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Action for Justice

July 31, 2015

Oil and Gas Working Group
Energy and Environment Cabinet
Frankfort, Kentucky 40601

To members of the Working Group and Cabinet officials:

We submit these comments concerning oil and gas development in Kentucky with the knowledge that Kentucky has an opportunity, right now, to generate good jobs and help Kentuckians save money by investing in clean energy development in our Commonwealth. Currently, our state's policies favor unhealthy, extractive industries while putting us at a competitive disadvantage to many neighboring states and the nation as a whole when it comes to clean energy. As a result we lag behind in clean energy jobs and economic growth that comes from solar deployment, wind development, use of combined heat and power and savings from energy efficiency. We can do so much better.

Regarding oil and gas development, we encourage the Working Group and the Cabinet to look beyond drilling to the broad range of issues related to this energy sector. This includes especially the transportation of oil, gas and oil and gas products whether by pipeline or other means, the disposing of waste products and infrastructure.

While we have many comments and recommendations below, we recognize there are areas of concern that we do not cover, such as methane emissions. Studies in other cities and states show thousands of leaks in existing pipelines. We suspect Kentucky is not immune from this problem given the age of many of our pipelines. We need similar information for Kentucky and an aggressive leak repair and prevention program.

The Ohio River is another area of concern. As a border state to the Ohio River, Kentucky should be working with neighboring states to help clean up the Ohio River, which provides drinking water for hundreds of thousands of Kentuckians. The potential for catastrophic pollution is too great from allowing oil and gas companies to use the Ohio River as a waste disposal pipeline (including using barges to transport fracking waste water, oil, natural gas, natural gas byproducts, fracking liquids), or oil from tar sands development on the Ohio River. Kentucky should oppose allowing oil and gas companies to drill and frack under the Ohio River.

Why Kentucky should follow other states and ban high-volume hydraulic fracking and the disposal of fracking waste with injection wells

Worker Safety

A variety of studies show that oil and gas industry workers are exposed to a number of chemicals and dangerous conditions that put their health and safety at risk. Drilling site dangers include exposure to benzene, crystalline silica (from sand used at fracking sites), and other various volatile organic compounds.[1] [2]

The oil and gas industry has a fatality rate of 27.5 per 100,000 workers (2003-2009) – more than seven times higher than the rate for all U.S. workers, according to NIOSH. Most on-site fatalities are the result of accidents. [3]

RECOMMENDATION: Ban high-volume hydraulic fracking where the number and volume of chemicals is exponentially higher than conventional drilling, and the number of trucks and amount of equipment also is much greater. At existing drilling operations, the following should be required:

- elimination of worker exposure to toxic chemicals (both contact with skin and breathing), including adoption of comprehensive measures to address exposure to benzene developed by the National Institute for Occupational Safety and Health;
- a system for monitoring and reporting exposure levels and injuries;
- safety training for all workers that includes preventive and treatment methods for exposure to chemicals being used in the drilling process, proper training for the type of equipment that will be operated, and basic first aid;
- inspection of oil and gas equipment, including trucks, to ensure safety for workers and the public.

Protections for neighbors

The chemicals that workers are exposed to also drift off-site, creating health concerns for people and animals (pets, livestock, wildlife) living nearby. A community science study published in the Environmental Health Journal[4] found that, "Air concentrations of potentially dangerous compounds and chemical mixtures are frequently present near oil and gas production sites. Levels of eight volatile chemicals exceeded federal guidelines under several operational circumstances. Benzene, formaldehyde, and hydrogen sulfide were the most common compounds to exceed acute and other health-based risk levels." A study in Pennsylvania also found elevated levels of particulate *inside nearby homes*.[5]

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[1] Fracking workers exposed to dangerous amounts of benzene, study says, by Neela Banerjee, Los Angeles Times September 11, 2014; www.latimes.com/science/sciencenow/la-sci-sn-fracking-benzene-worker-health-20140910-story.html#page=1

