

**From Factory to Table:
Recent Developments in the Stinky Business of North Carolina’s Hog Industry**

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I. Introduction

The trend toward consolidation, simplification, and specialization has changed American agriculture.¹ Diversified, independent, family-owned farms are being replaced by large industrial farming operations.² These new farming operations aim to produce more in less space, use cost-efficient feed, and replace labor with technology to the extent possible.³ This paper will provide a general overview of concentrated animal feeding operations (“CAFOs”). Specifically, it will examine the presence of swine CAFOs in North Carolina, including their history, regulation, and recent controversy.

II. Background

The Environmental Protection Agency (“EPA”) defines a concentrated animal feeding operation as a type of animal feeding operation (“AFO”) that confines animals on site for more than forty-five days during the year.⁴ An AFO is an agricultural facility in which animals are kept and raised in a confined situation.⁵ Rather than graze freely in pastures, fields, or on rangelands, animals receive feed in their confined space inside the AFO.⁶ This modern farming method allows farmers to maximize efficiencies and increase production.⁷ By confining animals,

¹ Jeffrey T. Olson, PEW COMMISSION ON INDUSTRIAL FARM ANIMAL PRODUCTION, *Putting Meat on the Table: Industrial Farm Animal Production in America*, Pew Charitable Trusts & Johns Hopkins Bloomberg School of Medicine, 5, http://www.ncifap.org/_images/pcifapfin.pdf (last visited Oct. 10, 2015).

² *Id.* at 3.

³ *Id.* at 5.

⁴ USDA, *Animal Feeding Operations*, <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/plants/animals/livestock/afo/> (last visited Oct. 10, 2015).

⁵ *Id.*

⁶ *Id.*

⁷ Olson, *supra* note 1, at 5.

farmers are able to raise a larger quantity of livestock in less space.⁸ Farms also utilize standardized feed that allows for rapid weight gain to decrease the time necessary to raise an animal for market.⁹ Similarly, technology has standardized the process of tending to animals.¹⁰ Many of the tasks traditionally associated with animal husbandry such as feeding and watering are now performed by machines.¹¹ Since 1960, milk production has doubled; meat production has tripled; and egg production has increased fourfold.¹² This increase in supply has translated into cheaper prices for consumers, but is not without drawbacks.¹³

Due to the industrial scale of the operations, CAFOs generate hundreds of millions of manure annually.¹⁴ Animal waste is funneled by scrapers, flushing systems, or gravity flow gutters into massive waste lagoons, or open-air pits.¹⁵ The manure contains a number of potentially harmful pollutants which include: (1) nitrogen and phosphorus; (2) organic matter; (3) solids, including the manure itself and other elements mixed with it such as spilled feed, bedding and litter materials, hair, feathers and animal corpses; (4) pathogens (disease-causing organisms such as bacteria and viruses); (5) salts; (6) trace elements such as arsenic; (7) odorous/volatile compounds such as carbon dioxide, methane, hydrogen sulfide, and ammonia; (8) antibiotics; and (9) pesticides and hormones.¹⁶ As a means of disposal, farms often spray the manure from the lagoons onto the land as fertilizer.¹⁷ While manure can serve as an effective

⁸ *Id.* at 2.

⁹ *Id.*

¹⁰ *Id.*

¹¹ *Id.*

¹² *Id.* at 5.

¹³ *Id.* at 5.

¹⁴ Ryan Alan Mohr, Case Note, *Waterkeeper Alliance v. EPA: A Demonstration in Regulating the Regulators*, 10 GREAT PLAINS NAT. RESOURCES J. 17 (2006).

¹⁵ Natural Resources Defense Council, *Pollution from Giant Livestock Farms Threatens Public Health*, <http://www.nrdc.org/water/pollution/nspills.asp> (last updated Feb. 21, 2013).

¹⁶ EPA, 66 Fed. Reg. 2960, 2976-79 (proposed Jan. 12, 2001).

