

LESSONS FROM CAPE FEAR: “FOREVER CHEMICALS” HAUNT NORTH CAROLINA WATERS

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I. INTRODUCTION

In the summer of 2017, the North Carolina Department of Environmental Quality (“DEQ”) became aware of the release of dangerous contaminants into the state’s drinking water.¹ The substance in question was not lead, plastic, or any other high-profile contaminant but was instead a little-known chemical compound called GenX.² GenX is among a family of man-made chemicals known collectively as perfluoroalkyl and polyfluoroalkyl substances (“PFAS”); they are also referred to as “forever chemicals” for their ability to accumulate and remain in the environment almost indefinitely without breaking down.³ These chemicals can contaminate ground and surface water supplies and have been correlated with increased risks of severe health problems in humans and animals.⁴ The potential health and environmental impact of this contamination event led to a flurry of research, surveys, ecological evaluations, and regulatory action in its immediate aftermath.⁵ However, progress on PFAS regulation seems to have

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1. *GenX in the Lower Cape Fear River Basin*, N.C. DEP’T HEALTH & HUM. SERVS., https://epi.dph.ncdhhs.gov/oee/a_z/genx.html (Feb. 24, 2022).

2. *Id.*

3. *PFAS Explained*, U.S. ENV’T PROT. AGENCY, <https://www.epa.gov/pfas/pfas-explained> (last visited Feb. 25, 2022).

4. *Id.*; *Per- and Polyfluoroalkyl Substances*, N.C. DEP’T HEALTH & HUM. SERVS., https://epi.dph.ncdhhs.gov/oee/a_z/pfas.html (Jan. 6, 2022).

5. *See generally* Mei Sun et al., *Legacy and Emerging Perfluoroalkyl Substances Are Important Drinking Water Contaminants in the Cape Fear River Watershed of North Carolina*, ENV’T. SCI. & TECH. LETTERS (Nov. 10, 2016), https://chhe.research.ncsu.edu/wordpress/wp-content/uploads/2017/08/PFECAs_Sun_ESTL2016-2.pdf (detailing one of the first comprehensive studies of PFAS contamination in North Carolina).

slowed in recent years, due at least in part to the ongoing COVID-19 crisis, which has no doubt dominated much of the public's attention as well as that of federal and state legislatures.

The primary source of the 2017 contamination event was discovered to be a factory owned by the Chemours Company ("Chemours"), formerly part of the DuPont chemical company, operating near Fayetteville, North Carolina.⁶ Chemours had been releasing GenX into the Cape Fear River—over a period of more than a decade—which led to the contamination of the entire Cape Fear River Basin.⁷ Industrial outflow and air emissions from the factory threatened the drinking water of several counties and municipalities, most notably Fayetteville and Wilmington in eastern North Carolina.⁸ Subsequent research has also revealed the presence of PFAS across more than a dozen North Carolina water sources—even those without a direct source of contamination from factories.⁹ While the contamination of the Cape Fear River Basin has been an ongoing environmental crisis, comprehensive legislative and regulatory action to address this event, and others like it, remains largely nonexistent.¹⁰

To address this shortcoming in state and federal action, previous scholarship concerning PFAS contamination has recommended a number of approaches, two of which are addressed further in this Comment. First, there has been broad consensus among legal academics and experts that the federal government ought to take steps to restrict the use of PFAS.¹¹ Due to the ubiquity of these chemicals in the manufacture of countless consumer goods, PFAS contamination affects nearly every state in the United

6. *GenX in the Lower Cape Fear River Basin*, *supra* note 1.

7. *Id.*

8. *Id.*

9. See *MCOLF Atlantic PFAS Drinking Water Well Sampling*, NAVAL FACILITIES ENG'G SYS. COMMAND, https://www.navfac.navy.mil/products_and_services/ev/products_and_services/env_restoration/installation_map/navfac_atlantic/midlant/cherry_point/mcolf_atlantic_pfas.html (last visited Feb. 26, 2022); Michelle Jewell, *PFAS Present Throughout the Yadkin-Pee Dee River Food Chain*, N.C. STATE UNIV. (June 5, 2020), <https://cals.ncsu.edu/applied-ecology/news/pfas-in-yadkin-pee-dee-river-food-chain>.

10. *GenX in the Lower Cape Fear River Basin*, *supra* note 1.

