Fowl Matters

Public Health, Environmental Justice, and Civic Action around the Broiler Chicken Industry

RACHEL CARSON COUNCIL

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Authors

Zoë Ackerman, *Rachel Carson Council*
Robert K. Musil, Ph.D., M.P.H., *Rachel Carson Council*
Emily McAuliffe, *Duke University*
Elijah Brunson, *Rachel Carson Council*
Lauren Reynolds, *University of Central Florida*

Graphic Design by Ross Feldner, Rachel Carson Council
Cover Photo: Dr. Anthony Gustin

RACHEL CARSON COUNCIL

The Rachel Carson Council (RCC), founded in 1965, is the national environmental organization envisioned by Rachel Carson. The RCC promotes Carson's ecological ethic with the goal of building a more just, sustainable, and peaceful future.

Rachel Carson Council
8600 Irvington Avenue
Bethesda, MD 20817
www.rachelcarsoncouncil.org
office@rachelcarsoncouncil.org
(301) 214-2400
Facebook.com/RachelCarsonCouncil
Instagram and Twitter: @RachelCarsonDC

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This report is dedicated to Steve Wing (1952-2016).
We are inspired by Dr. Wing's unwavering commitment to improving environmental health in communities globally and vision for a brighter future.

Anything marked (*) is a name changed for privacy purposes.

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A LETTER FROM THE RACHEL CARSON COUNCIL

Prior to World War II, American families bought their chickens live and breathing. Half a century later, the industry would begin to transform dramatically. By the year 2000, 90 percent of chicken meat was processed and sold in a dozen forms: drumettes, necks, wing tips, inner fillets, thighs, drumsticks, three-joint wings, breasts, feet, tails, gizzards, and whole legs.[1] In the foreword to Ruth Harrison's pioneering book, *Animal Machines* (1964), Rachel Carson noted early signs of this change: "Gone are the pastoral scenes in which animals wander through green fields or flocks of chickens scratch contentedly for food. In their place are factory-like buildings in which animals live out their wretched existences without ever feeling the earth beneath their feet."[2] In her description, Carson portrays the modern-day Concentrated Animal Feeding Operation or CAFO.

The United States Department of Agriculture (USDA) defines **broiler CAFOs** as operations that annually raise and slaughter 500,000 or more chickens for meat consumption. In her book, Harrison described the industry as a "network of back-room boys with computing machines working to discover the breeds, feeds, and environment most suited to convert food into flesh" and subsequently raise corporate profits.[2] Harrison and Carson predicted that the industry would continue to concentrate, pollute, and profit from exploiting humans, animals, and the environment. The women, though visionaries for their time, may not have anticipated that large-scale broiler operations, equipped with automated feeding and processing regimens, would have almost wholly replaced small and mid-sized farms by the twenty-first century. Today, 18,500 broiler CAFOs nationwide generate not only billions of chickens, but 300 million tons of waste each year.[3] The U.S. is the largest producer in the world: as of 2014, domestic revenues topped $32.7 billion.

Figure 1: Tyson, Pilgrim's, Perdue and Sanderson Farms market their products under many brand names. Credit: Oxfam.

Several decades ago, independent operators oversaw each stage of production and had more options about where to sell their product. As national policies reshaped the industry over the last 60 years, it became more profitable to combine, or **vertically integrate**, these operations. The global broiler market is now the most vertically integrated segment in all industrial agriculture, meaning a single company oversees production, processing, and distribution. Tyson Foods, Perdue, Sanderson Farms, Koch Foods, and Pilgrim's Pride bought smaller "family farms" and required formerly independent operators to sign binding contracts.[2] These global corporations have **monopolies** and **monopsonies** on the broiler market; the contracts stipulate that

all buying and selling must occur through corporate-controlled channels. A **monopoly** occurs when a single company supplies a particular good or service; a **monopsony** occurs when a small number of buyers control the market through which goods are purchased, driving prices down.[4,5] The Rural Advancement Foundation International (RAFI), an organization that advocates for fair contracts between farmers and big chicken companies, estimates that up to 97 percent of the chicken we eat is produced by about 30,000 farmers under contract with those five **integrators**.[5] The *Henhouse to Hothouse* section of this report presents poultry's history of consolidation and regulation, and the effects on contract growers and workers.

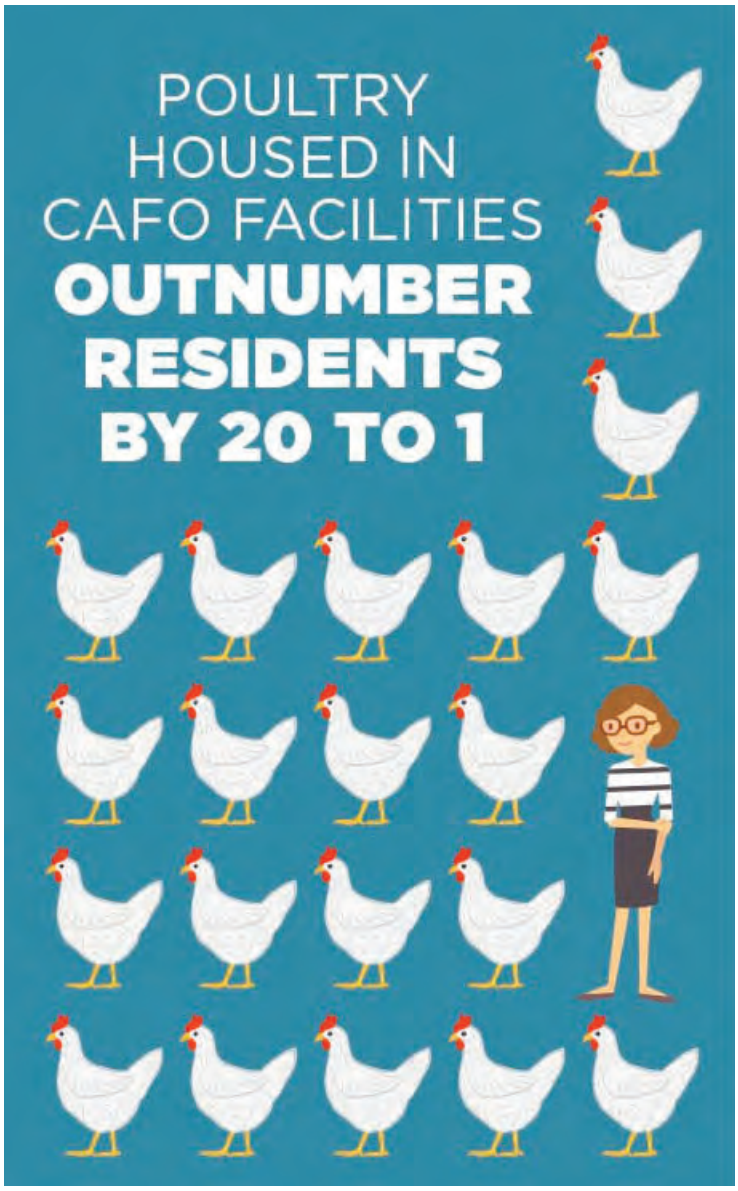


Figure 2: In North Carolina, poultry outnumber residents by a factor of 20 to 1. Credit: Fields of Filth, Environmental Working Group.

Chickens are often seen as environmentally benign because they are small. Even though cows and hogs produce more liquid waste, contribute higher levels of greenhouse gases, and require more space, industrial chicken production and processing yields many harmful **externalities**. These effects on stakeholders are not reflected in the price of a conventional chicken breast. On the Eastern Shore of Maryland, for example, there are about 29 million broilers at any given time, equal to five chickens per person.[6] The operations produce as much sewage as 9.8 million humans, most of which is untreated. When excess manure runs into the Chesapeake Bay, algae feed off nitrates, resulting in algal blooms, fish kills, and dead zones. CAFO neighbors drink polluted well water and breathe in air rife with ammonia and organic compounds flushed out of feeding houses by large fans.[6] Many of these communities also experience multiple forms of **environmental racism** and **environmental injustice**. The *Environmental Justice and Public Health* section examines the ecological impacts of the poultry industry and disproportionate environmental and health burdens on low-income communities and communities of color throughout the southeastern poultry corridor, with specific attention to North Carolina and Maryland. The report highlights positive actions as well, such as a new coalition that formed around a groundbreaking **Civil Rights Complaint** to resist hog CAFO pollution in eastern North Carolina. In the following section, *Poultry and Climate Justice*, we explore

how the broiler industry contributes to climate change. A 2007 study in North Carolina found that poultry litter incinerators, which convert excess waste into energy, produce higher emissions of greenhouse gases than coal-fired power plants.[6] Waste-to-energy technology is often an example of **greenwashing**, in which consumers and voters are misled into believing certain corporate changes will reduce environmental and health harms.

In the pursuit of what Rachel Carson called the "quick and easy profit," the twenty-first century chicken industry has sacrificed the environment, climate, human health, workers, contract growers, animals, research integrity, and consumer safety.[2] The *Triangle of Solidarity: Animal Welfare, New Economies, and Higher Education* section explores how those at a distance from the epicenter of harm are essential to building a movement for sustainable agriculture. Today, chicken accounts for more than 40 percent of meat consumption in the U.S and, as of 2015, Americans consumed 89 pounds of meat per year, mostly from industrial sources.[1] Consumers can choose to reject chickens raised in factory farms where animals are abused, contract diseases, and are given non-therapeutic antibiotics.[4] Consumer action, though it may operate well on a small scale in more affluent areas, is not as effective as broad political and structural action to protect communities against global corporations. This report highlights new economic initiatives put forth by the Movement for Black Lives' economic policy platform and ways to plug in to the movement.

The movement against industrial agriculture is gaining momentum as we write, and organizers and frontline communities are the helm. Organized communities that know and experience environmental problems firsthand can lead scientists and policy experts toward developing alternatives. In "Fowl Matters" the RCC aims to connect issue areas and lift community voices so that stakeholders at a distance—consumers, animal welfare advocates, students, researchers, journalists, politicians, filmmakers—can gain knowledge and skills to remain engaged in environmental justice over the long run. Our hope is you will be inspired to join vibrant networks of action, tap into the power of community-led research and action, and join us in our vision for a just, humane and sustainable food system.

Zoë Ackerman, Associate Program Director, Rachel Carson Council
Robert K. Musil, Ph.D., M.P.H., President and CEO, Rachel Carson Council

FROM HENHOUSE TO HOTHOUSE

The two largest costs of industrial animal production are feed and manure management. According to Food & Water Watch's 2015 report *Factory Farm Nation*, federal policies artificially reduced the cost of these processes over the last several decades.[4] The practice began under the Roosevelt Administration, which introduced agricultural subsidies in an economic stimulus package under the **New Deal program**. This program encouraged farmers to produce large amounts of corn and soy to feed troops abroad by setting prices for the crops. During this regulated era, when excess corn and soy flooded the market, farmers (most of whom owned diverse farms with animals and crops) could trade the surplus for loans until supply and demand evened out. After the war ended, stockpiles continued to grow in grain silos across the Midwest, and the question of what to do with these crops became more pressing. One solution was to feed the excess corn and soy to animals across the region. In the 1970s Richard Nixon's Secretary of Agriculture Earl Butz saw this market as an opportunity to convert American farmers into businessmen. From then on, policies and regulations required growers to focus on a single crop and "get big or get out."[4] Small and mid-size farmers who could not afford to invest the capital required to expand farms, install new machinery, and automate growing processes began to disappear.

Paying the Polluter

Farm bills in the 1990s and 2000s further depressed crop prices, indirectly subsidizing industrial animal operations, meatpacking, and processing facilities.[4] The 1996 Farm Bill, also known as the **Freedom to Farm Act**, did away with all requirements to keep some farmland idle, and further contributed to the epidemic of **monoculture**. The loaning system also changed with the new Farm Bill: farmers could no longer pay back borrowed capital with crops, further depressing prices. Between 1996 and 1997 the real price of corn dropped by 28 percent, and CAFOs—a primary consumer of cheap grain—spread rapidly.[4] Whereas small- and mid-size farmers once grazed their animals on land that supplied food, creating a **feedback loop** of waste and fertilizer, now it was economically feasible for large-scale animal producers to import feed from thousands of miles away and focus solely on raising animals. The cheapest and most efficient option was to confine thousands of animals indoors and automate the feeding systems. In rural areas across the U.S., the Freedom to Farm Act soon became known among small and mid-size farmers as "Freedom to Fail."[4]

Subsequent farm bills in 2002 and 2008 did not halt collapsing prices. Instead, government payments made up the difference between the low prices that agribusiness paid farmers for crops, and the "cost of sowing, growing, harvesting and transporting."[4] To this day, the government supports the unsustainable ventures of meatpackers, factory farms, and food processors with grants, cost-share for capital construction, federal and state research dollars, and tax credits.[8] This equals between $7-$12 billion dollars "plucked each year from the public purse" to subsidize, clean up, and manage leaking facilities.[8] A 2007 study by Tufts University's Global Development and Environment Institute found that industrial animal operations saved over $35 billion between 1997 and 2005 by buying feed below the cost of production.[4] The research also indicates that in the same period, Tyson Foods,

which controlled over 20 percent of the chicken market, received an implicit subsidy of $2.6 billion, and made large profits.[8]

Over the next 20 years, fluctuations in crop prices influenced the rate at which industrial animal operations could expand. In 2008, corn and soy values rose in concordance with climate-driven weather and global demand for biofuel.[4] By 2014, however, the prices began to fall, kick-starting industrial construction for broilers yet again.[4] Integrators in both states are constantly looking to expand broiler production, processing, and litter incineration facilities.

