

CitizenShale has a mission to “support comprehensive efforts to protect individuals and communities from the wide-ranging impacts of shale gas development.” Although we are a group of citizens, not a group of medical professionals, it is clear to us that the Public Health Study performed by the Maryland Institute of Applied Environmental Health (MIAEH) not only suggests, but proves that unconventional shale gas development and production (UNGDP) will harm individuals and communities in western Maryland.

This raises the questions: Is harming communities and individuals acceptable? Are there tradeoffs that would make harming not only people, but also livestock and food crops, and other living things, acceptable?

The MIAEH Health Study reveals eight general areas of concern that would impact human health during UNGDP. We will address some of the areas of high concern, although we feel that even the concern with the lowest rating, earthquakes, is based on out-dated information. The USGS has now claimed that not only underground injection of waste, but the injection of fracking fluid itself causes earthquakes. This development would likely change MIAEH’s low rating of earthquake risk.

#### **1. The high risks to air and water quality:**

Studies used by MIAEH reveals that water and air in a range of proximities to UNGDP wells contain high levels of toxins and hazardous materials that are associated with methane, chemicals, and other substances used or produced by UNGDP.

*The MIAEH recommendations about water and air quality suggest that the various ranges of influence where impacts have occurred in other states are not mitigated by the most recent (final) draft of MDE’s proposed Best Management Practices (BMP) report, one that will be used to inform new regulations, should UNGDP be permitted in Maryland.*

Although MIAEH recommends that MDE re-evaluate the 2000-foot setback distances (R2) proposed in the final BMPs, *MIAEH ignored research on setbacks by later recommending a number that matched the BMP recommendations (R14)*

*And the fact is more research on air and water is needed.* The MIAEH recommendations about air emissions are based on very little research, considering medical research and medical outcomes take time to manifest. A report released in July 2014, after the MIAEH report, states:

The Inter-Environmental Health Sciences Core Center (EHSCC) Working Group concluded that a potential for water and air pollution exists which might endanger public health, and that the social fabric of communities could be impacted by the rapid emergence of drilling operations. The working group recommends research to inform how potential risks could be mitigated.

Conclusions: Exposure and health outcomes research related to UNGDP is urgently needed and community engagement is essential in the design of such studies.

## 2. The high risk to the western Maryland Healthcare infrastructure

The MIAEH report suggests that impacts to the healthcare infrastructure will be high due mostly to an influx of migrant workers that are historically uninsured.

Western Maryland is already recognized as having a healthcare personnel shortage, as well as a medically underserved population (HPSA and MUA respectively.) Studies released even since MIAEH completed its research have shown that local medical care is very stressed by UNGDP. ***Hospitals in other states have shown huge losses that may cause bankruptcy, if not a decrease in quality of service.***

Reports from North Dakota:

<http://www.alternet.org/speakeasy/tara-lohan/fracking-boom-overwhelming-hospitals-uninsured-laborers>

The economic toll has been great. “The 12 medical facilities in western North Dakota saw their combined debt rise by 46 percent over the course of the 2011 and 2012 fiscal years, according to Darrold Bertsch, the president of the state’s Rural Health Association,” wrote Eligon.

Report from Pennsylvania:

[http://archive.pressconnects.com/article/20121224/NEWS\\_11/312240043/Gas-field-workers-cited-Pa-hospital-s-losses](http://archive.pressconnects.com/article/20121224/NEWS_11/312240043/Gas-field-workers-cited-Pa-hospital-s-losses)

“We had a loss,” Plummer said. “I don’t think it’s a sign of the economy. I think it’s the influx of the gas industry and those who lack insurance.”

The hospital reported an operating loss of \$770,000 while providing more than \$3 million in care to people unable to pay in its most recent fiscal year. The uncompensated care figure is the highest it has ever seen.

***How will these financial losses be covered?*** In a presentation to Garrett County’s Shale Gas Advisory Committee, Logan Marks of West Virginia University was able to show that with a range of build out scenarios, the severance tax income to the county would match or be exceeded by the loss in revenue to the county in property taxes. ***In order to maintain the current level of county services, Garrett County will need to generate income to pay for rising costs of health care due to impacts of shale gas development.***

MIAEH recommendations about mitigating the impacts to healthcare infrastructure all suggest implementing monitoring systems, stakeholder committees (as if doctors who are already challenged by workloads could attend more meetings), or review systems at the county level. Monitoring problems does not mitigate those problems or prevent them from happening. And MIAEH’s recommendations raise the question: ***How will the monitoring systems be paid for?***

### **3. The high risk to UNGDP workers**

a. The MIAEH report states that silica in the fracking sand is a hazard to workers. MIAEH refers to an OSHA warning to workers in the UNGDP that there is a high risk of lung damage from exposure to silica.

