HB1438 Agriculture - Processing of Poultry Litter for Alternative Use
Bill Sponsor: Delegate Jacobs
Committee: Environment and Transportation, March 4th, 2020
Organization Submitting: Food & Water Action
Person Submitting: Jim Walsh, Senior Policy Advocate

Position: OPPOSE

Chairman Barve and members of the Environment and Transportation Committee,

HB 1438 represents yet another attempt to manage waste from large industrial chicken farms. This is a policy that seeks to treat a symptom of our unsustainable agricultural system, instead of finding a cure. The Chesapeake Bay will never fully recover as long as we continue to concentrate large numbers of animals in factory farms on its shores. These large facilities are generating huge amounts of waste that continues to be a major source of nitrogen and phosphorous contamination in the Bay.

The state has invested millions in manure digester programs since 2014. The results are clear, none of these projects are financially viable, even with significant government subsidies. This is not unique to Maryland, but these digesters are unprofitable throughout the country. If they are to remain in business, manure digesters will require significant public support through higher electricity rates or taxpayer subsidies.

Even if these projects were financially stable, manure digesters do nothing to eliminate nitrogen in animal waste, and may exacerbate issues relating to concentration of the waste, if farms use central digesters, which this legislation would support. Manure digesters also create harmful air pollutants such as hydrogen sulfide and large amounts of methane, a greenhouse gas 86 times more potent than CO2. Combustion of manure gas for electricity and energy creates even more air pollution that threatens public health and the climate.

Furthermore, the costs and responsibility of collecting and managing this waste will likely be borne by taxpayers, not the big corporations that are exploiting Maryland farmers and natural resources.

Rather than propping up a failing industry, we must support policies that transition factory farms to a more sustainable agricultural models that enriches farmers, our soil, and our communities.

Thank you

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FOOD & WATER WATCH

The Urgent Case for a Factory Farm Moratorium in Maryland

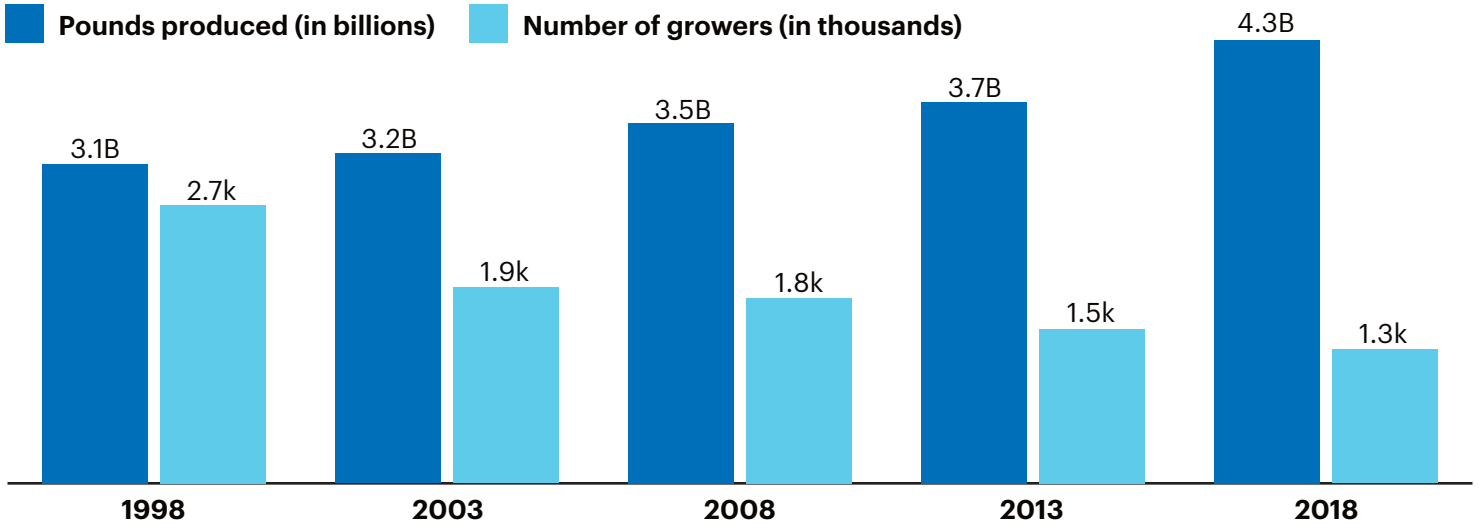
The chicken industry continues to expand on Maryland's Eastern Shore. More chickens may mean more profits for companies like Perdue and Mountaire Farms, but for residents it spells more manure waste, polluted air, planet-warming emissions and degradation of the Chesapeake Bay. Weak state and federal regulations allow these corporations to pawn off the enormous burden of waste disposal to their contract growers — and ultimately to Maryland taxpayers, who help foot the bill to transport hundreds of thousands of tons of poultry and other livestock waste each year. It is time Maryland's leaders place a moratorium on new factory farms and on the expansion of existing ones.