11. See generally Carly Johnson, Comment, *How the Safe Drinking Water Act & the Comprehensive Environmental Response, Compensation, and Liability Act Fail Emerging Contaminants: A Per- and Polyfluoroalkyl Substances (PFAS) Cast Study*, 42 MITCHELL HAMLINE L.J. PUB. POL'Y & PRAC. 91, 92–93, 95 (2021); Gabriela Elizondo-Craig, "Forever Chemicals" Are in Our Bodies, Drinking Water, and the Environment: Now Is the Time to Hold Polluters Accountable and Ramp Up Regulation in the United States, 63 ARIZ. L. REV. 255, 257–58 (2021).

States, which makes it a particularly well-suited target for federal action.¹² However, the federal government, like many state governments, has so far been reticent to take expansive action on PFAS regulation.¹³ Second, recent scholarship has recommended the recognition of tort liability against PFAS polluters in state legal codes, thereby allowing private citizens to seek redress for harms caused to their health or property by contamination.¹⁴ While this Comment briefly addresses these two approaches, the primary focus is the potential for state legislative action in North Carolina.

To that end, Section I provides a comprehensive explanation of PFAS and their impacts on human health and the environment in order to highlight the dire need for regulatory intervention. In addition, the lack of substantive action at the federal level will also be examined to emphasize the need for state legislation. Section II further discusses the background of the Cape Fear contamination event as well as ongoing legislative and regulatory action relating to Chemours; this analysis serves to emphasize the shortcomings in North Carolina's existing regulatory framework for managing and deterring similar events in the future. Lastly, Section III provides a final recommendation for the manner and method by which the North Carolina legislature can combat PFAS contamination in the state.

These sections demonstrate that state action is not only the most effective means by which North Carolina can address PFAS contamination in the short term but also that such action is the most achievable method of protecting North Carolina citizens and property in the future. The strengthening of North Carolina's existing regulatory framework to allow for expanded oversight over PFAS-related industries as well as greater authority to levy fines and force compliance among offending companies is the surest means by which our water can remain safe for generations to come.

12. *PFAS Explained*, *supra* note 3.

13. *See infra* Section I.B.

14. *See generally* Miranda Goot, Comment, *Emerging Thoughts: A Principled Framework for Regulating GenX as an Emerging Contaminant*, 98 N.C. L. REV. 629, 650 (2020); Paul Quackenbush, *Patching a Persistent Problem: PFAS and RCRA's Citizen Suit Provision*, 50 ENV'T L. REP. 10896, 10905-07 (2020).

II. PFAS: WHAT ARE THEY?

In order to address the most effective methods for regulating PFAS, the nature of these chemicals must first be clearly understood. This section addresses two primary questions. First, what are PFAS and how do they endanger human health and the environment in North Carolina? The specific health and environmental danger posed by PFAS highlights the severity of this issue as well as the dire necessity of state regulation. Second, in light of these dangers, what steps has the federal government taken (or not taken) to safeguard the nation's water? The absence of substantive action by the federal government demonstrates that state and local action in North Carolina is the most feasible method of combating PFAS contamination. By answering these two questions, it becomes clear that the North Carolina legislature must acknowledge the dangers of PFAS and take action to restrict their use. And while the exact method of regulation is addressed in Section III, clearly defining the nature of the threat posed by PFAS is a vital first step.

A. Health and Environmental Impact

It must first be acknowledged that most individuals in the United States have been exposed to PFAS, perhaps even from the moment they were born.¹⁵ These chemicals are found in countless consumer products including cookware, textiles, plastics, and even pizza boxes, to name only a few.¹⁶ However, despite their ubiquity, research regarding PFAS and their specific impact on human and environmental health is a developing field that still lacks clear, definitive answers.¹⁷ This is due in large part to the novelty of PFAS themselves; despite being used in industrial settings since the 1940s, the threat posed by these chemicals has only recently become a

15. *PFAS Explained*, *supra* note 3.

16. *Id.*; see *Our Current Understanding of the Human Health and Environmental Risks of PFAS*, U.S. ENV'T PROT. AGENCY, <https://www.epa.gov/pfas/our-current-understanding-human-health-and-environmental-risks-pfas> (last visited Mar. 16, 2022) [hereinafter *Our Current Understanding*]; see also WANDA BODNAR, N.C. POL'Y COLLABORATORY, NORTH CAROLINA POLICY COLLABORATORY FIREFIGHTING FOAM (AFFF) INVENTORY AND RECOMMENDATIONS1,3 (Apr. 15, 2021), <https://ncpfastnetwork.com/wpcontent/uploads/sites/18487/2021/04/Collaboratory-AFFF-Final-Report-15Apr2021.pdf> (discussing the dangers of PFAS in firefighting foam and pesticides).