In just two decades, from 1992 to 2012, North Carolina's broiler chicken production increased by 60 million—to 148 million animals—according to the USDA Census of Agriculture.[9]

As of 2012, about $65.1 million "worth of North Carolina meat and poultry were exported to Mexico," the state's top trade partner since the signing of the **North American Free Trade Agreement**.[16] Poultry farming is now the number one agricultural operation in North Carolina and in 2014 had an economic impact of $12.8 billion.[10,16] Nationally, North Carolina and Maryland currently rank third and ninth respectively among states for poultry production value.[9,11] According to an analysis by the Maryland Clean Agriculture Coalition, construction of new poultry houses is Maryland is predicted to bring an additional 27 million chickens per year.[11] Poultry production and processing facilities operated by Sanderson Farms are also expanding in North Carolina.

Lax Regulation of Waste

Integrators purposefully site facilities in regions with communities of color and/or lower socioeconomic statuses (SES) due to a perceived "lack of political clout or ability to pressure industry and government to follow and enforce regulations."[7] The Eastern Shore of Maryland, which has high populations of communities of color, is home to hundreds of poultry CAFOs, while in North Carolina operations are dispersed across the state and disproportionately affect low-income white people. Because of legal exemptions from regulations requiring that their locations be identified, it is challenging to pinpoint poultry operations across the country. The map on page 6, produced by Environmental Working Group and Waterkeeper Alliance seeks to "fill in yawning gaps in the NC state agriculture regulatory system," such as whether operations have permits or are meeting reporting obligations.[9] The project also enables "citizens, lawmakers and policymakers to visualize and interpret" those operations, and take action when necessary.[9]

The expansion of broiler CAFOs translates to more waste, pollution, and adverse health effects for CAFO neighbors and consumers. This is partly because environmental regulation of poultry has been almost non-existent over the past several decades. The **Clean Water Act (CWA)**, passed in 1972, gives the Environmental Protection Agency (EPA) the "authority to regulate any entity discharging pollution into national waterways, including CAFOs."[4] The CWA sets a simple goal of zero discharge into

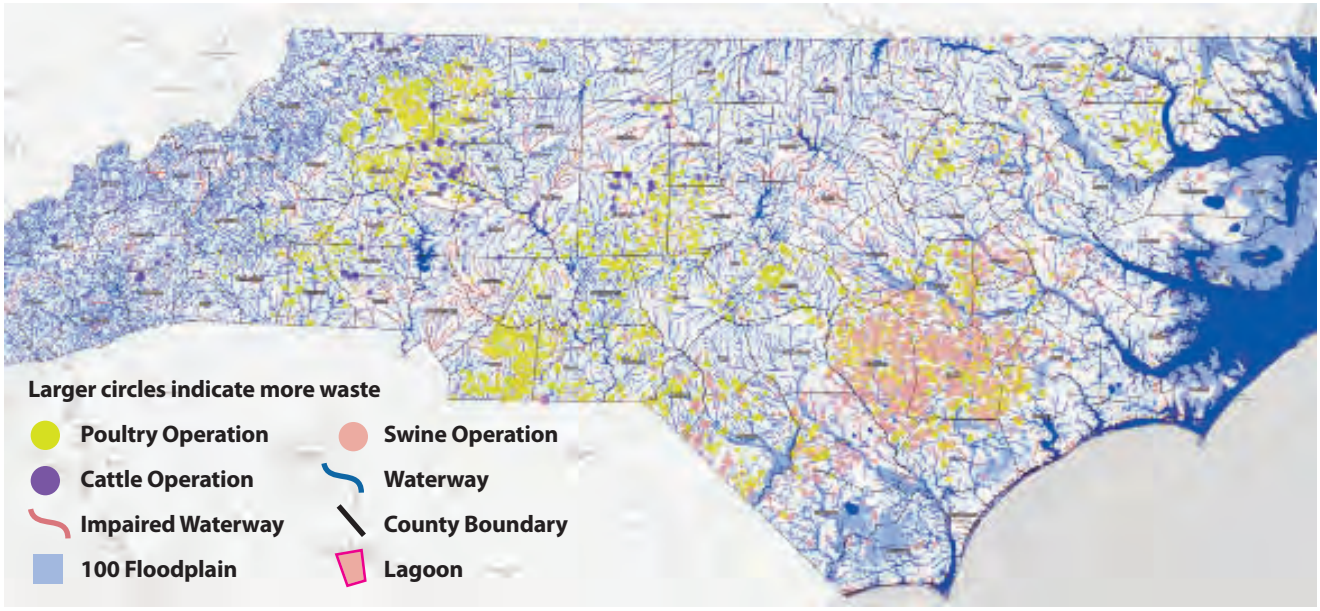


Figure 3: While industrial hog operations are centered in southeastern North Carolina, poultry operations are spread out across the state, and have not been mapped until recently. Credit: Fields of Filth, Environmental Working Group/Waterkeeper Alliance

public water, and sets limits on industrial and sewage sites. However, it left CAFOs unregulated for years.[4] A recent EPA study shows that nationally, only 36 percent of the largest industrialized livestock facilities and 41 percent of all CAFOs have permits as required by the CWA.[12] Many of the states with the highest densities also have the lowest level of CWA compliance.[12]

Though the **Clean Air Act (CAA)** has been in effect for 45 years, the EPA has not actively used it to regulate ammonia or any other air pollution from factory farms. Advocates for sustainable broiler production face an additional hurdle because wet chicken litter is regulated by the EPA, but dry litter by the USDA. Attempts to require oversight by both agencies have been repeatedly blocked by the industry, which opposes "safeguards or oversight of factory farm pollutants."[4] Even when inspection is required, state-level regulatory bodies are riddled with conflicts of interest and often lack the staff capacity to properly examine all permitted facilities.

Contract Growers

In advocacy against the industrial food system, contract growers, environmentalists, workers, and frontline communities address economic, environmental, and social harms. Too often, however, the groups are pinned against different walls and pitted as enemies. **Contract growers**, who raise chickens from chick to market-ready status do not easily align with coalitions for environmental health because they are technically responsible for water and air pollution. Waste management would be one of the major costs of production borne by corporations; shifting this burden to contract growers is an intentional decision to reduce overall costs. To build a stronger movement for sustainable agriculture, contract growers must not be seen as an enemy, but rather allies who are trapped in economically unjust relationships with the industry.

In 2014, chicken farmers raised 8.5 billion chickens in the U.S., and at least 60 percent of that production and processing took place under the control of roughly four chicken giants.[5]

In the contract system, integrators have a **monopoly** over all farming inputs; they provide formerly independent farmers with hatchery equipment, carefully-bred eggs, mixtures of feed, medicine, and transportation.[5] Every five weeks, growers are required to sell the slaughter-ready chickens back to the integrators. Big chicken companies have a **monopsony** on the buying side as they own all processing facilities nationwide. Tyson owns 33 plants which process 33 million chickens per week and Pilgrim's Pride owns 24 plants processing 28 million per week.[5]

Contract growers appear only to be responsible for the waste, which would be one of the larger costs if borne by the integrators.[13] Yet, in the fine print, growers must update and expand their operations on a regular basis. Federally-backed USDA loans are readily available in poultry-heavy regions and make financing the upgrades appear easy.[14] Bankers and the USDA, however, take no real risk, and are encouraged to subsidize operations by the industry's powerful lobby. When growers feel the pressure to upgrade, they are forced to put everything on the line, sometimes mortgaging their property multiple times to stay in the game.[14] Before long, growers face mounting debts and small returns on sales. The industry's manipulative practices are designed to purposefully keep the contractors in debt cycles. If growers decide not to sell their chickens back to the integrators, or fail to keep pace with construction, maintenance, and labor needs, their contracts can be terminated on a whim.[4]

Carole Morison, a former poultry operator in eastern Maryland, described the rosy picture first painted by the industry. Growers are promised that if they take out loans to improve houses and raise chickens, they will be able to pay off their debts in as few as 10 years.[15] After several years in the contract, however, Morison and her husband were forced to take second, off-farm jobs to make ends meet. Although she raised thousands of chickens, Morison could not even afford to buy one at the store. When she saved enough money from her second job to pay down the mortgage on their chicken houses, her contract was terminated without warning, leaving her family destitute and at risk of foreclosure.[15]

Despite the dangers of speaking out, Craig Watts, a Perdue-contracted poultry farmer in North Carolina, made a brave decision to take on the industry to expose injustice. In the documentary *Cock Fight*, Watts takes the viewer inside a CAFO, and describes the nefarious **tournament system** where his birds are measured in secret against the weight of neighbors' birds. He is then paid depending on where his flocks rank in comparison. Watts describes how his income could fluctuate greatly: some years he makes $67,000 and other years only $3,000—radically lower than minimum wage. Among growers, there is a great fear of sharing information about how much each person is paid per chicken. Openness between growers could result in integrators adding a few weeks (as punishment) before delivering the next round of chicks. This can cost contractors up to $30,000 per year. This model is equivalent to sharecropping and produces anxiety for contract growing families. The industry is also

quick to silence outspoken farmers: in the documentary, viewers witness how once Perdue discovered Watts' actions, they sent agents to patrol his farm.

Both Watts and Morison are among a few **whistleblowers** in the industry. It is rare to find growers willing to expose abuses inherent in the industry's business model, an action crucial for progress toward more just alternatives. Fortunately, organizations like RAFI and the Government Accountability Project's Food Integrity Campaign (FIC) offer opportunities for growers to express grievances and seek redress. RAFI works for better conditions for growers and farmers, and to expose harm to the national media. Their recent documentary, *Under Contract: Farmers and the Fine Print*, follows the story of several contract growers in the American Southeast on their journey of discovering the true nature of the exploitative business model.

The FIC provides legal help to whistleblowers like Craig Watts—the first grower to file a whistleblower claim against an integrator—who face threats, intimidation, and harassment. Together, RAFI and FIC have carried out several successful initiatives, including raising awareness and public support for whistleblowers, and working to stop the **Grain Inspectors, Packers, and Stockyards Administration (GIPSA) Rider**, an effort by some in Congress to whittle down the USDA's protection for livestock and poultry farmers.[17]

Carole Morison and Craig Watts are success stories about letting go of a value system dedicated to maximizing control and profit. After producing chickens for Perdue for 23 years, Morison now owns and operates a sustainable farm where she pasture-raises chickens for eggs. This was no easy feat on the Delmarva Peninsula, where large poultry companies dominate the landscape. With help from various organizations, she disproved the mindset that raising chickens must be fossil-fuel intensive, antibiotic-laden and corporatized.[15] Morison's farm is in Worcester County, Maryland, and she is involved in fighting a new proposal to site an industrial broiler operation nearby, fearing it could threaten "the health of her family and her hens."[18] Craig Watts followed a slightly different path away from the industry. After teaming up with Compassion in World Farming USA to expose animal welfare issues in his operations with Perdue, he joined the Socially Responsible Agricultural Project as a consultant on environmental and health issues.[19]

Take Action: Contract Growers

Food Integrity Campaign (www.foodwhistleblower.org): FIC is a program of the Government Accountability Project, the nation's leading whistleblower protection and advocacy organization with a mission to promote corporate and government accountability by protecting whistleblowers, advancing occupational free speech and empowering citizen activists.

Rural Advancement Foundation International (www.rafiusa.org): RAFI's mission is to cultivate markets, policies, and communities that sustain thriving, socially just, and environmentally sound family farms. RAFI works nationally and internationally, focusing on North Carolina and the southeastern U.S.

