BUCKEYE ENVIRONMENTAL NETWORK

Save The Appalachian Region from Petrochemical Industry Incursion

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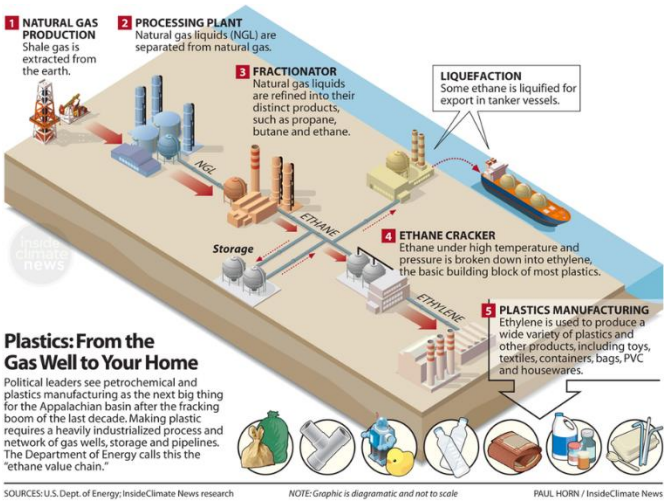
Petrochemical facilities are moving into the old Rust Belt of Appalachia at an alarming rate and into some of the same properties that the coal and steel industries left behind. The petrochemical industry is a broad-sweeping "industry branch" that creates goods and products "such as refinery products, natural gas, plastic, rubber, [and] fiber raw materials."[1] The purpose of the petrochemical industry is to work on a "global product market," creating materials and goods to be shipped out around the world to various industries and fabricators.[2] In Appalachia, the incursion of the petrochemical industry poses significant long-term risks to the people and communities that live in this lush and historical region of Appalachia.

On the location of the old R.E. Burger coal-fired power plant located just south of the city of Shadyside in Belmont County, Ohio, another industrial facility is now being constructed to house an Ethane Cracker Plant. The R.E. Burger plant was operational from 1944 to 2011 and demolished in 2016 as many other fossil fuel power plants around the nation were shut down between 2010 to 2018 to be "replaced by natural gas power plants;" now, the region is seeing the increased interest of industries coming back into the area with the planning of some "twenty-nine new gas-fired plants" to power the electricity of the region.[3] Just as with the old coal and steel plants, the petrochemical industry brings significant risks to the environment and people who live there and utilize the abundant lands of Appalachia in the form of industrial waste and pollution from emission and facility practices.



The prospect of these "new investments" in Appalachia comes at a critical period for the oil and gas industry that has had its share of failures and success, otherwise known as "booms and busts."[4] The Wall Street Journal "reported" hesitancy and caution in a time where many drillers are approaching the

[1] Clews, R.J. "The Petrochemicals Industry." Science Direct. 2016. https://www.sciencedirect.com/topics/earth-and-planetary-sciences/petrochemical-industry. (accessed 4/14/2020).
[2] Clews, R.J.
[3] Kelly, Sharon. "What the Petrochemical Buildout Along the Ohio River Means for Regional Communities and Beyond." https://wfpl.org/what-the-petrochemical-buildout-along-the-ohio-river-means-for-regional-communities-and-beyond/ (accessed 4/7/2020).
[4] Kelly.

time they will need to pay off escalating debts.[5] The drillers (a.k.a. Frackers) have an estimated balance of "$9 billion in debt, which will rise to $137 billion between 2020 and 2022."[6] The issue of debt is a significant matter that communities considering the inclusion of these industries into their region should deeply weigh and investigate before approving such expansion. The issue of debt on the side of the "investors" creates a critical "risk" factor for these communities, which are typically seeking a monetary payout with a long-term rise in job prospects for their citizens that could ultimately be in jeopardy if as in the past, these "investors" default and the company is no longer able to uphold promises made during negotiations with communities and local governments.[7]

