

Emailed Written submission – Comment on DRBC Water Resources Program 2017-2019 resolution proposed by Delaware River Basin Commission, submitted 02.19.2017 to Paula Schmitt at paula.schmitt@drbc.nj.gov

Dear Ms. Schmitt,

Delaware Riverkeeper Network submits this email and these documents to support our request that the Water Resource Program 2017-2019 references regarding the DRBC's plan to continue to develop natural gas regulations (page 31) be removed from the program based on our request that instead a ban should be enacted by the Commission. Some highlights of recent analyses and studies on the impacts of fracking and drilling are included below.

When the commission enacted the moratorium three main concerns were cited – the diminishment of **surface and groundwater**, the release of **pollution**, and the impacts of frack **waste** disposal.¹ In the intervening years, a substantial body of knowledge has developed containing significant evidence that shale gas development has myriad adverse effects on our air, water, and land, public health, property interests, and agriculture, effecting present and future generations.²

Water use for oil and gas well development and for stimulation and extraction of gas from wells is very large, particularly for hydraulic fracturing (fracking) - the predominant method used today to extract gas - which requires high volumes of water. On average, 4.5 million gallons of water is used to frack a shale well, a depletive use because the water is not returned to the source, most of it completely removed from the hydrologic cycle when it is injected into deep formations. Of particular concern in the Delaware River Watershed where the shale underlies the upper basins' streams, is that the required water can remove up to 70 percent of the water in small streams, permanently depleting crucial flows, disrupting natural flow regimes and increasing damaging runoff³, essentially turning some of our highest quality streams into ditches. Removal of fresh water flows also allows for the concentration of contaminants when aquifers are overdrawn, reducing base flow of streams, in turn affecting water quality and habitats.

In terms of **pollution** potential, fracking uses toxic chemicals and hazardous materials are produced by the formations that are fractured. 1,076 chemicals are known to be used in fracking fluids, according to

¹ <http://www.nj.gov/drbc/programs/natural/>

² PSE Healthy Energy Library, https://www.zotero.org/groups/pse_study_citation_database/items; See Compendium, <http://concernedhealthny.org/compendium/>; Delaware Riverkeeper Network, "Unsafe and Unsustainable," http://www.delawareriverkeeper.org/Documents/DRN_Report_Unsafe+Unsustainable_fr.pdf

³ Hansen, L., Habicht, S., and Faeth, P., CNA, "Potential Environmental Impacts of Full-development of the Marcellus Shale in Pennsylvania", September 2016, p. 35.

the U.S. Environmental Protection Agency (EPA),⁴ many of them carcinogenic, including some linked to childhood leukemia.⁵

In the most recent statistical analysis of the body of scientific literature by the Concerned Health Professionals of New York and Physicians for Social Responsibility, 685 peer reviewed papers were reviewed and the overwhelming majority of studies found evidence of or potential adverse impacts on water, air, and human health.⁶

The negative impacts of shale gas development are documented by PA Department of Environmental Protection's accounting of 284 private water well contamination cases that were determined by the agency to have been caused by oil and gas operations through 2016⁷. The EPA's newly released hydraulic fracturing study provides scientific evidence that hydraulic fracturing activities can impact drinking water resources and includes water impacts from shale gas in the Pennsylvania community of Dimock.⁸

In terms of **waste** production, reuse and disposal, both wastewater and solid wastes pose challenges that have not yet been resolved by government agencies or the industry. Currently, no set of federal regulations for waste produced during fracking exists except for a prohibition by EPA for the treatment of gas and oil wastewater at sewage treatment facilities. This only addresses part of the management issues and leaves some critical loopholes in place that pose environmental threats. Because of a 1988 oil and gas industry waste exemption from the Resource Conservation and Recovery Act (RCRA), oil and gas waste is not regulated as hazardous, even though it contains hazardous constituents. In fact, the shale gas industry has received unprecedented exemptions from our nation's most important environmental and public health laws, making adequate regulation virtually impossible.⁹

⁴ Environmental Protection Agency (EPA). 2015. Assessment of the Potential Impacts of Hydraulic Fracturing for Oil and Gas on Drinking Water Resources – External Review Draft. June 2015. Available at: www.epa.gov/hfstudy; Hein 2012, p. 2.

⁵ Deziel, N. et al, Yale School of Public Health, [Journal of Exposure Science and Environmental and Epidemiology](#), January 2016.

⁶ Concerned Health Professionals of New York and Physicians for Social Responsibility, "Compendium of Scientific, Medical, And Media Findings Demonstrating Risks And Harms Of Fracking (Unconventional Gas And Oil Extraction)", Fourth Edition, November 17, 2016.

⁷ http://files.dep.state.pa.us/OilGas/BOGM/BOGMPortalFiles/OilGasReports/Determination_Letters/Regional_Determination_Letters.pdf accessed by DRN 12.27.2016

⁸ <https://cfpub.epa.gov/ncea/hfstudy/recordisplay.cfm?deid=332990>

⁹ Oil and Gas operations are exempt from portions of major federal environmental laws including: Clean Air Act; Clean Water Act; Safe Drinking Water Act; Resource Conservation and Recovery Act, Comprehensive Environmental Response, Compensation and Liability Act (the Superfund Law); and Emergency Planning and

Fracking produces waste that contains many of the toxics that are injected and also deep geology pollutants that are disturbed and ejected to the surface, exposing the environment and those who live in it to the increased risk of disease and adverse health effects. The radioactive isotopes that are brought to the surface can contain dangerous levels of radioactivity, requiring special monitoring and handling. Measurements by New York Department of Environmental Conservation show radium in drill cuttings from gas wells over 200 times background concentrations.¹⁰ Duke University scientists¹¹ found Ra-226 concentrations in stream sediments at the point of discharge of a fracking wastewater facility were 200 times greater than upstream and background sediments and above radioactive waste disposal threshold regulations.

