



October 3, 2014

Environmental Health Bureau, Marcellus Shale Comments
Maryland Department of Health and Mental Hygiene
201 West Preston Street, Room 327
Baltimore, MD 21201
dhmh@envhealth.maryland.gov

Dear DHMH:

On behalf of Earthworks, thank you for the opportunity to provide comments on the Maryland Institute for Applied Environmental Health (MIAEH) report, *Potential Public Health Impacts of Natural Gas Development and Production in the Marcellus Shale in Western Maryland*.

Founded in 1988, Earthworks is a nonprofit organization dedicated to protecting communities and the environment from the negative impacts of mineral and energy development while seeking sustainable solutions. Core aspects of our work include investigating and documenting the effects of oil and gas development on health and persistent gaps in the enforcement of oil and gas regulations.

Earthworks believes that **a comprehensive Health Impact Assessment (HIA) is still warranted in Maryland**, particularly in light of the health-related vulnerabilities of the populations that would be affected by Marcellus Shale development identified in the MIAEH report. However, we also acknowledge that MIAEH has with the current report advanced understanding of the actual and potential impacts of shale gas operations on the health and well being of individuals and communities.

In particular, **we applaud the MIAEH report's emphasis on the cumulative impacts of exposures to chemicals and other hazards**. State regulators generally assess and issue permits for oil and gas operations one well or facility at a time, with no consideration of the additive effects. The MIAEH report rightly acknowledges two critical issues when considering health impacts: "While there is strong agreement in scientific community that the traditional single chemical centric risk assessment methods are inadequate in dealing with such issues, the emerging field of cumulative risk assessment is still in its infancy;" and "the combined effect of UNGDP related hazards described in this report may be higher than the simple sum" (p. xxiv).

In 2011-2013, Earthworks conducted air sampling at the homes of Pennsylvania residents living near gas wells, compressor stations, and other facilities who have reported health symptoms since drilling began.¹ Given that a variety of air contaminants were being released into the atmosphere from the operations, including particulate matter, volatile organic compounds, and hazardous air pollutants (such as benzene, formaldehyde, and toluene), we concluded that the combination may cause health impacts even when concentrations of individual chemicals are relatively low. Similarly, a recent study by researchers with the Southwest Pennsylvania Environmental Health Project concluded that when people are exposed to multiple chemicals such as inhalable particles and air toxics, the dose increases synergistically, with a greater health effect felt than if these contaminants

were inhaled separately.²

The MIAEH analysis of public health risks from gas development in Maryland is predicated on the state's adoption of strong regulations, the use by operators of Best Management Practices (BMPs), and mandatory submission of a Comprehensive Gas Development Plan (CGDP) that would include all foreseen exploration and production activities. In addition, **the report includes numerous recommendations—which Earthworks fully supports here and in other contexts**—to strengthen the effectiveness of regulations and CGDPs in actually protecting health and the environment, in particular with regard to air emission and noise reduction; setbacks from buildings and water supplies; monitoring of air, water, and soil; and waste management.

Yet even with the presumption that all these strong protective measures would be in place, MIAEH concludes that there is a High or Moderately High Likelihood that all aspects but one (earthquakes) considered in the report would be negatively impacted by unconventional natural gas development (i.e., air, water, and soil quality, noise, social determinants, occupational exposures, health infrastructure, and cumulative exposures). This speaks to the essentially unequivocal risk posed by natural gas development, an inherently polluting process.

Earthworks cautions MIAEH, DHMH, the Maryland Department of the Environment (MDE), and Department of Natural Resources (DNR) from presuming that the adoption of strong regulations and the report's recommendations alone will protect health and the environment. While regulations, mandatory BMPs, and comprehensive planning are critical measures, they are only as effective as their enforcement.

This points to the **necessity of MDE having the funds, staff, and other resources necessary to fully oversee the gas industry** during all phases of exploration, extraction, production, transport, and clean up—*before* any steps are taken to move forward with gas development. In addition, MDE (in collaboration with other public agencies such as DHMH and DNR) must have the ability to collect the information needed to enforce regulations, respond to citizen concerns, conduct inspections and investigations, and take action to stop operations and practices that cause pollution.

Yet we question MDE'S current ability for effective enforcement in light of the fact that the Department has only three inspectors on staff. While MDE plans to assess permit fees sufficient to fund new hires, this amounts to a “catch up” approach that has proven insufficient in other states. By the time MDE hires additional inspectors and other necessary staff, site construction and drilling activities will have been permitted and commenced—and therefore potentially resulted in environmental and public health impacts *before* MDE has the opportunity to put a full regulatory oversight and enforcement program in place.

