

**Julius L. Chambers**  
**Center for Civil Rights**

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**THE INCLUSION PROJECT:**  
**Analyzing the Continuing Impacts of**  
**Residential Segregation**

# **ENVIRONMENTAL JUSTICE: DUPLIN COUNTY, NC**



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## **Introduction**

*The Inclusion Project* is an ongoing Chambers Center for Civil Rights initiative that supports grassroots advocacy by bringing research, legal analysis, and public education directly to communities. *The Inclusion Project* examines the impacts tied to the legacy of residential segregation on super-majority non-white neighborhoods we describe as “excluded communities.” The term is applied broadly to refer to any community excluded socially, politically, or economically from opportunities available to other neighborhoods or residents. *Inclusion Project* research helps communities inform and persuade local decision-makers. It also helps develop legal strategies to promote inclusion and equity, including litigation.

This report is the second in a series looking at the impacts of exclusion in Duplin County, North Carolina. The first concentrated on education advocacy and equity in the county.<sup>1</sup> This one examines environmental justice, and like the previous report is based both on empirical research and engagement by community advocates and the lawyers supporting their efforts.

While environmental justice encompasses a range of hazardous and unwanted land uses disproportionately located in excluded communities, in Duplin the most significant of those are industrial animal feeding operations. They are therefore the focus of this report.

## **Background**

Duplin County, like many other eastern North Carolina counties, has long relied on an agricultural economy. In addition to food and tobacco crops, Duplin once hosted thousands of smaller livestock farms. Today the county hosts the highest number of broiler chickens, the second highest number of turkeys, and is tied with neighboring Sampson County for the highest number of hogs in the state.<sup>2</sup> The vast majority of those hogs are owned by Smithfield Foods, which controls an estimated 90 percent of all hog production in North Carolina.<sup>3</sup> Murphy-Brown, LLC, the livestock production subsidiary of Smithfield Foods, is based in the Duplin town of Warsaw.<sup>4</sup> In 2013, a Chinese corporation, W.H. Group, bought Smithfield Foods for \$4.7 billion, making it the largest acquisition of a U.S. company by a Chinese buyer to that date.<sup>5</sup>

Industrial hog operations (IHO) are disproportionately concentrated in black, Latino, and Native-American communities in Duplin County.<sup>6</sup> Because the State permits IHOs (unlike poultry operations, which operate without permits), their locations are publicly known. The State does not publish poultry

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<sup>1</sup> Available at <http://www.uncinclusionproject.org/documents/duplinedreport1.pdf>.

<sup>2</sup> U.S. Dep’t of Agric. North Carolina Agricultural Statistics 2017, p. 42, available at [https://www.nass.usda.gov/Statistics\\_by\\_State/North\\_Carolina/Publications/Annual\\_Statistical\\_Bulletin/AgStat/Section04.pdf](https://www.nass.usda.gov/Statistics_by_State/North_Carolina/Publications/Annual_Statistical_Bulletin/AgStat/Section04.pdf).

<sup>3</sup> <http://www.ncglobeconomy.com/hog/corporations.shtml>.

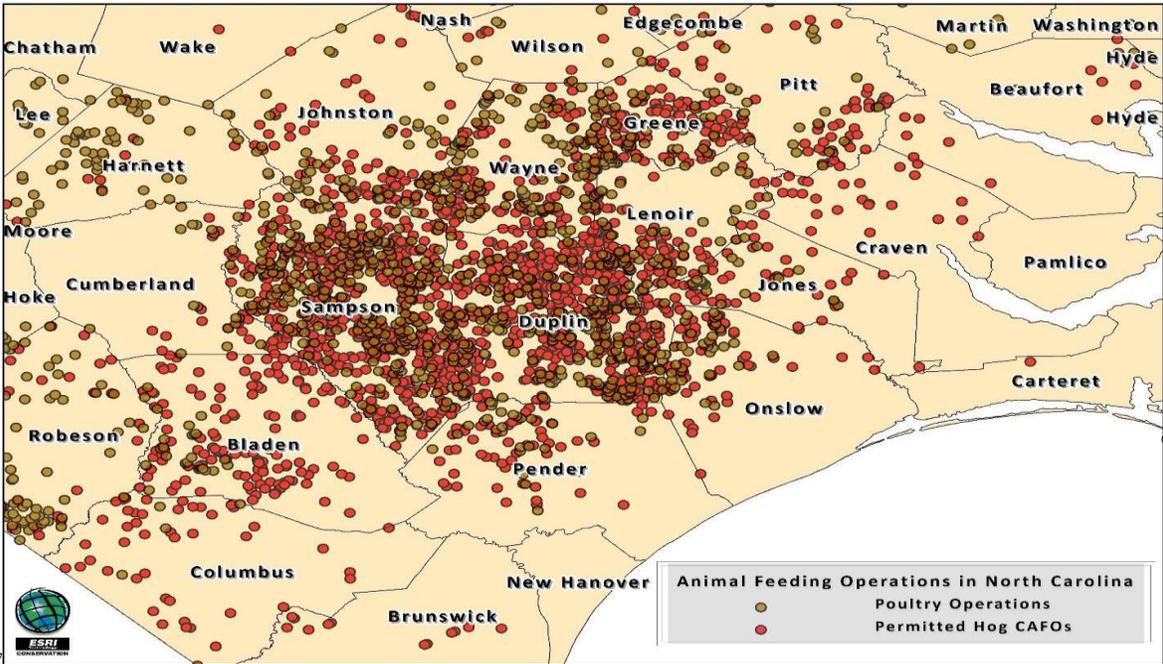
<sup>4</sup> For simplicity’s sake, references in this report to “Smithfield” include Murphy-Brown, LLC.

<sup>5</sup> <http://www.ncglobeconomy.com/hog/corporations.shtml> (citing Prudence Ho and Yvonne Lee, “Smithfield Foods Owner Plans \$5 Billion IPO,” *Wall Street Journal* (Nov. 6, 2013)).

<sup>6</sup> See 2014 Complaint filed with the U.S. Environmental Protection Agency by the NC Environmental Justice Network, the Rural Empowerment Association for Community Help and Waterkeeper Alliance, Inc. (EPA File Number 11R-14-R4. Copies available upon request.