From independent farms to corporate contractors

Maryland's poultry industry looked remarkably different in the mid-20th century. Chicken growing was largely a side business; farmers put up a couple of chicken houses but still maintained mixed crop systems, helping them better manage poultry litter (a mixture of manure, bedding and feathers)[1] by utilizing it as crop fertilizer. But beginning in the 1940s, companies began to seek control over each step of broiler production, from chick breeding to poultry processing.[2] Today, a handful of corporations including Perdue and Mountaire Farms control a system for producing broiler chickens that is radically different — and that concentrates significantly more birds on each site. The company, or "integrator," owns the birds and contracts with farmers, called "contract growers," to raise them. The average Maryland contract grower now has at least six chicken houses and raises half a million birds per year.[3]

And the industry's output continues to expand. Over the past five years, the Delmarva Peninsula built 400 new chicken houses and increased its broiler production by over half a billion pounds per year. The region's farms are raising more chickens, but on fewer farms, because farm size has been increasing.[4] In Maryland, this means that while the number of contract broiler operations fell by almost a quarter from 2002 to 2017, the number of chickens produced annually increased by 20 million (see Figure 1).[5]

FIG. 1: Delmarva Broiler Production[6]



SOURCE: Delmarva Poultry Industry, Inc. (DPI). Includes data for Maryland, Delaware and Accomack County, Virginia

In 2017, Maryland's 307 million broiler chickens raised under contract generated a whopping 400,000 tons of litter. For comparison, that's equal to the weight in manure produced by nearly 600 thousand people — roughly the population of Baltimore city.[7] Many broiler operations today no longer raise crops alongside their chickens, limiting their options for sustainably disposing of this waste. Overapplication of litter can lead to nitrogen and phosphorus runoff and ultimately the degradation of the Chesapeake Bay.[8]

