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Another Petrochemical Sacrifice Zone

Proposed Appalachian Gas “Cluster” Would Pollute Region and Entrench Fossil Fuel and Plastics Infrastructure for Decades

Executive Summary

The petrochemical and plastics industries are riding to the rescue of the fracking industry. The controversial and ecologically destructive natural gas drilling technique has proliferated across the shale basins of Pennsylvania, Ohio and West Virginia. But the rapid expansion of fracking created a gas glut that has driven gas prices to the lowest levels in decades.¹ Fracking can only continue its breakneck pace if the overabundance of low-priced gas can become profitable through new markets (exports) or new products (plastics) to drive up gas demand.²

Without the petrochemical and plastics industries to sop up the excess gas supply, it does not make economic sense to maintain the fracking frenzy when gas prices are this

low. One key building block for plastics manufacturing is ethane, a natural gas byproduct that is present in certain shale plays.³ Natural gas is mostly methane, but some reserves contain other hydrocarbons called natural gas liquids (NGLs), which include ethane, a raw material used to manufacture and produce finished petrochemicals such as plastics.⁴ The fracked gas from the Utica and Marcellus shale formations under Ohio, Pennsylvania and West Virginia contain high concentrations of these NGLs.⁵

Beginning in 2012 chemical companies started aggressively investing in petrochemical plants and export facilities focused on tapping the ethane glut.⁶ Now a massive buildout and expansion of new and existing plastics and

petrochemical infrastructure is coming to fracking’s rescue. One of the biggest petrochemical building booms is in the fracking regions of the Tri-State area of Ohio, Pennsylvania and West Virginia. The key proposed facility is the Appalachian Storage Hub (Storage Hub), which would include a large underground storage facility and a web of interconnected pipeline infrastructure to connect to regional petrochemical plants and plastics factories in the Tri-State area — potentially extending into eastern Kentucky, which sits atop the Rogersville shale gas reserve.⁷

The gas and petrochemical industries want to convert the region into the epicenter for shale gas development and to create a new regional chemical manufacturing cluster to bolster their profits. The American Chemical Council (ACC) estimated that chemical industries and plastics industries could invest \$35.8 billion in central Appalachia’s emerging petrochemical and plastics manufacturing facilities and large underground gas storage facility.⁸ The combination of shale gas production and petrochemical facilities would create what *Crain’s Cleveland Business* dubbed “an ethane tsunami.”⁹

The proposed storage complex may be a profit bonanza for industry, but it is a pollution pitfall for communities and ecosystems of the Appalachian basin. Converting the region into the second largest concentration of plastics and chemical manufacturing outside the highly polluted

Gulf Coast will compound the Tri-State area’s already substantial exposure to industrial toxic emissions, while increasing plastic materials that largely end up polluting the earth’s oceans.¹⁰

New petrochemical, plastic and interconnected gas infrastructure investments also prop up a faltering fracking industry. Building new pipelines that deliver fracked gas to plastics plants and to export terminals to be shipped to global manufacturers will drive up natural gas demand and price.¹¹ This provides a profit incentive to justify the expansion of fracking extraction and the associated spills, accidents, water pollution, climate-destroying methane emissions and ecosystem damage.