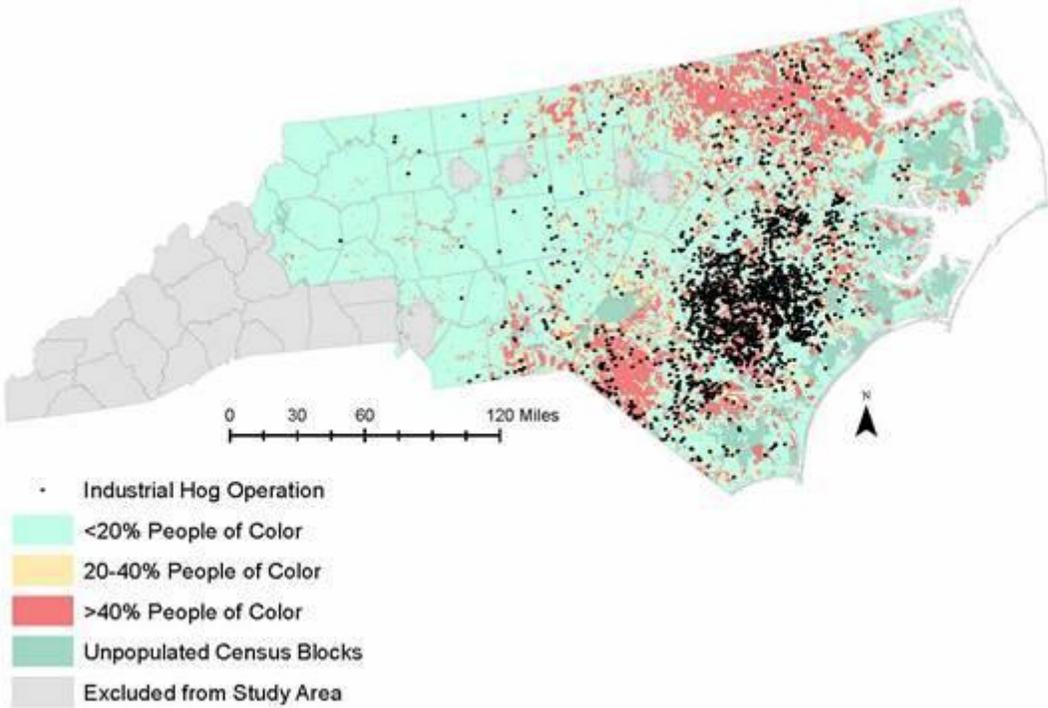
facility locations, but data compiled by the Environmental Working Group (EWG) reveal a striking degree of co-location with IHOs.

**Figure 1. Co-Location of IHOs and Poultry Operations in Eastern North Carolina**



The following map shows the density of industrial hog operations located near communities of color.

**Figure 2. Demographics and Industrial Swine Facilities Operating Under the General Permit, 2014<sup>8</sup>**



<sup>7</sup> Figure 1 courtesy of EWG (<http://ewg.org/>) & Waterkeeper Alliance, Inc. (<http://waterkeeper.org>).

<sup>8</sup> Figure 2 courtesy of EarthJustice (<https://earthjustice.org/>).

The effects of swine and poultry operations on surrounding residents are similar, including but not limited to: the odor from confinement houses and waste disposal sites; flies, buzzards and other disease vectors; large truck traffic carrying live animals, dead animal remains, and waste; contamination from runoff into creeks and other surface and ground waters; and depression of property values.<sup>9</sup> Across the county, residents are left to contend with the impacts of these confined animal feeding operations (CAFOs) on their health, well-being, and the environment.

### **The Development and Operation of Swine CAFOs in North Carolina**

In 1982, more than 11,000 farms in NC raised approximately 2 million animals.<sup>10</sup> By 1997, however, the number of farms had dropped to fewer than 3,000, while the swine population had ballooned to nearly 10 million, primarily raised in industrial-sized CAFOs.<sup>11</sup> Ownership of this enormous inventory of hogs had been concentrated into a handful of corporations—the largest of which was Murphy Family Farms, a company started in the early 1970s by Wendell H. Murphy.



In 1982, Murphy, the nation's largest pork producer and former agriculture industry lobbyist, began his tenure in the North Carolina General Assembly, where he served until 1993. During that period the legislature enacted Session Law 1985-973, exempting livestock operations from the state sales tax; Session Law 1987-813, exempting farms that grow feed for livestock from state property tax; and laws that eliminated the sales tax on hog and poultry houses and related

equipment.<sup>12</sup> During the early 1990s, Senator Murphy was instrumental in passing additional legislation that shielded the swine industry, including measures to strengthen North Carolina's so-called "right-to-farm" law by restricting agricultural operations' exposure to lawsuits by neighbors, removing counties' zoning authority over agricultural operations, and permitting the NC Pork Producers Association to collect a levy to support lobbying activity.<sup>13</sup>

Based on similar intensive operations for poultry, the CAFO model for hog production created two unique environmental issues: waste disposal and the dangerous use of pharma-chemicals. Concentrating large numbers of livestock in buildings requires the use of antibiotics and penicillin to resist disease, which threatens human health and the environment through the transfer of resistant

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<sup>9</sup> See above footnote 6; Complaint Exhibits 6 (Baldwin Declaration); 16 (Hall Declaration); 17 (Herring Declaration); and 30 (Muhammad Declaration).

<sup>10</sup> U.S. Dep't of Agric., Census of Agriculture 30 tbl. 32 (1987), available at <http://usda.mannlib.cornell.edu/usda/AgCensusImages/1987/01/33/3/Table-32.pdf>.

<sup>11</sup> U.S. Dep't of Agric. 1997 Census of Agriculture – Highlights of Agriculture: 1997 and 1992 North Carolina, available at [http://www.agcensus.usda.gov/Publications/1997/Census\\_Highlights/North\\_Carolina/ncst.txt](http://www.agcensus.usda.gov/Publications/1997/Census_Highlights/North_Carolina/ncst.txt).

<sup>12</sup> See N.C. Gen. Stat. § 106-701 (1979, c. 202, s. 1; 1991 (Reg. Sess., 1992)). Under Murphy's guidance in 1982, the General Assembly also exempted feed trucks from the gas tax. See Session Law 1985-656.

<sup>13</sup> *Major CAFO Events*, Ryke Longest, Duke Environmental Law & Policy Clinic. Available upon request.

organisms and associated genes via the food chain.<sup>14</sup> Such dangers led to a call in 1977 for increased federal regulation of the use of these drugs in livestock production; however, despite continued pressures from environmental, public health, and animal rights advocates there has been no increased regulation.<sup>15</sup>

The waste disposal problem of industrial hog operations presents even greater external impacts and is the focus of CAFO-related environmental justice organizing in North Carolina and nationally. Nearly 1,000 animals are packed into the typical “hog house,” where slatted floors allow all waste—feces, urine, feed—to drop into a basin underneath that is periodically flushed through pipes into an open, clay-lined pit outside of the building. The industry refers to these open pits as “lagoons.” A typical operation has three to ten hog houses, a couple of lagoons (each the size of a football field) and generates 4,500 to 15,000 gallons of feces and urine each day.<sup>16</sup> According to State records, there are 508 permitted swine operations in Duplin County.<sup>17</sup> All of them utilize the lagoon system.



Photo of lagoon in Duplin County courtesy of Waterkeeper Alliance, Inc.

The waste in these open pits contains high levels of nitrogen, phosphorus, potassium, calcium, magnesium, and boron, along with metals such as copper and zinc.<sup>18</sup> Anaerobic bacteria work to break down the manure that sinks to the bottom of the pit, producing gases and sludge. The sludge remains and accumulates as a heavy-metal solid, while the gases are released into the air.<sup>19</sup>

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<sup>14</sup> <https://www.sciencedirect.com/science/article/pii/S1369527414000642>.

<sup>15</sup> In 1977, the FDA called for hearings on the use of antibiotics, penicillin and two forms of tetracycline, in livestock production, but never held hearings or took other action. 42 CFR 43772 (August 30, 1977) on penicillin. 42 FR 56264 (October 21, 1977) on tetracycline.

<sup>16</sup> Ryke Longest, *History of Conflicts Between Swine Farmers and Neighbors in North Carolina: The Response of the Law to Conflict, Workshop on Agricultural Air Quality*, at 382 (June 5, 2006).

