



Talking Points DRBC June 12 2019 Meeting

HEALTH IMPACTS FROM FRACKING:

- In March 2018 Rolling Stone Magazine reported on the “Compendium” report of scientific studies of health effects of fracking that the researchers behind the report pointed out that fracking extends far beyond a single well but is, more accurately, part of a complicated extraction process with an infrastructure that extends across entire regions. **“At virtually every turn, the process contains public health hazards. Residents living near an active site breath air laced with carcinogens, including benzene and formaldehyde, and research has shown an increase risk of asthma, a decrease in infant health and worrisome effects on the development of a fetus, such as preterm births and birth defects”**, reports the Magazine.

The overwhelming evidence is that fracking presents a public health hazard that cannot be averted, no matter what regulations are devised; the only way to control the harm is to prohibit fracking and its activities on the precautionary principle. This information is critical for the Delaware River Basin Commission to consider because human health is an essential consideration of the Commission and inextricably connected to the quality of the Basin’s water resources and ecosystems.

- Health problems are being identified near Pennsylvania’s unconventional gas wells that are consistent with some of the issues flagged by EPA in their review of frack fluid chemicals. For instance, a study of 492 residents with water wells living within a kilometer of gas wells in Washington County were found to have more frequently reported upper respiratory problems and skin conditions. A study of 15,000 births in southwestern Pennsylvania found that those babies with the highest exposure to shale gas wells were born with low birth weight. Another study of approximately 8,000 Pennsylvanians with the highest exposure to shale gas wells had greater fatigue, chronic nasal and sinus symptoms, and migraines, compared to others who were not as close. **Fracking has created a public**

health crisis in Pennsylvania, the state that is the second largest producer of natural gas in the nation. People are paying the price for the intense fracking that is effecting shale field communities. These and other studies and reports are reviewed in the “Keystone Secrets” report and in the 2018 edition of the *Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking*.

<https://bit.ly/2MTDs5k>

- In an analysis of hospitalizations in Pennsylvania comparing areas with fracking and an area without fracking (Jemielita, 2015) it was found that increased inpatient prevalence rates occurred where unconventional gas wells (employing fracking) were located. Cardiology patients were significantly associated with the number of wells and inpatient prevalence rates also correlated with neonatology, neurology, dermatology, urology, and oncology. Neurology inpatient prevalence rates were significantly associated with wells per kilometer. **The researchers estimated that larger numbers of active hydraulic fracturing wells would increase inpatient prevalence rates over time, making it clear that fracked gas wells do effect hospitalizations, and thereby human health. This is just one study of hundreds that have found adverse health effects in fracked communities.**
- A new report issued by FracTracker Alliance, “Categorical Review of Health Reports on Unconventional Oil and Gas Development; Impacts in Pennsylvania”, 2019, on scientific and health reports regarding fracking impacts published over the last 3 year shows that health effects are continuing and in some cases escalating in fracked regions. Early life exposure, including prenatal exposure has been the most studied topic. **Researchers have documented relationships between UOGD and is associated with adverse birth outcomes and morbidity in children. A Pennsylvania study showed developmental, structural and functional birth defects were found to result from proximity to UOGD. Pennsylvania studies have also measured preterm birth (<37 weeks).** These studies and others from Pennsylvania populations have also documented low birth weight due to prenatal exposures. Fetal death and early infant mortality have also both been epidemiologically linked to Unconventional Oil and Gas Development(UOGD). Pennsylvania epidemiologic research has also shown that exposure to UOGD is associated with respiratory outcomes including asthma exacerbation in children and adults. **A relationship was found between UOGD and oral corticosteroid orders, asthma emergency department (ED) visits, and hospitalization.**

Pennsylvania hospitalization rates show relationships of exposure to UOGD and acute myocardial infarction (MI), chronic obstructive pulmonary disease (COPD), pneumonia, and other upper respiratory disorders.

More research from Pennsylvania showed impacts including current chronic rhinosinusitis, migraines, fatigue, all related to neurological impacts.

The relationship between cancer and proximity to UOGD has also been established in the Pennsylvania literature. Cancer types include all childhood leukemia subtypes, urinary bladder cancer, and thyroid cancer, and research in Colorado discovered correlations with acute lymphoblastic leukemia and Non-Hodgkin's lymphoma.

These health risks are startling and too great a risk to allow; DRBC must ban fracking and its activities.