Visit* http://rachelcarsoncouncil.org/take-action *to learn more.

Worker Health and Safety

The exploitative model of the poultry industry can deeply affect workers' health and wellbeing. P* grew up working on his father's industrial poultry operation in North Carolina.[20] His father moved from California to the East Coast in the early 1990s in the footsteps of his cousins, who had already set up fruitful operations there. Through hard work, P's father rose to assistant manager, to manager, and was groomed by the industry to become an owner. As a crew leader, he traveled with his team across North Carolina to vaccinate and transport chickens, and occasionally visited Virginia and other states to train new managers and offer techniques.

Each weekday, 32 million chickens are grown, caught, trucked to processing factories, and hung live for slaughter. From there, workers cut, debone, package, and deliver the goods to grocery stores, retail units, and restaurants.[1] While processing work takes place "on the line," the growing, catching, and vaccinating portions occur in feeding operations. All day, **catchers** and other laborers toil in 95+ degree Fahrenheit (F) temperatures as they round up chickens or administer vaccinations at 12 and 20 weeks. Many breathe in contaminated dust, ammonia, and feathers, which P remembers "floating in the air like snow."[20] On breaks, laborers often blow soot from their noses, and many develop coughs, asthma, bronchitis and other respiratory diseases.[18] In 2004, the Occupational Safety and Health Administration (OSHA) issued citations to Tyson after an employee was asphyxiated when he inhaled hydrogen sulfide, a gas created by decaying organic matter.[14]

Figure 4: Line workers process chicken in extremely challenging conditions. Credit: TakePart.

Water breaks are few and far between in poultry facilities during 12-hour stints. When catchers or line workers need to use the bathroom, they must find a temporary replacement and relieve themselves in the woods.[20] A recent Oxfam report, *Lives on the Line*, found that workers were even forced to wear diapers to keep the line moving. Because of this, many refrain from drinking water. Due to complications with urination and dehydration, women reported urinary tract infections, and men developed prostate problems.[1]

Overall, poultry workers are viewed as expendable commodities that can be injured and replaced. Shawn Boehringer, a chief counsel of Maryland Legal Aid, spoke with line workers on the Eastern Shore and found that 75 percent experience injuries while on the job.[18] They repeat the same motion over and over—hanging, cutting, trimming, breading, freezing or packing chickens—at a rate of two per second and nearly 1,000 per day.[1] Workers are also not given time to sharpen knives which, when dulled, become more dangerous and difficult to use. Maximum line speeds, set by the USDA, are twice what they were in 1979. Today they stand at 140 birds per minute (BPM), up from 70 BPM several decades ago.[1] As line workers toil in temperatures that can top 120 degrees F, they suffer chemical burns and risk losing limbs.[22] Four in 10 show signs of carpal tunnel syndrome, a rate seven times the national average.[1] Nationally, 20 percent of poultry workers experience injuries on the job, and

Department of Labor statistics reveal they suffer five times more occupational illnesses than the average employee.[1,22]

At both feeding and processing facilities, workers are exposed to "infected tissues, blood and other substances from dead animals," some of which transmit **antibiotic-resistant bacteria**.[1] When pressured to work quickly, drug-laden dust that fills the air can cause catchers to choke.[22] When **line workers** absorb antibiotics from chicken flesh, they may become unable to recover from staph infections.[1] The environmental health issue of antibiotic resistance is not confined to feeding and processing operations. When workers go home to be with their families, or consumers buy contaminated food at grocery stores, pathways of exposure multiply. A 2008 study by Ana M. Rule at the Johns Hopkins School of Public Health found evidence that humans could be exposed to antibiotic-resistant strains of bacteria by driving behind trucks transporting broiler chickens. According to *Factory Farm Nation*, the overuse of antibiotics on factory farms creates "an ideal breeding ground for antibiotic-resistant bacteria," and can decrease the drugs' effectiveness for all human patients.[4]

The industry targets marginalized populations, viewed as more pliable to intimidation, to serve as catchers and line workers. Shortly after World War II, white women primarily composed the poultry workforce. During the Civil Rights era, African-American women—many of whom had grown up as sharecroppers—began to push for poultry jobs as the cotton and tobacco industries declined, and were the first to integrate plants.[1] During the 1970s and 80s, workers organized and fought for their rights, and the industry began to look for less resistant employees.[1] Around the same time, as the global market for U.S. poultry—and opportunity to source cheaper labor—expanded with the passage of NAFTA in 1994, many people of Mexican descent migrated to North Carolina to work in the poultry industry.[16] Today, most workers are people of color, immigrants, women, and refugees from countries including Sudan, Burma, and Eritrea.[1] One in five are undocumented, and thus reluctant to speak up for fear of losing their jobs.[22] While a mere 15 percent of 250,000 poultry workers nationwide speak English, equipment warnings and training videos are rarely posted in languages other than English and Spanish. In a survey conducted by the Southern Poverty Law Center of 302 workers in Alabama, 70 percent reported that line speeds caused pain and injuries, and made them feel unsafe.[1] When workers were asked whether they felt they could influence the conditions, "nearly 99 percent said they could not."[1]

In 2014, the President and CEO of Tyson Foods earned $12.2 million, or 550 times the average poultry worker's salary.[1] In the same year, the CEO and Chairman of Sanderson Farms earned $5.9 million, a 200 percent increase since 2011. According to Oxfam, over the course of an eight-hour workday, the Sanderson CEO made the entire average annual salary of a line worker.[1]

Predictably, adequate compensation and benefits also do not exist at the ground-level in the poultry industry. Line workers are compensated at an average of $11 per hour, totaling $20-$25K per

year.[1] The average poultry employee qualifies for food stamps, and does not receive paid time off, retirement security, or health care benefits (which are limited and exclude family coverage). In addition, as the industry has grown, the real value of wages has declined by about 40 percent since the 1980s.[1] This means that as profits expand for the elite, benefits do not appear for those who produce and process on a daily basis.

In vertically integrated industries, common interests between regulators and industry officials yield lax oversight. Often, in a **revolving door** style, regulators are former industry officials and vice versa. A lack of transparency also makes it difficult to verify industry compliance. For example, Tyson corporate policies require a commitment to non-retaliation for speaking out, as well as rest breaks and time to sharpen knives. Nevertheless, even if regulatory agencies find violations, they inflict low fines and penalties, according to Oxfam.[1] Just as some drivers choose to budget for speeding tickets on long trips, the industry factors in fines for violations to keep its overall bottom line increasing.

Take Action: Worker Health and Safety

Farmer Advocacy Network (www.ncfan.org): NC FAN is a statewide network of organizations that works to improve living and working conditions of farmworkers and poultry workers in North Carolina. Since 2003, NC FAN has been collaborating to bring workers' voices into the public discourse on farmworker issues.

Food & Water Watch (www.foodandwaterwatch.org): FWW champions healthy food and clean water for all. Join the Save Antibiotics campaign to learn how communities are passing local resolutions to prohibit the non-therapeutic use of antibiotics on factory farms which threaten consumer and worker health.[18]

El Vínculo Hispano/The Hispanic Liaison (www.hispanicliasion.org): The Hispanic Liaison's mission is to foster intercultural understanding and to empower Hispanics to overcome the challenges they face and make their voices heard in the community.

Oxfam America (www.oxfamamerica.org): Oxfam is a global movement of people working together to end the injustice of poverty. Support the Lives of the Line campaign seeking the following demands: 1. Provide a healthy and safe environment in plants, and care for workers when they're injured. 2. Allow workers to have a greater voice in the workplace, ensuring they understand their rights, and provide an atmosphere of tolerance. 3. Compensate workers fairly.[1]

Student Action with Farmworkers (www.saf-unite.org): SAF works with farmworkers, students, and advocates in the Southeast and nationwide to create a more just agricultural system. Since 1992, SAF has engaged thousands of students, farmworker youth, and community members in the farmworker movement.

Western North Carolina Workers' Center (www.wncworkerscenter.org): WNCWC's mission is to develop leadership among workers through organizing and education to resolve issues of labor rights and promote fair working conditions in Western North Carolina.

Visit http://rachelcarsoncouncil.org/take-action to learn more.

ENVIRONMENTAL JUSTICE AND PUBLIC HEALTH

A Brief History of Environmental Justice

In her introduction to Harrison's *Animal Machines*, Rachel Carson writes: "The final argument against the intensivism now practiced in this branch of agriculture is a humanitarian one. I am glad to see Ruth Harrison raises the question of how far man has the moral right to go in his domination of other life."[2] Though Carson was not referring to the centuries-long movement for **environmental justice (EJ)** in the U.S., her critique of industrialization begs the same question at the core of community-based struggles today. When will a critical mass of people prevent the elite from exploiting communities, consumers, and ecology in the name of "feeding the world?"

The EJ movement asserts the "right to a safe, healthy, productive and sustainable environment for all," and has been led by people of color and supported by anti-racist allies.[23,24] Though the EJ principles were originally formed at the 1991 First National People of Color Environmental Leadership Summit in Washington, DC, injustices trace back to enslaved people's exposure to toxicity in cotton fields, and more generally to environmental and health harms brought about by colonization. The first principle of EJ states: "We affirm the sacredness of Mother Earth, ecological unity and the interdependence of all species, and the right to be free from ecological destruction."[24] The statement speaks to the delicate balance of nature, and interdependence of all living things—a theme that Carson explored in *Silent Spring*, her best-selling exposé of the synthetic pesticide DDT, and how it harmed waterfowl, birds, fish, insects, and human health. The principle also declares the fundamental human right to be free from ecological destruction—a freedom communities of color and low-income communities do not universally enjoy.

Figure 5: Warren County citizens march for their environmental rights in 1982. Credit: NC PCB Archives.

Environmental justice pioneer Dr. Robert Bullard conducted the first study of environmental racism in the 1970s after reviewing the siting pattern of landfills in Houston. The term environmental justice itself was born in 1982, after 550 citizens of Warren County, North Carolina organized in response to the state's threat to locate a toxic waste site containing polychlorinated biphenyls (PCBs) in a predominately black neighborhood there.[25] For six weeks, the community marched and was arrested in an act of nonviolent civil disobedience that was the largest since the 1960s.[25] These were also the

first arrests made over the infringement of civil rights relating to the environment. Though the community was not able to stop the landfill's siting, the movement demonstrated to the nation that organized resistance could put a large dent and delay in corporate and federal plans.

In response, Congressman Walter E. Fauntroy, who participated in the Warren County protests, commissioned a study by the General Accounting Office in the 1980s, and Charles Lee and Reverend Ben Chavis released a United Church of Christ (UCC) report in 1987. The GAO study found a relationship between hazardous waste facility sitings and the racial and socioeconomic status (SES) of communities.[26] The UCC report found that communities of color in the U.S. are more likely to be exposed to waste disposal facilities and polluting industries, a pattern known as **environmental racism**.[24] A few years later, in his book *Dumping in Dixie* (1990), Dr. Bullard chronicled the "hideous toxic abuse on black communities in the U.S. south in the 20th century."[26] In direct response to the GAO study findings and other reports, the EPA formed the Office of Environmental Justice (OEJ) in 1992 and the National Environmental Justice Advisory Council in 1993. The goal of these bodies would be to tackle environmental injustice through regulation and legislation.[26] A year later, President Bill Clinton issued Executive Order 12898, stating that "each Federal agency shall make achieving environmental justice part of its mission."[26] Unfortunately, one of Donald Trump's first moves in office was to attempt to dismantle the Environmental Protection Agency and target offices like the OEJ.

Though many scholars, activists, and communities have taken up the cause of researching and organizing for EJ over the last few decades, issues persist throughout the U.S., in the form of disproportionate siting of hog and poultry operations, incinerators, landfills and coal ash sites—and increased vulnerability to climate change—in communities of color and low-income communities (see *Pork and Pollution*, Rachel Carson Council, 2015).[27] Poultry production, processing, and litter incineration facilities are disproportionately sited in these communities in Maryland and North Carolina, and residents are often left out of the decision-making processes that bring industrial facilities in the first place. Somerset County, Maryland, for example, is 48 percent African American and has the "lowest average household income in any county in Maryland" as well as "the highest unemployment and cancer rates."[18] The county is also home to 14.9 million broilers (the largest of any county in Maryland and the sixth largest in the U.S.) and is slated not only for receiving more feeding operations, but poultry litter burning facilities as well.[18] The EWG and Waterkeepers' 2016 analysis shows that Duplin and Sampson counties in North Carolina alone produced "about 40 percent of North Carolina's total wet animal manure and 18 percent of the dry waste."[9] It is no accident that these counties have lower educational attainment and health care access rates than most of the state, as well as higher populations of low-income communities, communities of color, and indigenous people.