Poultry operations make neighbors sick

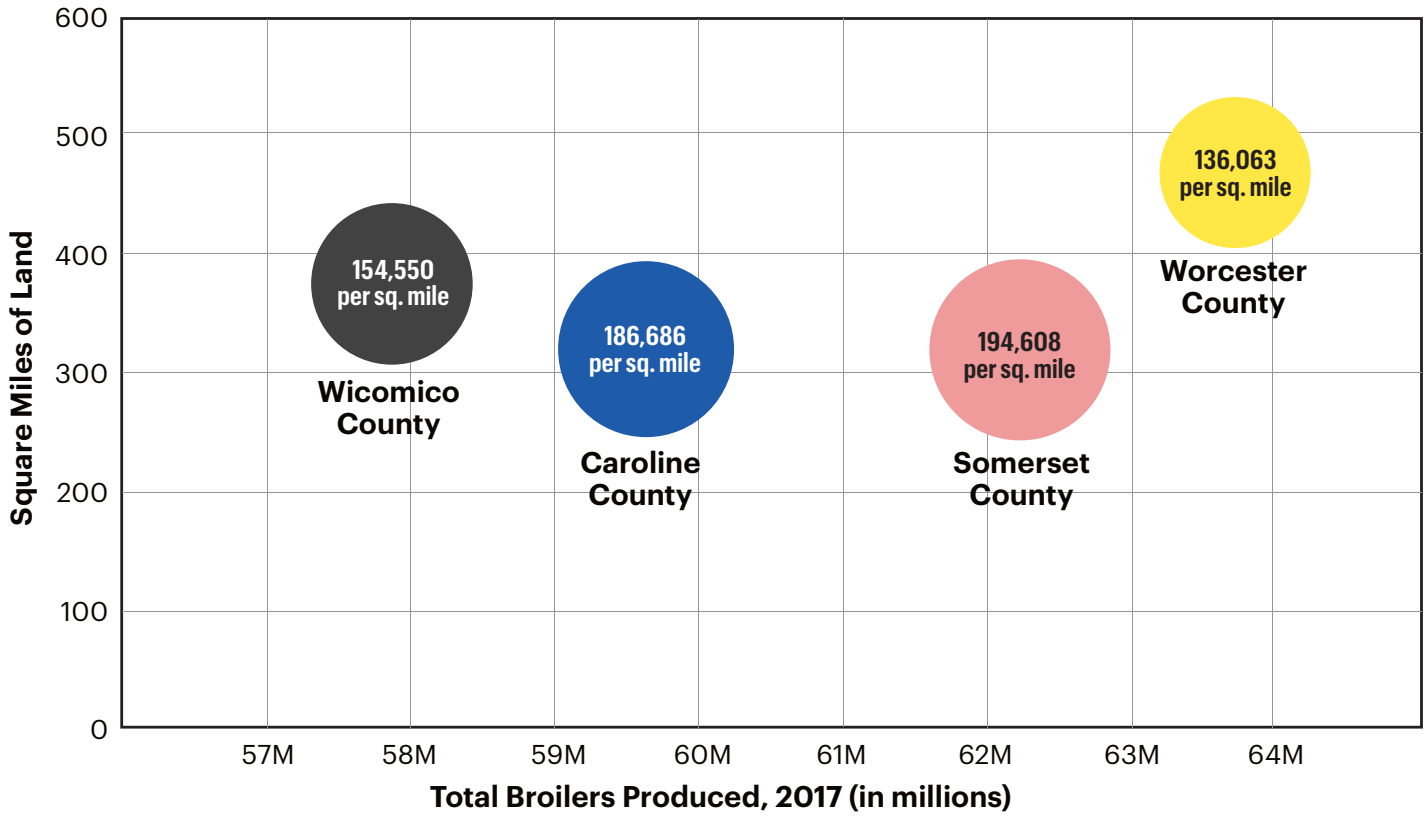
Excess poultry litter and other pollution from broiler factory farms threaten the health of surrounding communities. The Environmental Integrity Project estimates that the typical broiler operation on the Eastern Shore emits 19 to 24 tons of ammonia each year.[9] Ammonia, along with particulate matter and endotoxins, are respiratory irritants linked to lung disease. Broiler houses also emit foul odors and human pathogens, as well as volatile organic compounds, which irritate the eyes and throat, damage the nervous system and contribute to ground-level ozone.[10]

Poultry house workers exposed to these pollutants suffer elevated rates of respiratory symptoms.[11] But broiler house ventilation fans and strong winds can spread the pollutants offsite. Neighbors of broiler operations report experiencing foul odors that enter their homes even with the windows closed.[12]

Broiler operations also threaten drinking water. A U.S. Geological Survey assessment found nitrate (a pollutant from poultry litter runoff)[13] at levels above the allowable amount in drinking water in one-third of groundwater samples taken in the Delmarva Peninsula.[14] Maryland is second only to Delaware for the prevalence of nitrate in groundwater, which is linked to the life-threatening condition known as "blue baby syndrome."[15]