[2] Fracking Exposes Workers to High Levels of Silica and Other Health Hazards by Ja-Rei Wang, AFL-CIO NOW May 2012; www.aflcio.org/Blog/Political-Action-Legislation/Fracking-Exposes-Workers-to-High-Levels-of-Silica-and-Other-Health-Hazards

[3] Fracking's dangers for workers, by Sue Sturgis, May 25, 2012; www.southernstudies.org/2012/05/institute-index-frackings-dangers-for-workers.html

[4] Air concentrations of volatile compounds near oil and gas production: a community-based exploratory study, Gregg P Macey et al, Environmental Health October 2014; www.ehjournal.net/content/13/1/82

[5] Air Pollution Spikes In Homes Near Fracking Wells by Jeff McMahon, Forbes June 26, 2014; www.forbes.com/sites/jeffmcmahon/2014/06/26/air-pollution-spikes-in-homes-near-fracking-wells/

Health problems experienced by neighbors in fracking fields in Texas include nausea, chronic headaches, nosebleeds and severe asthma attacks.[6] In Pennsylvania, the problems include dermal, respiratory and neurological symptoms and eye irritation.[7]

A three-year monitoring project by the Colorado School of Public Health found a number of "potentially toxic petroleum hydrocarbons in the air near the wells including benzene, ethylbenzene, toluene and xylene" which may contribute to "acute and chronic health problems for those living near natural gas drilling sites."[8]

RECOMMENDATION: Ban high-volume hydraulic fracking to eliminate this problem.

- Air quality monitoring, on and off the permit area, should be a regular part of drilling and well-site inspections.
- Local health departments in counties with a heavy concentration of oil and gas drilling should be equipped and trained to do air quality monitoring when requested by residents within one-half mile of drilling and well sites.
- Landowners/residents should be notified of what substances are in any pipelines on their property; provided with a safety spec sheet for each; provided with emergency 24-hour numbers to call in the event of a spill or leak and instructions on when evacuation is necessary.

Protection for water sources

The deeper gas companies have to drill for oil and gas the more water they use. In the Marcellus Shale region in Pennsylvania companies routinely use between 3-5 million gallons of water per well.[9] The Rome Trough within the Rogersville Shale deposit is deeper than the Marcellus Shale deposit. And as we've recently seen in Johnson County, these companies will be taking this water directly from Kentucky's streams and rivers.

RECOMMENDATION: Ban high-volume hydraulic fracking to prevent this problem.

- Permit applications should include a water sourcing plan if more than 200,000 gallons will be drawn from local water resources.
- Both the county and other state and federal agencies involved in water planning and conservation (such as the USDA Resources Conservation & Development Council) shall certify that proposed water withdrawals will not adversely affect local water usage or conservation activities.
- Landowners and residents downstream from the proposed withdrawal should receive written notice of the proposed withdrawal.

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[6] PBS: Raising health and air quality concerns in Texas' fracking frontier, Judy Woodruff interview with Jim Morris, February 19, 2014; www.pbs.org/newshour/bb/raising-health-air-quality-concerns-texas-fracking-frontier/

[7] www.forbes.com/sites/jeffmcmahon/2014/06/26/air-pollution-spikes-in-homes-near-fracking-wells/

[8] Study: 'Fracking' may increase air pollution health risks, by Neela Banerjee, Los Angeles Times March 20, 2012: http://articles.latimes.com/2012/mar/20/local/la-me-gs-fracking-increases-air-pollution-health-risks-to-residents-20120320

[9] Natural Gas Plays in the Marcellus Shale: Challenges and Potential Opportunities: DAVID M. KARGBO, RON G. WILHELM, DAVID J. CAMPBELL; Environ. Sci. Technol.2010,44,5679–5684. http://pubs.acs.org/doi/pdf/10.1021/es903811p

