

November 5, 2019

Patrick O'Neill, Chairman
Air Quality Technical Advisory Committee
Department of Environmental Protection
Rachel Carson Office Building, 16th Floor
P.O. Box 2063
Harrisburg, PA 17105-2063

Dear Chairman O'Neill:

We are writing in reference to a letter sent to you from David Spigelmyer of the Marcellus Shale Coalition (see attached) regarding a Pennsylvania Department of Health (DOH) presentation at the October 17 AQTAC meeting. The presentation was titled "Oil and Natural Gas Production Health Concerns in Pennsylvania."

While we have sometimes been at odds with the DOH over the lack of attention it has given to health risks associated with fracking in the region, and while we have definite opinions about why the Pennsylvania Oil and Natural Gas Production Health Registry is failing to capture the majority of health outcomes of residents, we nevertheless applaud the DOH for presenting the science-based health risks of shale gas development to your committee.

However, after reviewing both the Marcellus Shale Coalition letter and the DOH presentation, we are compelled to call out a number of spurious arguments, misleading statements, omissions, and factual errors in Mr. Spigelmyer's letter. These include the following:

1. Mr. Spigelmyer asserts that, when making its case for health impacts, the DOH "should have clearly stated the difference between an association or correlation... and *causation*...." He appears to be arguing that anything short of a proven causation is negligible and should be disregarded. This is a naïve and dangerous assertion.

In the field of environmental health, we know that association and correlation are often the best we can hope for when it comes to protecting communities from environmental harm. If we always waited for causation to be proven, it would mean allowing individuals to suffer, often for years, while the painstaking research catches up with the reality on the ground. Rather than making it incumbent upon citizens to prove the cause of their harm, governments should insist that industry first proves that its processes and products are safe. Public precaution must always overrule corporate protectionism.

2. Mr. Spigelmyer states that: “Studies and researchers can have shortcomings, biases and incomplete conclusions that outweigh any value that they may bring to a discussion as serious as public health....” Those of us who perform public health research understand the unavoidable biases and limitations of any research study and always state them clearly within the context of our conclusions.

Further, the research we do, when compiled with the research of others, can paint a more complete picture of health exposure issues. It’s not an accident that, as the *NY Compendium* shows, “90.3 percent of all original research studies published from 2016-2018 on the health impacts of fracking found a positive association with harm or potential harm.” As the *Compendium* concludes: “There is no evidence that fracking can operate without threatening public health directly and without imperiling climate stability upon which public health depends.”¹

3. Mr. Spigelmyer cites the DOH’s evaluation of existing literature (Bamber et al., 2019)² as reason that existing epidemiological studies should be ignored. In a letter to the DOH dated August 1, 2019, we wrote extensively about why this literature review’s methodology is flawed.³ In particular, we are troubled by the Bamber review’s inappropriate rating scheme, which gives inadequate weight to observational studies, as well as its lack of recognition of additional pertinent evidence streams outside of epidemiology in assessing the potential for harm.

Contrary to the Bamber review’s findings, we know that observational studies are actually the gold standard when it comes to assessing health impacts from environmental causes. In fact, since a randomized controlled trial would be impossible, not to mention unethical, observational science is what we must depend on.

4. Mr. Spigelmyer cites a DEP study of the Fort Cherry School District commissioned by Range Resources (the Gradient Report) as proof that there is no connection between fracking and health risks. In a public letter earlier this year, my organization concluded that the Gradient Report is flawed in its methodology, scope, and objectivity.⁴ The choice of which wells to study, the failure to consider other emission sources, the lack of appropriate monitoring, the failure to consider peak emissions and vulnerable populations, the reputation of Gradient as an industry ally, and the potential for Range Resources to skew the results are critical red flags. We deemed this report invalid.

¹ [*Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking \(Unconventional Gas and Oil Extraction\)*, Sixth Edition, June 19, 2019](#)

² [“A Systematic Review of the Epidemiologic Literature Assessing Health Outcomes in Populations Living near Oil and Natural Gas Operations: Study Quality and Future Recommendations,”](#) Alison M. Bamber, Stephanie H. Hasanali, Anil S. Nair, Sharon M. Watkins, Daniel I. Virgil, Michael Van Dyke, Tami S McMullin, Kristy Richardson. *International Journal of Environmental Research and Public Health*, June 15, 2019

³ [“An open letter to Dr. Rachel Levine, Pennsylvania Secretary of Health,”](#) Southwest Pennsylvania Environmental Health Project, August 1, 2019

