

# REPORT FROM A WORKING SYMPOSIUM ON THE MARYLAND PUBLIC HEALTH STUDY OF MARCELLUS SHALE

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**Overview:** On Friday September 12, 2014, the Maryland Environmental Health Network, the Chesapeake Chapter of Physicians for Social Responsibility, and the Alliance of Nurses for Healthy Environments co-hosted a symposium to assess the findings of the study, “Potential Public Health Impacts of Natural Gas Development and Production in the Marcellus Shale in Western Maryland” (the “Maryland Health Study”) by the University of Maryland Institute for Applied Environmental Health (MIAEH). The goal of the symposium was to develop recommendations on next steps for Maryland policy-makers with respect to issues raised in the study, not to achieve consensus or to record comments in detail. As was understood by the participants, the workshop did not attempt to achieve consensus nor to record comments in detail.

This report summarizes the comments of the panelists and the outcome of small group discussions. A list of panelists and participants are found in the Appendix. Affiliations of individuals are for identification purposes only and do not reflect the endorsement of their institutions or agencies. Dr. Bernard Goldstein, professor emeritus and former dean of the School of Public Health at University of Pittsburgh, moderated the event. Forty people attended, including public health officials, researchers, graduate students, health advocates, and environmental regulators.

Although the comments of the symposium participants ranged across many topics, there was general agreement that: **(1)** this is a valuable study conducted with limited resources and time, **(2)** the state of the science on health effects of hydrofracturing is still inadequate for determining whether hydrofracturing can be done safely, **(3)** science is emerging that suggests health issues associated with various aspects of gas and oil well development that need to be better understood, **(4)** and that therefore, as a consequence, Maryland should not proceed with hydrofracturing at this time. However, the general view of the participants was that, in the event that Maryland does go forward with Unconventional Natural Gas Development and Production (UNGDP), there must be increased transparency in the industry, including prohibitions on trade secrets and other non-disclosure agreements that restrict the ability to report, publicly discuss, and research health issues associated with hydrofracturing.

**Study Overview:** The Maryland Health Study draws upon several methods of a rapid Health Impact Assessment (HIA) including: scoping, assessment of baseline health and potential health impacts of shale gas development, and a final report with recommendations for public health responses. The MIAEH research team reports seeking input from a wide range of stakeholders through public meetings, publication of a draft detailed scoping document, and individual discussions with interested parties.

In 7 out of eight broad categories of UNGDP associated hazards, the research team found there would be a high or moderately high likelihood of negative public health impacts from UNGDP: on local air

quality, the healthcare infrastructure, worker health, community cohesion (due to increases in crime, traffic, substance abuse, and sexually transmitted diseases), harm to water quality, excessive noise, and the cumulative effects from all of the above.

**MIAEH presentation:** Dr. Donald Milton, director of the MIAEH, and Dr. Amir Sapkota, a member of the study team and MIAEH faculty, provided an overview of study methods and responded to several of the issues raised in the comments by peer reviewers. Dr. Sacoby Wilson of the study team and MIAEH faculty was also present. Dr. Milton mentioned climate impacts as an important topic omitted from the study due to resource and other constraints but deserving of analysis. He emphasized the importance of surveillance to establish baseline health status and monitor for negative health outcomes and acknowledged that risks to water quality were largely unknown due to absence of data – not presence of data showing no harm. During the question and answer section it was pointed out that contrary to the report, the leading cause of cancer death in Allegany and Garrett counties and also all of Maryland is lung cancer and lung cancer needs to be mentioned.