<sup>17</sup> <https://deq.nc.gov/about/divisions/water-resources/water-resources-permits/wastewater-branch/animal-feeding-operation-permits/>.

<sup>18</sup> Michelle B. Nowlin, Conference on Agriculture and Food Systems: September 28, 2012: *Sustainable Production of Swine: Putting Lipstick on a Pig?*, 37 *Vt. L. Rev.* 1079, 1085.

<sup>19</sup> Longest (2006), above note 16.

The horrible odor brings the most public attention, but as discussed further below, there are many documented public health impacts from IHO air pollution.<sup>20</sup> Scientists also warn of the long-term harms resulting from IHOs' emissions of methane and nitrous oxides-- two greenhouse gases associated with global warming and climate change.<sup>21</sup>

To prevent lagoons from overflowing, liquid waste is pumped from them and applied to surrounding fields, resulting in further release of ammonia and hydrogen sulfide (among other substances) into the air. There are multiple types of land applications that result in varying degrees of odor and drift. Most waste is applied through an irrigation system like the center pivot and boom-type sprayers, which project aerosolized waste into the air and across a wide area, resulting in horrible odor and particulate waste drift that can travel several miles onto surrounding residences and roads.<sup>22</sup> Alternative land application methods that spread the effluent closer to the ground, such as the drag-hose-reel or direct injection, can limit odor and drift.



A boom-styled sprayer applying lagoon effluent to fields beside a public road near Warsaw in Duplin County.<sup>23</sup>

Under regulations which the North Carolina Department of Environmental Quality (DEQ) is charged with enforcing, land application of waste is restricted by the “agronomic rate” at which the crops can absorb the waste’s nutrients and by the land’s ability to accept the additional water. If too much is applied, or applied in rainy conditions, the soil cannot absorb the waste, causing ponding and run off. Crops cannot absorb excess nutrients, which are then lost to groundwater, the soil, or the atmosphere.<sup>24</sup> The DEQ General Permit for Swine Operations (the “General Permit”) prohibits land application of waste during or preceding storms, on saturated fields, or in any manner that would result in ponding or

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<sup>20</sup> For a fuller discussed of that research, including impacts on CAFO workers, see Nowlin article cited at above note 18.

<sup>21</sup> Nowlin, above note 18, at 1086 (citing U.S. EPA, *Greenhouse Gas Emissions: Nitrous Oxide Emissions*, <http://www.epa.gov/climatechange/ghgemissions/gases/n2o.html>). Nitrous oxide has 300 times the global warming potential of carbon dioxide, and methane has approximately twenty times carbon dioxide’s potency of carbon dioxide. “In the US, CAFOs produce approximately 40% of the total reported methane emissions generated by the decomposition of animal manure.” Nowlin at 1091.

<sup>22</sup> Photo courtesy of CBS, available at <http://www.thepigsite.com/articles/1981/overview-of-different-lagoon-effluent-application-methods-on-odor-and-ammonia-emissions/>.

<sup>23</sup> Available at <https://www.cbsnews.com/news/north-carolina-hog-farms-accused-of-putrid-pollution/>.

<sup>24</sup> Longest (2006), above note 16.

runoff.<sup>25</sup> The General Permit also requires permittees to test lagoon waste for concentrations of two nutrients (nitrogen and phosphorus) and two heavy metals (zinc and copper) within 60 days of the start of spraying.

Environmental and community advocates have long decried such “self-monitoring” as insufficient to protect against the inevitable discharge of pollutants. A May 2018 investigation revealed 35 permittees in Eastern North Carolina misled regulators about the content of 55 waste lagoons after spraying had already occurred.<sup>26</sup> Additionally, in June 2018, the State Bureau of Investigation began looking into lagoon sampling records submitted by Billy Houston, a longtime technician with the Duplin County Soil and Water District. While working for the County, Houston had a side business serving area swine operations. This raised concerns about conflict of interest among state regulators as early as 1996.<sup>27</sup> After receiving test records which Houston claimed were collected from 55 lagoons at 35 different swine CAFOs on a single day, DEQ conducted its own sampling and found enormous discrepancies between the data sets.<sup>28</sup> At the time of publication of this report, Houston was preparing to stand trial for 28 felony charges of obtaining property by false pretenses in Duplin County District Court.<sup>29</sup>

### **Available Alternatives to Lagoons and Sprayfields**

Since the mid-1990s, hurricanes and other massive rain events that have flooded parts of Eastern North Carolina have increased public awareness of the dangers and unsustainability of the lagoon system of swine waste disposal. Photos of overflowed lagoons, persistent advocacy by the North Carolina Environmental Justice Network (NCEJN), Waterkeeper Alliance, Southern Environmental Law Center and other organizations, and research showing surface water impacts from CAFOs forced the State to act. In 2007 the General Assembly placed a moratorium on any new swine operations that do not meet or exceed all the following performance standards:

- (1) Eliminate the discharge of animal waste to surface water and groundwater through direct discharge, seepage, or runoff.
- (2) Substantially eliminate atmospheric emission of ammonia.
- (3) Substantially eliminate the emission of odor that is detectable beyond the boundaries of the parcel or tract of land on which the swine farm is located.
- (4) Substantially eliminate the release of disease-transmitting vectors and airborne pathogens.
- (5) Substantially eliminate nutrient and heavy metal contamination of soil and groundwater.<sup>30</sup>

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<sup>25</sup> See Section II of the General Permit, available at <https://files.nc.gov/ncdeq/Water%20Quality/Aquifer%20Protection/AFO/Permits/AWG100000%20Signed%203-7-2014.pdf>.

<sup>26</sup> <https://waterkeeper.org/widespread-fraud-uncovered-in-north-carolina-hog-industry/>.

<sup>27</sup> <http://www.ncpolicywatch.com/2018/06/28/pw-exclusive-25-years-before-sbi-investigation-duplin-county-was-warned-about-billy-houstons-consulting-work/>.

<sup>28</sup> See article at above note 27. DEQ opened its own investigation of Houston in April 2018.

<sup>29</sup> <http://www1.aoc.state.nc.us/www/calendars.Criminal.do?county=300&court=BTH&defendant=Houston&start=0&navindex=0&submit=Search>.

<sup>30</sup> <https://www.ncleg.net/sessions/2007/bills/senate/html/s1465v7.html>.