¹⁷ Natural Resources Defense Council, *supra* note 15.

fertilizer, over application or improper application, such as spraying on frozen land causing runoff, can lead to adverse environmental and health impacts.¹⁸

Mismanagement of manure transport or storage can affect ground and surface water quality.¹⁹ Sudden contamination can occur when a lagoon ruptures or pollution can occur cumulatively through runoff or spill overs.²⁰ Such occurrences can contaminate drinking water and cause algal growth which chokes off oxygen for fish.²¹ Additionally, the decomposition of fecal matter produces harmful gases such as Hydrogen Sulfide that can adversely affect the health of workers and nearby residents.²² Not only do lagoons emit a powerful stench, but a growing body of research links CAFO emissions to mucosal irritation and respiratory ailments.²³ Living in close proximity of a CAFO can decrease quality of life, increase mental stress, and even lead to elevated blood pressure.²⁴

III. Brief History of Swine CAFOs in North Carolina

The rapid growth of swine CAFOs in North Carolina can be traced back to Wendell Murphy who first applied the CAFO model to the production of swine.²⁵ Previously, the CAFO model had only been applied to poultry production.²⁶ After serving in the N.C. House of Representatives, Murphy was elected to the state Senate in 1988 where he sponsored (and passed) legislation that eliminated sales tax on hog farm equipment and prevented local

¹⁸ CARRIE HRIBAR, NAT'L ASS'N OF LOCAL BOARDS OF HEALTH, UNDERSTANDING CONCENTRATED ANIMAL FEEDING OPERATIONS 2-3 (Mark Shultz ed., 2010), http://www.cdc.gov/nceh/ehs/docs/understanding_cafos_nalboh.pdf.

¹⁹ *Id.*

²⁰ Natural Resources Defense Council, *supra* note 15.

²¹ Warren A. Braunig, Note, *Reflexive Law Solutions for Factory Farm Pollution*, 80 N.Y.U. L. REV. 1505, 1510 (2005).

²² Natural Resources Defense Council, *supra* note 15.

²³ Wendee Nicole, *CAFOs and Environmental Justice*, 121 ENVIRON. HEALTH PERSPECT. 6, A187 (2013), <http://ehp.niehs.nih.gov/wp-content/uploads/121/6/ehp.121-a182.pdf>.

²⁴ *Id.*

²⁵ *Id.*

²⁶ *Id.*

authorities from using zoning authority to deal with odor issues.²⁷ Between 1991 and 1998, the number of swine in North Carolina increased from 3.7 million to over 10 million, making North Carolina the second leading state in U.S. pork production.²⁸ Today, North Carolina remains the second largest swine producer in the nation with 2,100 farms producing close to 10 million hogs a year.²⁹

Swine CAFOs are located disproportionately in the eastern half of the state along the “Black Belt,” an area characterized by its history of plantation slavery.³⁰ After Emancipation, many freed slaves remained in the area to work as sharecroppers and tenant farmers.³¹ Current minority residents of this area face high poverty rates, poor health care, low educational attainment, unemployment, and substandard housing.³² Residents and advocates raised environmental justice concerns due to the clustering of CAFOs in these low-income minority communities.³³ The concentrated presence of CAFOs poses environmental, health, and economic risks. In Eastern North Carolina, water tables are high and many wells are shallow and unlined.³⁴ Residents who rely on well water are especially at-risk of illnesses caused by ground water contamination.³⁵ These same residents may not have access to adequate medical care.³⁶ Not only do CAFOs threaten the well-being of the land and population, but their dominance in the region

²⁷ *Id.*

²⁸ Christopher D. Heaney, et. al., *Source Tracking Swine Fecal Waste in Surface Water Proximal to Swine Concentrated Animal Feeding Operations*, 511 SCI. TOTAL ENVIRON. 676, 676-83 (2015), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4514616/pdf/nihms708856.pdf>.

²⁹ Bruce Henderson, *EPA to Probe Whether N.C. Hog Farms Violate Neighbor’s Rights*, CHARLOTTE OBSERVER, Feb. 26, 2015, <http://www.charlotteobserver.com/news/local/article11206091.html>.

³⁰ Nicole, *supra* note 23, at A183.

³¹ *Id.*

³² *Id.*

³³ *Id.*

³⁴ Steve Wing, Dana Cole & Gary Grant, *Environmental Injustice in North Carolina’s Hog Industry*, 108 ENVIRON. HEALTH PERSPECT. 225, 230 (2000), <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1637958/pdf/envhper00304-0081.pdf>.