Though federal attention to conditions for environmental justice communities has provided more opportunities for public involvement, to this day, the EPA Office of Civil Rights has never made a finding of discrimination relating to the environment.

Dr. Sacoby Wilson, Assistant Professor of Applied Environmental Health at University of Maryland-College Park's School of Public Health, says this speaks to a larger problem of regulatory systems, and what happens when authority is delegated to states.[28] Without a "blueprint of finding discrimination at the Federal level," Dr. Wilson explains, "stronger regulations with respect to disparate and cumulative impacts will not translate to local and state levels."[28]

Economic Drain

A myth about industrial poultry pervades in small producing and processing towns: without the industry or a full transition to alternative methods, people will suffer economically. In Maryland, about 7,000 people depend on poultry jobs and North Carolina employs 28,000 processing workers.[29,30] Integrators, however, intentionally seek out marginalized spaces where residents need jobs and then overstate the value they bring to such locales. Industrial poultry line jobs, for example, are rarely permanent and often do not include health benefits for workers' families. Likewise, the price that contract growers pay to stay in the producing game often involves being stuck in **debt treadmills** for decades. *Factory Farm Nation* (2015) found that as "factory farms increase in number, rural employment and income decline" as revenue is funneled from local economic development to distant shareholders.[4,7] A 1994 University of Minnesota study found that small and mid-size animal agriculture operations, which generate less than $400,000 in income per year, "spend between 60 and 90 percent of their purchases locally."[4] On the other hand, the study found that "less than 50 percent of purchases by farms with incomes over $600,000" stay in local economies.[4] In addition, areas dense with factory farms endure plummeting property values. A 2008 study of home sales in Iowa "found that homes within three miles or downwind of a factory farm received lower [selling] prices."[4] This parasitic relationship between corporations and CAFO neighbors, workers, and growers severely reduces the potential for equitable and local economic gains.

Toxic Air

Truck traffic on small roadways pollutes the air with exhaust fumes and increases community exposure to antibiotic-resistant pathogens and drug residues. According to Dr. Jillian Fry, Project Director of Public Health & Sustainable Aquaculture at Johns Hopkins School of Public Health, communities living in poultry-dense areas are exposed to ammonia, volatile organic compounds, particulate matter, and heavy metals.[32] Ammonia is produced when manure is concentrated in confined areas and aerated by large fans. When the fans operate, neighboring residents are forced to close their windows, limit time outdoors, and buy air purifiers for their homes. The smell not only attracts excessive fly and rodent populations, but causes a range of health impacts including respiratory diseases such as asthma and bronchitis, thyroid problems, neurological impairments, gastrointestinal illness, lung cancer, birth defects, and blue baby syndrome.[32,33] While not everyone who lives in poultry-dense areas will experience this gamut of effects, Dr. Fry and other researchers expressed concern for the disproportionate burden on vulnerable populations including the young, the old, and those with preexisting conditions such as asthma during a panel interview on the Sound Bites program of the Marc Steiner show.[32]

Figure 6
Phosphorus Management Tool Implementation in Maryland

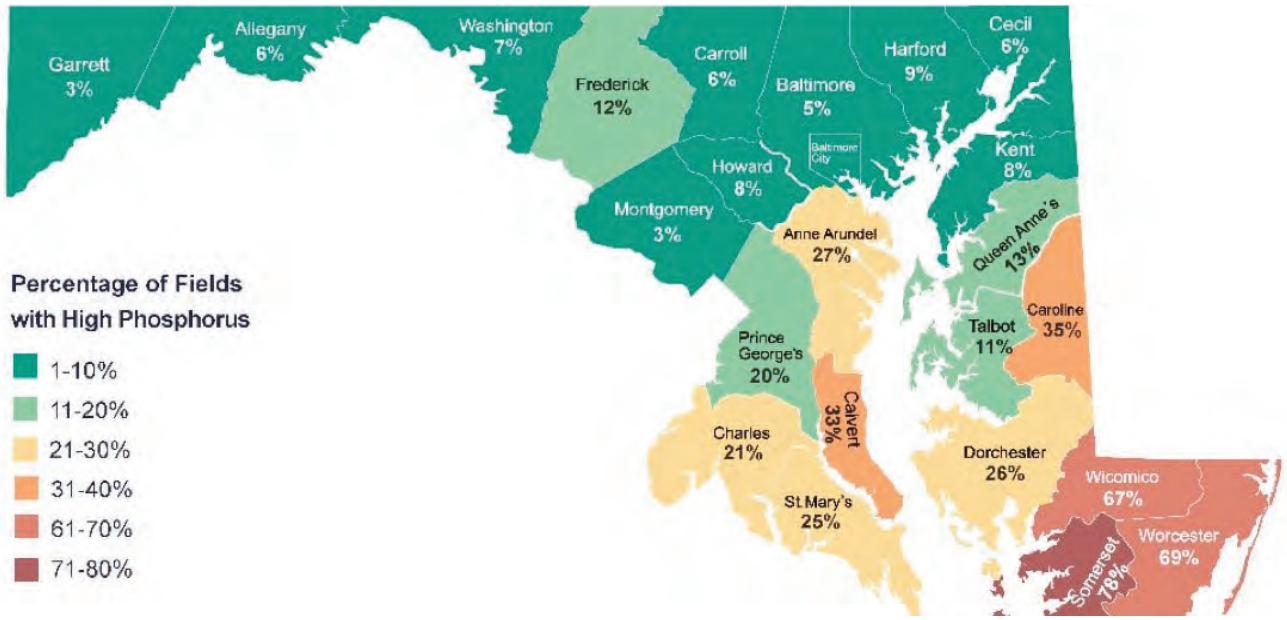
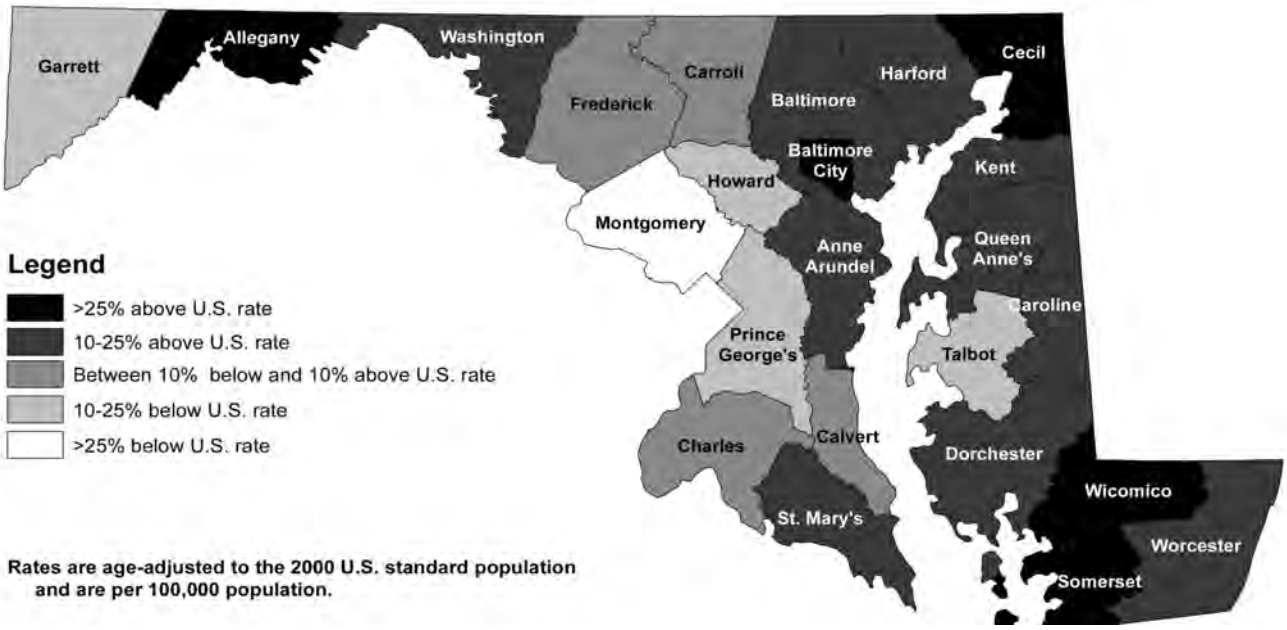


Figure 7
Maryland Lung Cancer Incidence Rates by Geographic Area: Comparison to U.S. Rate, 2007-2011



Figures 6-7: Counties in Maryland with large amounts of poultry production (suggested by higher levels of phosphorus in crop fields) also report higher rates of lung cancer. Figure 6 Credit: Maryland Department of Agriculture. Figure 7 Credit: Maryland Department of Health and Mental Hygiene.

In addition to adversely affecting air quality, **ammonia depositions** in the Chesapeake Bay contribute to nitrogen pollution. Federal law under the Clean Air Act requires all facilities to report "significant accidental releases of certain dangerous air pollutants, like ammonia."[4] As mentioned before, state and federal agencies do not prevent CAFOs from releasing toxic pollutants, however communities in Maryland are organizing for change. In January 2015, the Environmental Integrity Project (a nonpartisan, nonprofit watchdog organization that advocates for effective enforcement of environmental laws) and the Humane Society of the United States (the nation's largest animal protection organization), filed lawsuits on behalf of farmers and rural residents harmed by air pollution across the nation.[34] The suit petitions the EPA to categorize factory farms as a pollution source under the CAA, and to set standards for existing and future facilities.[3]

In February 2017, with help from Food & Water Watch, a coalition of community leaders on the lower Eastern Shore of Maryland that includes the Assateague Coastal Trust, Wicomico NAACP, Circle of Leaders, Concerned Citizens Against Industrial CAFOs, the Backbone Corridor Neighbors Association and Socially Responsible Agricultural Project, testified in favor of the **Community Healthy Air Act**. This piece of legislation would "require the Maryland Department of Environment to assess whether they can regulate air emissions from CAFOs and conduct monitoring."[3] The bill sets an important precedent for improving air quality in poultry-dense areas. The health studies and organizing that have allowed the CHAA to progress were preceded by a similar coalition working to stop the siting of a Harim Millsboro chicken processing plant in Delaware in 2013.[32] A research team from the University of Maryland-College Park issued a rapid **Health Impact Assessment** (HIA). This tool weighs the positive and negative impacts of proposed policies. The subsequent report from UMD found that residents in the area were already burdened by air and water pollution from multiple sources, including a coal-fired power plant, poultry processing plant, and a concrete factory.[32]

Threatened Waters

The Chesapeake Bay is a 64,000-square mile watershed covering parts of Virginia, Maryland, Delaware, West Virginia, New York, and Washington, DC.[33] More than 100,000 streams, creeks, and rivers drain into the Bay, making it the nation's largest estuary and key component of the region's "identity and economy."[3] Industrial agriculture is one of the largest contributors of nutrient and sediment pollution to the Chesapeake Bay watershed.[33] Assateague Coastkeeper Kathy Phillips is a member of the Waterkeeper Alliance, works for the Assateague Coastal Trust, and lives on the lower Eastern Shore of Maryland. Each day, she observes 600-foot-long feeding houses that each hold 25,000-40,000 chickens, a 40 percent increase since 1994.[33] Each one stretches the equivalent of two football fields. A parcel of land might contain up to 10 poultry houses with a total of 1-2 million chickens in a single neighborhood.[32]

Phillips works to ensure that laws to protect water quality from pollution by factory farms are enforced.[33] As she patrols the water, Phillips searches for signs of pollution by looking at key indicators of water health: pH, temperature, salinity, water clarity, and dissolved oxygen.[33] About 44 percent of nitrogen and 57 percent of the phosphorus in the Bay come from polluting farms; the nutrients seep into watersheds when farmers over-apply poultry manure to crop fields.[33] The imbalance of such pol-