In the process of extracting natural gas by drilling (aka fracking), the drillers also pull up other byproduct materials from underground, including copious amounts of Ethane gas. Ethane is a "different kind of raw material" that is a byproduct of fracking for natural gas. The oil and gas industry uses this byproduct to sell to cracker facilities, like the proposed plant in Belmont County, to produce plastic products.[8] A plant like the proposed Ethane Cracker facility in Belmont County, Ohio, then purchases the Ethane from Frackers and proceeds to "break apart [the]ethane molecules to produce Ethylene," which can then be used to make plastic products at other facilities around the world.[9] The cracker facility itself will likely be the "size of a Walmart," including all "the land and outbuildings."[10] All the infrastructure is in place to construct the facility, but the company itself is showing hesitation and waiting for the final "go ahead" to begin construction.[11] Recent events with the Global Pandemic have put a lot of pressure on investors worldwide. Meanwhile, at the community level, this hesitation has left the people in limbo without resolution and the fulfillment of negotiated promises from the company.

Image 1: Injection Well in Southeast Ohio

Outside of Ohio, other plants are being constructed like the one in Beaver County, Pennsylvania. The Beaver County

[5] Kelly.
[6] Kelly.
[7] Kelly.
[8] Kelly and Grant, Julie. "Why Some Financial Analyst are Questioning Viability of the Appalachian Plastic Hub." *State Impact Pennsylvania: NPR*. April 3, 2020. https://stateimpact.npr.org/pennsylvania/2020/04/03/why-some-financial-analysts-are-questioning-viability-of-the-appalachian-plastics-hub/ . (accessed 4/8/2020).
[9] Compston-Strough, Jennifer. "First phase of cracker site work complete in Belmont County." *The Intelligencer: Wheeling News-Register*. April 8, 2020. https://www.theintelligencer.net/news/top-headlines/2020/02/first-phase-of-cracker-site-work-complete-in-belmont-county/ . (accessed 4/8/2020)
[10] Defrank, Robert A. "Hopes High for Cracker Plant After Wednesday." *The Times Leader*. March 26, 2020. https://www.timesleaderonline.com/news/local-news/2020/03/hopes-high-for-cracker-plant-after-wednesday/ . (accessed 4/8/2020)
[11] Defrank.

Ethane Cracker facility is "expected to produce 1.6 million metric tons of polyethylene each year."[12] Market analysts offered a market forecast just two years ago that proposed the placement of up to an additional five cracker facilities to be constructed in the Appalachian region. The regions where Ethane cracker plants are planned would be in Ohio, West Virginia, Pennsylvania, and Kentucky, all in the heart of Appalachia. These forecasts for the Appalachia region comes during a significant period of countless market upheavals and "other challenges" that the old Rust Belt communities should not risk.[13]

Allowing petrochemical industries to invade the Appalachian region in higher numbers will permanently "tie" the region to the "economic fate of the natural gas industry," a risky investment commitment for the region given the unsteadiness of the industry in recent years and the rise of green energy throughout the world.[14] Nevertheless, the projects are moving forward. In Belmont County, Ohio, two companies, PTT Global Chemical America of Thailand and Daelim Chemical USA of South Korea, have "announced" the completion of the "first phase of site preparation for the potential Ethane Cracker facility.[15] These foreign investors and corporations have made significant investments into these cracker facilities to produce plastic products; the companies have "purchased" a great deal of acreage, in Belmont County, at a sum of 500 acres of Ohio land, including the FirstEnergy former site of the R.E. Burger coal-fired power plant just south of Shadyside, Ohio.[16]

Considering all this information, one has to question if these interested parties as foreign corporations can have the communities safety in mind, how the local communities and governments responding to the new investments in their community will pan out in the long run, and the potential issues that might arise, including environmental pollution, resources, and community impact over the life of the facility. As of now, it is apparent that most government officials are enthusiastic about the induction of these facilities into their communities.