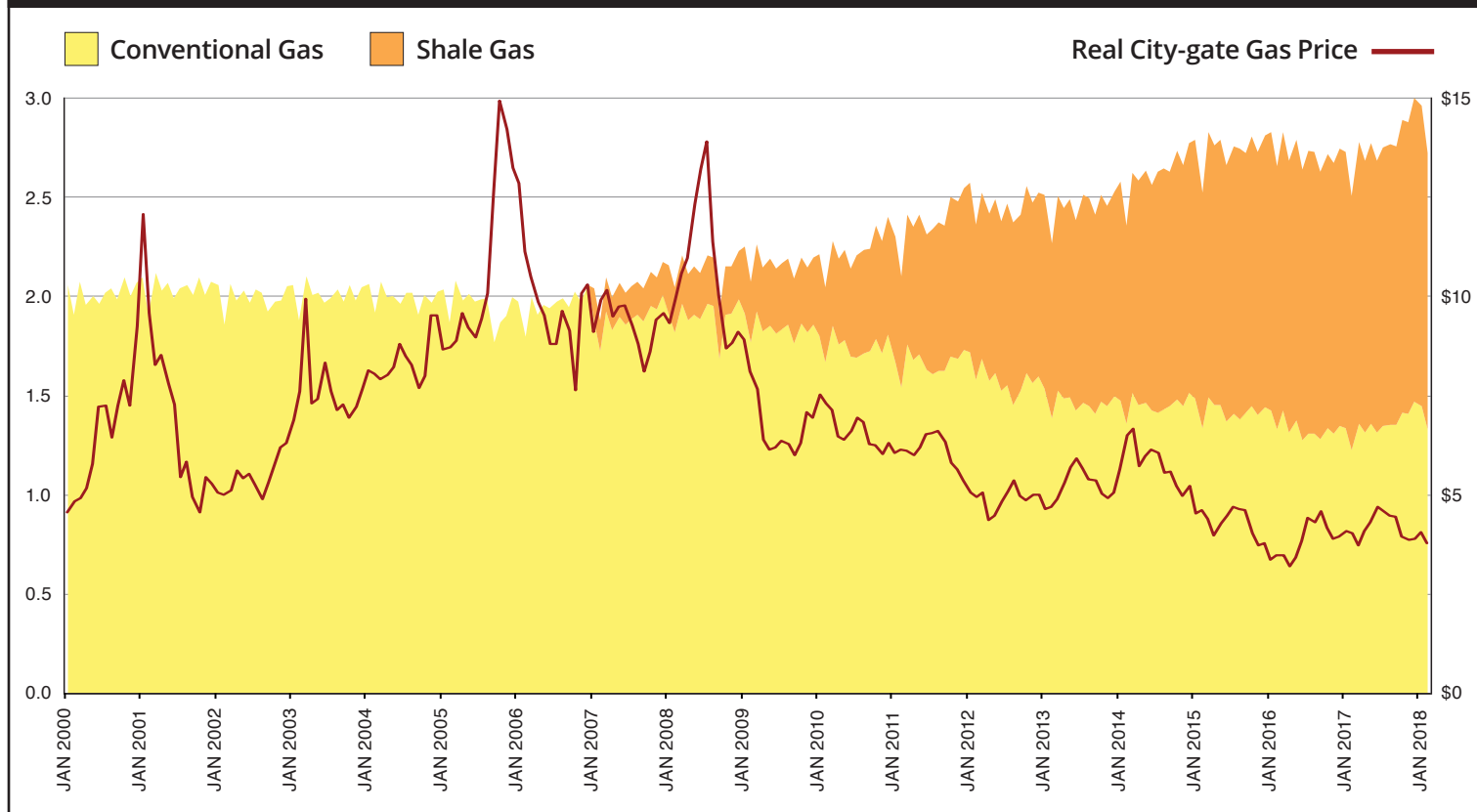
Too Much Gas: Setting the Stage for a Petrochemical Construction Boom

Surging fracked gas production has collapsed natural gas prices, spawning a crisis in the fracking industry. Over the past decade, the controversial and environmentally destructive gas extraction technique spread rapidly across Ohio, Pennsylvania, West Virginia and the nation. The fracking industry’s gas production expanded nearly sixfold in 10 years, with gas production jumping from 2.9 quadrillion cubic feet in 2008 to an estimated 16.9 quadrillion cubic feet in 2017.¹²



FIG. 1: U.S. Natural Gas Production and Price

PRODUCTION IN QUADRILLION CUBIC FEET; INFLATION-ADJUSTED PRICE PER 1,000 CUBIC FEET IN 2016 DOLLARS



The Marcellus and Utica shale basins beneath the Tri-State area have become a major source of shale gas, producing 7.6 trillion cubic feet of gas in 2016 — about 45 percent of all shale gas and a quarter of all gas produced in the United States.¹³ All this additional gas has pushed real, inflation-adjusted natural gas prices to their lowest levels in decades. From 2008 to 2017, the real wholesale price for natural gas fell by 60 percent as total gas production rose (see Figure 1).¹⁴