⁴ [“Public Statement in Response to Gradient Report on Fort Cherry School Emissions as Commissioned by Range Resources,”](#) SW PA Environmental Health Project, 2019

5. In trying to write off negative birth outcomes that have been linked to shale gas development, Mr. Spigelmyer states that a study out of the University of Pittsburgh (Stacy et al., 2015), which the DOH cited in its presentation and which concluded that the mothers most exposed to shale gas activities delivered children with lower birth weights, “was not peer reviewed.” This is false, as the study was indeed peer reviewed.⁵

Mr. Spigelmyer also attempts to attack this study’s credibility by claiming that the authors utilized a “definition of low birth weight that is not recognized by the medical community, nor by the National Institutes of Health, as low birth weight.” This is also simply not true. The authors never attempted to define low birth weight as a diagnosis. Instead, the study compared average weights between babies born to the most exposed mothers and the least exposed mothers in their sample, finding that the most exposed mothers bore babies of lower average weight and higher incidence of small for gestational age than the least exposed. This work is just one of *seven* peer-reviewed studies^{6,7,8,9,10,11} that have found associations between adverse birth outcomes and exposure to shale gas development.

6. While Mr. Spigelmyer correctly asserts that the quantity of VOC emissions is down in the region since 1995, and sulfur dioxide and nitrogen oxide emissions are down since 1990, what he neglects to say is that emissions of these toxic pollutants are once again beginning to rise. According to the American Lung Association’s “2019 State of the Air” report, southwestern Pennsylvania continues to lag the nation in air quality, with numbers of dangerous emissions ticking upward in many local areas in the most recent time period.¹²

⁵ [“Perinatal Outcomes and Unconventional Natural Gas Operations in Southwest Pennsylvania,”](#) Shaina L. Stacy, LuAnn L. Brink, Jacob C. Larkin, Yoel Sadosky, Bernard D. Goldstein, Bruce R. Pitt, Evelyn O. Talbott, *PLoS One*, June 3, 2015

⁶ [“Congenital Heart Defects and Intensity of Oil and Gas Well Site Activities in Early Pregnancy,”](#) Lisa M. McKenzie, William Allhouse, and Stephen Daniels, *Environment International*, June 19, 2019

⁷ [“Shale Gas Development and Infant Health: Evidence from Pennsylvania,”](#) Elaine L. Hill, *Journal of Health Economics*, September 2018

⁸ [“Drilling and Production Activity Related to Unconventional Gas Development and Severity of Preterm Birth,”](#) Kristina W. Whitworth, Amanda K. Marshall, and Elaine Symanski, *Environmental Health Perspectives*, March 20, 2018

⁹ [“Maternal Residential Proximity to Unconventional Gas Development and Perinatal Outcomes Among a Diverse Urban Population in Texas,”](#) Kristina W. Whitworth, Amanda K. Marshall, and Elaine Symanski, *PLoS One*, July 21, 2017

¹⁰ [“Unconventional Natural Gas Development and Birth Outcomes in Pennsylvania, USA,”](#) Joan A. Casey, David A. Savitz, Sara G. Rasmussen, Elizabeth L. Ogburn, Jonathan Pollak, Dione G. Mercer, and Brian S. Schwartz, *Epidemiology*, April 1, 2016

¹¹ [“Birth Outcomes and Maternal Residential Proximity to Natural Gas Development in Rural Colorado,”](#) Lisa M. McKenzie, Ruixin Guo, Roxana Z. Witter, David A Savitz, Lee S. Newman, and John L. Adgate, *Environmental Health Perspectives*, April 1, 2014

¹² [“State of the Air 2019,”](#) American Lung Association

Meanwhile, the region continues to experience ozone (smog) issues that create or worsen health issues for thousands. The plastics cracker plant in Beaver County, along with the attendant build-out of more fracked wells and the possibility of more plastics cracker plants and pipelines, will increase emissions of harmful pollutants, including smog-forming VOCs, even more. Added methane leaks will emit powerful greenhouse gasses that warm the planet and contribute to natural disasters, illnesses, and deaths.