**Panelist Comments:** Seven panelists presented their responses to the MIAEH study and made suggestions for areas where Maryland policy-makers should focus their attention when addressing health issues associated with UNGDP in Maryland. There was general agreement on the valuable contribution that MIAEH made through this work. Panelist comments ranged across the breadth of topics covered by the MIAEH study, summarized here by topic rather than by speaker, and including points made in response by MIAEH team members and audience participants:

- **Air:** Companies should pay for air quality (AQ) monitoring; real time AQ monitoring and controls are readily available and it is realistic to demand that the industry use them to implement real time controls. Ultrafine particles should be included in the monitoring. Monitoring should not be limited to averages, as peak exposures can be extreme and cause acute effects that would be missed if using only averages. Focus should be on monitoring of human exposure to air pollutants from UNGDP. Monitoring should not be limited to NAAQS (National Ambient Air Quality Standards, limited to 6 pollutants regulated by EPA) , since many Hazardous Air Pollutants are emitted by UNGDP processes
- **Water:** For both surface and ground water quality monitoring, there is no equivalent early detection technology, and the extent of the impacts could be local or they could travel throughout a watershed outside the two counties being considered for UNGDP. A good starting point for monitoring water would be the disclosure of chemicals added to hydrofracturing water.
- **Setbacks:** A one-size-fits-all setback will not suffice because geology, topography, technology variables that even industry cannot predict, and other factors will dictate the safe distance for each site. Some combination of a site-by-site assessment and a minimum setback may be needed. Developing a methodology for site-specific setbacks will be challenging but should be conducted.

- **Site Accountability:** Accountability at well sites is currently difficult due to the number of steps in the process and number of contractors. Maryland should hold one company legally responsible for all activity at a site.
- **Unknowns:** Chemical, biological and physical exposures and their health effects can occur at many stages and toxicity of many hazardous agents to which people are being exposed has not been established. Health scientists need more time to study long term health effects of UNGDP due to the industry being new, and health data not being collected from the start.
- **Silica:** Silica exposures for workers can be controlled by wearing masks, but not for community at large. Crystalline silica particles are very small and remain airborne for extended periods (days) in outdoor air, and may cause people living, working or attending schools near these facilities to be at an increased risk of exposure. Health effects take decades to manifest
- **Local Involvement and Preparation for Impacts:** Preparedness programs must be developed, as counties must anticipate that people will be calling for help, and with questions or complaints. Local food supplies could be affected, for instance hunters donate deer meat to food banks which could be contaminated. Help to inform the communities by starting discussions now in town hall meetings about the hazards and how to manage requests from the community and interactions with industry.
- **Local food supply:** Could be affected, for instance contaminated deer meat, which hunters donate to food banks. Start discussions now in town hall meetings about how to handle these things.
- **System Impacts:** Permits and regulations should take into account the context of how the individual site relates to the larger environment and community settings. Impacts will not be felt exclusively in these two counties, but throughout the state, both because of infrastructure development and because of environmental impacts, such as increased air pollution from site development and transportation. The state should consider the entire system in which gas drilling is taking place and its impact on Maryland.
- **Timeframe:** Use data from Pennsylvania and West Virginia to project the impacts in Maryland, e.g., potential increases in foster care, emergency room visits, and high school drop outs. Look beyond the short term to a 10-year horizon- the health, social, environmental, and economic impacts in 10 years.
- **Ethics:** If decisions are made not to protect people, be transparent about it. Do not hide information. Consider the ethics of these decisions. Remember the moral obligation to consider how pollution generated at sites will affect others. Vulnerable populations are often not observed, counted, or included in our data. Establish a risk profile of the industry for various outcomes, for example “it is estimated that due to benzene exposure 1 in 100,000 excess cancer cases may be observed.”
- **Radiation:** Radiation effects are a legitimate and rational concern. Analysis of radon data will be coming soon from PA and should be used to evaluate risk. In New York, radon in pipes is a concern. The toxic daughters of radon (or decay products) are of concern, so aging the gas until the radon deteriorates is not a solution. Again, health effects such as lung cancer are

manifested in the long term and are well known. We need monitoring of exposures through air, water, soil and food.

