

Public Health Testimony on Marcellus Shale Development
League of Women Voters Marcellus Shale Informational Meeting

Jewish Community Center
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Charles Christen, DrPH, MEd

1. I would like to begin by stating that I have very little to say about the public health science related to this industry, especially the Marcellus Shale development, because there is scant evidence of independent research in the literature . I would like to invite industry representatives and the Marcellus Shale Coalition to work with the Graduate School of Public Health to develop an independent characterization of the industry for an in depth exposure assessment as well as ensuing risk assessment of all operations. We have heard many industry representatives tell us about the safety and low environmental impact of this industry. We all want to believe this is true, because we would all like to enjoy the prosperity that is promised by this industry.
2. The prosperity this industry promises is founded on a great number of wells being drilled in the Marcellus shale region. This means we have not even begun to see the intensity of drilling that is to come to this region. This is at the heart of our public health concerns.
3. Public Health is involved not only in the science of epidemiology where we look at the pathways and routes of exposure of disease and contamination, but also in predictive modeling and the science of prevention, in this case a complete picture of risk is not able to be completed so predictions on the likelihood of exposure pathways and the ensuing risk of contamination and health effects to individuals and communities.
4. We are very concerned about fluid disposal from gas industry operations such as flow back fluids and produced fluids. Industry and scientists have all acknowledged that we are plagued by legacy pollution in this area of our air and water. In particular it has often been stated, across

the board, that acid mine drainage has contributed greatly to the total dissolved solids in our rivers, especially the Monongahela River. Accepting this, and aware that research, in particular from the West Virginia Research Institute, shows that in the last five years we have been spiking close to safe limits of 500 - 800 mg/L or ppm of TDS in this river. Marcellus Shale drilling began approximately 5 years ago in this area. It is possible and highly probably that adding more TDS to our rivers may jeopardize the safe levels in water. We have figures on the permitted gallons of disposed fluids allowed for 14 waste disposal facilities in the Monongahela Watershed. These figures add up to a total of 612 -2,112 1000's of gallons of waste per day. In a study published in the journal of the Society of Petroleum Engineers focusing on the concentrations of selected important contaminants from Marcellus Shale flow back water, there are approximately 161,636 mg/L total dissolved solids (TDS): 2, 950 mg/L of Barium: 3,280 mg/L of Strontium and 95,400 mg/L Chloride. Doing the calculations with the total disposed waste from the treatment facilities there is **824,825 lbs. of TDS, 15,053 lbs. of barium, 16,737 lbs. of strontium and 486,812 lbs. of chloride** permitted disposal everyday into the Mon River. This is above and beyond the acid mine drainage flowing into the river. We would strongly encourage zero discharge as soon as possible.

5. It has been said that safety is important. An analysis conducted on 1207 violations reported between 2008 and 2010 from data acquired from the PA DEP by the PA Land Trust shows that 16% of the violations were related to discharges of contaminated waste into soil or water and 44% of the violations were related to the potential for contamination of land or water related to inadequate construction or safety precautions. For a total of 60% of the violations related to pollution or potential pollution problems related to inadequate construction or safety precautions. This is over half of the total violations.

6. Air quality is already poor in Allegheny County as well as other counties in Southwestern PA, the gas and oil industry has said that burning natural gas is moving us to lower CO₂ emissions and therefore over all lower carbon emissions. This is true, but the fact leaves out the factor of contaminants associated with the production of natural gas as an industry and the level of carbon emissions it takes to produce the gases from this industry. For one, Methane (CH₄) is a greenhouse gas that remains in the atmosphere for approximately 9-15 years. Methane is over 20 times more effective in trapping heat in the atmosphere than carbon dioxide (CO₂). Then there are the hydrocarbons such as benzene, ethyl benzene, toluene, and xylene as well as other hydrocarbons or volatile organic compounds (VOC) emitted from the hundreds of diesel trucks moving back and forth during drilling operations, as well as from well pads to drain condensate tanks during the life of the producing well. There are VOC's emitted from large (sometimes 3 acre) open impoundments used for storing flow back fluids that will be mixed with fresh water for recycling in fracturing operations. There are also impoundments for the storage of drilling mud and cuttings, which contain many kinds of contaminants including radionuclide's picked up during the drilling process.
7. In the process of our project to document the experiences of people impacted by this industry, we have learned that many people are reporting health effects which they perceive are attributable to gas industry operations nearby. Some farmers are reporting cattle and goat mortality. I will add that these are unsubstantiated reports and anecdotal evidence, but at the very least these perception of threats and incidents related to the industry evolves from the stress this industry places on the residents of the communities where drilling operations and wells exist. Anxiety about pollution of water, air contamination, as well as noise and disruption of normal individual and community activities are part of the environment of new industry involved in natural gas exploration and development, especially in rural areas. There is also the stress induced by inflated economies in areas that tend to be lower income. These inflated economies are due to the boom of workers from out of state who are filling up motel rooms and

also rental units, this along with man camps temporarily inflate the population and can drive up prices of food and services for everyone. Much of this stress is related to the unknown and affects all aspects of the lives of those who reside in the neighborhoods where drilling operations are performed.

8. The Center for Healthy Environments and Communities is a community based participatory environmental health research center. The work of the CHEC related to Marcellus Shale development has been to meet and dialogue with many different groups and individuals across the state of Pennsylvania. A major outcome of these conversations is a need for a repository of data, related to the Marcellus Shale play. To this end, the Foundation for PA Watersheds, has hosted an information commons web tool developed by Rhiza Labs here in Pittsburgh, which the CHEC is managing. This is a data aggregation, mapping and visualization based on the geo-coding of data. The tool is a two part systems composed of an information blog, which provides help for registering, negotiating and working with the web commons tools. The blog is called FracTracker.org and the web tool is called Data.FracTracker.org. Since its introduction FracTracker has received rave reviews and a considerable amount of excitement from individuals, environmental organizations, regulatory agencies, and legislators concerned about the Marcellus shale development. This tool is user friendly and aimed at a large segment of the general population. Having a repository of a variety of data enables a large number of people to create maps and stories of their own related to the impacts of the Marcellus Shale development.