³⁵ *Id.*

³⁶ *Id.*

deters new economic development while depreciating the value of neighboring property.³⁷ The disparate impact of the \$2.5 billion hog industry on a subset of the state's population is no new controversy.³⁸

IV. Recent Studies

The North Carolina Division of Water Resources ("DWR") partnered with the U.S. Geologic Survey ("USGS") to design and implement a study of nitrogen profiles in watersheds adjacent to animal operations in Eastern North Carolina.³⁹ USGS scientists collected water samples from agricultural sites in the Coastal Plain area to assess water quality differences among streams draining watersheds with and without nearby CAFOs.⁴⁰ The samples were taken six times between June 2012 and April 2013 from fifty-four watersheds that included no CAFOs; swine CAFOs; and both swine and poultry CAFOs.⁴¹ Researchers found that 58 percent of the watersheds containing CAFOs had distinct differences in water quality reflecting swine and/or poultry manure effects. USGS hydrologist and lead author of the study Stephen Harden stated that "overall the study showed that the agricultural fields treated with animal manures at swine CAFOs influenced water quality parameters in many, but not all, of the streams that were studied."⁴² Environmental variations between the sample sites influenced whether or not the effects of swine CAFOs on stream quality were evident.⁴³ Watersheds with swine and/or poultry CAFOs had higher median concentrations of nutrients such as nitrogen. Nutrient surpluses in

³⁷ *Id.*

³⁸ Bruce Henderson, *NC Hog Farm Neighbors Seek Court Help to Stop the Stink*, CHARLOTTE OBSERVER, Jan. 1, 2015, <http://www.charlotteobserver.com/news/local/article9251771.html#.VO3zQPnF8p8>

³⁹ NC DEP'T OF ENVTL. QUALITY, DIV. OF WATER RES., FACTS ABOUT NORTH CAROLINA'S ANIMAL FEEDING OPERATIONS PROGRAM, available at <http://portal.ncdenr.org/web/wq/aps/afo/program-summary> (last visited Oct. 12, 2015).

⁴⁰ *Some Coastal Plain Streams Influenced by Animal Feeding Operations*, U.S. GEOLOGICAL SURVEY, <http://www.usgs.gov/newsroom/article.asp?ID=4255#.VhxbI8tViko> (last updated June 23, 2015, 12:03 PM).

⁴¹ *Id.*

⁴² *Id.*

⁴³ *Id.*

streams can contribute to water quality problems by stimulating the growth of algal blooms which harm fish. The North Carolina Department of Environment and Natural Resources (“DENR”) has stated it is taking the findings of the report under consideration as the permitting program moves forward and evolves.⁴⁴

An additional study published in January 2015 by UNC Chapel Hill and Johns Hopkins found heavy bacteria from swine in some streams near CAFO farms.⁴⁵ The study collected a total of 187 water samples weekly for six months (mid-February to mid-August 2010) and monthly sampling (from mid-September to mid-January 2011) to capture seasonal trends.⁴⁶ “Overall, 40%, 23%, and 61% of samples exceeded state and federal recreational water quality guidelines for fecal coliforms, E. Coli, and Enterococcus, respectively.”⁴⁷ The highest concentrations of bacteria levels were found in sample sites located downstream of CAFO spray fields.⁴⁸ The results suggest diffuse and overall poor sanitary quality of surface waters where CAFO density is high.⁴⁹ The results can help evaluate the effectiveness of current technologies and policies for protecting surface water quality as well as inform future management decisions about liquid waste disposal practices.⁵⁰

V. CAFO Regulations

The Clean Water Act of 1977 directed the EPA to protect surface waters through a point source permitting program.⁵¹ Under the Clean Water Act, CAFOs are defined as point sources of

⁴⁴ N.C. DEP’T OF ENVTL. QUALITY, *supra* note 39.

⁴⁵ Henderson, *supra* note 29.

⁴⁶ Heaney, *supra* note 28.

⁴⁷ *Id.*

⁴⁸ *Id.*

⁴⁹ *Id.*

⁵⁰ *Id.*

⁵¹ Lisa Ann McKinley, *State Compendium – Programs and Regulatory Activities Related to Animal Feeding Operations*, SOUTHERN REGIONAL WATER PROGRAM, <http://srwqis.tamu.edu/program-information/focus-areas/animal-waste-management/> (last visited Oct. 12, 2015).

pollution.⁵² All point sources of pollution are subject to National Pollutant Discharge Elimination System (“NPDES”) permit regulations which limit the amount and types of pollutants that can be released.⁵³ NPDES permits may be issued by the EPA or by any state authorized to implement the NPDES program.⁵⁴ Although North Carolina is authorized to issue NPDES permits, it has opted to develop its own water quality permitting program.⁵⁵ The North Carolina DWR, housed within DENR, administers the permitting program and operates a mandatory training and certification program for animal waste management operations.⁵⁶ Facilities subject to state (non-NPDES regulations) permits include animal operations designed for 100 head of cattle; 75 horses; 250 swine; 1,000 sheep; or 30,000 birds with a liquid waste system.⁵⁷ The N.C. Swine Waste Management System General Permit covers permitted swine facilities.⁵⁸ The permit is valid for five years and must be renewed upon expiration.⁵⁹ All permitted animal operations are required to have a Certified Animal Waste Management Plan (“CAWMP”) that has been developed by a Certified Technical Specialist.⁶⁰ The CAWMP defines the fields to which the waste is applied, the crops to be grown, and other details of the operation.⁶¹