Exposure to these various pollutants may be contributing to respiratory and heart disease on the Eastern Shore. The counties with the highest densities of broilers produced per square mile of land (see Figure 2) — Caroline, Somerset, Wicomico and Worcester — have rates of heart disease mortality and lung and bronchus cancer that exceed the state average.[16] Additionally, children in Somerset and Wicomico counties have higher rates of emergency room visits for asthma incidents compared to the state average.[17]

FIG. 2: Broilers per Square Mile[21]



SOURCE: U.S. Census Bureau; 2017 U.S. Census of Agriculture

These four counties also have higher rates of poverty and lower median incomes compared to Maryland as a whole,[18] suggesting that the siting of poultry houses may be an environmental justice issue. In fact, what would have been the largest poultry operation ever in Wicomico County was proposed for a community that is 77 percent African American, with nearly one in five residents living in poverty.[19] The plan was opposed by the local chapter of the National Association for the Advancement of Colored People (NAACP) and other public interest groups, and was ultimately abandoned.[20]

Unfortunately, with state and federal regulators failing to regularly monitor emissions from poultry operations,[22] it is difficult to know the full extent of toxic emissions that nearby residents are exposed to on a daily basis — and whether this exposure may be contributing to these communities' health issues.

Factory farms are incompatible with a healthy Chesapeake Bay

Agriculture is the leading source of nitrogen and phosphorus loads to the Chesapeake Bay, which feed toxic algal blooms that harm aquatic life and lead to aquatic "dead zones."[23] Poultry litter runoff contributes to this load, yet Maryland's solution is to just shift this litter around rather than halt the expansion of factory farms. Over the past two decades, the Department of Agriculture allocated nearly $10 million to its Manure Transport Fund, which hauled 1.8 million tons of poultry and other livestock waste off of operations.[24]

Perdue boasts that it has contributed over $1 million to this fund; however, the company is possibly the program's largest beneficiary, gobbling up more than $3.8 million over the past decade to haul litter to its composting and fertilizer facility.[25] Taxpayer funding of manure transfer is just another form of corporate welfare. Perdue and other integrators must shoulder the responsibility for managing the poultry litter produced by their chickens. And Maryland's leaders need to address the *production* of poultry waste in the first place by placing a moratorium on factory farms.

Maryland is failing to regulate its factory farms

Maryland is not holding integrators accountable for their enormous waste problem and the toxic emissions plaguing nearby communities. This goes against the will of the state's residents, the majority of whom support greater regulation of the poultry industry and its waste.[32]

Poultry contracts are abusive

Broiler production is the most vertically integrated of all livestock industries, with 96% of all birds raised under production contracts.[26] Companies like Perdue and Mountaire Farms (the integrators) provide growers with all inputs including chicks, feed and veterinary services. In exchange, growers borrow money to build the broiler houses (costing an estimated $1 million per operation) and manage the huge amount of waste produced.[27]

Contracts shift many of the risks involved in raising poultry onto growers. Growers are paid by the live weight of birds produced, meaning that any losses due to illnesses are reflected on their paychecks.[28] Additionally, some companies operate "tournament" systems where growers are compensated based on how their performance compares with other growers. And contract lengths vary, with some integrators offering "flock-to-flock" contracts, meaning there is no guarantee that the integrator will renew the contract once the current flock is sold.[29]

Integrators are able to offer such one-sided contracts in part because of extreme market consolidation. Many regions have only one integrator willing to work with growers, so contracts become a "take-it-or-leave-it" scenario. Walking away isn't necessarily an option when growers accrue massive debt in order to keep up with contract requirements.[30] And integrators have been known to deliver sick birds or to drop contracts with growers who speak out against unfair practices and treatment. This leaves them with empty chicken houses and debt they cannot repay, potentially leading to bankruptcy and the sale of their farmland.[31]