Notably, existing IHOs were exempted from these new standards, despite the fact that these environmentally superior technologies (“ESTs”) had been identified as part of *The Smithfield Agreement*, a multi-year research study paid for in large part by Smithfield pursuant to a 2000 consent agreement with NC Attorney General (now Governor) Roy Cooper. By 2006, that research had identified five technologies that met all the above EST performance standards.<sup>31</sup>

The 2007 moratorium also included a “Lagoon Conversion Program” (“LCP”) that provided a legislative cost-share incentive for facilities to implement these new technologies. However, less than a dozen of the more than 2,200 industrial hog farms in the state ever applied for the program, only 8 projects were funded, and out of those, only one farm conversion was completed.<sup>32</sup> Even if the program had seen more interest, the legislature never allocated sufficient funds to convert more than a few operations.<sup>33</sup>

### **Public Health and Environmental Impacts of Swine Waste**

Although much of the stench and particulate matter drift is due to the open waste pits, other aspects of IHOs also adversely impact the surrounding communities. The confinement houses, “dead boxes” (where hog carcasses wait for removal to rendering plants), and transport trucks carrying live or dead swine are additional sources of pollutants and respiratory irritants.<sup>34</sup> Epidemiological research conducted in Duplin County shows health impacts on residents from malodors include acute blood pressure increases that could contribute to development of chronic hypertension;<sup>35</sup> wheezing, asthma symptoms and other respiratory conditions; headaches, muscle aches, burning eyes, stress, anxiety and interrupted sleep.<sup>36</sup>

Water pollution is another impact. Runoff from sprayfields, lagoons, and swine-hauling trucks enters surface waters in various ways, from washoff during heavy rain events to routine land application. Heavy rains (such as those from Hurricanes Matthew, Florence and Michael in 2016 and 2018) threaten lagoon levels, resulting in spraying before or after major weather events. Duplin County is in the coastal plain region of the state, where the groundwater table is high, requiring ditching or tile drain methods

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<sup>31</sup> [https://projects.ncsu.edu/cals/waste\\_mgt/smithfield\\_projects/phase3reporto6/pdfs/report%20summary.pdf](https://projects.ncsu.edu/cals/waste_mgt/smithfield_projects/phase3reporto6/pdfs/report%20summary.pdf).

<sup>32</sup> Annual Report to the Environmental Review Commission of the North Carolina General Assembly on the Implementation of the Lagoon Conversion Program, available at <https://www.ncleg.net/documentsites/committees/ERC/ERC%20Reports%20Received/Archives/2015/Department%20of%20Agriculture%20and%20Consumer%20Services/2015-Oct%20Lagoon%20Conv%20Prog%20Rpt.pdf>.

<sup>33</sup> The program had \$2 million in allocated funding and spent \$500-600,000 on completed projects. See Annual Report cited at above note 32.

<sup>34</sup> These include hydrogen sulfide, ammonia, a wide array of volatile organic compounds, and bioaerosols including endotoxins, bacteria, yeasts, molds. Steve Wing and Jill Johnston, *Industrial Hog Operations in North Carolina Disproportionately Impact African-Americans, Hispanics and American Indians* (Oct. 19, 2015)(citing Todd Cole and Steve Wing, *Concentrated swine feeding operations and public health: A review of occupational and community health effects*, 108 *Environmental Health Perspectives* 685-699 (2000) and S. Schiffman, J. Bennett and J. Raymer, *Quantification of odors and odorants from swine operations in North Carolina*, 108 *Agricultural and Forest Meteorology* 213-240 (2001).

<sup>35</sup> Steve Wing, Rachel Avery Horton and Kathryn M. Rose, *Air Pollution from Industrial Swine Operations and Blood Pressure of Neighboring Residents*, 121 *Environmental Health Perspectives* 92 (2013).

<sup>36</sup> Steve Wing, Rachel Avery Horton, Stephen W. Marshall, Kendall Thu, Mansoureh Tajik, Leah Schinasi and Susan S. Schiffman, *Air Pollution and Odor in Communities Near Industrial Swine Operations*, 116 *Environmental Health Perspectives* 1362 (2008).

to allow for waste application and crop harvesting. While designed to limit groundwater contamination, these methods cause other problems. As North Carolina Department of Water Resources staff have noted, they “are direct conveyances for the highly nutrient laden water to reach surface waters” and have significant negative impacts on water quality.<sup>37</sup> The runoff can be devastating to fish and wildlife and have thwarted residents’ recreational use and subsistence fishing traditions.<sup>38</sup>

In 2013, researchers from UNC’s Gillings School of Public Health submitted public comments raising the “large body of evidence documenting the negative health impacts of industrial swine operations,” asking DEQ “to reduce off-site pollution and increase transparency about animal production activities.” They called for modifications to the General Permit to prohibit “1) the management of swine waste using lagoons and spray fields, 2) the non-therapeutic use of antibiotics in livestock production, and 3) the location of animal confinements and animal waste storage in flood plains.” These changes, the researchers said, were “the minimum required to preserve the health and well-being of rural residents near swine operations.”<sup>39</sup>

NCEJN, Waterkeeper Alliance and others also submitted comments urging DEQ to modify the proposed General Permit to comply with Title VI of the Civil Rights Act of 1964. Title VI prohibits recipients of federal funds, such as DEQ, from discriminating on the basis of race or ethnicity. NCEJN and Waterkeeper called on the agency “to assess the racial and ethnic impact of the permitting program” before finalizing the general permit, and to “adopt measures that protect communities from pollution from the swine facilities.”<sup>40</sup>

### **2014 Title VI Complaint**

Despite those comments and the supporting scientific research, the General Permit was renewed in 2014 without addressing any of the environmental, public health or civil rights concerns that had been raised. In response, NCEJN, Waterkeeper and the Rural Empowerment Association for Community Help (REACH, a community advocacy organization based in Duplin with members from several surrounding Eastern NC counties) filed a Title VI complaint against DEQ with the Environmental Protection Agency (EPA). The complaint alleged that the General Permit and DEQ’s oversight of the permitted facilities have a discriminatory impact based on the race and ethnicity of the residents of communities in which these facilities are concentrated, and included an analysis demonstrating that African Americans, Latinos, and Native Americans are respectively 1.4, 1.26, and 2.39 times more likely than non-Hispanic whites to live within 3 miles of one or more industrial swine facilities.<sup>41</sup>

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<sup>37</sup> Final Neuse River Basinwide Water Quality Plan, Ch. 17 (2009), available at <http://portal.ncdenr.org/web/wq/ps/bpu/basin/neuse/2009>.

<sup>38</sup> See Michael A. Mallin & Lawrence B. Cahoon, *Industrialized Animal Production—A Major Source of Nutrient and Microbial Pollution to Aquatic Ecosystems*, 24 *Population & Env’t* 369, 371 (2003).

<sup>39</sup> Comments of Steve Wing, Ginger T. Guidry, Sarah Hatcher, and Jessica Rinsky, on General Permit AWG100000, December 6, 2013 (available upon request).

<sup>40</sup> <http://pulse.ncpolicywatch.org/2018/05/03/environmental-justice-groups-reach-settlement-with-deq-over-federal-complaint-hog-farms/>.

<sup>41</sup> Steve Wing & Jill Johnston, Dep’t of Epidemiology, Univ. of N.C. at Chapel Hill, *Industrial Hog Operations in North Carolina Disproportionately Impact African-Americans, Hispanics and American Indians* (rev. Oct. 19, 2015), submitted to EPA as Complaint Attachment 12. Available upon request.