7. Taking it upon himself to compare county-level asthma hospitalization rates from the DOH's 2015 Asthma Focus Report, Mr. Spigelmyer erroneously states that "the hospitalization rate for the five shale-producing counties were all less than 10 per 10,000 residents, while the average for the non-shale producing counties examined were all in excess of 112 per 10,000 residents." The fact is that the hospitalization rate in non-shale producing counties was 11.2 per 10,000 residents (not 112). While this may have been simply a typo, it's nevertheless conveniently misleading.¹³

Further, when examining the relationship between exposure to fracking and asthma exacerbations, categorizing entire counties as simply "shale-producing" or "non-shale producing" and then comparing health outcomes, like hospitalizations, can be misleading and would not be the preferred way to look at this issue.

A more precise approach would be to assess exposure at the level of the individual, as Johns Hopkins epidemiologists did in their asthma study. Rasmussen et al. (2016)¹⁴ assigned each participant in their sample (of over 35,000 asthma patients) a refined exposure metric based on distance, density, and phase of gas wells. They then used that metric to compare the most exposed group to the least exposed. The Rasmussen study found associations between shale gas development exposure and not one but three levels of severity of asthma exacerbations: mild, moderate, and severe.

8. Mr. Spigelmyer states that: "Unconventional wastewater has not been treated and discharged into waterways since 2011..." While this may be true, it's also true that the industry has sent approximately 800,000 tons per year of solid fracking waste to Pennsylvania landfills resulting in liquid leachate – which is high in radium, a radioactive metal – being sent on to sewage treatment plants, where it cannot be effectively treated and has therefore been discharged into rivers at rates higher than drinking water standards.¹⁵

¹³ ["Pennsylvania Asthma Fact Sheet 2015 – Asthma Hospitalizations in Pennsylvania,"](#) Pennsylvania Department of Health, August 2015

¹⁴ ["Association Between Unconventional Natural Gas Development in the Marcellus Shale and Asthma Exacerbations,"](#) Sara G. Rasmussen, Elizabeth L. Ogburn, Meredith McCormack, Joan A. Casey, Karen Bandeen-Roche, Dione G Mercer, Brian Schwartz, *Journal of the American Medical Association – Internal Medicine*, September 2016

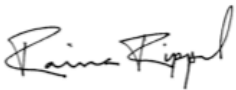
¹⁵ ["How did fracking contaminants end up in the Monongahela River? A loophole in the law might be to blame,"](#) Reid Frazier, State Impact Pennsylvania, September 11, 2019

As AQTAC chairman, you are well aware that the PA DEP has cited shale gas companies for more than 4,000 violations in Washington County alone. If the shale gas industry were truly concerned about the health of residents, its spokespersons would not be criticizing every study that came out, trying to sow doubt with letters like Mr. Spigelmyer's. Rather than acting like a guilty party trying to cover its tracks, a responsible industry would work with the DEP, the DOH, and other researchers to improve shale gas practices and subsequently reduce health risks and negative health outcomes.

We are clear, based on our own research and boots on the ground in affected communities – as well as the broad base of research done by scientists from renowned universities like Johns Hopkins, Duke, Berkeley, Pitt, and more – that these health risks and effects are real, prevalent, and continuing to get worse as more shale gas development moves into the region. Children, pregnant women, the elderly, and people with chronic diseases are especially vulnerable. Potential health risks presented by shale gas development range from the acute, like asthma exacerbations and poor birth outcomes, to the chronic, like cardiovascular disease and cancer. The body of literature on the subject is steadily transforming from a demonstration of risk to a demonstration of impact.

We welcome any measures your committee can take to reduce shale gas leaks, ensure adequate setbacks of facilities from homes and schools, and prevent harmful pollutants from reaching the air, water, and soil, thereby protecting the health of hundreds of thousands of Pennsylvanians.

Respectfully,

A handwritten signature in cursive script that reads "Raina Rippel".

Raina Rippel, Director

cc: Governor Tom Wolf
Dr. Rachel Levine, Secretary of Health
Patrick McDonnell, Secretary of Environmental Protection



October 21, 2019

Patrick O'Neill, Chairman
Air Quality Technical Advisory Committee
16th Floor Rachel Carson State Office Building
P.O. Box 2063
Harrisburg, PA 17105-2063

Dear Chairman O'Neill:

At the October 17th meeting of the Air Quality Technical Advisory Committee (AQTAC or Committee), the Pennsylvania Department of Health (DoH) made a presentation¹ entitled "Oil and Natural Gas Production Health Concerns in Pennsylvania." On behalf of the members of the Marcellus Shale Coalition (MSC), the broader industry in the Commonwealth, and their employees and families who take seriously their obligation to protect the health and safety of our communities, please consider this additional information around this very important and complex topic.