DANGERS OF WASTEWATER PRODUCED BY FRACKING:

- **Wastewater produced by fracking activities contains a chemical mix that is complex, variable, and contains dangerous constituents and properties; in some instances what is in the fluids used in fracking, which are contained in the waste stream, is kept secret, even though it could be toxic. It is known that many of the constituents are carcinogenic, some have known adverse health effects, and some are toxic to aquatic life and plant life** including: biochemical oxygen demand (BOD), bromide, chloride, chemical oxygen demand (COD), specific conductivity, sulfate, total dissolved solids (TDS), total suspended solids (TSS), barium, potassium, sodium, strontium, benzene, ethylbenzene, toluene, xylenes, sulfide, gross alpha, gross beta, radium 226, and radium 228, according to the U.S. Environmental Protection Agency.
- It is known through sampling of wastewater produced by fracking that the Marcellus Shale formation and other shale gas deposits are highly radioactive, resulting in a waste stream that contains dangerous radioactive materials. A Duke University study of a stream in Pennsylvania below a frack wastewater processing plant found radium 226 levels in stream sediments at the point of discharge were ~200 times greater (544–8759 Bq/kg) than upstream sediments and background sediments (22–44 Bq/kg) and above radioactive waste disposal threshold regulations. **Radium 226 has a half-life of 1600 years and is a known carcinogen. Once it is released into the environment by being brought to the surface by fracking, it is a health hazard for generations to come.**
- According to EPA's Wastewater Produced by Fracking in 2018: EPA says in their report that the lack of information about many of the constituents of frack wastewater, including

the lack of scientific research on the chemicals used and on those chemicals that are kept secret under the cloak of Trade Secrets, leaves a data gap that is insurmountable, making it impossible to identify and control the impacts on human health and aquatic life. **If EPA has not been able to get this needed information, DRBC and states cannot get this information either, making an insurmountable problem. Wastewater simply cannot be allowed to be discharged in the Delaware River Watershed – it is too risky to endanger the water supply of over 15 million people.**

- USEPA reports that spills, leaks, and releases of frack wastewater occur, citing a study that says wastewater is one of the top 3 materials spilled in fracking activities, including during transportation of wastewater. EPA documents that these releases have negative impacts on water quality and aquatic life; the harm can persist for years after a spill. **It has reported that “health effects associated with chronic oral exposure to these chemicals include carcinogenicity, neurotoxicity, immune system effects, changes in body weight, changes in blood chemistry, liver and kidney toxicity, and reproductive and developmental toxicity.”** EPA also states that studies show that the likelihood of spills increase as the volume of wastewater and number of trips increase. **It is highly likely that at least some of these chemicals will leak, spill, or migrate into water supplies. Therefore, allowing drilling and fracking activities in the Delaware River Basin amounts to a huge gamble with people’s health.**
- Bromide is a contaminant consistently found in frack wastewater. Pennsylvania Department of Environmental Protection acknowledges that bromide is a key parameter of concern in the effluent because it can form brominated disinfection by-products (DBP’s) in water supplies. **These are a drinking water hazard because of the propensity for the brominated DBP’s to form trihalomethanes and haloacetic acid, which can cause cancer.**

DANGERS OF FRACKING FLUID CHEMICALS

- Yale University School of Public Health, in a study of chemicals used in fracking, found that of the 119 compounds with sufficient data to classify them in terms of carcinogenicity (only 20% of chemicals in use had sufficient data – a problem in itself), “44 percent of the water pollutants and 60 percent of air pollutants were either confirmed or possible carcinogens.” 55 unique compounds with carcinogenic potential could be released to both water or air and 20 chemicals had evidence of increased risk for leukemia or lymphoma specifically. **DRBC will not be able to control which chemicals companies use to frack wells and**

which chemicals end up in the wastewater that is produced, resulting in the exposure of people to these dangerous chemicals, risking harmful health effects.

- The Secret Chemical Report - “Keystone Secrets”, Partnership for Policy Integrity (PFPI) documents that drilling companies have extensively used loopholes in Pennsylvania rules that allow companies to withhold chemical identities as trade secrets, using analysis of fracking chemical disclosure data by Pennsylvania-based FracTracker Alliance. Drilling companies employ secret chemicals to frack gas and oil wells, keeping the ingredients of fracking formulas hidden claiming Trade Secret protections. **Regulations at the federal and state level allow for the information about the chemicals injected into drilled wells to be kept from the public and, in some cases, even from emergency responders and regulatory agencies.**
- This same Secret Chemicals report documents that drilling companies injected secret fracking chemicals 13,632 times into 2,515 “unconventional” wells in Pennsylvania, between 2013 and 2017, primarily in Marcellus and Utica shale formations. At least one hydraulic fracturing (“fracking”) chemical with an identity kept hidden from the public - and an average of more than five secret fracking chemical injections each - was injected into more than 2,500 unconventional natural gas wells drilled in Pennsylvania, amounting to 55 percent of the more than 4,500 unconventional gas wells drilled during the five-year period. Because of reporting loopholes, the number is probably even greater. **How can we risk these toxic and in some cases carcinogenic chemicals being injected into the ground and exposing our groundwater and surface water – and our DRINKING WATER – to contamination?**
- These secret chemicals used in fracking could have serious health effects including irritation to skin and lungs, liver toxicity, developmental toxicity and neurotoxicity, according to EPA. **The widespread use of secret fracking chemicals therefore poses serious health risks for people living near Pennsylvania’s unconventional gas wells and for people living downstream of fracked wells, such as the 15 to 17 million people who rely on the Delaware River Basin for drinking water who would be exposed if DRBC doesn’t ban fracking. Fracking must be fully banned – banning frack wastewater and water withdrawals for fracking as well as extraction of shale gas - to save our water and protect public health.**
- Add to this the health effects of other materials in frack wastewater such as Naturally Occurring Radioactive Materials (NORM), hydrocarbons, heavy metals, and other