Now the fracking industry needs new demand sources to absorb excess gas to justify more drilling.¹⁵ The expanding petrochemical and plastics manufacturing sectors can sop up excess gas supplies, propping up the faltering fracking industry and creating a mutually profitable and polluting partnership. The surplus of ethane has been a boon for the plastics industry, which relies on petrochemical manufacturing to process ethane so it can be turned into plastics.¹⁶

In November 2013, representatives from the oil and gas, petrochemical and plastics industries convened a three-day summit — the first of its kind — to address the

“opportunities and challenges of a ‘coming renaissance’ in North American plastics.”¹⁷ These industries symbiotically support one another: the fracking industry gets new buyers, and the petrochemical and plastics industries get new supplies.

According to *Plastics News*, “shale-based natural gas represents a once-in-a-generation opportunity” for the North American plastics market.¹⁸ The ACC dubs shale gas as a “game changer for the chemistry industry,” stating that it “holds the promise of a renaissance of chemical manufacturing in the United States.”¹⁹ By 2023, the chemical industry could spend over \$164 billion on 264 new facilities and expansion projects nationwide specifically to take advantage of shale gas, according to the ACC.²⁰

In 2017, ACC CEO and former member of Congress Cal Dooley boasted, “The Appalachian region has distinct benefits that could make it a major petrochemical and plastic resin-producing zone.”²¹ Some projects are already under way, and others are fairly far along in the planning process, but a mammoth buildout may be as much industry hype as actual forecasting.

This fracking-driven plastics bonanza also has a global reach. For example, the Mariner East pipeline system delivers ethane to the Marcus Hook export terminal in Pennsylvania, where fracked gas byproducts are shipped to European plastics plants owned by industry giant Ineos.²²

The moneyed interests pushing the proposed Appalachian Basin petrochemical cluster

The gas and petrochemical industries have been pushing to expand gas infrastructure projects to transform the Tri-State region into a major hub of gas, petrochemical and plastics production.²³ The building boom would include a large natural gas storage facility, a cluster of new petrochemical and plastics plants and a network of pipelines to transport the natural gas and NGLs to and from the hub.²⁴ Since 2010, investors have planned to pour \$16 billion into the region's petrochemical and fracked gas infrastructure projects, but the ACC has recommended at least \$32 billion to jump-start a petrochemical boom.²⁵

According to the executive director of the Independent Oil and Gas Association, "There are vast reserves of natural gas under West Virginia, Pennsylvania and Ohio. Vast reserves. That natural gas will be the catalyst to the Appalachian Underground Storage Hub and all kinds of downstream development, petrochemical and manufacturing, over the next few years."²⁶ As West Virginia Senator Shelley Moore Capito observed, chemical companies could take advantage of "the enormous benefits of being right on top of the [shale gas] resource."²⁷

The industry investments will total tens of billions of dollars. Three facilities alone — two ethane crackers and the Storage Hub — are estimated to tally at least \$26 billion.²⁸ The fracked gas is processed to separate out ethane and other NGLs and then delivered to cracker plants. Crackers are petrochemical facilities that apply steam or heat to "crack" ethane into ethylene, which is then converted into the most common type of plastic, polyethylene.²⁹

Shell has already begun construction on a \$6 billion petrochemical plant with an ethane cracker and a polyethylene unit to make plastics in western Pennsylvania.³⁰ Shell also proposed the 97-mile Falcon Ethane Pipeline that would run through Ohio, West Virginia and Pennsylvania to deliver ethane to the cracker.³¹ Similar investments include a partnership between a South Korean construction

company with petrochemical expertise and a Thai government-owned oil company to build a \$10 billion ethane cracker in Ohio.³² But the cornerstone of these projects is the Appalachia Development Group LLC's \$10 billion Appalachian Storage Hub project (location not yet determined, other than it would be sited in the Tri-State area); it includes an underground storage facility for NGLs and a web of pipeline infrastructure to connect to petrochemical and plastics facilities across the region.³³

The region is already home to many factories that manufacture plastics or plastic products.³⁴ Currently, these factories buy plastic inputs like ethylene from the Gulf Coast of Texas and Louisiana.³⁵ The regional buildout of gas storage, transportation and petrochemical processing plants like ethane crackers would substantially reduce transportation costs and supercharge the development of a new regional plastics powerhouse modeled after the Gulf Coast.³⁶