First and foremost, it must be stressed that our member companies understand the importance of safeguarding our environment and the health of our fellow citizens. Their employees, after all, overwhelmingly are local residents who live and raise their families in the region where they work. They are as vested as anyone in ensuring that their operations are safe and protective of public health and our shared environment.

The DoH presentation compiles a list of ailments that some members of the public have complained about, affixes a reference to oil and natural gas production, and references that other studies have found an "association" between the two. Fortunately, several members of the Committee questioned the DoH as to what constitutes an "association". However, the DoH should have clearly stated the difference between an association or correlation – which is largely though not exclusively a reference to physical proximity – and *causation*, which draws a definitive link between a specific activity and a specific health impact.

By presenting the findings and conclusions of other studies, without having conducted its own peer review of the data, methods, sample size and potential shortcomings of the studies, the DoH is lending credibility to these findings and conclusions. It is insufficient, given the weight that the general public understandably affords to its government agencies, simply to qualify these studies as conveying information compiled by others. Studies and researchers can have shortcomings, biases and incomplete conclusions that outweigh any value that they may bring to a discussion as serious as public health, particularly when doing so undermines the credibility of an industry that is so critically important to the Commonwealth.

¹ Available on AQTAC website:

http://files.dep.state.pa.us/Air/AirQuality/AQPortalFiles/Advisory%20Committees/Air%20Quality%20Technical%20Advisory%20Committee/2019/10-17-19/AQTAC_101719_ONGP_final_2.pdf

PA Department of Health Evaluation of Existing Literature

To this very point, it is important for the Committee to know that the DoH participated in a comprehensive review and evaluation of epidemiologic literature specifically examining health studies evaluating citizens living near oil and gas operations. This study, entitled “*A Systematic Review of the Epidemiologic Literature Assessing Health Outcomes in Populations Living near Oil and Natural Gas Operations: Study Quality and Future Recommendations*”², was published in June 2019.

Conducted in partnership with the Colorado Department of Public Health and Environment, the reviewers examined the methods utilized by twenty epidemiological studies. Of the twenty, only four were rated by the reviewers as having a “moderate level of certainty” with respect to the ascribed health impact outcomes. The other sixteen studies received a rating of “low certainty.” Importantly, the researchers noted:

“The majority of findings from the studies were ranked as low certainty, primarily due to limitations of the study designs that make it difficult to establish clear links between exposures to substances potentially emitted directly from oil and natural gas operations and the health outcomes evaluated. These limitations are inherent to observational epidemiologic studies and include indirect exposure measurements, confounding bias, and subjective methods to determine health outcomes.”

Air Quality Impacts

As noted by PA Department of Environmental Protection (PA DEP) staff at the Committee meeting, the Commonwealth has conducted both a short-term and a long-term³ air quality study to examine the effects of unconventional shale gas development on public health. Neither study found significant nor concerning ambient air quality impacts associated with unconventional natural gas development. Likewise, a comprehensive, two-year air quality evaluation which collected data throughout every phase of development and production from an unconventional well site in the Fort Cherry School District (Washington County) found that PM_{2.5} and volatile organic compounds (VOCs) concentrations were consistently below health-based air comparison values and did not pose acute or chronic health concerns. This study and analysis was provided to PA DEP and is also available publicly⁴.

These studies come at a time when the citizens of Pennsylvania are benefitting from historic reductions in criteria air pollutants. Consider that, since 1995, VOC emissions are down 51%, while sulfur dioxide and nitrogen oxide emissions are down 82% and 72%, respectively, since

² Bamber, Hasanali, Nair, et al: <https://www.mdpi.com/1660-4601/16/12/2123/htm>

³ Long-Term Ambient Air Monitoring Project: Marcellus Shale Gas Facilities – July 2018 – http://files.dep.state.pa.us/Air/AirQuality/AQPortalFiles/Monitoring%20Topics/Toxic%20Pollutants/Docs/FINAL_Long-Term_Marcellus_Project_Report_071018.pdf

⁴ Public Health Evaluation of Ambient Air Near a Shale Gas Well Site and School Campus: Results from Long-term Air Monitoring at the Yonker Well Site Nearby the Fort Cherry School Campus in Washington County, PA: <http://www.rangeresources.com/docs/default-source/files/public-health-evaluation-of-ambient-air-near-a-shale-gas-well-site-and-school-campus.pdf>

1990. Many of these recent reductions are attributable to increased use of natural gas in the electric power generation sector.