EPA accepted the complaint for investigation in early 2015. That spring, DEQ and the complainants agreed to participate in EPA's Alternative Dispute Resolution (ADR) process. Following months of preparation, negotiations broke down when the national and state Pork Producers Councils sought to unilaterally intervene in the process. Uninvited and without any notice, five Pork Council representatives arrived at the first mediation session--the very existence of which was supposed to have been confidential. REACH, NCEJN and Waterkeeper Alliance then filed a second complaint, alleging illegal intimidation, retaliation, and interference with the Title VI administrative process. Perhaps most troubling was DEQ's support of the Pork Councils' insistence that they belonged at the table.<sup>42</sup>

Meanwhile, the original Title VI complaint garnered national attention, with a Change.org petition getting close to 100,000 signatures. Meetings between twenty impacted residents, NCEJN, REACH, their counsel, the EPA Office of Civil Rights, other EPA staff, and various legislative staff in Washington, DC in October 2016 brought about a long-requested OCR site visit a month later. Senator Cory Booker also travelled to Duplin County to meet with community organizations and tour the impacted communities. Since the filing of the complaint, North Carolina has re-emerged as the "front line" in the battle for environmental justice, with growing public awareness of industrial agriculture's harmful impacts and unsustainable practices.<sup>43</sup>



Members of REACH, NCEJN and Waterkeeper Alliance in Washington to demand EPA conduct a site visit in Duplin County and investigate the Title VI complaint

The Title VI process came to a head in January 2017, when the EPA issued its first ever "Letter of Concern," warning DEQ of its "deep concern about the possibility that African Americans, Latinos, and Native Americans have been subjected to discrimination as the result of NC DEQ's operation of the Swine Waste General Permit program[...]."<sup>44</sup> The letter led the parties to re-initiate EPA's ADR process,

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<sup>42</sup> See July 11, 2016 Title VI Civil Rights Complaint and Petition for Relief or Sanction by NCEJN, REACH, and Waterkeeper Alliance Against North Carolina DEQ (EPA OCR File No. 11R-14-R4): Intimidation. Available upon request.

<sup>43</sup> The environmental justice movement was born in North Carolina, when African American residents and community organizations in Warrenton, NC, challenged a planned hazardous waste disposal facility in their community. See, e.g., Robert Bullard, *Dumping in Dixie*, Westview Press, Boulder, Co. (1990).

<sup>44</sup> EPA Letter to DEQ available at <http://waterkeeper.org/wp-content/uploads/2017/01/Letter-to-Complainants-in-Case-11R-14-R4-Forwarding-Letter-of-Concern-to-NC-DEQ-1-12-2017.pdf>.

which concluded on May 3, 2018 in a groundbreaking settlement agreement. Only two other such agreements have been reached in EPA's entire history.<sup>45</sup>

The Title VI settlement agreement commits DEQ to implement new policies to ensure compliance with federal civil rights laws. DEQ also committed to improving the process for the 2019 renewal of Swine Operations General Permit, and to strengthening the permit protections for surrounding communities. DEQ committed to increasing public transparency and accountability; conducting increased monitoring of air and water; and developing and piloting an environmental justice mapping tool to examine the concentration of swine facilities and the demographic, environmental, and health status of neighboring communities.

While the agreement is far from perfect, it signifies a new dynamic in the relationship between DEQ and the communities of color that are most severely impacted by policies regarding industrial animal feeding operations. REACH and Waterkeeper Alliance also made significant progress in getting the state agency to accept the data they collect (photos, video and other documentation of potential and actual permit and other regulatory violations) to better monitor and assess the environmental impacts from swine operations.

At the same time the settlement was finalized, DEQ Secretary Michael Reagan established the agency's first Environmental Justice and Equity Advisory Board. The Board consists of public health scientists, academics, and community leaders and advocates from across the state, including NCEJN's Co-Director Naeema Muhammad. The Board's purpose is to work directly with the Secretary and DEQ staff to help "elevate the voices of the underserved and underrepresented," and to advise the agency on how "to provide science-based environmental stewardship for the health and prosperity of all North Carolinians."<sup>46</sup> Current critical questions for this Board include the upcoming General Permit for Swine renewal; the process and timeline for implementation of the Title VI settlement's environmental justice tool; and the development of waste-to-energy projects that also present discriminatory impact concerns discussed at the end of this report.

### **Nuisance Suits & Resulting Legislation Shielding Pork Industry**

In 2013, around 600 residents (nearly all of whom are people of color) living near IHOs noticed their intent to file suit against Smithfield's pork producer subsidiary, Murphy-Brown, LLC, for nuisance created by its operations.<sup>47</sup> Because the plaintiffs recognized the complete control the corporation maintains over every aspect of hog production through its contracts, the claims were *not* brought against the individual local growers. The plaintiffs sought damages for the "anger, embarrassment, discomfort, annoyance, inconvenience, decreased quality of life, deprivation of opportunity to continue to develop properties," and "physical and mental discomfort and reasonable fear of disease and adverse

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<sup>45</sup> <https://www.scalawagmagazine.org/2018/09/hog-industry-pollution-pt2/>.

<sup>46</sup> <https://deq.nc.gov/news/press-releases/2018/05/02/deq-announces-creation-secretary%E2%80%99s-environmental-justice-equity-board>.

<sup>47</sup> See Cordon M. Smart, *The "Right to Commit Nuisance" in North Carolina: A Historical Analysis of the Right-to-Farm Act*, 94 N.C. L. REV. 2097, 2101-02 (2016). North Carolina's "Right to Farm" Act is codified at N.C. Gen. Stat. § 106-701 *et seq.*

health effects” caused by the horrible odors, flies, buzzards, truck traffic, and other impacts flowing from the operations.<sup>48</sup>

Within weeks of that notice, the General Assembly amended North Carolina’s Right to Farm Act (“RTFA”) to further limit the ability to sue agricultural operations for nuisance. The RTFA already provided operations with a defense where the plaintiff “came to the nuisance,” i.e., acquired or moved to the property after the agricultural operations were established. The 2013 amendments established that a change in ownership or size, or in the type of operation or product was not a “fundamental change” that could subject a pre-existing farm to liability, thereby protecting from nuisance liability agricultural operations that transitioned to industrial hog operations.

In 2014, the nuisance suits were moved to federal district court in Raleigh. When it became clear in 2015 that the cases would go to trial, Smithfield’s lawyers sought to limit the damages that could be recovered. But the court allowed the plaintiffs to proceed to have all their claims for damages heard—including damages for annoyance and reasonable fear of disease and adverse health effects.<sup>49</sup>

**HB 467:** In 2017, while Smithfield’s motions to dismiss the nuisance cases were pending, the General Assembly moved to accomplish legislatively what Smithfield’s lawyers had failed to do in court: limit the total compensatory damages that can ever be awarded in a nuisance action against agricultural or forestry operations. House Bill 467, sponsored by Duplin County legislator Rep. Jimmy Dixon, restricted nuisance damages to the diminution of property value.<sup>50</sup> Advocates and impacted community members, including NCEJN, REACH, Waterkeeper Alliance and the North Carolina Conservation Network (NCCN) wrote and called legislators and spoke in both House and Senate committee meetings against the bill. They pointed to the then-pending Title VI complaint’s substantial showing of industrial hog production’s racially discriminatory impacts; the fact that the nuisance remedy was one of the few remaining ways to hold the pork industry accountable; and the available, less-discriminatory alternative technologies that should replace the lagoons and sprayfield system.

In an early committee hearing, Rep. Amos Quick expressed concern that the bill would have “discriminatory impact, because the plaintiffs are predominately African-American,” lamenting that “there are people being impacted by these facilities” and pointing out that “capping the redress that they can receive is unfair towards those property owners.”<sup>51</sup> In a subsequent hearing, Jamie Cole, policy advocate with the NCCN, described the disproportionate impacts of hog farms on people of color. After a hog grower under contract with Smithfield expressed fear that he would be sued for nuisance, Duke Environmental Law and Policy Clinic professor Michelle Nowlin pointed out that it was Smithfield and not the individual contract growers being sued. She also noted that Smithfield could easily afford the technological innovations that would greatly reduce the odors and pollution that caused much of the nuisance.<sup>52</sup>

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<sup>48</sup> See Smart, above note 47, at 2101, and Request for Prelitigation Mediation of Farm Nuisance Dispute, Exhibit B, *Blanks v. Smithfield Foods, Inc.*, No. 13-R-685 (N.C. Super. Ct. July 3, 2013).