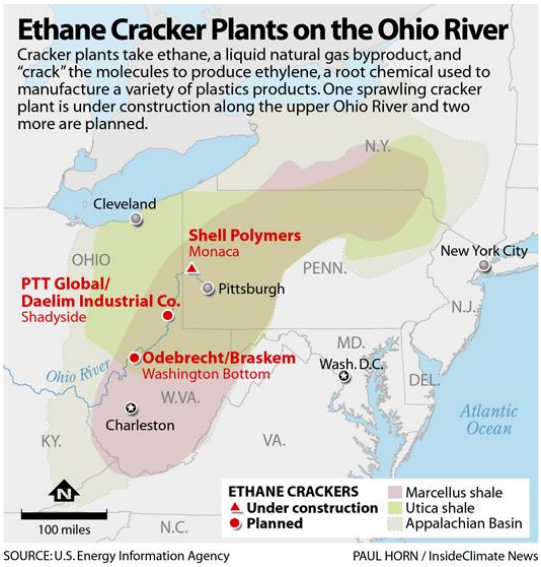
Local governments are supporting the construction of the Ethane Cracker plant in Belmont County, Ohio, including the Belmont County Board of Commissioner, Mead Township trustees, and the Shadyside Board of Education that "all approved" a "tax agreement" with investors of this plant.[17] After all, political negotiations have been ongoing with these corporations for "about six years," with a deal being struck with the local government with a complete financial package that they feel will significantly help the local region and its people.[18] The deal struck with the investing companies allots a tax exemption from property tax for a span of 15 years, with a provision that instead, the company will also pay a sum of

[12] Grant.
[13] IEEFA U.S. "Ohio Petrochemical Project faces high Risk and Shaky Outlook." March 23, 2020. https://ieefa.org/ieefa-u-s-ohio-petrochemical-project-faces-high-risks-and-shaky-outlook/ (accessed 4/10/2020).
[14] Kelly.
[15] Compston-Strough.
[16] Compston-Strough
[17] Defrank.
[18] Defrank.

"$38 million to the local school district" of Shadyside during that period.[19] The mead Township of Trustees would receive a sum of "$9.5 million" over the same period, while Belmont County is an estimated revenue of between $20-$24 million in sales tax revenue from the construction process and goods in this process of building the facility.[20]

The agreement between the companies and the local government in Belmont County is purely a financial endeavor that was made at a high cost to the company, but what are the possible environmental effects on the region from the Ethylene Plant and to the global environment upon the production of more single-use plastics. Local representatives remain optimistic, lamenting that the company is funneling millions of dollars into the region, yet they have "not earned a penny."[21] The fact that millions of dollars are being invested before any revenue, what then is the expectation of this facility throughout the plants' life, and within that period, what will the community and the environment ultimately reap while the company recoups their money?

The negative impacts of an ethane cracker facility must also be measured before allowing such industries into our communities of Appalachia. We know the effects of industrial pollution on communities from various scientific studies. We know from past industrial plants that the emissions from industrial plants have been found to "make people ill," causing a myriad of problems, including: "headaches, shortness of breath, impaired thinking, and changes in blood pressure." Nevertheless, the proposed plant in Beaver, Pennsylvania, will be located just "one mile directly downwind" from the community, shopping centers, and newly developed housing developments.[22] We can take solace in the lessons learned from the past and how these types of industrial facilities have impacted communities to protect the welfare of current and future generations.