Birth Impacts and Respiratory Ailments

Perhaps nowhere else are the implications of “associating” health outcomes and oil and gas production activity more apparent than with references to birth impacts and respiratory ailments. For example, one of the studies (Shaina L. Stacy, et al) cited by the DoH in its presentation examined the association of low birth weights and unconventional natural gas development in southwestern Pennsylvania. This particular study, published in June 2015, was funded by the Heinz Endowment, which is an avowed anti-natural gas organization that has also funded numerous organizations dedicated to stopping natural gas development. The study was not peer-reviewed, and acknowledged several of its own limitations, ironically including a definition of ‘low-birth weight’ that is not recognized by the medical community, nor the National Institutes of Health, as ‘low-birth weight.’

Yet, even these authors state unequivocally in their publication,

“It is important to stress that our study does not say that these pollutants caused the lower birth weights.”

With respect to respiratory ailments, an analysis of the DoH’s own 2015 Asthma Focus Report, which examined asthma statistics between 2009 – 2013, shows that the asthma hospitalization rate in the top five northeastern shale-producing counties in PA are far below hospitalization rates in nine neighboring non-shale producing counties. In fact, the hospitalization rate for the five shale-producing counties were all less than 10 per 10,000 residents, while the average for the non-shale producing counties examined were all in excess of 112 per 10,000 residents. In total, asthma hospitalization rates across Pennsylvania decreased by 26% between 2009 and 2013 – a time of significant unconventional natural gas activity.

Unconventional Wastewater and Dust Suppression

In response to a question from the Committee, the DoH attributed some complaints they received from residents to oil and gas wastewater (brine) used for dust suppression on roadways. This statement was offered at the meeting in context to unconventional shale gas development, which the DoH noted accounted for the vast majority of the complaints lodged with the DoH health registry. It is important for the Committee members to understand that unconventional brine is not – and has never been – used for dust suppression or sprayed upon roadways. This prohibition was codified in PA DEP’s update to its oil and gas standards in October 2016⁵. Unconventional wastewater has not been treated and discharged into waterways since 2011 and is either recycled or properly disposed of in an approved disposal well. The MSC would welcome the opportunity to meet with DoH staff and explain the differences between conventional and unconventional operations, and the different standards applied to each activity.

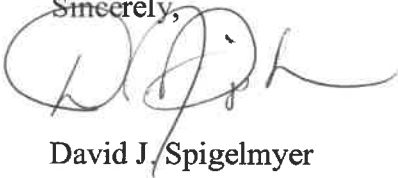
⁵ 25 PA Code §78a.70: <https://www.pacode.com/secure/data/025/chapter78a/chap78atoc.html#78a.70>.

With respect to drinking water complaints, Pennsylvania remains one of two states in the nation without water well construction standards. Several studies, including a study conducted by Penn State University⁶ in consultation with state agency partners, has found significant pre-existing contamination of private water wells in Pennsylvania. Notably, several of these studies were conducted prior to widespread unconventional natural gas development in the Commonwealth. The MSC supports legislation that would establish water well construction standards, and notes that any complaints submitted to PA DEP are fully investigated. In fact, under existing state law shale gas operators are *presumed* responsible for any impacts that occur within 2,500 feet of a well and within twelve months of completing a well, unless it is definitively demonstrated to be the result of another cause.

Conclusion

Earlier this summer, the MSC partnered with API-PA and the PA Independent Oil and Gas Association in a letter⁷ to Governor Tom Wolf outlining the critical importance of rigorous, scientific-based studies when evaluating the health impacts of any industry – and particularly before assigning a link between those health impacts and a particular activity or industry. A copy of that letter is linked to below. We remain committed to working closely with the Governor and his Administration to advance our mutually shared goal of safe and responsible development of Pennsylvania’s shale gas resources.

Sincerely,



David J. Spigelmyer

cc: Honorable Rachel Levine, MD
Secretary of Health
Honorable Patrick McDonnell
Secretary of Environmental Protection

⁶ Penn State Extension: *What We Learned from a Study of Over 700 Water Wells in Pennsylvania*. Swistock et al <https://extension.psu.edu/programs/mwon/information/webinars/what-we-learned-from-a-study-of-over-700-water-wells-in-pennsylvania/pdf-copy-of-slides>

⁷ MSC, API, PIOGA Reaffirm Commitment to Public Health, Safety in Pennsylvania – July 23, 2019: https://marcelluscoalition.org/wp-content/uploads/2019/07/API_MSC_PIOGA-Letter-to-Governor.pdf