Fracking Wastewater

Many of the chemicals used in fracking have known health effects. [10] [11] Oil and gas companies report that chemicals make up about 1% of the liquids used in fracking a well, and if companies use just 2 million gallons of water, sand and chemicals to frack a well then they will be using about 20,000 gallons of chemicals on each well. These chemicals will need to be transported by trucks to the site, stored on the site before the fracking begins, stored in lagoons after the fracking liquids are pumped out of the well and then transported off the site to be disposed of somehow. Often these fracking waste liquids are pumped back underground in injection wells (which studies now link to an increase in earthquakes), and companies also have been known to dump the liquids into municipal sewage treatment plants and to spray the waste-water and brine on roads in the winter to de-ice the roads.[12]

According to the U.S. Geological Survey, wastewater injection wells have directly contributed to earthquakes in the central and eastern portions of the United States. USGS data shows the number of earthquakes registering larger than 3.0 in the central and eastern U.S. from 1973-2008 was 21; from 2009-2014 that number rose to 758.[13] [14]

RECOMMENDATION: Ban high-volume hydraulic fracking to eliminate this problem. Under no circumstances should the public be exposed to chemical-laden fracking wastewater such as through storage in open pits or as a de-icer on roads, or expected to bear the cost of treatment in municipal sewage plants not equipped for such wastes. Additionally:

- A wastewater disposal plan for both fracking waste and brine should be required for each permit, including for conventional drilling;
- Fracking, drilling and production wastewater should be tested for radioactivity and treated as a radioactive waste when present;
- Pits needed for temporary storage should be covered;
- Pits and ponds shall not be used for permanent wastewater storage;
- Underground injection of hydraulic fracking wastewater should not be allowed.

Disruption to rural residents

High volume hydraulic fracking will take place in rural areas, and the increased truck traffic will destroy roads and bridges and will cause traffic safety hazards in areas where thousands of trucks will be traveling on small one or two lane roads.[15] According to a study in Pennsylvania, to frack

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[10] Proximity to Natural Gas Wells and Reported Health Status: Results of a Household Survey in Washington County, Pennsylvania; Peter M. Rabinowitz, et al, ENVIRONMEN TAL HEALTH PERSPECTIVES, Advance Publication: 10 September 2014. http://ehp.niehs.nih.gov/wp-content/uploads/advpub/2014/9/ehp.1307732.pdf

[11] https://trackingfracking.wordpress.com/2014/04/06/are-fracking-chemicals-really-just-as-bad-as-the-ones-under-your-kitchen-sink/

[12] http://www.riverkeeper.org/campaigns/safeguard/gas-drilling/the-facts-about-new-york-and-fracking-waste/

[13] http://earthquake.usgs.gov/research/induced/

[14] Myths and Facts on Wastewater Injection, Hydraulic Fracturing, Enhanced Oil Recovery, and Induced Seismicity, Justin L. Rubinstein and Alireza Babaie Mahani, Seismological Research Letters Volume 86, Number 4 July/August 2015. https://profile.usgs.gov/myscience/upload_folder/ci2015Jun10120057556600Induced_EQs_Review.pdf

[15] Abramzon, S.; Samaras, C.; Curtright, A.; Litovitz, A.; Burger, N. "Estimating the Consumptive Use Costs of Shale Natural Gas Extraction on Pennsylvania Roadways," February 2014. Journal of Infrastructure Systems. doi: 10.1061/(ASCE)IS.1943-555X.0000203. - See more at: http://journalistsresource.org/studies/environment/transportation/costs-shale-natural-gas-extraction-local-roads - sthash.j23BwpbE.dpuf

one well it requires anywhere from 600-1000 trips for large trucks. The study found that because there were more than 1,700 horizontal wells drilled [in Pennsylvania] in 2011, "the statewide range of consumptive road costs for that year was between $8.5 and $39 million," costs paid by state transportation authorities and thus taxpayers. Kentucky, and especially Kentucky counties, have nowhere near the funds to repair the damage that will be done.