17. *PFAS Explained*, *supra* note 3.

matter of scientific study and regulatory attention.¹⁸ Furthermore, while some types of PFAS, most notably perfluorooctyl sulfonate (“PFOS”) and perfluorooctanoic acid (“PFOA”), have been the subject of research, regulation, and even health advisories from the Environmental Protection Agency (“EPA”), newer compounds like GenX have yet to receive the same attention.¹⁹ This problem has been exacerbated by the new types of PFAS created each year.²⁰

The widespread and ubiquitous nature of PFAS has likely been one of several reasons for the muted response from federal and state governments. Not only are these chemicals used in industries vital to the economy, but there is a constant stream of new compounds which industry leaders purport to be “cleaner” and safer for the environment.²¹ For instance, when PFOS and PFOA received critical attention from the EPA, manufacturers like Chemours simply developed GenX as an allegedly safer alternative.²² Regulation in a piecemeal fashion—that is, by researching and restricting individual types of PFAS one compound at a time—simply cannot keep pace. Comprehensive restrictions on all PFAS compounds are essential to safeguard water sources from further contamination.

The necessity of restrictions becomes even clearer when considering the specific human health risks associated with PFAS compounds. As stated previously, research regarding PFAS and human health is somewhat indefinite due to the sheer number of unique compounds to study. However, some health risks have been strongly correlated to PFAS generally, especially the PFOS and PFOA variants and GenX.²³ Based on research studies of exposure in animals, these chemicals can damage both male and female reproductive systems, leading to sterility in some instances, as well as cause developmental disorders in exposed offspring.²⁴ PFAS have

18. *Id.*

19. *Risk Management for Per- and Polyfluoroalkyl Substances (PFAS) under TSCA*, U.S. ENV'T PROT. AGENCY, <https://www.epa.gov/assessing-and-managing-chemicals-undertsca/risk-management-and-polyfluoroalkyl-substances-pfas#tab-3> (last visited Feb. 28, 2022).

20. *Id.*

21. *PFAS Explained*, *supra* note 3.

22. *GenX in the Lower Cape Fear River Basin*, *supra* note 1.

23. *PFAS Explained*, *supra* note 3.

24. *Id.*; *Our Current Understanding*, *supra* note 16; *GenX in the Lower Cape Fear River Basin*, *supra* note 1.

also been correlated with liver and kidney damage in otherwise healthy adults.²⁵

Furthermore, risks to human health increase the longer these chemicals remain in the environment; PFAS have been shown to accumulate in both the environment and the human body and remain there for long periods of time—truly earning the title “forever chemical.”²⁶ Studies of human populations subjected to prolonged exposure, particularly through surface and groundwater contamination, have revealed decreased infant birth rates and immune system responses as well as increased cholesterol, thyroid disorders, and even cancer.²⁷ The risks to human health alone should be sufficient to pressure federal and state governments to take action to safeguard their citizens, but the danger does not stop there.

Health risks at the individual level become even more alarming when considered alongside the impact of PFAS on the environment. In particular, the manner in which these “forever chemicals” accumulate and remain in local environments threatens ecosystems across the country.²⁸ Several studies have indicated that PFAS chemicals contaminate wildlife ecosystems from the bottom up, meaning that relatively low annual concentrations in water sources can eventually lead to elevated concentrations in wildlife.²⁹ For instance, contamination in the Yadkin-Pee Dee River food chain in North Carolina revealed that PFAS contamination in local water accumulated in algae, then in insects that fed on the algae, followed by the fish that fed on the insects, and so on up the food chain.³⁰ Most notably, at each ascending level of the food chain, the concentration of PFAS in wildlife became greater as the animals consumed the accumulated PFAS from their prey.³¹

Additional cause for concern lies in the means by which these chemicals are able to enter ecosystems and water sources. For instance, researchers have discovered elevated levels of PFAS, including GenX, in surface water sources that have no direct source

25. *PFAS Explained*, *supra* note 3; *GenX in the Lower Cape Fear River Basin*, *supra* note 1.

26. Jewell, *supra* note 9.

27. *Our Current Understanding*, *supra* note 16.

