



November 15, 2013

Dr. Donald Milton, Dr. Amir Sapkota, Dr. Sacoby Wilson, Dr. Thurka Sangaramoorthy, Laura Dalemarre, and Meleah Boyle
Institute for Applied Environmental Health, School of Public Health
University of Maryland
College Park, MD 20742-2611

Cc: Dr. Cliff Mitchell, Maryland Department of Health and Mental Hygiene
Dr. Christine Conn, Department of Natural Resources

Dear Drs. Milton, Sapkota, Wilson, and Sangaramoorthy and Ms. Dalemarre and Ms. Boyle:

On behalf of Earthworks' Oil and Gas Accountability Project, I am writing to express appreciation for the launch of the Marcellus Shale Public Health Study, part of Maryland's Marcellus Shale Safe Drilling Initiative. Since I was unable to attend recent public meetings on the study, I offer the following comments and information based on our many years of work with communities impacted by oil and gas development nationwide.

As you are surely aware, investigation of the health impacts of shale gas development lags far behind the expansion of the industry. For many years, industry has based assertions that this development is safe on the absence of scientific studies showing otherwise. Fortunately, the health, medical, and environmental research community, responding to widespread anecdotal evidence of negative health impacts, is increasingly engaged in studies that are already yielding vital information. We are pleased that your study will likely add to this growing body of work.

We are particularly encouraged that the University of Maryland's study scope includes a full assessment of both direct and indirect causes of health impacts. As both previous and emerging research indicates, the toxicity and risks of many of the substances and chemicals used in hydraulic fracturing, and the types of pollution that result from gas production and processing, are well-established. For example, a 2011 review by The Endocrine Disruption Exchange concluded that many of the hundreds of chemicals known to be used in gas operations cause short- and long-term health impacts.¹

However, causal research that explicitly "connects the dots" from a gas well, compressor station, or other facility to a home or illness is still relatively new. It was this information gap that motivated Earthworks to conduct a community-based health impacts project in Pennsylvania in 2011-2012. The health complaints we heard from people in the midst of the Marcellus Shale boom were remarkably similar to those reported for years in states with much longer histories of drilling, such as Colorado, Louisiana, Texas, and Wyoming.

The resulting report, *Gas Patch Roulette: How Shale Gas Development Risks Public Health in Pennsylvania*, details the results of our air and water testing and more than 100 health symptom surveys—the largest such set of information from residents in the Marcellus Shale region to date.²

A summary of the report is enclosed, as well as a peer-reviewed paper based on the study published earlier this year in *New Solutions: A Journal of Environmental and Occupational Health Policy*.³

In sum, our analysis showed that:

- Contaminants associated with oil and gas development are present in air and water in many communities where the development is occurring;
- Members of households located closer than 1500 feet to gas facilities have statistically significant higher rates of several symptoms than those living farther away;
- The symptoms most frequently experienced by study participants were consistent across study areas; and
- Symptoms reported at participating households closely match the scientifically established effects of exposure to chemicals detected in the air and water at those locations.

Such findings are consistent with the conclusions of previous community health impact surveys conducted in gas and oil areas by both Earthworks and chemist Wilma Subra;⁴ impacts identified through client interviews by the Southwest Pennsylvania Environmental Health Project;⁵ and air emissions studies recently conducted in drilling areas of Colorado⁶ and Alberta, Canada.⁷

Taken together, this and several other research studies (see the enclosed list) point to an increasingly strong association between negative health impacts and proximity to gas wells and facilities (such as compressor stations and processing plants) that should be taken seriously by any government facing a decision on whether to permit shale gas development.

It is also our view that any assessment of risks from exposure should consider the very narrow scope of environmental testing that has been carried out in the context of shale gas development. State and federal agencies have generally conducted monitoring for only a limited number of air contaminants and in areas of high population density. In addition, most states do not regulate private water wells, and have not conducted any kind of baseline water testing before drilling begins.