During the 1990s, lax regulations and high-profile waste-spills placed a spotlight on North Carolina’s hog industry regulations.⁶² In 1997, a temporary moratorium was enacted on new and expanded farms.⁶³ The Swine Farm Environmental Performance Standards Act (2007) permanently banned new swine lagoons and mandated that any new or expanded CAFOs must

⁵² *Id.*

⁵³ *Id.*

⁵⁴ *Id.*

⁵⁵ *Id.*

⁵⁶ *Id.*

⁵⁷ *Id.*

⁵⁸ N.C. DEP’T OF ENVTL. QUALITY, *supra* note 39.

⁵⁹ *Id.*

⁶⁰ *Id.*

⁶¹ *Id.*

⁶² Nicole, *supra* note 23, at A188.

⁶³ *Id.*

use environmentally superior technologies (“EST”) to reduce emissions substantially and prevent waste discharges into surface and ground waters.⁶⁴ While the act prohibited the construction of new hog facilities, it did not specify any action to clean up existing operations.⁶⁵ In 2011, the state passed a bill that allowed swine CAFOs to upgrade their buildings without needing to upgrade their waste management systems or implement ESTs.⁶⁶ The bill was criticized for contradicting the stipulations of the 2007 bill which required ESTs to be implemented before any existing CAFOs would be allowed to increase herd size or install new buildings.⁶⁷ Most recently, DENR renewed the statewide general permits for CAFOs in October 2014.⁶⁸ The Department has been criticized for failing to review and revise the permits based on the CAFOs disproportionate impact on affected communities.⁶⁹

VI. Pending Litigation

Seven lawsuits were filed in U.S District Court in August 2014 against Murphy-Brown LLC, a subsidiary of Smithfield Foods, Inc., alleging it failed to take steps to reduce nuisance and injury.⁷⁰ Wallace & Graham P.A. of Salisbury, N.C., filed the suits on behalf of 146 plaintiffs.⁷¹ The complaint states:

Plaintiffs have suffered episodes of noxious and sickening odor, onslaughts of flies and pests, nausea, burning and watery eyes, stress, anger, worry, loss of property value, loss of use and enjoyment of their property, inability to comfortably engage in outdoor activities, . . . drifting of odorous mist and spray

⁶⁴ 2007 N.C. Sess. Laws 523.

⁶⁵ Nicole, *supra* note 23, at A188.

⁶⁶ *Id.*

⁶⁷ *Id.*

⁶⁸ DEP’T OF ENVTL. QUALITY, SWINE WASTE MGMT. SYS. GEN. PERMIT, http://portal.ncdenr.org/c/document_library/get_file?uuid=2fb2070e-e9f3-4016-9fa9-4d9f4fba0c6d&groupId=38364 (effective October 1, 2014).

⁶⁹ *Complaint Under Title VI of the Civil Rights Act of 1964, 42 U.S.C. § 2000d, 40 C.F.R. Part 7*, EARTHJUSTICE (Sept. 3, 2014), <http://earthjustice.org/sites/default/files/files/North-Carolina-EJ-Network-et-al-Complaint-under-Title-VI.pdf>.

⁷⁰ *Seven Lawsuits Filed against Murphy Brown*, WALLACE & GRAHAM (Aug. 27, 2014), <http://www.wallacegraham.com/news.cfm>.