Figure 8
Concentrated Animal Feeding Operations in North Carolina by County

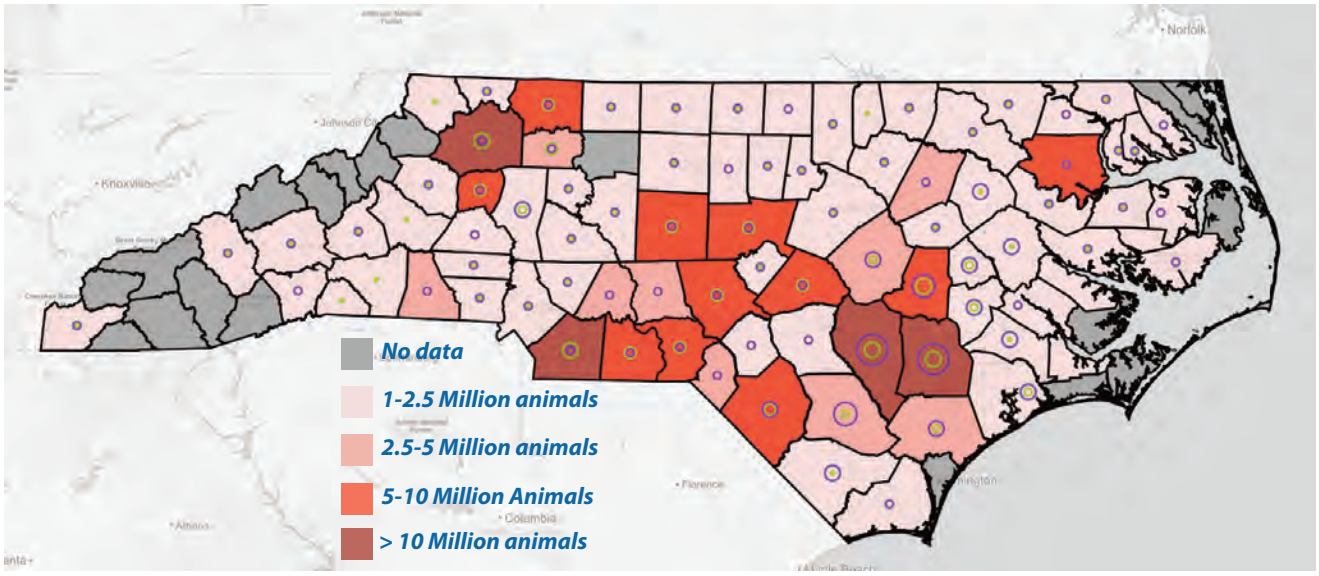
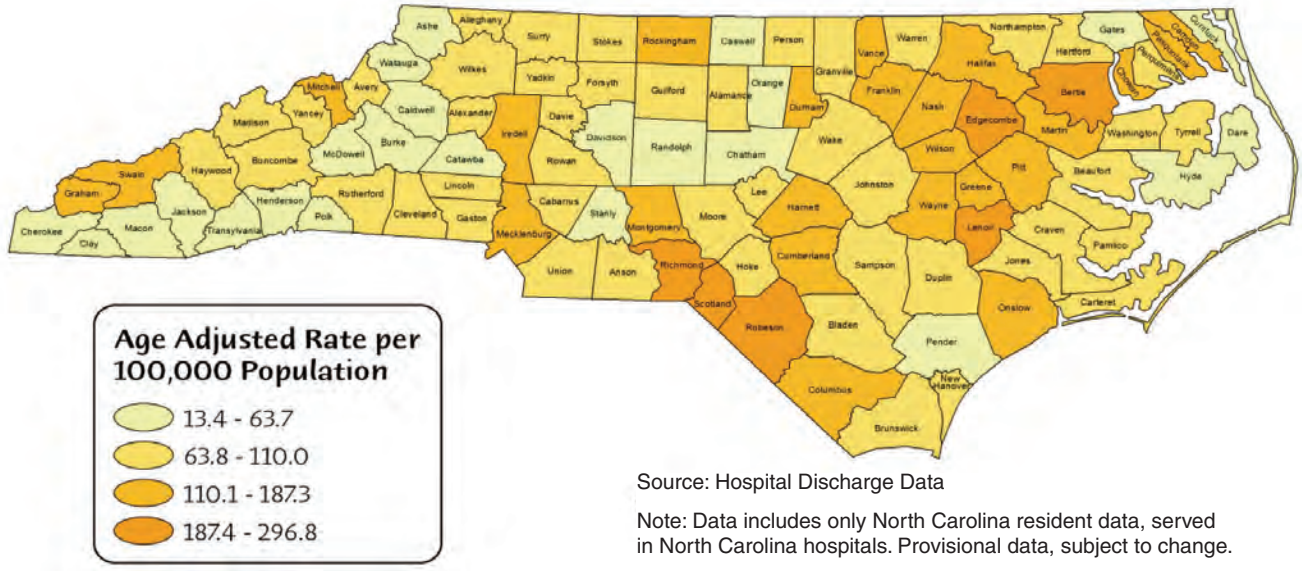


Figure 9
North Carolina Asthma Hospitalization, Age Adjusted Rates 2012



Source: Hospital Discharge Data

Note: Data includes only North Carolina resident data, served in North Carolina hospitals. Provisional data, subject to change.

sehs State Center for Health Statistics

NCPH North Carolina Public Health

Figures 8-9: Counties in North Carolina with large amounts of poultry and hog operation and processing facilities also report higher levels of asthma hospitalization. Figure 8 Credit: Environmental Working Group/Waterkeeper Alliance. Figure 9 Credit: North Carolina State Center for Health Statistics (SCHS). Analysis of Inpatient Hospital Discharge data per 100,000 residents (age-adjusted): 2012.

lutants in the Bay has resulted in **algal blooms** which "block sunlight from underwater grasses and suck up oxygen that fish, crabs and oysters need to survive."[33] When algal blooms go unchecked, severe **eutrophication** and **dead zones** can occur. Fish and amphibians in water with high levels of nitrogen and phosphorus are not only killed in high numbers, but also demonstrate abnormal sex characteristics, making them dangerous to consume.

Excess poultry waste in public waters also threatens human health, fishing, and the public's ability to "enjoy one of the nation's most treasured waters."[3] Communities and researchers have identified pesticides, hormones, heavy metals, and harmful bacteria, including antibiotic-resistant strains, miles downstream from operations.[18] These hazards leach from manure and enter groundwater sources. Polluted water preoccupies Somerset County residents, 60 percent of whom access household water from private wells.[18] Water contamination disproportionately affects those with preexisting conditions and people living near the fouled water. A new poultry CAFO proposed for Salisbury, Maryland would affect a community that is 80 percent African American and sits on the Paleochannel, an important source of drinking water. In a November 2016 town hall, Dr. Fry explained that it is easy for nitrates to soak through and contaminate this fragile water source.

Consuming water laden with excess nitrates can be fatal for newborns and cause birth defects, bladder cancer, and thyroid problems in adults.[35] Under certain conditions, the nitrates in the water can convert to nitrite, preventing blood from carrying oxygen to the brain.

In the same town hall, Dr. Fry, Dr. Wilson, and Michele Merkel, co-director of Food & Water Justice, the legal arm of Food & Water Watch, highlighted the importance of health impact assessments (HIAs). The experts spoke about a lack of transparency in the HIA process relating to the Salisbury site: no adverse effects were included in the HIA, and it claimed that the operation would have "no risk of runoff."[35] This is a dangerous assertion to make, since whenever waste is concentrated, there is a risk of flooding, especially with higher instances of extreme weather events and hurricanes.[35] Dr. Wilson described the HIA process as fraudulent: it was driven by the poultry industry with no say from the "most impacted stakeholders"—communities themselves.[35] Merkel added that the community should call for termination of the proposed poultry CAFO, because the county relied on a faulty HIA.[35]

Though the Clean Water Act is not strict in its regulation of CAFOs, the permitting process does require best management practices and more transparency in their cleanup goals.[3] According to the Environmental Integrity Project, **non-point source** pollution is the biggest remaining water pollution problem in the U.S. The EPA cites industrial agriculture as the largest source of non-point source pollution.[14] In response to breaching pollution limits, in 2010 the EPA established limits known as the **Bay Total Maximum Daily Load (TMDL)**. TMDL puts a lower cap on maximum amounts of nitrogen, phosphorus and sediment pollution that states are permitted to discharge. Bay states would be required to "meet 60 percent of their targeted reductions by 2017, and put all programs in place by

2025 to restore the Bay and its tidal rivers to health."[3] Unfortunately, the regulation does not ensure compliance, making Phillips' job—along with other Waterkeepers and community advocates—of the utmost importance.

One proposed preventative solution includes installing **riparian buffers** that serve as a partial defense for water quality. These buffers are formed out of deep-rooted grasses, shrubs, and trees and located along the banks of rivers and streams.[36] Depending on the width and type of buffer, these systems can lower water temperatures, help prevent flooding, serve as a habitat for plant and animal species, stabilize stream banks, and absorb between 50-100 percent of nutrients and pollutants that would otherwise wash into waterways.[36] According to the Piedmont Environmental Council, wide, forested buffers can "achieve filtration rates 10-15 times higher than grass turf and 40 times higher than a plowed field."[36] Though buffer systems seem more benign than other alternatives, they still receive opposition in conservative legislatures. The Southern Environmental Law Center's 2016 report "Dismantled" cites a moment when the NC Environmental Management Commission voted to reject a faulty NC Department of Environmental Quality (DEQ) study that showed that buffers were not effective in reducing pollutants from entering water, and improving water quality.[37] This was a "stunning rebuke" to a legislature that had attacked water protections.[37] Buffers do reduce water pollution, but still form only a partial defense, since they do not require adjusting the size and concentration of the polluting sources.

Community Movements: Barriers and Successes

In the past, the lower Eastern Shore coalition has achieved small successes in three counties (Somerset, Wicomico, Worcester). After facing community pressure, these counties amended their zoning codes to require greater property line set-backs for poultry CAFOs and additional Best Management Practices to lessen the effect of poultry house emissions on neighboring properties. This movement started with citizens in Somerset and Wicomico Counties asking for health-based ordinances to address adverse health impacts from CAFOs, and is a successful strategy that Food & Water Watch, Center for a Livable Future, and Socially Responsible Agricultural Project used in Codorus Township, PA. However, because the local officials in Maryland have ignored the citizens' concerns to date (and produced a faulty HIA), the team decided to put together the Community Healthy Air Act, on a parallel track.

The Waterkeeper Alliance is spearheading the *Pure Farms, Pure Waters* campaign, which "addresses the failure to regulate pollution from industrialized swine, poultry, and dairy facilities" that devastate waterways.[12] The campaign is active in North Carolina and combines "litigation, legal policy, regulatory solutions, and outreach to impacted communities."[12] Two Waterkeeper allies include the North Carolina Environmental Justice Network (NCEJN) and the Rural Empowerment Association for Community Help (REACH). These organizations work with community members affected by pollution and intimidation to build a mass movement beyond industrial animal agriculture.

In 2014, in response to the NC Department of Environmental Quality (DEQ) categorizing swine CAFOs as "non-discharge facilities" and issuing permits to allow them to contaminate water and air, the three groups filed a *Civil Rights Complaint* under Title VI with the EPA Office of Civil Rights (OCR).[38] Title VI states that "No person in the U.S. shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subject to discrimination under any

program or activity receiving Federal financial assistance."[38] In the complaint, Naeema Muhammad, Devon Hall, and Larry Baldwin represent NCEJN, REACH, and Waterkeeper Alliance respectively. The co-counsels of the group are Marianne Engelman Lado, of Earthjustice and Yale Environmental Justice Clinic, and Elizabeth Haddix of the University of North Carolina-Chapel Hill Center for Civil Rights. The counsels charge that North Carolina's lax regulation of hog waste discriminates against communities of color in eastern North Carolina. In February 2015, the OCR accepted the complaint and began proceeding with the investigation.

In October 2016, after a year's lack of response, community groups paid a visit in person to the EPA and held a briefing on Capitol Hill. The main message was to invite lawmakers to visit North Carolina, talk to community members, and witness the pollution firsthand. Soon after, the EPA spent three days in eastern NC and spoke with nearly 85 community members.

Senator Cory Booker followed up with a visit and met with community organizers and impacted residents. Following the visits, in January 2017, the EPA sent a 14-page letter of concern to the North Carolina DEQ, confirming that the complaint was based on facts, and that conditions surrounding hog operations were deplorable. Chandra Taylor, an attorney with the Southern Environmental Law Center, explained that while the letter comes short of making a finding of discrimination, it calls on the new Democratic administration and secretary of the NC DEQ to take action.[20] The letter also may establish a record that will be hard for Federal administrators to undo. The success of the Civil Rights Complaint is based on decades of academic and community partnerships, and it could serve as a model for collaborating between higher education, communities, and advocacy groups on poultry air and water issues in both North Carolina and Maryland.

Take Action: Environmental Justice and Public Health

Assateague Coastal Trust (www.actforbays.org): The Assateague Coastal Trust's mission is to promote and encourage the protection of the health, productivity, and sustainability of the coastal bays watershed of Delmarva through advocacy, conservation, and education.

