



Pennsylvania Council of Churches Resolution on Marcellus Shale Natural Gas Extraction: Moratorium on New Well Development

WHEREAS: The Pennsylvania Council of Churches (Council) believes (1) all of creation is a gift from God, given to us to hold in sacred trust, and that it is our responsibility as humans to protect and preserve the environment for now and future generations, and (2) the government must play a role in promoting an environment that protects citizens and communities and provides benefits for the common good through protection and wise management of Pennsylvania's natural resources;

WHEREAS: The Pennsylvania Council of Churches (Council) adopted a Resolution on Marcellus Shale Gas Extraction in October 2010 that enumerated statements, citations, beliefs and principles that provide a basis for concerns over Marcellus Shale gas development and production in Pennsylvania (http://www.pachurchesadvocacy.org/index_files/web_attachments/Marcellus_Shale_Resolution_2010.pdf).

WHEREAS: The Council, through a variety of sources, has reason to believe that there are significant concerns over ongoing and future development of Marcellus Shale resources that have not been addressed.

NOW, THEREFORE, BE IT RESOLVED: That the Board of Directors of the Pennsylvania Council of Churches calls upon the House, the Senate, and the Governor of the Commonwealth of Pennsylvania to enact and sign legislation that:

- Places a hold on all new extraction and injection wells until there are regulations and policies in place to properly manage and treat all emissions from drilling sites¹;
- Requires private, for-profit entities to be responsible for costs related to the use of public goods—including Pennsylvania's natural resources and public infrastructure—as well as damages to citizens and private property resulting from their activities, including strong bonding requirements²;
- Revokes zoning limitations placed on municipalities and counties in PA Act 13 of 2012;
- Adjusts fees on Marcellus Shale extraction activities set in PA Act 13 of 2012 to ensure that the Commonwealth has sufficient (1) resources to address costs incurred by public and private entities, (2) remuneration for natural resources extracted, and (3) reserves for costs that may arise after a well is closed; and
- Ensures preservation of the common good (in particular, protecting the most vulnerable Pennsylvanians from damage) by taking into account all environmental, health, welfare, and transparency concerns enumerated in the Board's Resolution on Marcellus Shale Natural Gas Extraction of October 2010.

BE IT FURTHER RESOLVED: That the Council instruct the Director of Public Advocacy to communicate this resolution to the Governor of Pennsylvania, the Speaker of the House, the President of the Senate, the chairs of the House and Senate Committees on the Judiciary, and to all Senators and House Representatives.

¹ Examples in Appendix.

² Examples in Appendix.

AND FINALLY BE IT FURTHER RESOLVED: That the Council encourages its member bodies to:

- Seek adherence to denominational resolutions on the environment similar to this Resolution;
- Provide educational materials and resources to their congregations to make them aware of, and to educate them about, the Marcellus Shale and its effects on the Commonwealth's environment and economy, and on the health and welfare of its citizens; and
- Encourage congregations and individuals to seek enactment of legislation and policies related to the Marcellus Shale that protect the Commonwealth and the common good.

Approved by the Board of Directors of the Pennsylvania Council of Churches on this 23rd day of October, 2012.

A handwritten signature in cursive script, appearing to read "Robert Driesen".

Bishop Robert Driesen, President
Board of Directors
Pennsylvania Council of Churches

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Documentation for Footnote 1—Proper management and treatment of emissions from wells and all parts of the production process includes:

- Ensuring that wastewater from Marcellus Shale hydraulic fracturing (fracking)/production is treated so as to render it safe. In particular, equip wastewater treatment plants with best available technology equipment designed to process the influx of new and problematic water to be treated.
- According to Marcellus Shale.us:

