of the study to the LWV LPC.

The EPA continues to push for tougher regulations and the results of their Hydraulic Fracturing Study to be out in 2014 will help develop needed legislation. They are looking at restricting the use of diesel in fracking. First-time wells now have to report all toxic emissions. The BLM is also looking at adding new regulations in the summer of 2013 for oil and gas activity on BLM lands. There is a concern that no organization looks at flowback – how much waste comes off a drilled well and where it goes. Colorado sends some of its flowback and produced water to New Mexico and New Mexico sends some to Colorado.

In the report for Colorado, STRONGER expressed concerns about well casings which do not extend below aquifers, allowing for potential contamination of the aquifer. Currently, Colorado regulations require that an oil and gas well be drilled 50 feet below the deepest water well in the area. Good practices dictate that a well be drilled 100 feet below any potentially usable groundwater. Flowback in La Plata County can be potable water from aquifers.

La Plata County in the 1990s was progressive in establishing county authority over surface rights and inspections in oil and gas drilling. Many regulations and inspections are now conducted on a voluntary basis. Baizel recommended that the county take over the responsibility for making the inspections. The use of water in this area of the state for fracking has not been addressed satisfactorily. Although 40% of water used in agriculture goes back into the stream, when water is used for fracking it is gone from the hydrological cycle permanently.

Three exemptions in federal legislation limit the amount of oversight on oil and gas development: the RCRA Hazardous Waste Regulations, the Halliburton Loophole, and the Comprehensive Environmental Response, Compensation, and Liability (Superfund) Act. Bruce feels that eliminating the Superfund Act exemption and getting more public input will make the most significant difference in ensuring safety in oil and gas drilling. He believes that oil and gas drilling can be made safe with a 1% accident rate, meaning

that we need to make the process perform that well, and plan for remediation of the 1% failures.

He also thinks that the industry is beginning to realize that they have a big trust issue and improvement there is sorely needed. The recent ban on fracking in Longmont was briefly discussed. Bruce feels that one reason this issue is so emotional is that in more and more cases, especially in the area north of Denver, drilling and fracking are taking place very close to people's residences and schools, against the will of homeowners. No one in a democracy likes to be told they can't say no to something they don't like.

The following comments were received based upon request for clarification regarding MSDSs at the well site:

MSDS's are required under OSHA regulation. A chemical would have a MSDS when there has been testing that shows a negative health impact, in the context of exposure by workers. If no such testing has been done, then there would be no MSDS. In addition, reviews of MSDS's have consistently shown that they are often generic, without the specific kind of information that would be needed by a medical professional for treatment purposes. Moreover, many of the MSDS's for frack chemicals are either incomplete or simply wrong. (see Theo Colburn's research) There is very little research regarding long-term exposures and health impacts. There is even less research regarding impacts to wildlife or consequences from the release of chemicals to water or the air or the soil, due to contamination events.

As a matter of practice, oil and gas companies often do not keep the MSDS's at well sites, but rather keep them at a field office or regional office. In our experience, OSHA does not do worksite checks at oil and gas wells to see if the MSDS's are there. So, to us, this makes the matter voluntary - as no one is checking what the company's do.

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