<sup>49</sup> *In re: NC Swine Farm Nuisance Litigation*, No. 5:15-CV-13-BR, Order Denying Motion to Dismiss 1 (Jun 24, 2015).

<sup>50</sup> <https://www.ncleg.net/Applications/BillLookup/LoadBillDocument.aspx?SessionCode=2017&DocNum=1904&SeqNum=0>.

<sup>51</sup> Hearing Before the H. Judiciary Comm. III, Gen. Assem. Sess. 2017, 2:10-15, (Apr. 5, 2017).

<sup>52</sup> Hearing Before the S. Ag. Comm. On Ag/Environment/Natural Resources, Gen. Assem. Sess. 2017, (Apr. 25, 2017).

In addition to the environmental issues raised during the debate on the bill, the bill was also criticized as an attempt to interfere with the existing nuisance litigation. HB 467 passed only after it was amended to make clear that it would only apply to cases filed after it became effective. Governor Roy Cooper vetoed the bill, stating that “[s]pecial protection for one industry opens the door to weakening our nuisance laws in other areas which can allow real harm to homeowners, the environment and everyday North Carolinians.”<sup>53</sup> With Republican super-majorities in both houses however, the veto was overridden and HB 467 became law on May 11, 2017.

**SB 711:** During the first set of nuisance trials in spring 2018, plaintiffs introduced evidence of alternative technologies which would greatly reduce the odor and other pollution that was the primary source of the nuisance.<sup>54</sup> And although Smithfield (as well as NC’s Commissioner of Agriculture Steve Troxler) continue to claim that there are no “economically feasible” alternatives to the lagoon and sprayfield system,<sup>55</sup> the Smithfield Agreement’s researcher designee, Dr. C.M. “Mike” Williams, recently indicated that although ESTs are more expensive than the lagoon and sprayfield system, the transition will bring “reduced social and environmental impacts; and long-term sustainability of this economically important food production industry in North Carolina.”<sup>56</sup>

The first trial ended with a jury verdict of \$51 million against Smithfield for its “substantial interference with the plaintiffs’ rights to use and enjoy their property.”<sup>57</sup> Twenty days later, Senator Brent Jackson introduced Senate Bill 711, which would make it nearly impossible to hold hog operations liable for nuisance.<sup>58</sup> Both Sen. Jackson and Rep. Dixon, the bill’s co-sponsor in the House, have received substantial financial support from pork industry representatives.<sup>59</sup>

Amidst an intensive pork industry lobbying campaign, the bill had few vocal opponents. Its sponsors urged that the ongoing suits against Smithfield made it necessary to “protect all farming operations from frivolous lawsuits.”<sup>60</sup> But Rep. John Blust warned against “taking sides in a [legal] dispute,” pointing out that the bill was really meant to protect “one giant corporation” from suit.<sup>61</sup>

Just as they had done with respect to HB 467, impacted community members and advocates fought hard against SB 711. Despite their grassroots efforts, local elected officials uniformly supported industry. Duplin County Commissioner Doug Grady and Mayor Charles Farris of Wallace both spoke in favor of

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<sup>53</sup> <https://governor.nc.gov/news/governor-cooper-vetoes-hb-467-signs-senate-bill-131>.

<sup>54</sup> Copies of relevant portions of trial transcripts and exhibits available upon request.

<sup>55</sup> Commissioner Troxler said “We’ve not found one that is cost-effective. We don’t think there is anything better.” <http://pulse.ncpolicywatch.org/2018/08/06/fact-checking-the-allegations-lodged-about-hog-farms-at-the-national-ag-leaders-roundtable/>.

<sup>56</sup> Dr. Williams also called for the State to incentivize the transition to ESTs which would help further reduce costs. <https://www.newsobserver.com/opinion/letters-to-the-editor/article213378904.html>.

<sup>57</sup> <https://www.farmfutures.com/commentary/smithfield-loses-50-million-lawsuit>; [https://p.indyweek.com/media/pdf/plaintiff\\_brief.pdf](https://p.indyweek.com/media/pdf/plaintiff_brief.pdf).

<sup>58</sup> <https://www.meatpoultry.com/articles/19714-industry-responds-to-recent-verdict-against-smithfield>.

<sup>59</sup> See campaign finance disclosures at <https://cf.ncsbe.gov/CFOrgLkup/DocumentGeneralResult/?SID=STA-O2H9oZ-C-001&OGID=18214> (Dixon) and <https://cf.ncsbe.gov/CFOrgLkup/DocumentGeneralResult/?SID=STA-Co8o8N-C-002&OGID=17228> (Jackson).

<sup>60</sup> See Sen. Jackson’s quotes at <https://www.northcarolinahealthnews.org/2018/06/07/nuisance-lawsuits/>.

<sup>61</sup> See recording from June 14, 2018 House floor debate. Available upon request.

the bill in legislative committee hearings.<sup>62</sup> The Duplin County Board of Commissioners and the Duplin County towns of Wallace, Kenansville, Warsaw, Rose Hill, Beulaville, and Harrells all passed resolutions in support of SB 711's restrictions on the rights of hog operation neighbors.<sup>63</sup> Smithfield brought hundreds of contract growers and employees to Raleigh to support the legislation, which they characterized as the "family farmers" answer to the nuisance suits.<sup>64</sup> This messaging ignored the fact that the suits were not against the growers, but against a multinational, multibillion dollar corporation, as well as the fact that following the verdict, it was Smithfield's decision to unilaterally end its contracts with the local growers, forcing them out of business.<sup>65</sup>



Community members from Duplin and other impacted communities hold a press conference at the legislature in opposition to SB 711

SB 711 became law over the Governor's veto. It prohibits nuisance lawsuits against an agricultural operation unless: (1) the plaintiff is the legal possessor of the injured property; (2) the injured property is within one half mile of the agricultural operation; and (3) the operation is less than a year old or undergoes a "fundamental change."<sup>66</sup> Despite the repeated claims by industry and legislators that the defendant farms in the nuisance suits were "comply[ing] fully with all laws and regulations,"<sup>67</sup> SB 711 extends the protection from nuisance liability to include agricultural entities that operate negligently or improperly. Finally, in the rare nuisance case that can be brought, SB 711 prohibits the recovery of punitive damages unless there has been criminal or civil enforcement action "taken pursuant to a notice of violation for the conduct alleged to be the source of the nuisance."<sup>68</sup> In light of DEQ's historic enforcement and oversight failures regarding industrial hog operations, this change is also troubling.

<sup>62</sup> Anne Blythe, "Think the hog farm next door stinks? Lawmakers limit neighbors from making a big stink in court." News & Observer, 6/16/18, <https://www.newsobserver.com/news/politics-government/article213046124.html#storylink=cpy>.

<sup>63</sup> <http://www.ncpork.org/wp-content/uploads/2018/06/Resolved.pdf>.

<sup>64</sup> <https://www.wral.com/group-rallies-in-support-of-agriculture-in-nc/17654403/>.