Earthworks raises this critical point based on our experience documenting gaps in oil and gas regulations and lapses in their enforcement. In 2012, Earthworks issued a groundbreaking report, *Breaking All the Rules: The Crisis in Oil & Gas Regulatory Enforcement*, based on in-depth analysis of data on the regulatory programs of six states (Colorado, New Mexico, New York, Ohio, Pennsylvania, and Texas). Our research showed that nationwide, more than half of active oil and gas wells go completely uninspected each year and companies are seldom held accountable for regulatory violations.³ We also found that when inspectors do go looking, they find problems—a clear indication that more violations and other environmentally damaging incidents are occurring than is ever documented by regulatory agencies.

In addition, this past August (2014), Earthworks released a report that we believe to be particularly relevant to conclusions in the MIAEH report. In *Blackout in the Gas Patch: How Pennsylvania Residents are Left in the Dark on Health and Enforcement*, the environmental and health impacts of gas development were considered for the first time on a site-by-site basis, and directly linked to a lack of state oversight and enforcement.

Blackout in the Gas Patch examined how events at gas well sites and facilities may have affected the air and water quality and health of nearby residents, as well as how gas operators and the Pennsylvania Department of Environmental Protection handled these situations. (The executive summary is enclosed with these comments; see <http://blackout.earthworksaction.org> for the full report and seven in-depth case studies of gas sites and nearby households.)

In sum, the report documented the very real, on-the-ground consequences of the failure to oversee the gas and oil industry and hold operators accountable for the damage they cause. Earthworks believes that *Blackout in the Gas Patch* serves as **a cautionary tale for both Maryland and other states of just how difficult it is to oversee a complex industry that poses threats to water and air quality and, in turn, health.**

Finally, Earthworks offers comments on two critical aspects of oil and gas regulations covered in the MIAEH report, as follows.

Disclosure of Well Stimulation Materials

We appreciate MIAEH's consideration of the important issues related to the disclosure of chemicals used in hydraulic fracturing fluids. Specifically, **Earthworks strongly supports Recommendations 9, 12, and 13** (pp. 89-90). Maryland should develop its own searchable and publicly accessible database to which operators must disclose all additives by Chemical Abstract Service number, including volumes and concentrations. We support MIAEH's suggestion that California's Senate Bill (SB) 4 and Maryland's House Bill (HB) 1030 (which was introduced in the 434th legislative session of the Maryland General Assembly) provide an important starting point for the development of relevant legislation.

Earthworks strongly opposes MDE's current proposal to allow operators to claim trade secrets automatically, without substantiation, documentation, or review. We agree with MIAEH that Maryland should not permit oil and gas operators to make any trade secret claims and thereby avoid chemical disclosure requirements. If Maryland does allow for trade secret claims, claimants must be required to demonstrate that disclosure would create a likelihood of substantial economic harm. The state should verify all trade secret claims for their veracity and provide for an administrative mechanism that allows for citizen challenges to the claims.

Flowback and Production Water

Earthworks disagrees with the conclusion in the MIAEH report that there is only a Moderately High Likelihood that the impact of unconventional natural gas development and production on water quality, soil quality, and naturally occurring radioactive materials will in turn have a negative impact on public health (p. 92). **We recommend changing this conclusion to a High Likelihood of impact to water quality.**

Unfortunately, much remains unknown about the characterization of these fluids in current use, since oil and gas exploration and production wastes enjoy a categorical exemption from the US Resource Conservation and Recovery Act (RCRA).⁴ Most states have incorporated the RCRA exemption into their own oil and gas regulations, including Maryland⁵. However, EPA itself has

stated that, “It is clear that some portions of both the large-volume and associated waste would have to be treated as hazardous if the Subtitle C exemption were lifted.”⁶ MDE and DNR reiterated this position in their *Draft Partial Responses to Comments On Draft Best Practices Report*:

“Looking at the situation in 2014, we note that some flowback and produced water from HVHF (high volume hydraulic fracturing) contain some constituents at greater than 100 times drinking water standards. **If the exemption were not in place, it is possible that these wastes would qualify as hazardous.** When these wastes are mismanaged, they have the potential to cause damage.”. (Emphasis added.)⁷

This view also has supporting documentation of flammability, toxicity, and ignitability levels high enough to trigger RCRA, were it not for the exemption. This includes a 2009 study analyzing constituents of flowback in West Virginia and Pennsylvania that detected both barium and known carcinogens such as benzene, toluene, ethylbenzene, and xylene in excess of the regulatory threshold for toxicity.⁸