In addition, during the drilling and fracking process, heavy equipment, drilling rigs, diesel generators and pumps will be running 24 hours a day, 7 days a week potentially for weeks or months if a company is drilling and fracking multiple wells on one site.

RECOMMENDATION: Ban high-volume hydraulic fracking to prevent these problems from happening.

- Any drilling permit application, even for conventional wells, should include a plan for compliance with weight limits, certification from county officials that rural secondary roads can handle the trucks and equipment; and bonding or contractual arrangements with the county for permanent repair of all damages to roads.
- Where needed, the plan shall include measures for dust control.
- Where there are residents within 300 feet of a rural secondary road used for transportation, truck and equipment transportation should be limited after dark and before daylight.

Soil and water pollution

Soil and water pollution from fracking chemicals and from used fracking liquids occurs due to leaks, blowouts, drilling accidents, spills from traffic accidents, and the intentional and illegal dumping of fracking waste liquids. In addition to the chemicals used in fracking wastewater and brine pumped out of wells can include naturally occurring radioactive materials and heavy metals such as strontium, uranium, radon, lead, mercury, cadmium, chromium, barium, and arsenic.[16]

RECOMMENDATION: Ban high-volume hydraulic fracking to prevent these dangerous chemicals from getting into our soil and water.

Regulatory programs

The regulations passed by the Kentucky General Assembly earlier this year in Senate Bill 186 will not protect landowners or the environment from any of the problems listed above. We should not pretend that Kentucky is ready for a boom in high-volume hydraulic fracking because of any recent improvements to state statutes. State laws and enforcement is inadequate even for conventional drilling.

There are too many loopholes in federal laws such as the Safe Drinking Water Act, Clean Water Act, the Resource Conservation and Recovery Act, the Comprehensive Environmental Response,

[16] http://www.cafrackfacts.org/impacts/food/

Compensation, and Liability Act, and the Emergency Planning and Community Right-To-Know Act that prevent people and the environment from being protected.[17]

RECOMMENDATION: Ban high-volume hydraulic fracking because Kentucky does not have the regulatory program, staffing, political will or legislative support to adequate protect Kentuckians and our health, land, air and water from this practice.

- No new permits for any type of oil and gas drilling or related facility should be issued until the cabinet has an adequate inspection and enforcement staff;
- Any pubic hearings should be properly noticed and take place in counties where the well is proposed to be drilled or facility located;
- Public notice should include written 30-day notice to landowners and residents 1) whose property or residence is immediately adjacent to the permit area, including pipelines; 2) whose property or residence is underlain by horizontal wells; 3) whose property or residence is along any rural road that will experience a significant increase in truck traffic or heavy equipment transport.

Other Recommendations

- Landowner rights: the rights of surface landowners to negotiate the use of their land in cases where they do not own the oil and gas rights should be strengthened.
- Eminent domain: the Working Group and Cabinet should oppose any effort to undermine the ruling of the Franklin Circuit Court and the Court of Appeals regarding the use of eminent domain for pipeline construction, and support efforts to enact this ruling into law.
- Permit applications, inspection reports and related information should be easily accessible to the public and not subject to an Open Records request.

Wet Gas

- There should be strict limits on quantities of natural gas liquids that can be stored at the drill site, with the containers double-walled and isolated from areas or equipment that could generate sparks.
- Any wet gas storage shall be at a safe distance from homes, livestock and crops, with standards developed based on the blast zone for the amount of material being stored.
- The Working Group and Cabinet should develop safety standards for transportation of NGLs off the permit area, and shall include notification to local emergency responders of the presence and movement of this material through their jurisdiction.

[17] http://www.watershedcouncil.org/learn/hydraulic-fracturing/regulations-and-exemptions/

Pipelines

- There are 26,751 miles of pipelines in Kentucky, but only 908 miles (3.4%) carry hazardous liquids. Just 4.1% of these are Natural Gas Liquids. However, these hazardous liquids pipelines represent:[18]
    - 30.9% of all incidents between 2003 and 2012;
    - 66.6% of all injuries;
    - 67.3% of all property damage and
    - 100% of the gross barrels spilled in these incidents.
    - Moreover, despite clean up efforts, 29.1% of the barrels spilled from hazardous liquid pipelines in Kentucky were not recovered or removed from the environment.