Community Engagement, Environmental Justice, and Health Laboratory (http://sph.umd.edu/laboratory-resources/community-engagement-environmental-justice-and-health-ceejh): The CEEJH Laboratory was founded by Dr. Sacoby Wilson, Assistant Professor in the Maryland Institute for Applied Environmental Health, in Fall 2011. The laboratory's mission is to educate impacted communities about environmental justice and health issues. Through technical assistance and collaboration,

communities are empowered to address environmental injustice and environmental health disparities. Dr. Wilson is also involved in starting a new group on UMD's campus, **17 for Peace and Justice**, dedicated to expanding the environmental justice movement on the College Park campus, Prince George's County, state of Maryland, Washington, DC region, the United States, and other countries.

Johns Hopkins Center for a Livable Future (http://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-for-a-livable-future/index.html): The CLF works with students, educators, researchers, policymakers, advocacy organizations and communities to build a healthier, more equitable, and resilient food system. Their issues of interest include factory farming, antibiotic resistance, lack of equity in food access, and wasted food.

Food and Water Watch (www.foodandwaterwatch.org): FWW champions healthy food and clean water for all and works with communities to resist the siting of poultry production, processing, and incinerating operations.

North Carolina Environmental Justice Network (www.ncejn.org): The NCEJN promotes health and environmental equality for all people of North Carolina through community action for clean industry, safe work places and fair access to all human and natural resources. They accomplish these goals through organizing, advocacy, research, and education based on principles of economic equity and democracy for all people. Along with the Rural Empowerment Association for Community Help and Waterkeeper Alliance, NCEJN is calling on the EPA Office of Civil Rights to make a finding of discrimination relating to the siting of industrial hog operations in Eastern North Carolina.

Socially Responsible Agricultural Project (www.sraproject.org): SRAP works throughout the U.S. helping communities protect themselves from the negative impacts of factory farms. The organization gives family farmers, ranchers, and other rural citizens the tools needed to develop and sustain ecologically sound, economically viable, and humane farming alternatives to industrial-scale agriculture.

Waterkeeper Alliance (www.waterkeeper.org): Waterkeeper Alliance fights for every community's right to drinkable, fishable, swimmable water. The Pure Farms, Pure Waters campaign calls attention to the destructive pollution practices of industrialized meat production, ensures compliance with environmental laws, and supports the traditional family farms that industrial practices endanger.

Visit http://rachelcarsoncouncil.org/take-action to learn more.

POULTRY AND CLIMATE JUSTICE

Carbon dioxide and other **greenhouse gases (GHGs)**, including methane, nitrous oxide, and fluorinated gases, regulate Earth's climate. This phenomenon, known as the **greenhouse effect**, occurs naturally as GHGs trap energy in the atmosphere, preventing infrared radiation from returning to space and allowing Earth to be warm enough to sustain life. **Climate change** is defined as a disruption of regional and global climate patterns attributed largely to increased levels of human-caused GHGs from fossil fuel combustion, industrialized agriculture, and other processes. Since the late 1700s, the amount of carbon dioxide in the atmosphere has increased by 40 percent.[39] Over the last 50 years, our planet has warmed by 1 degree F, causing sea-level rise, drought, higher humidity and average rainfall, and greater frequencies of extreme weather events.[39]

The **climate justice movement** is informed by the 27 Bali Principles of Climate Justice and calls attention to how climate change threatens the health of marginalized communities who contributed least to the problem. These populations are already feeling the impacts of global warming, and disproportionately include women, youth, people of color, coastal peoples, indigenous peoples, low-income populations, and the elderly.[40] Adverse impacts show up in the form of increased temperatures, sea-level rise, changes in agricultural patterns, loss of biodiversity, disease outbreaks, and increased frequency and magnitude of disasters such as floods, drought, and intense storms.

Figure 10: In October, in the wake of Hurricane Matthew, feeding operations flooded and released pollutants. Credit: Rick Dove — Waterkeeper Alliance.

Populations in Maryland and North Carolina are already experiencing climate justice impacts. The majority of the state of Maryland has warmed between 1-2 degrees (F) in the last century.[41] The average precipitation is likely to increase during the winter and spring, and drought periods will occur more often in the summer and fall.[41] Sea levels are also rising faster in Maryland than other coastal areas because the land is sinking; estimates suggest they will rise 16 inches to four feet in the next century.[41] In 2003, storm surges from Hurricane Isabel inundated several communities on the Eastern Shore, disrupting a number of poultry operations. A 2014 White House climate assessment found that North Carolina is more susceptible to sea-level rise, disasters, and extreme heat events than other states.[42] Poultry operations in the eastern part of the state are in a coastal plain, an area with high water tables subject to periodic flooding. Sea levels are expected to increase about one inch per decade along the coast, and between one and four feet over the next century.[39] This is happening faster than global averages for sea-level rise, and already having a deleterious effect on low-lying operations, especially when paired with intensifying hurricanes.[39]

Tropical storms and hurricanes have become more intense in North Carolina over the past 20 years, and the amount of precipitation during heavy rainstorms has increased by 28 percent in the Southeast since 1958.[39] Wind speeds and rainfall rates will rise as the climate continues to warm.[39] The recent devastation by **Hurricane Matthew** in October 2016 led to at least 27 deaths and disruptions in 37 counties in North Carolina.[10] During Matthew, at least 14 commercial-scale hog and poultry farms were flooded in Pender, Wayne, Jones, Greene, Bladen, and Sampson counties. These counties are in the low-lying eastern portion of the state, an area that is the site of a variety of environmental injustices.[10] The devastation was still being tallied weeks after the event, and was worsened by a powerful storm surge. Aerial photos show floodwater inundating hog and poultry farms, and waste-laced contaminants escaping "into waterways that feed public drinking water systems."[10] These pollutants include ammonia, nitrogen, phosphorus and fecal coliform bacteria, arsenic, and lead, among others.[10] The last major flooding event, Hurricane Floyd, occurred 17 years prior and resulted in even higher levels of inundation. Although the state has moved several hog operations out of the floodplains since then, they have yet to relocate any poultry production or processing facilities.

While reducing fossil fuel extraction tends to dominate conversations about climate solutions, global agriculture and food production account for anywhere between 18-51 percent of all GHGs emitted into the atmosphere.[43]

Though regions in North Carolina have warmed less than other areas in the nation, in the coming decades, a changing climate will "harm livestock, increase the number of hot days, and increase the risk of heat stroke and other heat-related illnesses."[39] Contract growers and workers who are expected to withstand high temperatures inside poultry production and processing facilities—as well as children, elderly, and low-income populations working outdoors—will be the first to become more vulnerable to heat stroke and dehydration. Exposure to ground-level ozone and smog may aggravate lung diseases including asthma in vulnerable populations, compounding the effects of environmental pollution.[39]

Figure 11. Hurricane Matthew killed 1.7 million chickens in North Carolina and caused waste to leak into surrounding waterways. Credit: Larry Baldwin – Waterkeeper Alliance.

A 2008 United Nations report, *Livestock's Long Shadow*, found that at least 18 percent of annual GHG emissions are attributable to raising cattle, buffalo, sheep, goats, camels, horses, pigs, and poultry. A subsequent study by the Worldwatch Institute released in 2009

estimated this number could exceed half of all emissions.[43] The higher tally included emissions involved in "clearing land to graze livestock and grow feed, keeping livestock alive, and processing and transporting the end products" which Worldwatch claims had been uncounted and overlooked by previous studies.[43] According to the report, livestock, like automobiles, are a "human invention and convenience not part of pre-human times."[43] Therefore, a molecule of carbon dioxide exhaled by livestock should equate to one emitted from auto tailpipes.[43] The 2015 USDA Dietary Guidelines reiterated the toll of the global food and meat industry on land, estimating that it accounts for at least 80 percent of deforestation. As forests are cleared for grazing and corn and soy production, livestock continue to exhale, putting added weight on earth's ability to reabsorb carbon.[43,44]

In conclusion, Worldwatch states that "replacing livestock products with better alternatives would be the best strategy for reversing climate change" and perhaps would have faster effects than actions to replace fossil fuels with renewables.[43]

Poultry Contributes to Climate Change

When poultry litter (in the form of manure, bedding, feathers and spilled feed) is burned, it becomes phosphorus-rich ash, which can be used as fertilizer, feed, and electricity.[6] State-funded litter incinerator "solutions" to excess manure problems in both North Carolina and Maryland guarantee the expansion of factory farms, and foster the concentration of economic and political power in the hands of big energy and agriculture companies. Negative health, environmental, and climate impacts abound during **litter incineration** and **manure transport** stages in particular.[7]

A study by government officials in North Carolina found that "poultry litter combustion plants could result in higher emissions of carbon monoxide, particulate matter, nitrogen oxides and carbon dioxide per unit of power generation than new coal plants."[6] In addition, they are "permitted to produce more nitrogen oxide than new coal plants, and more sulfur dioxide than plants that use new wood or existing biomass to create electricity."[7]

In terms of human health, the EPA has found that particulate matter "produced by incinerators is linked to higher rates of respiratory and cardiovascular disease as well as to higher mortality."[6] Burning concentrated poultry litter also produces **dioxin**, classified by the National Toxicology Program as a known human carcinogen.[6] According to a research paper by the late Dr. Steve Wing, an Associ-

ate Professor of Epidemiology at the UNC-Chapel Hill School of Public Health, the health impacts are disproportionately borne by more rural and impoverished communities: "By centralizing the waste, health, and environmental impacts, harms are transferred from a wider area of poultry production to communities and workers in and around the waste-to-energy facilities."[7] In North Carolina, Surry, Montgomery, and Sampson counties are all "well below the state average for educational attainment, and above the state average for percentages of residents living in poverty."[7] In addition, people living in these areas have higher-than-average rates of hospitalization for conditions like asthma and cardiovascular disease, and are vulnerable to other environmental stressors, including industrial hog operations, coal ash deposits, new pipeline infrastructure, and landfills (see *Pork and Pollution*, Rachel Carson Council, 2015).[6]

In fact, plants often exceed these permitted limits. For example, in 2009, an incinerator in Benson, Minnesota was found to be exceeding thresholds for carbon monoxide, nitrogen oxide, and sulfur dioxide since 2007.[7] As often occurs, when the operations fail to comply, few modifications are required and there is almost no oversight or enforcement.[7] The waste-to-energy process generates more fossil fuels through manure transport to and from farms, often 100 miles or more each way. Exposure to this matter occurs when neighbors or workers breathe in emissions from the incinerator smokestacks, or inhale diesel exhaust from trucks on the road.[7] Wastewater runoff from the trucks has been found to contaminate soil and local groundwater, further threatening the safety of local food and water systems.[7]

Solar, Wind, and Poultry Litter?

Incinerators have not yet gained a foothold in Maryland or North Carolina, but waste-to-energy proposals continue to arrive. In both states, poultry litter incineration facilities are viewed as a "tier 1 source of renewable energy, on par with solar and wind."[6] Food & Water Watch reported that in 2014, Maryland's Secretary of Agriculture claimed incinerators would "improve water quality and reduce greenhouse gases—all of which would result in advanced Chesapeake Bay restoration and help farms become sustainable."[6]

The inclusion of poultry litter in Maryland's renewable energy portfolio came about through "significant lobbying efforts" by incinerator companies such as Fibrowatt. The Pennsylvania-based company "poured more than $100,000 into lobbying the Maryland legislature over several years, and spent more than $500,000 lobbying the Federal government over a decade."[6]

Such unsubstantiated claims, and the policies that can spring forth from them, threaten pro-environmental climate action and divert funding from sustainable and just initiatives. This resulted in proposals for three new biofuel plants statewide, which would each require between 1-1.5 million

tons of poultry litter annually.[7] In North Carolina, despite findings that generating electricity from poultry litter would require heavy subsidies, the state passed a bill in 2008 "mandating that utility companies obtain at least 900,000 megawatt-hours of electricity from poultry waste by 2014."[6]

As society turns away from fossil fuels, we must find alternatives that are renewable, and do not further concentrate economic interests and undermine public health in vulnerable communities that have been fighting back for decades. In both North Carolina and Maryland, community-led organizing has gained some wins. In the spring of 2016, with the help of planning expert Danielle Spurlock of UNC and the North Carolina Environmental Justice Network and Elizabeth Haddix of the UNC Center for Civil Rights, community organizers in Greene County successfully defeated the siting of a poultry litter burning plant by Carolina Poultry Power (CPP).[45] The proposed site was across the street from the only high school in downtown Snow Hill, and near churches, daycare centers, and the homes of elderly residents.[45] CPP planned to sell its "clean" gasification products to Duke Energy for renewable credits. Community organizers and allies stopped the siting because CPP had not followed due process for acquiring its permit applications, nor had it conducted an analysis on trucks transporting litter and the accompanying impacts of dust particles and arsenic on community health.