An alliance of industry players, government officials and regional universities is promoting this substantial petrochemical investment.³⁷ Big-business trade associations like the Chamber of Commerce, the National Association of Manufacturers and the ACC are all backing fracked gas and petrochemical infrastructure in the Tri-State area.³⁸ Even foreign firms are investing to build a regional petrochemical powerhouse. Aside from the South Korean-Thai partnership, China Energy, the world's largest power company, announced in 2017 that it would plow \$84 billion into West Virginia shale gas development and petrochemical manufacturing, power generation and NGL storage infrastructure over the next two decades.³⁹

Behind the buildout are elected officials in all three states, cheerleading their vision of linking together the region's rich shale gas fields to industrial users that want to easily tap the NGL surplus.⁴⁰ These politicians are seeking state and federal funding and coordinating state resources such as their public university systems to promote these dirty industry investments. The governors of Ohio, Pennsylvania and West Virginia have formed the Tri-State Shale Coalition to spur investment to create an economic gas and petrochemical hub⁴¹ to potentially rival Texas and Louisiana.

The governors have incubated partnerships between the public universities and the energy companies to provide the patina of objectivity to their business promotions.⁴² In

2015, Cleveland State University published a report that supported a petrochemical buildout in Appalachia, and an industry-funded West Virginia University study helped identify suitable locations for the gas storage facility.⁴³ Some of these politicians have close ties to these industries. Ohio Governor John Kasich received nearly \$1 million in campaign contributions from the chemical and oil and gas industries during his gubernatorial races, and Pennsylvania Governor Tom Wolf received more than \$285,000.⁴⁴

Federal legislators have sought federal loan guarantees, expedited federal regulatory approval and federally funded feasibility studies for the Storage Hub.⁴⁵ In 2016, West Virginia Senators Shelley Moore Capito and Joe Manchin hosted a field hearing of the Senate Committee on Energy and Natural Resources in Morgantown, West Virginia highlighting the regional investments.⁴⁶ In January 2018, the Storage Hub received partial approval for a \$1.9 billion U.S. Department of Energy loan, which Appalachia Development Group — the organization spearheading the project — intended to supplement with \$1.4 billion more in private equity financing.⁴⁷

The politicians, fossil fuel companies, big-business trade associations and public universities are promoting large-scale and broad-based petrochemical infrastructure investments. The core infrastructure project is a large natural gas storage facility that could receive fracked gas byproducts to stockpile and supply regional factories with NGLs. Additionally, a web of pipelines would deliver fracked NGLs to and from the Storage Hub and to petrochemical and plastics manufacturing plants.⁴⁸ This network of gas infrastructure would pave the way for new petrochemical and plastics plants that could convert NGLs into materials that could be used to manufacture plastic products — primarily packaging and containers.

Appalachian Gas Storage Hub

The proposed Appalachian Storage Hub would create a multi-billion dollar natural gas storage complex and associated network of gas pipelines designed to capitalize on the region's shale gas to supply chemical and plastics inputs for manufacturing plants.⁴⁹ The actual storage facility would be the region's cornerstone for the entire petrochemical development plan, which could incentivize and draw in additional petrochemical projects to the area. According to West Virginia University's Appalachian Oil and



Natural Gas Research Consortium, the underground gas storage facility would be a keystone asset; without it, “the entire program cannot go forward.”⁵⁰

It would operate similarly, but perhaps at a grander scale, than another storage facility proposed for Monroe County, Ohio, which would hold up to 2 million gallons of ethane and other NGLs hundreds of thousands of feet underground in a geological salt formation between the Marcellus and Utica shale basins.⁵¹ The storage cavity would be excavated by drilling wells into the salt and inundating and dissolving it with water. The empty cavern to hold the NGLs would be formed when the briny mixture was withdrawn.⁵²

If the environmental permits are granted, construction could commence during 2018. The project has already been in the works for about eight years, so even if all the permits are approved, the Appalachian Development Group has estimated that it could still take several more years to complete.⁵³