- According to the U.S. Pipeline and Hazardous Materials Safety Administration data, there is a "significant incident" involving a hazardous liquids pipeline every 3 days. A significant incident is defined as one involving:
    - A death
    - An injury requiring hospitalization
    - $50,000 or more in property damage or
    - The release of 5 barrels or more of highly volatile liquid

- The best pipeline monitoring equipment can detect a leak only when there is a 1.8% or greater drop in pressure. At 400,000 barrels per day, this means more than 300,000 gallons could leak every day without being detected. A Wall Street Journal analysis found that fewer than 20% of leaks are detected by pipeline control centers set up for that purpose.

- NGLs are transported in a pressurized liquid state but become an odorless and colorless vapor once they hit the air when leaks occur. NGL vapor is heavier than air and will stay low to the ground, settling in valleys, creeks, rivers or other low points. These vapors are highly flammable and can be ignited by heat, spark or flame. In the event of a suspected leak, turn off all tractors or car engines, do not turn on anything electric and walk to higher ground.

- When leaked, about 80% of NGLs turn to gas. The other 20% remains a liquid and may contaminate the soil and water. "You've got to be nuts to put a large diameter HVL [high volatile liquids pipeline] in a karst terrain." (pipeline expert Richard Kuprewicz)

- All the proposed re-purposed pipe for Tennessee Gas Pipelines was manufactured prior to 1970. Pre-1970 NG pipe was longitudinally welded with obsolete welding technology that is well known to fail along the weld seam. Pre-1970 NG pipe used obsolete exterior protective coatings that are known to disbond, and therefore reduce protection against corrosion.[19]

- PHMSA research identifies the blast zone around a hazardous liquids pipeline similar to the size of the Tennessee Gas Pipeline proposal to be about 5,000 feet. The pipeline runs through business districts, populated neighborhoods and near schools. *If built today, this pipeline would never be allowed to be built in its present location.*

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[18] Research courtesy of Dr. Lorraine Garkovich (University of Kentucky)

[19] Research provided by Dick Watkins.

RECOMMENDATIONS:

- The Working Group and the Cabinet should oppose plans to re-purpose the Tennessee Gas Pipeline from natural gas to hazardous liquids.
- The Working Group and the Cabinet should support Pipeline Safety legislation to be introduced in the 2016 General Assembly by Rep. David Floyd.
- A set of pipeline location safety standards should be developed that protects the public from imminent dangers from existing or new pipelines. Model ordinances for local government or planning and zoning commissions should be developed.

Conclusion

As Kentuckians For The Commonwealth, a statewide social justice organization with more than 9,000 members, we urge the Commonwealth of Kentucky, the Kentucky Energy and Environment Cabinet and the Oil and Gas Working Group to:

- Ban high volume hydraulic fracking
- Not allow the further construction of or repurposing of existing pipelines to transport oil, natural gas, natural gas byproducts, fracking liquids or oil from tar sands development
- Oppose transporting oil, natural gas, natural gas by products, fracking liquids or oil from tar sands development on the Ohio River
- Work to prevent oil and gas companies from drilling under and fracking under the Ohio River.

Kentucky should instead invest in developing clean energy and energy efficiency programs such as those proposed in the Clean Energy Opportunity Act, which has been introduced in the Kentucky General Assembly. Passing the Clean Energy Opportunity Act would create more than 28,000 local jobs, curb energy costs for our families, farms and businesses and improve Kentuckians' health and well-being.[20]

Sincerely,

Mary Love, Co-chair
KFTC land Reform Committee

JoAnne Golden Hill, Co-chair

[20] http://www.kysea.org/legislative-policy-work/2011-legislative-goals