In 2016, Maryland's General Assembly failed to advance the Poultry Litter Management Act, which would have held integrators financially responsible for transporting excess poultry manure.[33] And the Community Healthy Air Act (CHAA) did not make it to a floor vote three years in a row, despite testimony from fenceline communities and broad support from local advocacy groups. The CHAA would have required Maryland's Department of the Environment (MDE) to identify and quantify emissions gener-

ated by poultry and other factory farm operations and to prepare a public health assessment.[34]

In January 2019, the MDE announced its own study of poultry emissions, but this plan would involve just two monitoring stations near poultry operations measuring for two pollutants.[35] Critics note that data from such a small sample can hardly be considered representative of the industry. And since the MDE's plan is funded by the local poultry industry — which vehemently opposes the Community Healthy Air Act — some suspect it is nothing more than smoke and mirrors intended to draw attention away from the CHAA.[36]

Factory farms exacerbate climate change

Smaller crop-and-livestock operations can better manage poultry litter by using it as fertilizer. But since most Eastern Shore operations lack cropland, they produce significantly more litter than they can manage onsite — an estimated 228,000 tons, according to an analysis by Salisbury University.[37] Long-term storage and improper handling of poultry litter can increase greenhouse gas emissions from the litter.[38]

Additionally, poultry production releases greenhouse gases throughout all other steps in the production chain. This includes the growing and processing of chicken feed (often through intensive agriculture that relies on chemical inputs), as well as fossil fuel consumption to heat poultry houses and to process and transport poultry products.[39]

In turn, poultry operations are vulnerable to a changing climate. In 2018, the Eastern Shore's poultry industry warned growers to prepare for Hurricane Florence.[40] While the region was spared the worst of the storm, Florence ravaged North Carolina's factory farms, drowning millions of birds and sending their carcasses into floodwaters.[41] A similar environmental health catastrophe could occur on the Eastern Shore in the coming years if a major hurricane strikes.

It is time for Maryland to ban factory farms

Corporate consolidation of the poultry industry has squeezed out Maryland's small and independent chicken operations, enabling corporations to profit from abusive contracts while burdening growers and taxpayers with the responsibility of cleaning up litter waste. Meanwhile, their mega-operations pollute the air and water, threaten public health and fuel climate change.

A recent poll found that a majority of Maryland residents would look favorably on state legislators who seek to tighten oversight of the poultry industry.[42] It is time for Maryland's leaders to listen to the public and move to ban new factory farms and the expansion of existing ones.

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Biogas From Factory Farm Waste Has No Place in a Clean Energy Future

As the threats of global climate change and fossil fuel dependence are increasingly being felt worldwide, countries are turning to biogas as a part of a transition to renewable energy. Biogas is being boasted as a "renewable" energy solution, designed to help mitigate climate change. The process of anaerobic digestion converts organic material into biogas, which can be used to produce electricity on-site, for heating, or as vehicle fuel.[1]

Despite claims of environmental benefits, biogas is primarily made up of methane, a potent greenhouse gas. And the focus on the supposedly renewable nature of biogas ignores the many environmental and health threats posed by a major source of this gas: manure from massive factory farms. Biogas has no place in the world's clean energy future.

Proponents are promoting biogas as a means to abate the environmental consequences associated with large-scale livestock operations, often referred to as factory farms or concentrated animal feeding operations (CAFOs). These facilities raise large numbers of animals in intensive confinement, concentrating the animals and their manure.

Biogas digesters are among the new wave of "green" manure management solutions being used on livestock operations all over the world. But these digesters simply prop up factory farms that threaten human health, contribute to global warming and put workers, communities and farmers at risk.

Biogas Is Dirty Energy

Despite claims that digesters reduce greenhouse gas emissions[7], burning biogas actually releases carbon dioxide and other pollutants including smog-forming nitrogen oxides, ammonia and hydrogen sulfide[8], potentially offsetting other

What Is Biogas?