<sup>65</sup> <https://www.wral.com/smithfield-removing-hogs-from-farms-involved-in-court-losses/17760583/>.

<sup>66</sup> SB 711 incorporates the 2013 definition of "fundamental change" that excludes a change in ownership, size, technology, or product. <https://www.ncleg.net/Sessions/2017/Bills/Senate/PDF/S711v8.pdf>.

<sup>67</sup> <https://www.meatpoultry.com/articles/19714-industry-responds-to-recent-verdict-against-smithfield>.

<sup>68</sup> See N.C. Gen. Stat. 106-702 (a1).

**More Verdicts, More Industry Pushback:** The second jury verdict--\$25 million—came just days after the passage of SB711. Pork industry leaders declared a state of emergency, saying the suits “set a dangerous precedent for American livestock agriculture,” and decrying the plaintiffs’ claims as “unwarranted.”<sup>69</sup> Sen. Jackson, Rep. Dixon, Lt. Governor Dan Forest and Commissioner Troxler convened a rally in Duplin County where they accused “out of state lawyers” of ginning up the lawsuits. Dixon’s statements that the “hog houses existed when [plaintiffs] came here,” and that “folks were very happy and good neighbors until some out-of-state folks, combined with some in-state lawyers...came over and recruited” them with promises of financial awards were sharply contradicted by the evidence presented at trial.<sup>70</sup> Tensions between neighbors mounted as yard-signs produced by the Pork Council sprung up throughout Duplin County defending the industry and attacking residents.



This political reaction took on a national character when N.C. Congressman David Rouzer, Chairman of the House Subcommittee on Livestock and Foreign Agriculture, and Commissioner Troxler convened a “National Agriculture Leaders Roundtable” at the N.C. State fairgrounds on August 2, 2018 to decry the verdicts and call for a national legislative response.<sup>71</sup> Although with less than 24 hours public notice, the event featured over a dozen national players, including Michael Conaway, Chair of the U.S. House Committee on Agriculture; U.S. Department of Agriculture Under Secretary for Farm Production and Conservation Bill Northey; Zippy Duvall, president of the American Farm Bureau Federation; and Sen. Thom Tillis (one of whose main campaign contributors is McGuireWoods, the firm defending Smithfield in the nuisance suits).<sup>72</sup> In the middle of this “roundtable,” Tillis announced that the jury had returned a \$473 million verdict against Smithfield in the third nuisance case.<sup>73</sup>

<sup>69</sup> <https://www.porkbusiness.com/article/another-smithfield-hog-farm-found-guilty-jury>

<sup>70</sup> [https://www.facebook.com/northcarolinafarmbureau/videos/10155778587203333/?hc\\_ref=ARQEq7P5uUass8GK8gpZ6RcfnTCGumsh19473Kqc-enKIWylGjim7NyXdrHs4yyJDw](https://www.facebook.com/northcarolinafarmbureau/videos/10155778587203333/?hc_ref=ARQEq7P5uUass8GK8gpZ6RcfnTCGumsh19473Kqc-enKIWylGjim7NyXdrHs4yyJDw) (at 6:30 through 7:37). Copies of relevant portions of trial transcripts available upon request.

<sup>71</sup> <http://ncsoy.org/article/national-ag-leaders-roundtable/>.

<sup>72</sup> <http://pulse.ncpolicywatch.org/2018/08/06/fact-checking-the-allegations-lodged-about-hog-farms-at-the-national-ag-leaders-roundtable/>.

<sup>73</sup> Because N.C.G.S. §1D-25 caps punitive damages to three times the compensatory damages or \$250,000, whichever is greater, the three verdicts will be reduced to \$630K, \$3.2M, and \$118M respectively.

Two days later, REACH and NCEJN held a press conference in Duplin County.<sup>74</sup> Residents spoke plainly about the effects of industrial hog operations in their communities and the need for technological innovations to provide some relief from the pollution of their air and water. Duplin County NAACP branch president Robert Moore and REACH founding co-director Devon Hall spoke of the need to reject the divisive tactics deployed by Smithfield. They committed to work towards unity among local growers and neighboring residents. Da’Quan Love, the challenger running against Rep. Dixon, also called for unity, for technological innovations that would benefit neighbors and the environment and for legislative support for contract growers. At least one contract grower and a Smithfield worker attended the press conference, and while there was some tension in their questions, Devon Hall noted that an important community dialogue had begun that REACH intends to continue.

Several days after the press conference, Rep. Dixon reached out to the Duplin NAACP and suggested they meet to discuss the issues. Mr. Moore and REACH leaders agreed, hoping to facilitate a strategy to ensure their communities have clean air and water and the full use and enjoyment of their homes while promoting economic security for local growers. Regrettably, they received no further communication from Rep. Dixon.



Press conference at REACH office calling for unity on August 4, 2018

## New Challenges

**Waste-to-Energy Biogas: Greenwashing Unsustainable and Discriminatory Systems?** In 2007, North Carolina adopted the “Renewable Energy Portfolio Standard.”<sup>75</sup> Implementation of the law’s requirement that increasing percentages of the renewable energy come from swine waste has been repeatedly delayed, but over the past three years, there have been renewed efforts to push “biogas” projects through partnerships between Duke Energy, Duke University, Google and engineering companies working with pork producers.<sup>76</sup> Those projects focus on directed biogas, in which methane gas is captured on-site, then moved through in-ground pipes to a central location for conditioning and

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<sup>74</sup> <http://www.ncejn.org/>.

<sup>75</sup> <https://www.ncleg.net/Sessions/2007/Bills/Senate/PDF/S3v6.pdf>. N.C.G.S. 62-133.8 (e) requires that electric companies generate relatively small minimum portion-- 0.2% in 2018—of renewable energy from swine waste.

<sup>76</sup> <https://www.newsobserver.com/news/local/counties/durham-county/article205547394.html>.

injection into natural gas pipelines for distribution. Smithfield recently announced plans to convert 82% of its finishing farms to biogas production.<sup>77</sup>

Although covering lagoons to capture methane may reduce greenhouse gas emissions from lagoons, without a nitrification/denitrification component, these systems may actually increase the nitrogen content left in the effluent, which is then land-applied. Unless they are made to comply with the EST performance standards identified in G.S. 143-215.101, directed biogas technologies threaten to increase the likelihood of nutrient contamination of soil and groundwater as well as the atmospheric emission of ammonia. The projects also further incentivize the continued concentration of hogs in vulnerable communities, burdening those residents without any accompanying benefit. REACH members living near the Optima KV directed biogas project near Kenansville in Duplin County complain of the odors from the plant, which currently receives waste from five hog operations.

In June 2018, the NC Utility Commission voted to suspend for three years new biogas projects that would be injecting gas into a pipeline until injection standards are determined as required by a 2017.<sup>78</sup> The NC Pork Council responded with a motion asking the Commission to reconsider its decision, which the Commission denied.<sup>79</sup> Community advocates are calling on state leaders to require that waste-to-energy projects comply with EST performance criteria and include host community benefit agreements.