- **Advisory Committee:** Create an advisory committee drawn from all stakeholder groups including government, local and state, industry, and community, not just Western MD, and work out an implementation plan for the recommendations. Transparency and involving all stakeholders is crucial for policy-makers to navigate through a controversial area.
- **Cumulative Risks:** Cumulative risks have to be properly considered. For instance, in the case of being surrounded by wells and potentially exposed over a series of years. Be aware that new issues will be emerging – benzene study, radon data, and more. There is no standard method for a cumulative risk assessment; these methods must be developed and applied.
- **Role of Industry:** Industry must take responsibility for data collection and management. They must show “before” data as well as “after” data, and be responsible for disproving claims that UNGD has caused effects. Maryland should establish and ensure monitoring, early detection and standardized data collection. Also, Industry must pay for externalities, such as health clinics, social impacts, etc

Following the comments of the panel and discussion with participants, the meeting broke into four group discussions. Each group was charged with the same task: to choose priority issues and make recommendations on next steps for Maryland policy-makers. The responses of the small groups took a variety of forms.

### **Small Groups:**

#### **Group 1 Recommendations:**

- Look at more systemic downstream impacts such as compressor stations
- Eliminate non-disclosure
- Specify uses for fees and severance taxes; monitoring, infrastructure, dealing with accidents
- Get baseline data – and understand the background before you start (ex. compressor station)
- Focus on morality and the ethical factors associated with the final decision
- Conduct the GIS mapping that was promised to evaluate extent of exposures related to proximity; this will be a valuable tool for regulatory and community empowerment
- We do not have enough information to make a sound scientifically based decision

#### **Group 2 Recommendations:**

- Collect more data – get background data for Maryland, and from other states
- UNGDP does not appear to be safe enough to approve at this time
- Projected new health care costs associated with UNGDP must be quantified
- Make a single entity responsible at each well pad for environmental compliance and safety
- Forbid non disclosure of hydraulic fracturing chemicals
- Assure that there will be adequate staff to inspect, monitor and enforce new regulations
- Clarify to industry, regulators and policy-makers that lack of data does not mean there is no risk
- Conduct a cumulative risk analysis – do not disregard multiple risks on the basis of lack of methodology

- Limitations of report should be listed
- Consider schools and children and exposures – setbacks from schools
- Lung cancer data is needed and should be tracked, given the radon, diesel exhaust, and other nuclides issues

**Group 3 Recommendations:**

- Assure complete transparency every step of the way: no non-disclosure clauses, trade secrets, and confidentiality agreements. Assure ready availability of all pertinent data
- Make standards be based on full impacts – look at best/worst case and most/least likely – and do not allow costs to be externalized
- Require industry to pay for bio-monitoring, health care costs, road repairs, and all damages
- Solve the water problem before allowing hydraulic fracturing – industry needs to achieve no casing failures

**Group 4 Recommendations:**

- Ban open pits, require recycling, manage flow-back for air emissions and leakage, prevent produced water from entering wastewater treatment plants.
- Gather both baseline health data in communities where gas development is planned as well as data on how to mitigate risks associated with UNGD
- Pass HB 1030 to prohibit non-disclosure agreements and require information on chemicals used
- Require the industry to contribute to a restitution fund or implement a severance tax to cover health care costs, road repairs, and state-wide health surveillance systems
- Check standard practices used in other states and adjust to MD
- Continue the moratorium while all this is being put in place

After the reports from small groups, participants briefly considered the path forward.

We face BOTH an incomplete information set AND an incomplete regulatory and surveillance structure with insufficient capacity for dealing with the development of UNGD in Maryland. What criteria will tell us when we have both in place? There was some consensus that Maryland must insist that industry study and solve the water problem, provide data, and contribute to funding a public health system equipped to monitor and detect for health impacts. As public health professionals whose responsibility is protecting the health of all Marylanders, we should not pretend that we'll know what to do in the next couple of years – we acknowledge that it may take 10 years or more to fully understand the health ramifications of hydro fracturing, and importantly, how to mitigate the health risks associated with UNGDP. Maryland would benefit by waiting until the industry proves how to do this safely and, with improved technology and gas prices rising, we would benefit economically while protecting the health of our families and communities and engaging in environmentally sustainable practices.