A vitally important cumulative impact is the climate effects of shale development in the Watershed. Natural gas is primarily methane, a greenhouse gas 86 times more efficient at trapping heat than carbon over a 20 year time frame¹² and its effects persist for hundreds of years¹³. The well documented vented and fugitive losses from natural gas systems contribute to atmospheric warming; current technology and practices have not controlled these releases. The emissions are so great that it is projected that their release from the build out of Marcellus shale will prevent the achievement of global warming goals in Pennsylvania, accelerating climate change.¹⁴ Climate change impacts on the basin's water resources include changes in precipitation and runoff that increase flooding and drought, impairment of habitats and water quality (including salt water intrusion to Delaware Estuary water supplies) and sea level rise.¹⁵

Additionally, these links to recent studies and reports show that the adverse impacts of fracking and drilling are causing and have the potential to cause more substantial environmental and health effects, detrimental to the goals of water resource protection.

http://www.pennlive.com/news/2017/02/pa_regulators_address_fracking.html#incart_river_home

<http://publicherald.org/to-hell-with-us-records-of-misconduct-found-inside-pa-drinking-water-investigations/>

<http://publicherald.org/hidden-data-suggests-fracking-created-widespread-systemic-impact-in-pennsylvania/>

http://www.delawareriverkeeper.org/sites/default/files/resources/Reports/DRN_Report_Unsafe%2BUnsustainable_fr.pdf

Community Right-to-Know Act. Amy Mall, et. al., Natural Resources Defense Council, *Drilling Down*, October 2001, p. iv.

¹⁰ NYSDEC, Division of Environmental Remediation, August 2012, re. Allied Landfill, Niagara County.

¹¹ Warner, NR, et al, "Impacts of Shale Gas Wastewater Disposal on Water Quality in Western Pennsylvania," *Enviro Science and Technology*, Oct 2, 2013, pp. 11849.

¹² Intergovernmental Panel on Climate Change (IPCC). 2013. *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.*

¹³ <http://www.pnas.org/content/early/2017/01/03/1612066114.full>

¹⁴ PSE Healthy Energy, "Lifecycle Greenhouse Gas Emissions Associated with Projected Future Marcellus Development", 2017.

¹⁵ <https://www.epa.gov/climate-impacts/climate-impacts-water-resources>

<http://www.delawariverkeeper.org/sites/default/files/Review%20of%20PA%20DEP%20NORM%20Study-12.14.15%20FINALdocx.pdf>

<http://www.delawariverkeeper.org/sites/default/files/resources/Reports/Study%20-%20Residents%20More%20Likely%20to%20be%20Hospitalized%207.15.pdf>

<http://www.delawariverkeeper.org/sites/default/files/resources/Reports/Opinion%20J-127A-D-2012oajc.pdf>

<http://www.delawariverkeeper.org/sites/default/files/resources/Reports/PA%20AG%20audit%20DEP072114.pdf>

http://www.delawariverkeeper.org/sites/default/files/resources/Reports/NYDOH%20high_volume_hydraulic_fracturing.pdf

<http://www.delawariverkeeper.org/sites/default/files/resources/Reports/myers%20epa%20fracking%20report%20final%20082415.pdf>

http://www.delawariverkeeper.org/sites/default/files/DRN_MarcellusBuildOut_18Jan2017%282%29.pdf

http://www.delawariverkeeper.org/sites/default/files/resources/Reports/Expert_Report_Myers-Hydrology_Issues_with_Hydraulic_Fracturing_in_Pennsylvania.pdf

http://www.delawariverkeeper.org/sites/default/files/Envisioning_PAs_Energy_Future_1.pdf

http://www.delawariverkeeper.org/sites/default/files/Envisioning_PAs_Energy_Future_Factsheet%20final.pdf

<http://www.delawariverkeeper.org/sites/default/files/resources/Reports/Read%20articles%20by%20the%20New%20York%20Times%20reporter%20Ian%20Urbina.pdf>

<http://www.delawariverkeeper.org/sites/default/files/resources/Reports/CNA%20Impacts%20in%20DRB.8.15.pdf>

<http://www.delawariverkeeper.org/sites/default/files/resources/Reports/Resnikoff%20Env%20Assessment%20of%20EPA%20Potential%20Impacts.finaldocx.pdf>

Based on the overwhelming evidence that fracking and drilling cannot be done safely or within DRBC regulations and/or water resource policies, we request that the Commission enact a permanent ban on drilling and fracking within the Delaware River Watershed.

Thank you for the opportunity to submit written comment.

Sincerely,

Tracy

Attachments:



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EHP281.acco.migraine, sinus near fracking



Evidence of childhood leukemia Yale fracking

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To remind us all to Remember the River in every decision we make;

And to hold our elected officials accountable to do the same.