Take Action: Poultry and Climate Justice

Food & Water Watch (www.foodandwaterwatch.org): Join Food & Water Watch's campaign against litter incineration and support the demands to 1. Eliminate financial incentives for false solutions by, among other things, stripping incineration, including the burning of chicken waste, out of the Maryland's Renewable Portfolio Standard.[18] 2. Support legislation to end the chicken industry's free ride and to make the big poultry companies responsible for the removal and proper disposal of all excess manure. 3. Establish a moratorium on the construction of new poultry houses and on the expansion of existing facilities.[18]

North Carolina Environmental Justice Network (www.ncejn.org): The NCEJN promotes health and environmental equality for all people of North Carolina through community action for clean industry, safe work places and fair access to all human and natural resources. They accomplish these goals through organizing, advocacy, research, and education based on principles of economic equity and democracy for all people.

Visit http://rachelcarsoncouncil.org/take-action to learn more.

TRIANGLE OF SOLIDARITY: ANIMAL WELFARE, NEW ECONOMIES, AND HIGHER EDUCATION

Animal Welfare

The most vulnerable creatures within the poultry industry are, of course, chickens themselves. Since the 1920s, changes to broiler chicken breeding and production have resulted in modern chickens that grow twice as big in half the time.[4] Birds grow so quickly that they often do not keep pace with skeletal, heart or lung capacity.[21, 22] Selective breeding, which emphasizes high production over animal fitness or welfare, has created animals prone to structural deformities (lameness and broken limbs), bone density issues, metabolic problems, and susceptibility to infections—which, combined with poor living conditions, promote the higher use of antibiotics.[4]

Throughout their short lives, the vast majority of conventionally raised broiler chickens have no access to the outdoors and less than one square foot per bird to move around.[22] They remain in these conditions for around 47 days, or until they reach market weight.[21] Broilers grown to unnaturally heavy and disproportionate sizes tend to spend most of their lives lying in their own wet waste, causing open skin sores that can be "a gateway for bacteria which can cause… secondary infections (Staphylococci spp. and E. coli)…"[21] When calculated in per pound consumption, poultry products are more likely to cause "outbreak-associated illnesses" than any other meat product besides seafood, and yet food safety gaps in regulations abound.[21] "Despite its reputation as the clean, lean and healthy meat, most chicken in supermarkets comes from birds raised in unhealthy, unnatural and fundamentally inhumane conditions," said Daisy Freund, Director of Farm Animal Welfare for the ASPCA. "As consumer awareness and outcry grows around this sad reality, responsible food companies are committing to better standards that address the suffering of chickens, from their genetics to their living environments. It's the right thing to do and it's the right business move."

Figure 12: Interior of a poultry CAFO. Credit: Branislav Pudar, Huffington Post.

Both the ASPCA and the Humane Society of the United States (HSUS) work on a host of issues dealing with animal welfare. In 2016, HSUS formed a coalition with the Massachusetts Sierra Club to rally state support for a successful **cage-free ballot initiative**. The measure called for an end to confinement and cages within the state's egg-laying operations and additionally banned the sale of caged-

*Poultry are not included in the **Humane Methods for Livestock Slaughter Act, which requires that animals be rendered insensible to pain before slaughter.** Fast line-speeds at poultry slaughterhouses sometimes result in chickens being boiled alive, with almost no recourse against companies for this inhumane death.[46] In addition, the 28 Hour Law, which requires animals spend no more than 28 consecutive hours in transport without being fed, watered and rested, is not enforced across most of animal agriculture and similarly exempts poultry entirely.*

eggs in the state. According to Kenny Torrella, Public Policy Outreach Manager at HSUS, banning cages would lead to lower rates of salmonella and other diseases, improve the lives of chickens, and make waste easier to manage.[47] The precedent for this law was set in 2010 in California, when voters approved a proposition to require all farm animals bought in or shipped to the state to be able to lay down, stand up, and extend their limbs.[48] California's poultry industry supported the law because it created a more competitive market for out-of-state producers, and boosted their bottom lines.[47] Broiler chickens, as opposed to egg-laying chickens, are not caged, so this measure would not apply to them. Still, the success of cage-free measures could set a precedent for an overall increase in animal welfare standards.

Ag Gag Laws

Relying on government oversight or navigating "proper channels" is almost impossible when it comes to animal welfare.[49] The Food Integrity Campaign (FIC) describes **whistleblowers**, or insiders who reveal exploitation and abuse, as critical players in the fight to transform our food system. Successful investigations-which normally begin with undercover footage and images-have led to "product recalls, decisions by retailers to drop suppliers, legal prosecutions of employees, and hard questions posed to the animal industry," according to the ASPCA.[50]

To combat truth-telling in animal agriculture, more than half of all states have proposed **ag gag bills**, with eight states passing them into law. These laws are designed to silence all kinds of insider revelations, including conditions inside industrial animal operations, environmental harms, food safety breaches, and labor violations. Some ag gag legislation criminalizes recording, possessing, or distributing images from agricultural facilities, while others criminalize falsifying information on job applications to prevent individuals with ties to animal advocacy organizations from gaining employment.[50] In Nebraska, the industry claims that these laws protect "farmers and ranchers from attacks by outside animal rights extremist groups."[51] In reality, ag gag laws threaten the safety of animals, consumers, and workers.[52]

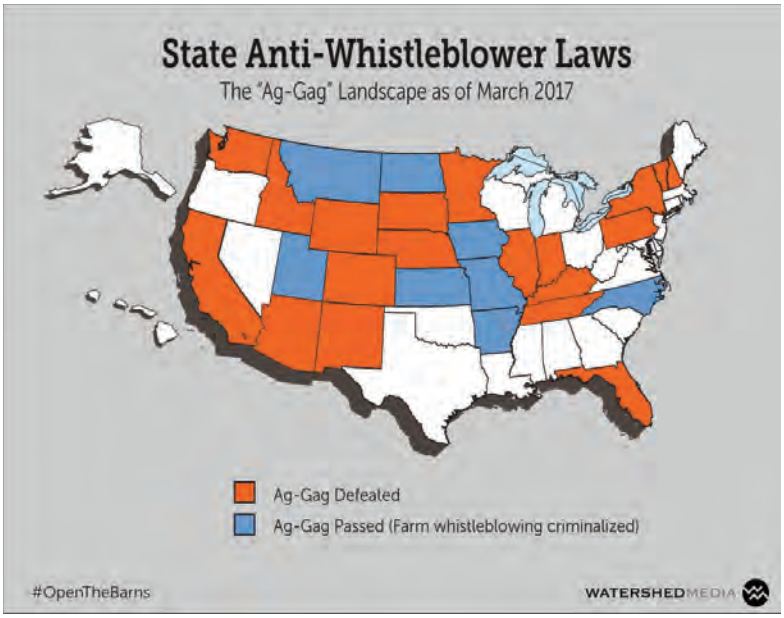


Figure 13: This map shows states that have passed and defeated ag gag laws in the last year. Source: ASPCA and Watershed Media

Certain ag gag laws require **mandatory reporting**, in which investigators must turn over photo and video evidence within what FIC terms a "short and arbitrary timeframe."[49] This requirement inhibits whistleblowers from building a case for widespread abuse and allows the industry to write off reports as isolated incidents. In addition, whistleblowers may lose their cover, face retaliation, and risk their personal safety for having reported abuses.

In 2016, eight environmental, workers' rights, and animal welfare groups brought a federal lawsuit against a North Carolina ag gag law that went into effect on January 1st of that year. The law punishes "organizations, journalists, and individuals who expose employer misconduct to the public or press" and fines violators up to $5,000 per day of unauthorized documentation.[50] The law applies not only to factory farming facilities, but to all workplaces—including day care centers and nursing homes. The diverse coalition of plaintiffs included the ASPCA, Public Justice, People for the Ethical Treatment of Animals, Center for Food Safety, Farm Forward, Animal Legal Defense Fund, Farm Sanctuary, Food & Water Watch, and the Government Accountability Project's Food Integrity Campaign. The suit was brought on the grounds that the law violates "due process, denies citizens equal protection, and abridges First Amendment rights of free speech, freedom of the press, and the right to petition the government."[50] Though the status of this case is pending, it has garnered wide public support. In 2015, ag gag legislation in Idaho was nullified by a federal court for violating the First and Fourteenth Amendments, and laws in Wyoming are being challenged as well.[50] The growing movement to stop ag gag laws in their tracks is strengthened by diverse stakeholders being in coalition with one another.

Alternatives to Factory-Farmed Chicken

In 2015, global chicken consumption amounted to 112 million metric tons which, according to RAFI, equals the "weight of two-thirds of all cars on the road" in the U.S. today.[5] Terms such as "Natural," "Humanely Raised," "Vegetarian-Fed" and "Family Farmed" mislead primarily middle-class consumers to imagine rosy production environments. In reality most meat—even certified organic—likely came from a CAFO.[53] The ASPCA is a national non-profit organization dedicated to fostering a more humane and transparent farming system. Among many areas of activism, they have created a comprehensive **Meat, Eggs and Dairy Label Guide** to help consumers make more informed decisions and stand up for animal protection.[53]

LABEL DEFINITIONS

CAGE-FREE

Cages prohibited but hens can be raised in enclosed, windowless sheds. Note: Chickens and turkeys raised for meat (as opposed to for eggs) are not typically caged, rendering the label meaningless on those products.

FREE-RANGE

Producers must demonstrate that animals have "access to the outdoors" but size, quality and duration of access to that outdoor space is unregulated, so conditions vary greatly.

GRASS-FED

Pasture access during most of growth required, but feedlots allowed in final months. Antibiotics and hormones allowed.

HORMONE CLAIMS

Hormone use in milk- and meat-producing cattle to increase production and weight is associated with welfare problems. "**No hormones added**" or "**no hormones administered**" claims are allowed if producers prove no hormones were used during animal's life. "**Hormone-free**" claims are not approved by USDA since all animals produce hormones naturally. Hormones are prohibited for use on chickens, turkeys and pigs so this label is meaningless on products from those species.

ANTIBIOTIC CLAIMS

Routine use of "subtherapeutic" antibiotics for disease prevention or growth is associated with confined, unhealthy conditions. Lack of antibiotic use can indicate a healthier overall environment but is not a guarantee of better welfare. "**Antibiotic-free**" claim not allowed because antibiotic residue testing technology can't verify animal never received antibiotics. "**No antibiotics administered**," "**no antibiotics added**" and "**raised without antibiotics**" claims allowed by USDA if producers prove antibiotics were not added/administered at any point.

NATURAL

As defined by USDA, this term only refers to how meat is processed after slaughter, not how an animal was raised.

OTHER UNREGULATED OR UNDEFINED TERMS

that do not necessarily impact farm animal welfare

Humanely Raised, Humanely Handled, Naturally Raised, Vegetarian-Fed

ASPCA

Figure 14: Page 2 of Meat, Eggs and Dairy Label Guide. Credit: ASPCA.

In any discussion about consumer activism, it is important to name the limitations of such reforms and disproportionate agency born by primarily white, middle-class consumers. The "average consumer" does not have the opportunity to weigh buying conventional or organic meat. And while consumption choices by the middle class bear some influence, they will not be enough to shift global markets. Taxes, such as the **soda tax**, could be a more viable consumer structural shift. One study found that soda taxes in Mexico resulted in a 12 percent decrease in purchases after one year, and another showed that taxing meat may slow global warming by reducing methane emissions.[54,55] Increasing prices, however, would disproportionately affect Americans who cannot afford to purchase organic or welfare-certified alternatives—including CAFO neighbors and workers—and further exclude them from the movement for a fair food system.