Consider the example of the "Donora Death Fog" that older generations of Pennsylvanians remember. From the late 1940s onward, the people of the Pittsburgh region were "used to smog."[23] Smog was another part of life in the old Rust Belt; the smog "meant the mills were running… men were working, and families [were] fed," it was a part of the livelihood of the region, and it caused issues and

[19] Defrank.
[20] Defrank.
[21] Defrank.
[22] Kelly.
[23] "The 1948 Donora Smog Historical Marker." ExplorePAhistory.com. https://explorepahistory.com/hmarker.php?markerId=1-A-14D (accessed 4/16/2020).

health ailments like "asthma and hacking coughs, but that was the price of progress and prosperity."[24] Nevertheless, with all this prosperity during this time, health concerns and environmental factors were pushed aside, and "no one was prepared for the black cloud that swallowed Donora, a Monongahela mill town" south of Pittsburg in late October 1948.[25] Within just a few days, the thick black fog coated the community crowding local hospitals, the smog started on Tuesday, and by Saturday, seventeen citizens were dead. Thousands more were left "gasping for air," all while the mills continued to emit the toxic smoke into the air. By Sunday, the "American Steel and Wire finally closed the plant," and the weather system began to clear, allowing "fresh winds" to blow air into the valley and blowing away the smog by Monday.[26] The smog from the mills had been trapped by a typical weather pattern that often occurs along Appalachia, which settled over the region and trapped the smog in the valleys killing 20 people, and "7,000 people had become ill – nearly half the town's population."[27]

Now, we have the luxury of learning from the "test-tube" communities of the past that became the test subjects for environmental pollution and trying to make better decisions for the present and future citizens of the Appalachian Region.[28] The difference between the Donora Smog and the mills in those regions compared to our communities in Appalachia and Petrochemical facilities is the threat of Ethane pollution will not result in a cloud of dense black smog but an invisible threat from an invisible gas that is Ethane, a highly toxic gas. According to documentation, Ethane is listed as a Hazardous Substance. Exposure to Ethane gas can "affect" a person when breathed, causing "headaches, nausea, vomiting, dizziness, and lightheadedness." Furthermore, exposure to "high levels can cause suffocation" from acute exposure, while also causing long term chronic health effects lasting "months or years."[29]

The type of Ethane Cracker facilities we are discussing are known to pose high risks to the surrounding communities and environment. The Fractracker Alliance explains that "large petrochemical facilities of this type are known to produce sizable unplanned releases of carcinogenic (benzene and other toxic pollutants during "plant upsets," a term that refers to a "shut down because of a mechanical problem, power outage or some other unplanned event."'[30] Other threats posed by Ethane Cracker facilities include similar dangers as other industrial sites, including "fires, explosions, evacuations, injuries, and death."[31] These events have happened in recent years, and the Fractacker Alliance gives a horrifying example:

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[24] "The 1948 Donora Smog Historical Marker."
[25] "The 1948 Donora Smog Historical Marker."
[26] "The 1948 Donora Smog Historical Marker."
[27] "The 1948 Donora Smog Historical Marker." and Kelly.
[28] "The 1948 Donora Smog Historical Marker."
[29] New Jersey Department of Health and Senior Services. "Hazardous Substance Fact Sheet." https://nj.gov/health/eoh/rtkweb/documents/fs/0834.pdf. (accessed 4/16/2020).
[30] Leiter, Leann. "A Formula for Disaster: Calculating Risk at the Ethane Cracker." Fractracker Alliance. February 8, 2017. https://www.fractracker.org/2017/02/formula-disaster-ethane-cracker/. (accessed 4/16/2020).
[31] Leiter.

> "A ruptured boiler at the Williams Company ethane cracker plant in Geismar, Louisiana, led to an explosion and fire in 2013. The event resulted in the unplanned and unpermitted release of at least 30,000 lbs. of flammable hydrocarbons into the air, including ethylene, propylene, benzene, 1-3 butadiene, and other volatile organic chemicals, as well as the release of pollutants through the discharge of untreated fire waters, according to the Louisiana Department of Environmental Quality. According to the Times-Picayune, "workers scrambl(ed) over gates to get out of the plant." The event required the evacuation of 300 workers, injured 167, and resulted in two deaths. The community's emergency response involved [the] deployment of hundreds of personnel and extensive resources, including 20 ambulances, four rescue helicopters, and buses to move the injured to multiple area hospitals. The U.S. Chemical Safety and Hazard Investigation Board chalked up the incident to poor "process safety culture" at the plant and "gaps in a key industry standard by the American Petroleum Institute (API)." The accident shut the plant down for a year and a half."[32]

All things considered, the magnitude of the potential loss of life and damage to community infrastructure and lands makes the incorporation of an Ethane Cracker Facility highly hazardous and consequential.