⁷¹ *Id.*

onto their land, inability to keep windows and doors open, difficulty breathing and numerous other harms.”⁷²

In total, there are 25 hog farm nuisance claims filed in the Wake County Superior Court in Raleigh.⁷³ The cases are still in litigation.⁷⁴

In January 2015, eight advocacy groups brought suit against the EPA in federal court to force federal action on air pollution from industrial livestock.⁷⁵ The lawsuits ask the court to require the EPA to rule on two petitions filed by advocates. One petition, filed by the Humane Society of the United States in 2009, asks the EPA to list industrial farms as a pollution source within the Clean Air Act and set performance standards.⁷⁶ The second petition, filed by the Environmental Integrity Project in 2011, asks the agency to set health-based emission standards for ammonia.⁷⁷ Additional plaintiffs involved in the suit include: Center for Food Safety; Sierra Club; Friends of the Earth; Clean Wisconsin; Iowa Citizens for Community Improvement; and the Association of Irrigated Residents.⁷⁸ The lawsuit asserts that the EPA’s failure to respond to the petitions in six and four years, respectively, is unreasonable.⁷⁹

VII. EPA Complaint Accepted

On February 20, 2015, the EPA’s Office of Civil Rights (“OCR”) announced its acceptance of an administrative complaint filed against the North Carolina Department of

⁷² *Id.*

⁷³ *NC Hog Farm Factory Litigation*, WALLACE & GRAHAM, <http://myhogfarmcase.com/> (last visited January 5, 2016).

⁷⁴ Henderson, *supra* note 38.

⁷⁵ Bruce Henderson, *Advocates Sue EPA over Industrial Farm Emissions*, CHARLOTTE OBSERVER, Jan. 28, 2015, <http://www.charlotteobserver.com/news/local/article9493595.html#.VO3zXfnF8p8>.

⁷⁶ *Id.*

⁷⁷ *Id.*

⁷⁸ *Id.*

⁷⁹ Press Release, The Humane Society of the United States, Coalition Sues EPA for Failing to Address Factory Farm Air Pollution (Jan. 28, 2015), *available at* http://www.humanesociety.org/news/press_releases/2015/01/epa-lawsuit-ff-air-pollution-012815.html?referrer=https://www.google.com/.

Environment and Natural Resources.⁸⁰ The complaint was filed by a conglomeration of partners which included the North Carolina Justice Network, Rural Empowerment Association for Community Help, and the Waterkeeper Alliance, supported by co-counsel, Earthjustice and Center for Civil Rights at the University of North Carolina School of Law.⁸¹ Two allegations were included in the complaint, but only one was accepted. It stated: “North Carolina DENR’s regulation of swine feeding operations discriminates against African Americans, Latinos, and Native Americans on the basis of race and national origin in neighboring counties and violates Title VI and EPA’s implementing regulations.”⁸² The EPA failed to accept the second allegation related to the DENR’s enforcement of regulatory and/or statutory requirements for swine farms, stating that it lacked adequate information needed to determine if the allegation could be investigated.⁸³ The acceptance of the complaint is only an initial step, but it marks the beginning of a formal investigation in which the EPA will gather additional information and conduct further research to determine next steps.⁸⁴ Over the time period from 1996 to 2013, the OCR has rejected or dismissed more than nine of every ten complaints submitted.⁸⁵ Often the EPA tries to resolve complaints informally favoring changes in policies and practices over fines.⁸⁶ The results of the investigation are still uncertain, but activists remain hopeful that it will lead to the action needed to protect local communities.⁸⁷

⁸⁰ Notification of Acceptance of Administrative Complaint from Velveta Golightly-Howell, OCR Director, EPA, to Marianne Engleman Lado and Jocelyn D’Ambrosio, EARTHJUSTICE (Feb. 20, 2015) (on file with Earthjustice) [hereinafter *Letter*].

⁸¹ Press Release, Earthjustice, EPA Launches Investigation of North Carolina for Civil Rights Violations (Feb. 25, 2015), available at <http://earthjustice.org/news/press/2015/epa-launches-investigation-of-north-carolina-for-civil-rights-violations-0> [hereinafter *Earthjustice Press Release*].

⁸² *Letter*, *supra* note 80.

⁸³ *Id.*

⁸⁴ *Id.*

⁸⁵ Yue Qiu & Talia Buford, *Environmental Justice Denied: Decades of Inaction*, THE CENTER FOR PUBLIC INTEGRITY, <http://www.publicintegrity.org/2015/08/03/17726/decades-inaction> (last updated Aug. 3, 2015).

⁸⁶ Henderson, *supra* note 29.

⁸⁷ *Earthjustice Press Release*, *supra* note 81.

VIII. Conclusion

The North Carolina hog industry faces mounting pressure from environmental groups and concerned residents to clean up its practices. Scientific studies continue to link CAFOs to inferior water quality and an increased risk of illness in the surrounding communities. Pending litigation and an EPA investigation into the disparate impact of CAFOs on disadvantaged, minority communities once again will place CAFOs in the public spotlight.