The limited scope of prior testing has resulted in significant data gaps that, in turn, have made it difficult for researchers, regulators, and communities to fully understand connections between gas operations and health impacts. Moreover, prior policy decisions have also limited data and information on exposures, in particular exemptions to disclosure, reporting, and tracking requirements in seven major U.S. environmental laws (such as the Safe Drinking Water Act, Clean Air Act, and Resource Conservation and Recovery Act).⁸

Current standards for determining risk from exposure to contaminants during the many stages of shale gas development are also limited. Most standards are set for acute exposures of short duration—yet many people living in gas patches are subjected to chronic exposure to multiple toxic substances from a number of facilities. For these residents, there is considerable potential for exposure to a chemical “cocktail,” which could be hazardous due to additivity or interactions among substances that, when taken alone, may be below guidance levels.

We commend your team for including in the study scope a baseline assessment of health conditions in potential drilling areas in Maryland. Many areas of the Marcellus Shale region have compromised air and water quality from various sources, including previous mining and fossil fuel development. In addition, limited access to health care and less healthy lifestyles may be more prevalent in rural and low-income communities. Even though such areas often overlap with areas of intensive

Marcellus Shale drilling, little is being done by state regulatory or health agencies to address related environmental justice concerns.

We recognize that no study, no matter how comprehensive, may be able to reach definitive conclusions—but that is not the goal of science. Both public health and environmental protection should be guided by the precautionary principle, which calls for action even in the face of some scientific uncertainty and posits that the proponent of an activity (in this case the oil and gas industry or a government), rather than the public, should bear the burden of proof. With this in mind, we look forward to following your team’s work and the application of its findings by the Marcellus Shale Safe Drilling Initiative to safeguard public health in Maryland and beyond.

Thank you for your time and consideration. Please feel free to contact me if you have any questions about the information contained in this letter.

Sincerely,

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¹ Colborn, T., Kwiatkowski, C., Schultz, K., and Bachran, M. “Natural gas operations from a public health perspective.” 2011. *Human & Ecological Risk Assessment* 17(5):1039-1056.

² Nadia Steinzor, Wilma Subra, and Lisa Sumi. *Gas Patch Roulette: How Shale Gas Development Risks Public Health in Pennsylvania*, Earthworks Oil and Gas Accountability Project, 2012. (<http://health.earthworksaction.org>).

³ Nadia Steinzor, Wilma Subra, and Lisa Sumi. “Investigating Links Between Shale Gas Development and Health Impacts through a Community Survey Project in Pennsylvania.” *NEW SOLUTIONS*, Vol. 23(1) 55-83, 2013. (www.earthworksaction.org/files/publications/SteinzorSubraSumiShaleGasHealthImpacts2013.pdf)

⁴ Earthworks Oil & Gas Accountability Project. Town of DISH, TX Community Health Survey, 2009. (www.earthworksaction.org/library/detail/health_survey_results_of_current_and_former_dish_clark_texas_residents); and Town of Pavillion, WY Community Health Survey, 2010 (http://earthworksaction.org/PR_PavillionHealthSurvey.cfm).

⁵ Southwest Pennsylvania Environmental Health Project. *Health Issues and Concerns Related to Unconventional Gas Development*, 2013. (www.environmentalhealthproject.org).

⁶ Lisa M. McKenzie, Roxana Z. Witter, Lee S. Newman, and John L. Adgate. “Human Health Risk Assessment of Air Emissions from Development of Unconventional Natural Gas Resources.” *Science of the Total Environment*, 2012 (www.ncbi.nlm.nih.gov/pubmed/22444058); and

Colborn T, Schultz K, Herrick L, and Kwiatkowski C. “An exploratory study of air quality near natural gas operations.” *Human and Ecological Risk Assessment: An International Journal*, 2013 (www.endocrinedisruption.com/chemicals.air.php).

⁷ Simpson, I.J., et al. “Air quality in the Industrial Heartland of Alberta, Canada and potential impacts on human health.” *Atmospheric Environment*, Vol 81: 702-709, 2013 (<http://dx.doi.org/10.1016/j.atmosenv.2013.09.017>).

⁸ Earthworks. “Loopholes for Polluters: The oil and gas industry’s exemptions to major environmental laws,” 2011 (www.earthworksaction.org/library/detail/loopholes_for_polluters).