Biogas is a mixture of gases that are produced after plant and animal material are broken down by microorganisms in a process called anaerobic digestion.[2] Anaerobic digestion — which occurs in a closed, oxygen-free space called a digester — takes substances like manure from factory farms, sewage sludge or food waste and "eats" the material, leaving mostly methane and carbon dioxide, among other gases. The material left over is called digestate.[3]

Biogas can be converted into biomethane through the removal of hydrogen sulfide, carbon dioxide and moisture.[4] It also can be treated and made into compressed natural gas (CNG) or liquefied natural gas (LNG)[5], with the removal of siloxanes and hydrogen sulfide[6], to be used to generate power or distributed through pipelines to homes and businesses.

greenhouse gas reductions. Additionally, biogas is composed of roughly 50-70 percent methane, 30-45 percent carbon dioxide and trace amounts of other gases.[9] Biomethane typically contains more than 95 percent methane.[10] Methane is a potent greenhouse gas, nearly 90 times more powerful than carbon dioxide over a 20-year time period.[11]

Data have shown that biogas digesters are responsible for both systemic and accidental methane emissions.[12] Plants that store digestate — the byproduct of anaerobic digestion — in open tanks emit a steady flow of methane. Accidental leaks can occur in over-pressured digesters, which can lead to explosions.[13] In a review of several studies, researchers estimated that the leakage from "renewable" methane production is actually similar to that of fossil fuel gas production.[14] On top of this, the transport of biogas and materials to and from digesters still uses massive amounts of toxic diesel fuel.[15]

Releases of harmful contaminants are also associated with biogas plant operation and infrastructure such as pipelines, the end use of the gas and digestate management.[16] These releases can destroy the Earth's protective ozone layer, warming the atmosphere and changing the global climate.[17] Biogas purification technology exists to reduce methane leakage, but it is costly and faces major challenges in terms of efficiency and energy consumption.[18]

The high costs of factory farm manure

Worldwide, factory farms produce millions of tons of manure a day. Many pig and dairy cow factory farms flush untreated waste into large cesspools called lagoons, where it is stored until it is applied as fertilizer on fields. However, waste from lagoons is routinely overapplied to crop land as fertilizer, leading to runoff into surface waters and leaching into groundwater, which impacts human health and nearby communities. And unlike human sewage, which is treated at wastewater treatment plants, such treatment facilities for livestock waste are nonexistent.[19]

Because they produce so much waste, large-scale factory farms are also dangerous sources of methane. Methane emissions from agriculture in the United States have gradually risen by 14 percent in the past few decades and steadily continue to rise.[20] From 1990 to 2017, manure management was the largest cause of the increase in methane emissions in the U.S. agricultural sector.[21] The majority of this observed increase was predominately from pig and dairy cattle manure, with emissions increasing 29 percent and 134 percent, respectively.[22]

Studies have claimed that the use of biogas technology offers a way to avoid the negative impacts of methane emissions and toxic gases from manure.[23] The multinational meat giant Smithfield Foods not only plans to push the U.S. factory farms that raise their animals to construct digesters, but also intends on building new factory farms specifically to tap into the potential to generate biogas.[24]

Biogas digesters are a false solution that do nothing to actually mitigate emissions from agriculture. On-farm digesters can cost anywhere from an estimated $400,000 to $5 million to construct depending on the size, design and features.[25] The money being funneled into digesters is wasted capital that should instead be invested in zero-emission renewable energy sources, like solar and wind.

And the looming spread of factory farms — driven in part by the promotion of biogas digesters — can be dangerous, compounding the already existing threats to farmers, workers and local residents.