contaminants from the shale formation, and the danger to water quality and public health is enormous and unmitigatable. **DRBC has proposed to ban fracking in the Delaware River Watershed but allow the treatment and discharge within the Basin of fracking wastewater produced elsewhere. Any discharges of wastewater would be likely to include some of these secret fracking chemicals, exposing at least 15 million people to frack waste pollution and the adverse health effects that are entailed without anyone even knowing about it.**

AIR POLLUTION FROM FRACKING AND THE DEVELOPMENT OF SHALE GAS

- According to a report that examined the potential impacts from fracking on the Delaware River Watershed (Habicht, 2015) **the development of shale gas wells could as much as double nitrogen oxides (NOx) emissions**, compared to current air conditions in the Marcellus Shale counties of the basin, and it will be released on a long-term basis from the compressor stations that are required to move gas through gathering lines to market pipelines. The release of the NOx is unavoidable throughout the life of the producing gas well. **NOx and VOCs are precursors to ozone, or smog, which is known to cause respiratory illness. Other air pollutants are released by fracking and during all stages of gas development, including sulfur oxides, particulate matter, and volatile organic compounds such as formaldehyde, benzene, toluene, ethylbenzene, and xylene. This would have a direct negative impact on human health and the ambient air quality of the region.**
- In the same study that examined the potential impacts from fracking on the Delaware River Watershed, health impacts from air emissions and other pollution from fracking was examined. The report mapped the likely location of well pads in the Delaware River Watershed's Marcellus Shale region and estimated that 45,000 people live within 1 mile of a projected well pad, virtually the entire population of the location where fracking is most likely to occur. The study reported that scientific literature documents that some health risk factors are related to the distance from a well pad to a person's home. 60% of the health of Wayne County's population could be affected by close proximity to a well pad. The study examined the pollutants that people would be exposed to, based on scientific studies (CNA, Table 12). **These findings make very clear that the effects of gas development and fracking on the air and the health of the people of the region are inescapable due to the proximity of projected well pad locations to the population. It is unacceptable to sacrifice the air quality and health of the people of the Marcellus Shale region in the**

Delaware River Basin so that shale gas can be developed. The only protective option is to prohibit fracking and gas development completely.

CLIMATE

- The development of natural gas digs the planet further into a hole, with the powerful greenhouse gas methane exacerbating the climate crisis. Methane is 86 times more powerful than carbon at heating the atmosphere on a 20 year time scale. That means natural gas is not a “bridge fuel” or a benefit if used to replace coal or oil as a fuel. Renewables are the answer. Recent decisions from the Trump Administration make it more urgent than ever that Governors Murphy (NJ), Cuomo (NY), Wolf (PA) and Carney (DE) act now to pass a complete ban on fracking and all of its associated activities throughout the Delaware River Basin. Even as the United Nation’s climate experts gave dire warnings about how we need to urgently act to move away from fossil fuel extraction and burning, including fracked gas, to avoid catastrophic climate change, (see the report here: <https://bit.ly/2IOH2bK>), and the U.S. National Climate Assessment Report warns the impacts of climate change are already being felt in communities across the country and will worsen as more frequent and intense extreme weather and climate-related events occur.

PEOPLE AND COMMUNITIES OPPOSE FRACKING, FRACK WASTE AND WATER

WITHDRAWALS FOR FRACKING

Tens of thousands of people wrote to DRBC during the public comment period on the draft natural gas regulations and testified at hearings for a full ban on fracking throughout the Delaware River Watershed. **Over 100,000 petitions were delivered to DRBC last December calling for a full and complete frack ban. The people have spoken!**

This is the petition delivered to all the Governors of the four states that are part of the Delaware River Watershed:

DRBC – ENACT A FULL BAN ON FRACKING

To the Delaware River Basin Commission voting members - the Governors of New York, Pennsylvania, New Jersey and Delaware, representing the Basin states, and the Army Corps of Engineers, representing the federal government:

We, the undersigned, call for the Delaware River Basin Commission to enact a permanent ban on natural gas drilling and fracking and all related activities (including drilling; fracking; fracking wastewater storage, processing and discharges; and water withdrawals for drilling and fracking) throughout the Delaware River Watershed.

During the eight years of the DRBC drilling moratorium, scientific studies have exposed environmental harms and documented damaging health effects, leading New York and Maryland to ban fracking. The overwhelming weight of evidence shows that shale gas simply cannot be extracted safely.

The DRBC is responsible for protecting the water resources of the Delaware River Watershed — upon which 15 million people rely for their drinking water. This water supply and the Wild and Scenic Delaware River are irreplaceable. The time to enact a permanent ban is NOW.