The storage facility would provide a steady stream of ethane to nearby crackers and act as a trading post for frack-

ing companies looking to sell their NGLs to petrochemical plants (including ethane crackers) and plastics facilities.⁵⁴

Connections to pipeline infrastructure

The fracking industry needs a sprawling network of pipelines to deliver gas and NGLs from the wellhead to gas processing plants, storage facilities, petrochemical plants and other manufacturing facilities.⁵⁵ An ACC analysis assumed that up to 500 miles of pipeline would be constructed along the Ohio River Valley to support the Appalachian petrochemical buildout.⁵⁶

Already a growing network of NGL and ethane pipelines exists across the Tri-State region. The Sunoco Mariner East 2 ethane pipeline expansion project would increase deliveries of fracked gas NGLs from Appalachia to an export terminal in Marcus Hook, Pennsylvania, bound for Europe.⁵⁷ The risky project has been plagued with construction accidents. In January 2018, the Pennsylvania Department of Environmental Protection temporarily halted construction because of permit violations.⁵⁸ In March, the Pennsylvania Public Utility Commission temporarily shut down the nearby Mariner East 1 pipeline because construction-related drilling for the Mariner East 2 caused sinkholes along the Mariner East 1's path.⁵⁹ A month later construction was temporarily suspended in Middletown, Pennsylvania after toxic fluids were released near an apartment complex.⁶⁰

From May 2017 to March 2018, Sunoco's horizontal directional drilling — a method used to install pipelines below waterways or other ecologically sensitive areas — resulted in over 100 different leaks or "inadvertent releases" of fluids into waterbodies.⁶¹ According to State Senator Andy Dinniman (D), "The longer this project goes on and the more Sunoco rushes to try to appease its investors, the more potential danger and threats local residents are experiencing to their health, safety, environment, and property."⁶²

At the same time, Shell has proposed the 97-mile Falcon Pipeline to carry ethane. If approved, the Falcon will cut through 22 townships in Ohio, West Virginia and Pennsylvania to deliver NGLs to Shell's in-progress cracker plant in Beaver County.⁶³

Pipeline construction is disruptive and dangerous. Building new and expanding existing pipelines threatens human

health, wildlife habitats and the environment by compromising soil quality, impacting vegetation, contaminating surface waters and aquifers, and releasing air pollutants.⁶⁴ Threats to public safety and the environment remain even after construction is completed. Between 2002 and April 2018, more than 10,000 pipeline leaks, spills, ruptures and explosions occurred in the United States, resulting in over 200 fatalities and at least 860 injuries.⁶⁵ From 2010 to April 2018, pipeline accidents cost nearly \$793 million in property damage.⁶⁶

The risks may be higher for ethane pipelines, since ethane is an extremely flammable gas.⁶⁷ Compounding the risk, newly built pipelines since 2010 are five times more likely to have problems than those built from 1980 through 2009, possibly because the rush to complete pipelines during the fracking boom encouraged corner-cutting during construction.⁶⁸ In 2015, for example, the National Transportation Safety Board determined that a poorly constructed pipeline, built in 2011, contributed to a 2014 gas explosion that destroyed two buildings in New York City, injuring 50 people and resulting in 8 deaths.⁶⁹ In 2018, a recently constructed gas pipeline exploded in a fiery blaze in Marshall County, West Virginia.⁷⁰

The new NGL pipelines only add to an already sprawling maze of pipelines across the Tri-State area. They would entrench the regional petrochemical building boom and incentivize and perpetuate fracking.

Expanding the Region's Petrochemical Footprint

The Ohio River Valley in the Tri-State area already has a high concentration of plastics manufacturing plants.⁷¹ The new petrochemical push anticipates adding a total of five ethane crackers in West Virginia, Ohio and Pennsylvania, but the ACC suggests that the Appalachian basin could support up to nine crackers.⁷²

One of these plants is already under construction, and another is being planned. Shell's western Pennsylvania facility is currently under construction and will be one of the nation's largest ethane crackers.⁷³ It will be the first new facility of its type to be built outside the Gulf Coast in two decades.⁷⁴ In addition to the cracker, the petrochemical complex will include a unit that will produce 3.5 billion pounds annually of polyethylene, a type of plastic.⁷⁵ The