Biogas in the United States

The energy crisis in the 1970s propelled the United States to consider the feasibility of biogas as an alternative energy source.[26] Once fully developed as usable technology, digesters were put on larger livestock operations. But this first generation of biogas digesters suffered from high capital costs and substantial operational hurdles.[27] By the 1980s, 85 percent of existing digester facilities were shut down, due in part to poor technological designs, bad management and a lack of knowledge needed to operate them.[28]

In actuality, some farmers were finding that the costs to run biogas operations were exceeding the money earned from generating electricity.[29] A drastic decline in electricity prices in the past decade has made selling the electricity to the grid less profitable.[30] This, coupled with the changing landscape of environmental regulations and legal challenges from neighboring communities, has resulted in the expansion of methane digesters used to produce "renewable" natural gas (RNG).[31] RNG production has created an incentive for constructing even more digesters — and the pipeline infrastructure needed to move the gas — across the country.[32]

According to the U.S. Environmental Protection Agency (EPA), as of January 2019 at least 282 anaerobic digesters were in construction or currently operating on livestock farms in the United States.[33] The EPA estimates that biogas technology can be employed on at least 8,000 additional large dairy and pig operations.[34] So far, the U.S. Department of Agriculture has invested more than $10 million in biogas research and use.[35] State governments also incentivize digesters by promoting biogas as renewable energy in their Renewable Portfolio Standard policies.[36]

Environmental injustices stemming from digesters

Across the country, the presence of factory farms and increased promotion of biogas are threatening low-income communities and communities of color. In the Central Valley of California, biogas digesters could impose disparate health impacts on already vulnerable populations. Pig farms in eastern North Carolina are disproportion-

The Case of Smithfield Foods

Rural communities across the United States are being targeted for new digesters. In late 2018, Smithfield Foods announced its plans to build "manure-to-energy" projects at 90 percent of the facilities raising its pigs — in Missouri, Utah and North Carolina — with the goal of achieving greenhouse gas emission reductions.[37] This $250 million joint venture with Dominion Energy will convert existing anaerobic lagoons into covered digesters, which will capture biogas that will then be transported to processing facilities around the country to be turned into natural gas.[38]

The partnership claims "to promote cleaner energy, sustainable family farms, and a brighter future for rural communities."[39] But the creation of even more dirty natural gas through anaerobic digestion at large factory farms will do nothing for independent family-scale farms because digesters require such large quantities of manure. This amount of manure can only be produced on farms that confine thousands of animals.

On top of this, Smithfield's greenwashing attempts are not surprising given the company's egregious track record in North Carolina. In 2018, Smithfield lost three lawsuits filed by a group of North Carolinians who live near its pig farms. The plaintiffs were awarded nearly $550 million after testifying about terrible odors, adverse health impacts and property destruction. After Hurricane Florence, conditions worsened as pig waste lagoons around the state overflowed — some breaching entirely — resulting in the release of millions of gallons of untreated pig manure into floodwater and people's homes.[40]

Smithfield's newfound interest in biogas digesters comes right on the heels of these lawsuits, which emphasized just how dangerous pig manure lagoons and sprayfield systems have been for nearby communities.[41] But this plan does nothing to solve the problem of Smithfield's polluting factory farms — instead, Smithfield will not only maintain its factory farms, but also employ dirty biogas infrastructure under the guise of being "renewable."

The Case of California's Central Valley

Before 2002 in the Central Valley of California, there were less than five dairies that operated manure digesters.[42] By 2015, five dairy factory farms had been awarded millions of dollars in grants to build new biogas digesters that would be located in disadvantaged communities in the Central Valley. The California Department of Food and Agriculture claims that these digesters will mitigate global warming by cutting methane emissions through the production of renewable energy.[43]

But the Central Valley is a region already plagued by pollution and terrible environmental conditions, and digesters may only make things worse. The increased presence of factory farms to promote biogas, the use of diesel trucks to cart manure to and from digesters, and the invasive construction of pipelines to move biogas across the country pose major risks to an already polluted Central Valley.