**Hurricane Florence:** Since making landfall in North Carolina on September 14, 2018, Hurricane Florence has been linked to the deaths of 39 North Carolinians. Many more suffer severely damaged or completely demolished homes.<sup>80</sup> Florence's destruction to agricultural operations was substantial: when this report went to press, 3.4 million chickens and turkeys and 5,500 hogs (double the animal casualties from Hurricane Matthew in 2016) had been reported killed. Environmental and public health impacts from flooding of coal ash and swine waste storage pits had yet to be fully determined.<sup>81</sup> Legislative budget cuts left DEQ insufficiently resourced to conduct adequate inspections and testing, and the agency continues to largely rely on permitted operations' self-reporting.<sup>82</sup> DEQ reported "structural damage" to 5 lagoons at 5 different swine facilities, discharge or "overtopping" of 32 lagoons at 27 facilities, "inundation" (surface water surrounding and flowing into the lagoon) of 9 lagoons at 7 different facilities and overtopping of an additional 56 lagoons at 46 facilities likely.<sup>83</sup>

Such storm events, which are becoming more frequent due to climate change, make the unsustainability of the lagoon and sprayfield system of swine waste disposal painfully apparent.<sup>84</sup> Community organizations and advocates have called on state leaders, including lawmakers, the

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<sup>77</sup> See page 19 of Smithfield's report, available at [https://www.smithfieldfoods.com/pdf/past-reports/smi\\_csr\\_11.pdf](https://www.smithfieldfoods.com/pdf/past-reports/smi_csr_11.pdf).

<sup>78</sup> Injection standards mandate is in Section 7 of Part VII of HB 589 (2017), amending G.S. 62-133.8(i)(4). Available at <https://www.ncleg.net/Sessions/2017/Bills/House/PDF/H589v6.pdf>. For more about Utility Commission vote, see <https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=730fd7d2-3481-4f98-ac2a-24df2593950a>.

<sup>79</sup> <https://energynews.us/2018/08/09/southeast/north-carolina-pork-industry-appeals-order-suspending-new-biogas-projects/>. See p 8 of NCUC decision denying motion, available here: <https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=2ec388a9-4f96-4e43-9d76-8565a99453bf>.

<sup>80</sup> <https://abc11.com/weather/hurricane-florence-death-toll-now-at-39-in-north-carolina/4244283/>.

<sup>81</sup> <https://www.newsobserver.com/news/local/article218610365.html>.

<sup>82</sup> <https://www.nytimes.com/2018/09/19/climate/florence-hog-farms.html>.

<sup>83</sup> <https://deq.nc.gov/news/deq-dashboard#animal-operations---swine-lagoon-facilities>.

<sup>84</sup> <http://blogs.harvard.edu/billofhealth/2018/10/02/hurricane-florence-and-the-health-effects-of-climate-change/>.

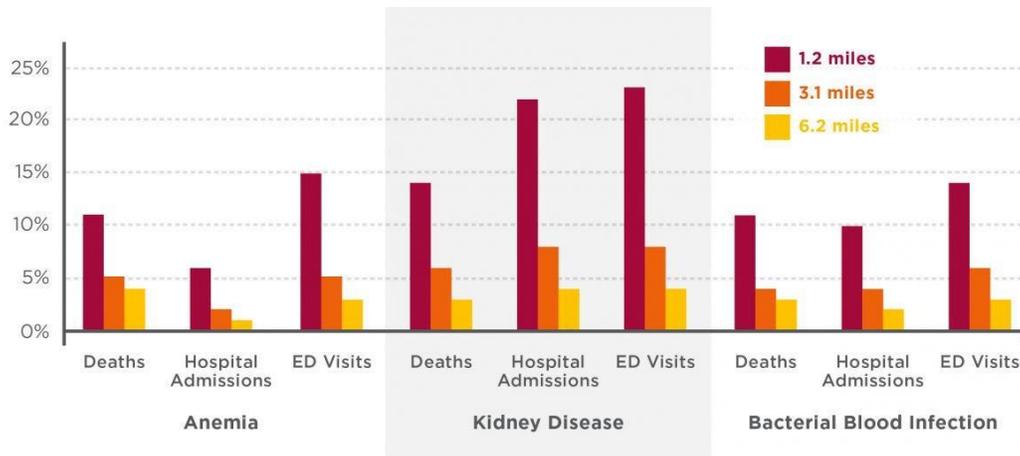
Governor and DEQ's Secretary, to seize this opportunity to push through long-awaited changes: 1) Make permit renewals to the 200 lagoon-reliant facilities located in the floodplains contingent on replacing lagoons with ESTs; 2) Require, as significantly damaged swine CAFOs are rebuilt, that they move to ESTs; and 2) Require permitting and regulatory oversight of large-scale poultry operations.



Hog lagoon breach near Stockinghead Creek in Duplin County days after Hurricane Florence. Photo courtesy of Waterkeeper Alliance, Inc.

**New Research on Health Impacts:** In September 2018, the North Carolina Medical Journal published research documenting the increased risk of serious health conditions suffered by residents living near IHOs.<sup>85</sup> The study compared communities with the highest concentration of hog operations to those without such operations (but similar in all other respects) and found there were 30% more deaths among patients with kidney disease, 50% more deaths among patients with anemia, and 130% more deaths among patients with a blood bacterial infection in communities near concentrated hog operations. These communities also experience greater risk of infant mortality and lower birth weights.

**Figure 3. Increased Health Risks and Proximity to Hog Farms<sup>86</sup>**



<sup>85</sup> Kravchenko, J. et al, *Mortality and Health Outcomes in North Carolina Communities Located in Close Proximity to Hog Concentrated Animal Feeding Operations*, North Carolina Medical Journal September-October 2018 vol. 79 no. 5 278-288.

<sup>86</sup> Figure 3 from *Kravchenko et al*, above note 84, available at <https://www.ewg.org/news-and-analysis/2018/09/duke-university-study-nc-residents-living-near-large-hog-farms-have#.W6lOqxFRfIU>.

The study also reiterates what UNC’s public health scientists warned DEQ about almost 20 years ago: that “a review of state and federal records shows that North Carolina's swine CAFOs are disproportionately located in low-income communities of color,” and that those populations “are more susceptible to CAFO pollution because of older housing, less access to air conditioning, increased exposures to other environmental and occupational hazards, higher prevalence of medical conditions that can be exacerbated by exposure to CAFO pollution, and inadequate access to medical services.”<sup>87</sup>

## **Conclusion**

The concentration of CAFOs in low-wealth neighborhoods and communities of color in Duplin County is the most critical environmental justice issue facing residents of those communities. Individual grassroots advocates, community-based organizations, and regional and national environmental and social justice groups are committed to working together to develop a multi-faceted strategy to end the lagoon and sprayfield system. Our strategy has included community education, public participation in state administrative processes, legislative advocacy, and legal challenges like the nuisance litigation and the Title VI complaint.

While all these measures have achieved some measures of success, advocates continue to face challenges in relying on the EPA or the State to address the environmental and social justice impacts of industrial agriculture. Nevertheless, residents and advocates remain committed to securing the end of this inequitable and unsustainable system. We are hopeful that in the wake of the nuisance verdicts, Hurricane Florence, and the growing body of scientific research on the related public health problems, the State will finally hold the industry accountable to replace this system completely with environmentally superior technologies.

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<sup>87</sup> Kravchenko, above note 84 (citing S. Wing, D. Cole, and G. Grant, II, *Environmental Injustice in North Carolina's Hog Industry*, *Environ Health Perspect.* 108, no. 3 (2000)).