Financial regulation, policies, and systemic change must offer viable alternatives for low-income communities experiencing the worst health impacts. The **Movement for Black Lives'** recent platform, circulated in 2016, calls for such an intervention: the creation of more **community-based food hubs**. The platform defines these hubs as processes and facilities that work "to aggregate or pool food produced from local farmers and coordinate marketing and distributing."[57] The vision also calls to expand networks of small-scale farmers through **local living economies** (such as La Via Campesina), and funneling resources to support local food system infrastructure.[57] Today, food hubs nationwide successfully generate jobs and stimulate economies, as well as provide public health, water, and air quality benefits.[33] Poultry for the People, an initiative coordinated by Baltimore County and the Maryland Agriculture Resource Center, allows consumers of diverse incomes and demographics to visit **pasture-based facilities** and buy organic chickens at accessible prices.[56] For every chicken bought, an organic chicken is donated to the Baltimore County homeless shelter system. Poultry for the People intertwines social responsibility and education: funds raised through chicken sales are then funneled into educational programs at both farms and shelters.[56]

Fair Farms works in Maryland to create a food system that is "fair to farmers, invests in homegrown, healthy foods, and restores waterways."[31] The tenets of this cross-sectional movement involve cleaner water, sustainable farming, keeping antibiotics working, and building accountable relationships with government and industry. Fair Farms campaigns recognize agriculture as the single largest source of pollution in the Chesapeake Bay, and engage consumers by urging them to support farms that are reining in manure, growing food without toxic chemicals or antibiotics, and improving animal welfare. In Maryland, Fair Farms has successfully rallied public support for the **Keep Antibiotics Effective Act**, which protects human health by ending the "inappropriate and unnecessary use of antibiotics in animal agriculture." The organization is looking to bring their model to North Carolina, and could be an important bridge between communities, contract growers, small farmers, and consumers in the movement for a better food system.

Take Action: Animal Welfare and New Economies

American Society for the Prevention of Cruelty to Animals (www.aspca.org/shopwithyourheart): The ASPCA provides effective means for the prevention of cruelty to animals throughout the U.S. Take action today by signing up for the Shop with Your Heart initiative which encourages consumers to buy animal welfare-certified products and more plant-based products. Meaningful welfare certification standards require that animals have adequate space, enrichment and lower-stress practices at every stage of life, and are never given hormones or sub-therapeutic antibiotics.[53] The campaign offers resources such as lists of welfare-certified products and urges consumers to petition grocers to supply higher welfare alternatives in their stores.[53]

Fair Farms (www.fairfarmsnow.org): Fair Farms is building a movement of Marylanders of all stripes, working together for a new food system—one that is fair to farmers, invests in homegrown, healthy foods, and restores our waterways instead of polluting them. Fair Farms priorities for 2017 include the *Keep Antibiotics Effective Act*, which limits the use of "human antibiotics in farm animals that are not sick" and the *Healthy Soils Act*, Act, a bill that provides incentives for sustainable farmers in Maryland.[31] Check back for updates on the Fair Farms or RCC websites as new legislative cycles begin.

Food Integrity Campaign (www.foodwhistleblower.org): FIC is a program of the Government Accountability Project, the nation's leading whistleblower protection and advocacy organization with a mission to promote corporate and government accountability by protecting whistleblowers, advancing occupational free speech, and empowering citizen activists.

Humane Society of the United States (www.humanesociety.org): HSUS is one of the nation's leading animal protection organizations, and is currently driving change in the U.S. by combating factory farming and other animal abuse issues.

Movement for Black Lives (www.policy.m4bl.org): The M4BL's platform on economic justice calls for shifting resources toward cooperative organizations working for a more democratic, localized, and sustainable economy.[57]

Visit http://rachelcarsoncouncil.org/take-action to learn more.

Defending Public Interest Research and Advocacy

To influence corporations responsible for environmental and health hazards and improve community health outcomes, it is essential to equip coalitions of students, faculty, staff, and administrators with skills that help them produce knowledge and action with communities over the long haul. Several programs nationwide in public health, geography, city and regional planning, social science, and other disciplines remain committed to addressing community needs and working for a more "just, sustainable, and democratic society."[58] These programs use **community-based participatory research** models, which involve communities at every step of the research process, and **service-learning** to achieve their goals. Higher education is also incorporating **co-learning models** that pro-

mote beneficial relationships between campuses and communities around place-based projects over the long-term (3-20 years).[58]

Community-based research conducted in 2011 by Dr. Jeannette Stingone and the late Dr. Steve Wing, an epidemiologist and environmental justice advocate at UNC-Chapel Hill, resulted in important findings about the health impacts of arsenic. In addition to causing cancer, arsenic (used in poultry feed to control intestinal parasites and promote growth) is associated with "cardiovascular disease, diabetes, endocrine disruption, and decreased immunity" when consumed by humans.[7] Despite the dire health implications, as of 2007, it was estimated that about "70 percent of chickens in the U.S. are fed roxarsone."[7] The research also found that heavy metals, nitrogen and sulfur dioxides, and other contaminants can pollute soil and groundwater through land application of poultry litter.

Too often, the "business model of research universities" leads faculty to contribute to **knowledge commodification**. In other words, research goals are steered by those who provide grants and funding. Outcomes reinforce systemic inequities through misguided policy at all levels of government.[58,59] On the other hand, research on hot-button issues that is community-driven and values "local, experiential" knowledge is often not supported by university administrations.[28,58] Deepening higher education's commitment to environmental and climate justice—and research integrity overall—will involve a culture shift that values research for community wellbeing, and protects scientists. Dr. Wilson recalled receiving a letter from the poultry industry questioning his work investigating health impacts of a new chicken processing plant in Delaware. In addition, in 2015, Dr. Wing received a subpoena from Murphy-Brown, an industrial hog production company, requesting access to all data and related materials for his studies. This included home addresses and phone numbers of participants, maps, pollution measurements, journals, diaries, interviews, emails and more. The demands were pure intimidation and harassment, and in response, the Rachel Carson Council issued a petition which garnered over 1,000 signatures from public health and environmental deans, researchers, and advocates nationwide. The petition to rally public support for Dr. Wing's work was delivered to UNC System President Margaret Spellings and UNC-Chapel Hill Chancellor Carol Folt in February 2017.[60]

Recently, with the success of the Civil Rights Complaint to the EPA, as well as 26 nuisance suits which represent the concerns of 500 CAFO neighbors, political bodies in North Carolina have tried to silence advocates. In spring 2017, the UNC Board of Governors proposed a policy that would "prevent any UNC center or institute from filing a complaint, motion, lawsuit or other legal claim against any individual, entity or government."

This motion would effectively stop the UNC Center for Civil Rights from providing any legal representation or direct advocacy on behalf of North Carolinians. It is no coincidence that this motion comes on the heels of successful ventures by the Center to defend community members in eastern

North Carolina from toxic hog waste, and preserve countless other affordable housing and environmental protections. As a February 2017 *News and Observer* Op-Ed stated: "This center... helps fulfill not just the academic mission of the UNC system, but the moral mission of public service to which the university has been dedicated for its entire history."

In addition, in late March 2017, state representatives in North Carolina proposed HB 467, a bill that restricts NC citizens' right to sue for property damages from industrial hog and poultry production. The bill was introduced at the behest of the Chinese holding company, WH Group, which owns the Smithfield Corporation. The Rachel Carson Council has been working with community groups organizing against the bill and with Representative Pricey Harrison of Greensboro, a leader of the opposition among legislators. Although HB 467 passed the House in April, the RCC has launched a MoveOn.org petition with 3,500 signatures to date for Governor Roy Cooper to veto the bill.

Take Action: Defending Public Interest Research and Advocacy

Community-Campus Partnerships for Health (CCPH) (https://ccph.memberclicks.net/): Established in 1997, CCPH is a nonprofit membership organization that promotes health equity and social justice through partnerships between communities and academic institutions. CCPH views health broadly as physical, mental, emotional, social and spiritual well-being and emphasize partnership approaches to health that focus on changing the conditions and environments in which people live, work, study, pray and play. By mobilizing knowledge, providing training and technical assistance, conducting research, building coalitions and advocating for supportive policies, the organization helps to ensure that the reality of community engagement and partnership matches the rhetoric.

Public Employees for Environmental Responsibility (www.peer.org): PEER is national nonprofit alliance of local, state and federal scientists, law enforcement officers, land managers and other professionals dedicated to upholding environmental laws and values.

Rachel Carson Council (www.rachelcarsoncouncil.org): The Rachel Carson Council, founded in 1965, is the national environmental organization envisioned by Rachel Carson to carry on her work. We promote Carson's ecological ethic that combines scientific concern for the environment and human health with a sense of wonder to build a more sustainable, just, and peaceful future.

Visit http://rachelcarsoncouncil.org/take-action to learn more.

Social Change on Campus and Beyond

As global corporations continue to construct poultry and hog operations throughout the U.S.—some of which grow and raise chickens and pigs in the same facilities—concern and activism is mounting. There are many opportunities to organize across the lines of higher education, animal welfare, workers' rights, environmentalism, public health, and social justice. This resource is a launching point for campus groups to engage with communities and advocacy spheres, and build a stronger movement for environmental health and justice. The Rachel Carson Council encourages readers to peruse the list below and visit our website at www.rachelcarsoncouncil.org.

- **Join the Rachel Carson Campus Network (RCCN).** The RCCN coordinates alliances between over 40 colleges and universities with the goal of engaging a diverse array of advocates, including students, faculty, staff, and administrators, as well as communities and advocacy organizations off-campus. RCCN mechanisms for action include curricular development, directing research and advocacy partnerships, conducting skills trainings, and creating calls-to-action with the goal of advancing sustainable and equitable policy and social change.

- **Financially support, volunteer, and offer your skillsets to local organizations**. Consumer action is limited if it does not reach a critical mass due to the globalized nature of food markets. Volunteer with or donate to a local organization that is helping defend people over profits. This will allow you to (1) stay connected to environmental equity work as you leave school and (2) keep communities in mind as you do work at learn at your university.

- **Take a class on environmental justice and/or join an environmental justice-oriented research team.** The Rachel Carson Council keeps tabs on statewide networks of professors teaching environmental justice through interdisciplinary approaches. Research groups often need volunteers to help code data, conduct surveys, and disseminate results.

- **Participate in direct actions.** Organize your own social networks (friends, social organizations, churches, etc.) to plan actions ranging from clean-up efforts to protests. Clean-up alone does not stop industries from continuing to dump and maximizing profits. Participating in sit-ins and disrupting "business as usual" is an important route to change.

- **Learn about privilege.** If you want to support communities different than your own, it is important to understand the role of privilege. Privilege can be both a useful tool and a danger to communities. The major difference lies in developing awareness and learning how to stay accountable.

- **Volunteer on a campus farm**. Duke Campus Farm and the NC State Center for Environmental Farming Systems in North Carolina, for example, give students an opportunity to do hands-on learning about organic and regenerative agriculture. This type of agriculture recycles nutrients and builds soil health over the long term.[33] When scaled up, organic agriculture can reduce society's reliance on factory farms to supply meat.

- **Sign on to the Real Food Campus Commitment.** Schools around the country have implemented programs to incorporate sustainability and environmental stewardship into their operations. According to Food Tank, many colleges and universities are beginning to source in diversified and local manners, reducing their environmental footprints, boosting local economies, and transitioning campuses away from relying on monoculture.[61] The Real Food Commitment asks colleges and universities to agree to buy at least 20 percent real food annually by 2020.[62] Real food is defined as "local/community-based, fair, ecologically sound, and/or humane."[62] For meat, standards require that the animals were raised in a low-stress environment, without hormones and non-therapeutic antibiotic treatments. In making this commitment, schools agree to increase transparency about the food they supply and promote student and

community engagement. The initiative includes over 40 campuses and features road trips, strategy retreats, and summits to train and organize students who want to transform the nation's food system.

- **Participate in Meatless Mondays.** This movement has been adopted by cities and campuses across the country.[63] The principle is simple: on Mondays, no meat is served in campus eateries. The goal of the movement is to reduce meat consumption by 15 percent, improve health, and reduce the use of natural resources. Going meatless even once a week can reduce the risk of cancer, cardiovascular diseases, diabetes and obesity, while lowering the usage of energy, water, and fossil fuels that are required in meat production and transportation.[63] Such movements should also be deepened to include worker and community health impacts, transitioning motivations away from individual lifestyle change toward structural change in the food system.

- **Divest your campus from Big Ag.** Many campuses have waged campaigns to persuade their universities to divest their holdings from dirty fossil fuel companies. This movement has seen some success, prompting the question of whether a similar movement to divest from factory farms could garner support on campuses around the country. Already, major companies are moving away from sourcing meat treated with antibiotics. Supporters of the campaign to divest from factory farming cite the risks posed to investors by the meat industry. Such risks include disease outbreaks, litigation, fines from pollution, volatility of feed prices, and worker health.[12] These issues present compelling reasons for campuses to divest their endowments from factory farming, and instead invest in sustainable, humane, healthy and fair farming practices.

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Rachel Carson Council
8600 Irvington Avenue
Bethesda, MD 20817
www.rachelcarsoncouncil.org
office@rachelcarsoncouncil.org
(301) 214-2400
Facebook.com/RachelCarsonCouncil
Instagram and Twitter: @RachelCarsonDC