Somewhere between 20% and 40% of the water used for hydro-fracing a gas well returns to the surface as **flowback**, and later as **produced water**. In addition to the frac fluids added by the gas drilling companies, this water picks up other contaminants from deep in the Earth (~ 7,000 feet deep) with one of the most notable ingredients being salt...These fluids contain sodium and calcium salts, barium, oil, strontium, iron, numerous heavy metals, soap, radiation and other components. This **fluid combination** becomes brine wastewater...Brine wastewater is difficult and expensive to treat...even if the wastewater is processed by an industrial level processing plant, we are left with serious questions about the frac fluids that remain in processed drinking water. Drilling companies argue that frac fluids make up a very small percentage of hydro-fracing, but even using their numbers frac fluids make up 1,500 gallons of a 3-million gallon well frac” (http://www.marcellus-shale.us/drilling_wastewater.htm)
- “Bromide: A concern in drilling wastewater,” Pittsburgh Post Gazette, March 13, 2011 (<http://www.post-gazette.com/stories/news/environment/bromide-a-concern-in-drilling-wastewater-212188/?print=1>) says:

Ballooning bromide concentrations in the region's rivers, occurring as Marcellus Shale wastewater discharges increase, is a much bigger worry than the risk of high radiation levels, public water suppliers say.

Unlike radiation, which so far has shown up at scary levels only in Marcellus Shale hydraulic fracturing wastewater sampling done at wellheads, the spike in salty bromides in Western Pennsylvania's rivers and creeks has already put some public water suppliers into violation of federal safe drinking water standards...

Bromide facilitates formation of brominated trihalomethanes, also known as THMs, when it is exposed to disinfectant processes in water treatment plants. THMs are volatile organic liquid compounds.

Studies show a link between ingestion of and exposure to THMs and several types of cancer and birth defects.
- Much published material claims that fracking does not pollute groundwater/wells, despite changes that have rendered well water unusable in many locations throughout Pennsylvania and other places where fracking is being used. A posting at ProPublica notes that federal environmental officials have linked water contamination to fracking activities in at least one location, Pavillion, WY (<http://www.propublica.org/article/feds-link-water-contamination-to-fracking-for-first-time>). While the article also notes that the link is specific to the geology in that area, groundwater migration patterns are not always known or predictable.
- Managing and mitigating emissions into the air.
 - A Power Point presentation by William C. Kaufell of Skelly & Loy contains an extensive list of air pollutants from Marcellus Shale production (<http://www.cce.cornell.edu/EnergyClimateChange/NaturalGasDev/Documents/PDFs/Air%20Quality-Kaufell.pdf>).

- “Air Quality Concerns Threaten Natural Gas’s Image,” NPR, aired on June 21, 2011 (<http://www.npr.org/2011/06/21/137197991/air-quality-concerns-threaten-natural-gas-image>) contains the following:

In the hilly countryside of the southwest corner of Pennsylvania, Kristen Judy and her mother, Pam, are getting an early whiff of the air pollution problem that could be on the way from the Marcellus gas industry.

"It just hits you in the face and about knocks you over," says Kristen Judy.

"It smells like some kind of petroleum but you can't pinpoint it," Pam Judy adds.

They're talking about fumes from a gas compressor station that went in three years ago just 700 feet from their house...

First Pam, her husband and two grown kids started getting headaches, and then fatigue set in. They've also had dizziness, nausea and nosebleeds.

"I've had a sore throat so long that I don't know what it would be to not have a sore throat," Pam says.

For a week last summer, Pennsylvania state officials monitored the air at the Judys' house and the compressor station. They found volatile organic compounds, benzene and lots of other toxic chemicals they say almost surely came from the compressor station.

Their report says levels were low and don't pose any short-term health risks. But their study doesn't address cumulative effects or cancer risks.