In 2002, the California Department of Toxic Substances Control found 11 percent of oil waste samples tested exceeded ignitability regulatory thresholds.⁹ As early as 2003, federal regulators became aware that exploration and production (E&P) wastes do spontaneously combust. In January of that year, a Texas collection pit of E&P waste ignited when hydrocarbon vapors interacted with sediments and water in the pit.¹⁰ In May 2006, a natural gas condensate tank and pit operated by EnCana caught fire and burned for five hours.¹¹ In April 2010, a wastewater impoundment in Washington County, PA ignited reportedly shooting flames 100 feet in the air.¹²

With such risks in mind, **MIAEH should recommend that Maryland close the hazardous waste loophole in state law** that allows chemicals used by the oil and gas industry—and which would be considered hazardous in any other context—to permeate water and soil and, in turn, degrade the environment and harm human health.

Earthworks strongly supports all the MIAEH report recommendations related to flowback and production water, in particular Recommendations 22 and 23 (p. 93). As the University of Maryland Center for Environmental Sciences-Appalachian Laboratory (UMCES-AL) report¹³ referenced by MIAEH notes, operators should, to the extent practicable, recycle 100 percent of their flowback and produced water. In addition, operators should use “tracers” that can aid in groundwater monitoring efforts and easily identify sources of contamination—thereby adding a critical layer of accountability by gas operators for water contamination events.

Earthworks appreciates MIAEH’s significant efforts to assess the risks of natural gas extraction and production. We look forward to participating in the continued process of ensuring that MDE and state policymakers prioritize the environment and health of Maryland’s residents when deciding whether or not to take a gamble on Marcellus Shale development.

Thank you for your consideration.

Sincerely,



Aaron Mintzes
Policy Advocate, Earthworks
1612 K St., NW #808
Washington, DC 20006



Nadia Steinzor
Eastern Program Coordinator, Earthworks
PO Box 149, Willow, New York 12495
202-887-1872, ext. 109
nsteinzor@earthworksaction.org

¹ See 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), 2013; and Earthworks, *Blackout in the Gas Patch: How Pennsylvania Residents are Kept in the Dark on Health and Enforcement*, 2014.

² David Brown, Beth Weinberger, Celia Lewis, and Heather Bonaparte. "Understanding exposure from natural gas drilling puts current air standards to the test." *Reviews on Environmental Health*, March 2014.

³ Earthworks 2012. *Breaking All the Rules: The Crisis in Oil and Gas Regulatory Enforcement*. See national overview and state-specific reports at <http://enforcement.earthworksaction.org>.

⁴ See "Loopholes for Polluters" fact sheet. Earthworks 2011.
www.earthworksaction.org/library/detail/loopholes_for_polluters.

⁵ COMAR 26.13.02.04-1(A)(5)

⁶ US Environmental Protection Agency. "Regulatory Determination for Oil and Gas and Geothermal Exploration, Development, and Production Wastes." *Federal Register*, Volume 53, 1988.
www.epa.gov/osw/nonhaz/industrial/special/oil/ogreg88.txt.

⁷ Marcellus Shale Safe Drilling Initiative Study, Draft Partial Response to Comments On Draft Best Practices Report, April 2014, Classification of wastes under the Resource Conservation and Recovery Act (RCRA)

⁸ T. Hayes. *Sampling and Analysis of Water Streams Associated with the Development of Marcellus Shale Gas*, Gas Technology Institute, report prepared for the Marcellus Shale Coalition. December 2009.
<http://energyindepth.org/wp-content/uploads/marcellus/2012/11/MSCCommission-Report.pdf>

⁹ Claudia Zagrean Nagy, California Dep't of Toxic Substances Control, Oil, Exploration and Production Wastes Initiative (2002) at 36

¹⁰ U.S. Dep't of Labor, Occupational Safety and Health Admin., Potential Flammability Hazard Associated with Bulk Transportation of Oilfield Exploration and Production (E&P) Waste Liquids, SHIB 03-24-2008. It is possible also that this incident might meet the RCRA standard for reactivity.

¹¹ Earthworks Oil & Gas Accountability Project, Spring/Summer 2006 Report

¹² Janice Crompton, [*Residents Reported Gas Odors Before Explosion*](#), Pittsburg Post-Gazette, Apr. 1, 2010 at B-1

¹³ See Keith Eshelman and Andrew Elmore, *Recommended Best Management Practices for Marcellus Shale Gas Development in Maryland*, University of Maryland Center for Environmental Science- Appalachian Laboratory, page v.