Beyond the environmental issues, there are other factors to consider. According to the Energy Economics and Financial Analyst (IEEFA), a non-profit think tank, they state that these corporations that are anticipating the building of the Belmont County, Ohio Ethane Cracker plant are already pursuing other infrastructure construction before the facilities are even close to being completed before the communities have entirely accepted the inclusion of these businesses into their cities. The Energy Economics and Financial Analyst affirms that the additional infrastructure construction is unnecessary, especially with the construction of a containment site along the Ohio River.

Citizens must also consider the financial risks before allowing an Ethane Cracker Facility to be built in their communities. Financial projections are sending ripples of doubts about investing in Petrochemicals in recent months, a change in forecast from past years. In fact, "natural gas prices were depressed last year, and the warm winter" has ultimately "reduced demand," which is terrible news for the oil and gas industry.[33] Other economic forecasts include the abundance and the "oversupply" of "plastic products on the market" that has stifled the necessity to produce new plastics for consumers and

Image 2: Shale Gas Buildout in the Appalachian Basin, 12/8/19 Courtesy of Concerned Ohio River Residents.

[32] Leiter.
[33] Grant.

fabricators.[34] According to the IEEFA, there are significant principal risks to consider, but are not limited to, the following:

> The report identifies principal risks as:
>
> - Plastic prices today are 40% below the 2010-2013 period when the project was initially proposed. Weak prices will drive profit margins below investment targets.
> - Oversupply from a global industry-wide plastics buildout is likely to drive prices and revenues down. Supply/demand imbalances are likely to last through 2026.
> - PTTGC faces stiff competition from major companies.
> - Slower U.S. (and global) economic growth projections… suggest a slowdown that will impact both volume and prices.
> - PTTGC risks negative credit actions" in pursuit of the project in Belmont County, Ohio.
> - "Uncertainty over federal government policies add to the risk factors." [35]

All in all, the plastic business has dropped significantly, making the profitability margins of a new facility dwindle too. The necessity for infrastructure before production, the toll on communities, the possibility of harming the environment as well as the citizens, all of these variables need to be increasingly weighed before communities allow a company to come in and invest, despite the temporary financial gains to be had.

At our present status during this Global Pandemic, there are also other variables to consider, including the impact of the financial markets from the Pandemic. These are uncertain times, and the economy is faltering, and we are seeing the results of a severe global economic drop occurring. We must learn from the past, from the abrupt halt and demise of the steel industry in this region, and listen to what the global economy is telling plastic producers worldwide. We must demand the change we want to see, we want renewable energies, we cannot merely take a temporary monetary investment and hope for the best, we want to keep our lands fresh, our water drinkable, and the air breathable; if not for us then for our children and grandchildren.

Others have stood up in protest, sparking public demonstration to raise public awareness and protest the introduction of petrochemical facilities in their regions. They are protesting the probable creation of another "cancer valley" like the one the Petrochemical industries have brought to Louisiana. We must be mindful that these plastic products will go to fabricators around the world to ship product around the world, starting here in the Appalachian region, we will

Image 3: Petrochemical Protest by the group Concerned Ohio River Residents.

[34] Grant.
[35] IEEFA U.S.

be just as responsible for the use of these single-use plastics that are destroying our oceans daily and filling up our landfills weekly created by plants that tarnish the very air we breathe hourly. We can stop the cycle, we can demand change, and we can Save the Appalachian Region from the Petrochemical from entering our soil. The Appalachian Region stands at a "crossroads of energy and industry" will we bow to the oil and gas industry, or will we fight for renewable energy and green jobs? [36]

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[36] Kelly.