CitizenShale agrees that there is high concern for silica exposure, but the MIAEH recommendation is to require MOSH and other institutional monitoring. Again: ***monitoring is not prevention, and Again: How will this monitoring be paid for?***

A recent CDC study, released since MIAEH's report, not only took air samples, but also urine samples of workers and found toxins, including benzene a known carcinogen, at high levels in both sample sets. Garrett County has cancer rates equal to other areas around the state, but, according to a statement made Sept 25, 2014, Mark Boucot, President and CEO of Garrett Memorial Hospital, Garrett County cancer victims suffer much higher mortality rates than cancer patients in other areas of the state.

***CitizenShale is not in favor of introducing an industry that has a history of using known carcinogens without proper protections before Maryland has proper mitigating procedures in place***

### **4. The high impact on social determinants of public health**

Motor vehicle injuries and deaths, violent crime rates, and sexually transmitted diseases all increase in areas where UNGDP occurs.

***Above we noted that western Maryland healthcare system is already understaffed so addressing the health impacts of these risks will be difficult and costly.***

MIAEH recommends that the local jurisdictions impacted by increased truck traffic from UNGDP devise and execute new traffic plans, including reductions in speed limits and designated truck routes. CitizenShale supports these recommendations, and notes that Garrett County's Shale Gas Advisory Committee has proposed a new transportation plan addressing impacts of UNGDP to roads and traffic. It is unclear if Allegany County has addressed the need to meet traffic and transportation impacts. ***A complicating factor for both counties is the fact that some local road use authorities lie with the state, including roads bonding, and there is no guarantee that concerns will be addressed at the state level.***

MIAEH recommends that social services be increased to help workers "feel welcome," which may decrease some negative behaviors. Again we ask: ***How will this increase in services be paid for?***

MIAEH recommends that a SOPA be enacted to empower local communities to monitor setbacks and to create maps of areas that would be restricted from UNGDP, making those areas safer from physical and social harms associated with this industry. While a SOPA

may be useful, *no law currently exists to specifically protect and empower surface owners in the event that UNGDP is permitted in our state.*

#### **5. The moderately high concern for impacts from wastewater.**

MIAEH admits that its recommendations about the impacts of flowback and wastewater are based on “limited data available.” Flowback contain NORMs and other known carcinogens, endocrine disrupters, solvents, surfactants, VOCs, and numerous un-named chemicals in unknown concentrations.

MIAEH recommends implementing appropriate setbacks. As explained above, *there is no consensus in the literature to determine the appropriate safe distances.*

MIAEH recommends more monitoring. *Citizen Shale would suggest that without a clear understanding of the chemicals and radioactive materials involved, and the impact of those on humans, animals and soil, a monitoring program has little ability to prevent accidents or exposure.*

MDE’s Best Management Practices (BMP) report states:

*“Flowback and produced water shall be handled in a closed loop system of tanks and containers at the pad site. Flowback and produced water may not be stored in surface impoundments or ponds,”* no process for storing or disposing of the toxic and radioactive waste has been outlined in the Best Management Practices (BMP) report. (see discussion on pp 42-43 of the BMPs) This omission from the BMPs is likely because waste from fracking operations, due to its chemical and radioactive content, could be categorized as hazardous, but being a product of the oil & gas industry, it is **exempt** (via Resource Conservation and Recovery Act) from being treated by law as hazardous waste. *Citizen Shale suggests that waste containing radioactive materials and known carcinogens and neurotoxins will likely harm our communities because it is exempt from RCRA regulations.*

And closed loop containment systems, the proposed BMP, can leak, as we saw earlier this year. *So, MDE’s proposed BMPs may not prevent spills and leaks that lead to negative health impacts.* From Huffington Post, January 2014 “At least 100,000 customers in nine West Virginia counties were told not to drink, bathe, cook or wash clothes using their tap water because of a chemical spill into the Elk River in Charleston, with Gov. Earl Ray Tomblin declaring a state of emergency ...”

Source: [http://www.huffingtonpost.com/2014/01/09/elk-river-chemical-spill-wv\\_n\\_4571408.html](http://www.huffingtonpost.com/2014/01/09/elk-river-chemical-spill-wv_n_4571408.html)

*Finally, science has not determined how the many chemicals in fracking react with one another, but known reactions between chemicals in other contexts may provide insights.* A brand new report –released since this MIAEH study was completed- suggests that “the disposal and leaks of hydraulic fracturing wastewater (HFW) to the environment pose human health risks. Since HFW is typically characterized by elevated salinity,

concerns have been raised whether the high bromide and iodide in HFW may promote the formation of disinfection byproducts (DBPs) and alter their speciation to more toxic brominated and iodinated analogues.”

Source: <http://pubs.acs.org/doi/abs/10.1021/es5028184>

**Conclusion:**

Citizen Shale suggests that despite the efforts of MIAEH, UNGDP has not yet been thoroughly researched, nor its health impacts well understood. It is clear that using MDE’s proposed BMPs, UNGDP cannot be regulated to adequately address risks to public health in Maryland. And from this report, it is clear that the few proposed recommendations that might achieve some level of protection for our communities will increase financial burdens on the state and counties, as well as on individuals and medical and social service providers. Until these risks to public health and our regional economy are addressed, it is not prudent to move forward with Unconventional Natural Gas Development and Production in Maryland.