Dr. Cindy Parker ended the meeting with summary reflections on the caliber of the conversations, and the opportunity before Maryland to learn from other states, before we make decisions. Acute, long term and cumulative risks in this field are a real and grave concern, and the necessary underlying scientific research has not been conducted. Our current regulatory system does not have the

infrastructure, programs or methods to adequately protect human health. We need to acknowledge that we do not yet know whether this can be done safely.

#### **Appendix – List of Participants & Speakers**

Moderator: Bernard Goldstein, MD, University of Pittsburgh Graduate School of Public Health

Panelists:

John Adgate, PhD, University of Colorado School of Public Health  
David Brown, ScD, Southwest Pennsylvania Environmental Health Project  
Elaine Hill, PhD, University of Rochester School of Medicine and Dentistry  
Michael McCawley, PhD, West Virginia University  
Keshia Pollack, PhD, Johns Hopkins Bloomberg School of Public Health  
Poune Saberi, MD, University of Pennsylvania Center of Excellence in Environmental Toxicology  
Brian Schwartz, MD, Johns Hopkins Bloomberg School of Public Health

MIAEH Study Team Members Present:

Donald Milton, MD  
Sacoby Wilson, PhD  
Amir Sapkota, PhD

Other Symposium Participants

Dr. Lesliam Quiros Alcaia, Maryland Institute of Applied Environmental Health  
Dr. Christine Berg, Johns Hopkins Medicine  
Dr. Ann Bristow, Maryland Marcellus Shale Advisory Commission  
Jacob Bueno de Mesquita, MD Institute for Applied Environmental Health-UMD  
Veronika Carella, MD Children’s Environmental Health Coalition & Maryland Environmental Health Network  
David Costello, Maryland Department of the Environment (observing)  
Dr. Stephanie Fowler, National Cancer Institute  
Dr. Robyn Gilden, University of Maryland School of Nursing  
Lara Hall, Blaustein Philanthropic Group  
Rachel Hess-Mutinda, Maryland Department of Health & Mental Hygiene  
Elisabeth Hoffman, ClimateHoward  
Katie Huffling, RN, Alliance of Nurses for Healthy Environments  
Dr. Richard Humphrey, Johns Hopkins School of Medicine & Maryland Environmental Health Network  
Robert Kutchman, Allegany County Health Department  
Julie McDill, Mid-Atlantic Regional Air Management Association, Inc.  
Chelsie Miller, Maryland Department of Health & Mental Hygiene  
Megan Milliken, Town Creek Foundation  
Dr. Clifford Mitchell, Environmental Health Bureau, Dept of Health & Mental Hygiene (observing)  
Katey Mote, Baltimore City Health Department  
Dr. Cindy Parker, Johns Hopkins Bloomberg School of Public Health & Chesapeake Physicians for Social Responsibility  
Sara Rasmussen, Johns Hopkins Bloomberg School of Public Health  
Kristen Rawlett, University of MD-Baltimore  
Rebecca Rehr, Maryland Environmental Health Network  
Allison Rich, Maryland Environmental Health Network  
Betsy Ringel, Blaustein Philanthropic group  
Crystal Romeo, Maryland Department of Health & Mental Hygiene  
Rebecca Ruggles, Maryland Environmental Health Network  
Dr. Ana Rule, Johns Hopkins Bloomberg School of Public Health

Dr. Brian Schwartz, Johns Hopkins Bloomberg School of Public Health  
Jim Swanger, Allegany County Health Department  
Veronica Tinney, Children's National Health System  
Dr. David Vanko, Towson University  
Tim Whitehouse, Chesapeake Physicians for Social Responsibility  
Dr. D'Ann Williams, Johns Hopkins Bloomberg School of Public Health  
Stacy Woods, Johns Hopkins Bloomberg School of Public Health