Beaver County location was meticulously selected to thrive off of Marcellus and Utica shale gas production throughout the region.⁷⁶

Seventy-five miles southwest of the Shell facility, the Thai petrochemical company PTT Global Chemical has planned to build another ethane cracker.⁷⁷ In 2017, PTT announced its \$13.8 million purchase of land along the Ohio River in Belmont County for the facility.⁷⁸ In January 2018, a subsidiary of Daelim Industrial Co. — a South Korean company that builds power plants and petrochemical facilities — agreed to join the project and help secure funding.⁷⁹ The partnership subsequently planned to nearly double the size of the cracker to produce 3.3 billion pounds of ethylene annually, almost matching the size of Shell’s facility, an investment that Ohio Governor John Kasich called a “game changer.”⁸⁰

These new crackers, however, are only a small part of a big dream to host a region full of ethane crackers, petrochemical facilities and plastics plants. There is a possibility of more petrochemical and plastics manufacturing plants, including three additional ethane cracker projects proposed for the region.⁸¹ The Ohio Rail Development Commission is also receiving a \$16.5 million grant that could

serve as critical transportation infrastructure for the Ohio petrochemical plant, since almost all plastics in North America are transported by rail.⁸²

Central Appalachia could become the next cancer alley

The petrochemical infrastructure investments would reinforce the petrochemical and plastics industry in the northern Ohio River Valley, driving demand for more fracking, more petrochemical facilities, more profits, more regional air pollution and more plastic litter piling up in landfills and waterbodies. The explicit aim of the development in pipelines, gas storage facilities and petrochemical plants is to create a regional plastics competitor for the Gulf Coast, the current epicenter of U.S. petrochemical and plastics manufacturing, where Texas and Louisiana combined produce about half of the nation’s petrochemicals.⁸³

But the petrochemical cheerleaders do not acknowledge that the Gulf Coast has some of the highest pollution levels and pollution-related illnesses and diseases. The upper Ohio River Valley region already faces some of the starkest environmental and associated public health challenges in the nation from a century of industrial pollution. In 2018, there were 8 current or proposed Superfund sites, 46 toxic waste sites and over 200 brownfield sites in the Upper Ohio River Valley between Pittsburgh, Pennsylvania and Point Pleasant, West Virginia.⁸⁴

The development of new petrochemical facilities, crackers and plastics plants will compound the existing pollution problems, releasing volatile organic compounds, carbon monoxide, nitrogen oxides and other toxins. The Ohio River Valley has persistent air pollution problems that threaten the health of residents. The University of Pittsburgh Center for Healthy Environments and Communities identified the Ohio River Valley as having hotspots of criteria air pollutants from the northern West Virginia panhandle to the southern Ohio-West Virginia border.⁸⁵ Several Ohio, Pennsylvania and West Virginia communities were ranked among the most polluted areas for ozone and particulate matter by the American Lung Association, including Beaver County where one cracker is being built.⁸⁶ Belmont County, Ohio, the proposed site for another cracker, already has been plagued with “intense” emissions from shale gas development.⁸⁷



Plants that convert natural gas into petrochemicals are known to emit massive amounts of hazardous air and climate pollutants including polycyclic aromatic hydrocarbons, carbon dioxide, ozone-creating volatile organic compounds (such as benzene and toluene) and nitrogen oxide.⁸⁸ These plants can rapidly produce smog-creating ozone and high levels of formaldehyde, a carcinogenic air pollutant and ozone precursor, during the commonplace flaring of excess gases.⁸⁹

Prolonged contact with ground-level smog-producing ozone is linked to asthma and chronic obstructive pulmonary disease.⁹⁰ Long-term exposure to smog has been connected to premature deaths and to low birthweight in babies.⁹¹ Several studies have demonstrated that people's long-term exposure to petrochemical facility pollutants is associated with heightened cancer risks, acute irritative symptoms (such as nausea and eye and throat irritation) and respiratory-related illnesses, especially for children.⁹² In Louisiana, the concentration of petrochemical plants between Baton Rouge and New Orleans has been called "cancer alley."⁹³ Similarly, the populations near petrochemical facilities in Houston live in high-cancer-risk areas.⁹⁴