The valley is surrounded by mountains that trap air pollutants, resulting in poor air quality. Already, the concentrations of ozone and particulate matter often exceed the state and federal standards.[44] Groundwater has also been degraded partly because of land use and agriculture practices.[45]

The San Joaquin Valley, which makes up two-thirds of the Central Valley, is home to a population that is 54 percent people of color.[46] This area is agriculturally rich but economically poor, ranking among the nation's poorest regions. These communities lack the political agency and resources needed to advocate for themselves, and often go unnoticed by state officials.[47]

ately located in communities of color where bacteria from manure is found in water.[48]

Moreover, air pollutants from these operations disrupt daily living — of predominately Black, Hispanic and Indigenous residents — contributing to stress and anxiety, mucous membrane irritation, respiratory conditions, reduced lung function and blood pressure elevation.[49] And while a good portion of emissions are present before digestion takes place, biogas construction and production will bring its own pollutants and emissions — from the exhaust generated from the use of heavy equipment and vehicles, to the potential odors that will come with the transport of manure and other material used for digestion.[50]

The placement of digesters in already disadvantaged communities will only exacerbate the existing environmental degradation facing vulnerable populations around the country.

Biogas Domination in Europe

Europe is far more familiar with biogas operations than the United States, with more than 17,000 digesters located around the continent. Seventy percent of these plants operate on agricultural materials,[51] which includes animal waste, other waste associated with food production, and energy crops — crops grown specifically for anaerobic digestion.[52]

The increase in biogas production can be attributed, in part, to renewable energy policies backed by the European Union, which boasts that biogas is economically and environmentally beneficial.[53] More than £200 million (roughly $273 million) of taxpayer money is used annually to fund digesters in the United Kingdom (UK) alone.[54] Germany has more than 8,000 digesters as a result of a law that guarantees renewable energy producers above-market rates for their power.[55]

Contrary to claims of new energy production, the power from digesters cannot actually be harnessed in the ways that the fracking and natural gas industries promote. In a report on the feasibility of renewable biogas, researchers note that there are significant economic constraints in achieving substantial volumes of "renewable" methane from manure in Europe.[56] Even when incentivized, the high costs of transporting "renewable" methane to the grid for heating and transportation becomes increasingly difficult.[57]

Safety issues on the rise

These operations have proven time and time again to be extremely dangerous. And accidents are increasing. One

farm in the UK has been the site of two separate digester spills, which spewed toxic black sludge onto acres of farmland — killing more than 50 farm animals — and into a nearby stream.[58] The sludge even reached neighboring farms. Damages from the two spills cost around £114,000, roughly $145,000.

A study of biogas accidents around Europe found that increased digester development has led to a higher number of operational accidents. The study examined more than 200 accidents and found that explosions and leaks resulted in a number of worker injuries on biogas plants. In more extreme instances, hazardous conditions at plants have led to worker deaths.[59] Researchers from the study had a database of only 208 accidents to examine, but concluded that the number of accidents at plants probably exceeds what is recorded.

The Urgent Need to Shift to Renewables

Because biogas has the potential to be turned into natural gas, it appeals to industries that want to expand natural gas infrastructure development around the world. The cost of a single biogas digester can reach $5 million. The expansion of natural gas infrastructure to handle new biogas production will also come at a high price. By 2016, the costs for constructing U.S. pipelines rose to a whopping $2.4 million per mile above 2015 costs, bringing total costs to $7.65 million per mile (roughly £5.86 million).[60] Rather than investing this huge amount of capital in dirty energy, it would be better spent on actual renewable energy efforts.

We must reject biogas as renewable energy

This worldwide promotion of biogas as "renewable" by agribusinesses and the fracking and natural gas industries is misleading and harmful. Dirty biogas releases greenhouse gas emissions and other pollutants, puts workers and farmers in danger, and harms nearby communities, all while failing to provide reliable power. Investing in natural gas infrastructure and factory farm-linked technology forestalls meaningful reductions in emissions and delays a true shift to renewable energy. It is time to invest in a just transition to a 100 percent, zero-emission, clean energy future, not factory farm biogas.

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