- The Clean Air Council speaks to air emissions throughout the process in a letter to the EPA calling for a comprehensive study of the emissions (<http://www.cleanair.org/sites/default/files/EPA%20Letter%205.18.11.pdf>):
Throughout every stage of the extraction and production process, Marcellus Shale drilling produces air emissions. From compressors and processing facilities used to serve the exponential growth in producing wells, to truck traffic shipping millions of gallons of water to production sites, large amounts of harmful air pollutants are being emitted during the course of shale drilling and gas processing. These emissions include nitrogen oxide, sulfur dioxide, particulate matter, VOCs (volatile organic compounds), hazardous air pollutants, and greenhouse gases.
- Injection wells
 - “Ohio earthquakes linked to deep injection of Marcellus Shale drilling waste,” PennLive, posted March 12, 2012 (http://www.pennlive.com/midstate/index.ssf/2012/03/ohio_earthquakes_linked_to_dee.html) notes the following:
Earthquakes have, however, been associated with the fracking process in England. A drilling company there stopped fracking operations last July after two small earthquakes of 1.5 and 2.3 magnitude were registered within 500 meters of the drilling site. The British Geological Survey noted that that fluid injection was ongoing at the site shortly before both earthquakes occurred and concluded, “The timing of the two events in conjunction with the fluid injection at the Preese Hall drill site suggests that they may be related to this.”
Past earthquakes also have been linked to other types of energy exploration and production, including wastewater injection and injections of water for geothermal power, experts said. They point to recent earthquakes in the magnitude 3 and 4 range — not big enough to cause much damage, but big enough to be felt — in Arkansas, Texas, California, England, Germany and Switzerland. And in the 1960s, two Denver quakes in the 5.0 range were traced to deep injection of wastewater.
 - “Are Fracking Wastewater Wells Poisoning the Ground beneath Our Feet?” Scientific American, posted June 21, 2012 (<http://www.scientificamerican.com/article.cfm?id=are-fracking-wastewater-wells-poisoning-ground-beneath-our-feeth>):

- Records from disparate corners of the United States show that wells drilled to bury this waste deep beneath the ground have repeatedly leaked, sending dangerous chemicals and waste gurgling to the surface or, on occasion, seeping into shallow aquifers that store a significant portion of the nation's drinking water (<http://www.scientificamerican.com/topic.cfm?id=water>).

In 2010, contaminants from such a well bubbled up in a west Los Angeles dog park. Within the past three years, similar fountains of oil and gas drilling waste have appeared in Oklahoma and Louisiana. In South Florida, 20 of the nation's most stringently regulated disposal wells failed in the early 1990s, releasing partly treated sewage into aquifers that may one day be needed to supply Miami's drinking water.

There are more than 680,000 underground waste and injection wells nationwide (<http://www.propublica.org/documents/item/371154-uic-well-inventory-2010-2>), more than 150,000 of which shoot industrial fluids thousands of feet below the surface. Scientists and federal regulators acknowledge they do not know how many of the sites are leaking.

- The boom in oil and natural gas drilling is deepening the uncertainties, geologists acknowledge. Drilling produces copious amounts of waste, burdening regulators and demanding hundreds of additional disposal wells. Those wells — more holes punched in the ground — are changing the earth's geology, adding man-made fractures that allow water and waste to flow more freely.

"There is no certainty at all in any of this, and whoever tells you the opposite is not telling you the truth," said Stefan Finsterle, a leading hydrogeologist at Lawrence Berkeley National Laboratory who specializes in understanding the properties of rock layers and modeling how fluid flows through them. "You have changed the system with pressure and temperature and fracturing, so you don't know how it will behave."

A ProPublica review of well records, case histories and government summaries of more than 220,000 well inspections found that structural failures inside injection wells are routine. From late 2007 to late 2010, one well integrity violation was issued for every six deep injection wells examined — more than 17,000 violations nationally. More than 7,000 wells showed signs that their walls were leaking. Records also show wells are frequently operated in violation of safety regulations and under conditions that greatly increase the risk of fluid leakage and the threat of water contamination.

Documentation for Footnote 2—Direct costs related to the use of public goods may include:

- Reinforcement of and repairs to the roads and bridges being used on a daily basis by large trucks going in and out of drilling sites, so our communities can travel safely;
- Construction and maintenance of best available technology wastewater treatment plants to ensure that any contaminants in treated water are below limits set by environmental and health related agencies.

Indirect costs related to the use of public goods include, but are not limited to:

- Reinforcement of and repairs to other municipal, county, and state infrastructure used by gas drilling operations.

Costs related to private sector losses include, but are not limited to:

- Loss of wells/drinking water, and its replacement;
- Damage to private property, including land and structures (individuals/families and commercial); and
- Damage to farms and farming operations.