The increase in plastics manufacturing also means mountains of litter that can pose health problems. The largest sector of the plastics industry is packaging, which creates materials that are immediately thrown away.⁹⁵ These products are also inherently toxic and can become a vehicle for other pollutants.⁹⁶ Many plastics contain hazardous chemicals and thousands of different additives, which may leach out as the plastic ages.⁹⁷ Several additives have been linked to chemical toxicity, including some hormone-altering endocrine disruptors,⁹⁸ and can seep from plastics into food and the environment, accumulating over time.⁹⁹

Environmental injustice of petrochemical and plastics manufacturing

Many polluting industrial plants have commonly been sited in socially and economically marginalized communities that lack the resources or political power to prevent their arrival.¹⁰⁰ For example, a 2005 study found that hazardous waste facility siting has followed a "path of least (political) resistance" for decades; as a result, disempowered communities have "borne a disproportionate share of the society's environmental burdens."¹⁰¹

This environmental injustice has been pronounced in both Texas and Louisiana. There were 16 chemical plants within a three-mile radius of the Manchester-Harrisburg neighborhood, one of Houston's lower-income communities of color.¹⁰² One study even found that children living within two miles of the Houston Ship Channel, where many plants are located, have a 56 percent greater chance of developing leukemia than children living 10 miles away.¹⁰³ And Louisiana's historically African-American community of Mossville has been surrounded by 14 industrial facilities — including a coal-fired power plant, oil refinery and several petrochemical facilities — annually releasing millions of tons of toxins into the water, air and land, including high levels of cancer-causing substances.¹⁰⁴

Already, lower-income communities in Appalachia are prone to having toxic neighbors and being disproportionately affected by pollution. This rural pollution can originate from industrial facilities, factory farms or natural resource extraction like mining and drilling — all of which contributes to environmental and health disparities for lower-income rural residents.¹⁰⁵

Many of the industrial polluters in the Ohio River Valley have been located in lower-income areas or communities of color. In 2015, people of color and low-income residents made up large portions of the population (10 percent and 17 percent, respectively) living within one mile of the more than 200 industrial facilities in the Upper Ohio Valley (excluding Allegheny County, Pennsylvania, where people of color made up 23 percent of the population near industrial facilities).¹⁰⁶

Appalachia's plentiful fossil fuel resources have not delivered widespread economic prosperity. In general, Appalachia endures higher rates of unemployment and poverty than the rest of the nation. The Appalachian regions of Ohio and Pennsylvania typically have higher rates of unemployment and poverty than in the rest of their states. And West Virginia experiences higher rates of unemployment and poverty than the rest of the United States.¹⁰⁷

According to a *University of Pittsburgh Law Review* article, the region's natural resource development has been linked to "a history of marginalization, extraction-related health issues, and a cycle of poverty."¹⁰⁸ The nearby rural communities have endured disproportionate health and environmental impacts from coal and natural gas resource

extraction.¹⁰⁹ The fracking-driven petrochemical expansion will ramp up toxic air and climate emissions from plastics plants and drilling rigs, adding to the pollution burden facing frontline communities from other industrial and natural resource development-related health and environmental impacts.

Petrochemical workers: Health hazards

The industry proponents have touted the potential jobs that the petrochemical buildout will bring to the region.¹¹⁰ But these job promises could be oversold, and the industry downplays that petrochemical jobs are potentially dangerous and hazardous to health.

Some studies have found that petrochemical workers that handle or are exposed to toxins can have higher brain cancer risks than other workers¹¹¹ and can develop liver disease and experience hearing loss.¹¹² Petrochemical workers are commonly exposed to hazardous chemicals that can pose long-term health risks. Benzene, toluene and xylene are neurotoxic, carcinogenic and classified as “priority pollutants” by the U.S. Environmental Protection Agency.¹¹³ It is believed that long-term exposure to certain amounts of benzene, a known carcinogen and mutagen, can increase the risk of leukemia.¹¹⁴

In addition, petrochemical facilities produce and emit dozens of potentially dangerous chemicals, including polycyclic aromatic hydrocarbons, nickel, lead, mercury, methanol and naphthalene.¹¹⁵ Acute and chronic exposures to these chemicals can have significant health effects. Long-term exposure to methanol can cause dizziness, insomnia, gastric issues, headaches, nausea, blurred vision and blindness.¹¹⁶ Exposure to naphthalene, a possible human carcinogen, has been linked to anemia, liver and neurological damage, retinal impairment and the development of cataracts.¹¹⁷ Lead, nickel, mercury and polycyclic aromatic hydrocarbons are all believed to be endocrine disruptors, which are chemicals that can alter hormone functions and negatively impact the metabolism and the neurological, immune and reproductive systems.¹¹⁸ Some polycyclic aromatic hydrocarbons are also “reasonably anticipated to be human carcinogens,” according to the U.S. National Toxicology Program.¹¹⁹

In addition to the long-term health impacts of these releases, petrochemical and plastics facilities can have

catastrophic accidents. Many of the vapors produced at petrochemical plants are highly flammable.¹²⁰ Accidents are frequently large and not only can injure the workers but also can impact nearby communities.¹²¹ For example, in June 2013 an explosion at a Louisiana petrochemical plant killed two workers and injured 167. The fire blazed for three-and-a-half hours, releasing more than 30,000 pounds of combustible hydrocarbons into the air. The damage was so great that the plant had to close down for a year and a half.¹²²

Several recent chemical facility accidents and fires in the Ohio River Valley demonstrate the risks of petrochemical expansion in the region. A 2017 fire at a plastics company warehouse burned for a week in Parkersburg, West Virginia, spewing smoke that was dangerous enough for health officials to urge people to remain indoors. The company IEI Plastics’ material safety datasheet was out of date and they therefore could not provide emergency responders or state officials with an accurate inventory of what materials were burned in the fire.¹²³ A 2015 fire and explosion at a plastics and chemical plant in Allegheny County, Pennsylvania required a “shelter in place” order for local residents.¹²⁴ In 2008, in western Pennsylvania, a chemical spill morphed into a toxic plume and forced 2,500 people to evacuate.¹²⁵



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The 2013 Williams Olefins Plant explosion in Baton Rouge, Louisiana killed two workers and injured 167.

Conclusion: Hub Plans to Profit From New Markets and New Products

The proposed storage hub, and the greater petrochemical buildout, is a symbiotic profiteering opportunity for the gas, petrochemical and plastics industries. The expansion of existing facilities in Texas and Louisiana, as well as new construction in Ohio, Pennsylvania, West Virginia and potentially Kentucky, locks in more demand for fracking and decades more of climate pollution — from the climate-altering releases during the upstream (drilling and fracking) and downstream (petrochemical and plastics manufacturing) part of the pipeline chain.

Natural gas is a cheap and dirty fossil fuel, now proliferating its toxic legacy by facilitating the expansion of petrochemical plants, which are polluting and unsustainably producing materials that often end up in landfills. Rather than continually investing in fossil fuels and chemical industries, we must invest in clean, renewable energy.

Some projects are already under construction and others are well into the planning process, but a large-scale petrochemical buildout may be largely industry hype. Community groups have been mobilizing and taking action across Appalachia to stop the reckless construction of many of these proposals.

Instead of expanding the current petrochemical infrastructure in the Gulf, and in lieu of turning the Appalachia basin into the next cancer alley, we must invest in a just transition to a clean energy future. Food & Water Watch recommends:

- Banning fracking everywhere;
- Stopping fossil fuel exports and the construction of infrastructure to support these exports;
- Limiting purchases of non-biodegradable, plastic products that effectively supports and finances the oil and gas industry;
- Enacting aggressive energy conservation policies, including large public transportation investments and widespread deployment of other energy-saving solutions;
- Establishing ambitious programs for deploying and incentivizing existing renewable energy and energy

efficiency technologies in order to slash fossil fuel demand to reach 100 percent clean renewable energy by 2035;

- Modernizing electrical grids to cater to distributed renewable power generation; and
- Making investments in research and development to overcome technological barriers to the next generation of clean energy and energy efficiency solutions.

Endnotes

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