28. Jewell, *supra* note 9; Sun et al., *supra* note 5.

29. Jewell, *supra* note 9.

30. *Id.*

31. *Id.*

to the chemicals.³² Whereas the Cape Fear River was directly contaminated by factory outflow, rivers like the Yadkin have no industrial source and yet are still contaminated by PFAS.³³ This indicates that the chemicals can travel through migrating wildlife, rainfall, and even air emissions.³⁴

The implications for humans who drink water or consume animal products originating from these water sources is clear: environmental contamination of local ecosystems puts human health at risk.³⁵ While human exposure to PFAS through consumer goods like plastics or cookware is generally well below EPA thresholds for danger, consumption of contaminated water and food resources has been correlated with considerably higher concentrations of PFAS in humans.³⁶ In addition, while water treatment plants may be able to remove PFAS from water, contamination of fish and wildlife has no such safeguard.³⁷ With these human health and environmental threats in mind, the question remains: what exactly is the condition of North Carolina with respect to PFAS contamination?

As stated previously, PFAS have been found in North Carolina in the Cape Fear River Basin near Wilmington and Fayetteville, as well as the Yadkin River, which supplies much of Winston-Salem's drinking water.³⁸ However, these are not the only contaminated water sources in the state. The North Carolina Department of Health and Human Services ("NCDHHS") has also identified contamination events in Greensboro and Atlantic, North Carolina.³⁹ Unfortunately, the full extent of contamination is currently impossible to assess. Because counties and municipalities are not required to measure for PFAS in their annual water quality reports, the primary source of research is an organization called the NC PFAS Testing Network.⁴⁰ While its work has been helpful in

32. Sun et al., *supra* note 5.

33. Jewell, *supra* note 9.

34. *Id.*

35. *PFAS Explained*, *supra* note 3.

36. *Id.*

37. *Per- and Polyfluoroalkyl Substances*, *supra* note 4 (noting that treating water for PFAS contamination is not a standardized practice across the state and that many municipal plants do not test for PFAS).

38. *GenX in the Lower Cape Fear River Basin*, *supra* note 1; Jewell, *supra* note 9.

39. *Per- and Polyfluoroalkyl Substances*, *supra* note 4.

40. *What is the NC PFAS Testing Network?*, N.C. PFAS TESTING NETWORK, <https://ncfastnetwork.com/about> (last visited Feb. 26, 2021).

identifying new contamination events in the state, it is still in its infancy and perhaps years from offering definitive research findings.⁴¹ Even still, the organization has created a helpful guidance document for state and local regulation.⁴² While the North Carolina government has at least taken some initial steps to address PFAS in the state, the federal government has largely resigned itself to a wait-and-see approach despite the severity of PFAS contamination.

B. Federal Response

With the threat of PFAS to humans and ecosystems now firmly established, it is natural to wonder: what is the federal government doing about this? Unfortunately, very little of substance has been done. However, considering the traditional methods by which federal regulatory action occurs—research, rule proposals, public comments, and all the other steps involved in agency rulemaking—this lack of action should come as no surprise.⁴³ The primary governmental actor overseeing environmental harms is the EPA, and the relevant statutory mandates from which the EPA derives its authority are the Clean Water Act, the Safe Drinking Water Act, and the Toxic Substances Control Act.⁴⁴ These statutes give the EPA broad, but far from unlimited, authority to address environmental contaminants like PFAS. However, as an executive agency, the EPA's efforts to address PFAS are also subject to outside political pressures. Environmental regulations, including for PFAS, were consistently impeded during the Trump administration, and whether the Biden administration will make regulation a priority remains to be seen.⁴⁵

41. See *Publications*, N.C. PFAS TESTING NETWORK, <https://ncpfastnetwork.com/publications> (last visited Feb. 26, 2021) (noting that all of its publications are produced after 2019).

42. N.C. PFAS TESTING NETWORK, FINDINGS AND RECOMMENDATIONS OF THE NORTH CAROLINA PER- AND POLYFLUOROALKYL SUBSTANCES TESTING NETWORK (Apr. 15, 2021), https://ncpfastnetwork.com/wp-content/uploads/sites/18487/2021/04/NC-PFAST-Network-Final-Report_revised_30Apr2021.pdf.

43. *Risk Management for Per- and Polyfluoroalkyl Substances (PFAS) under TSCA*, *supra* note 19.

44. See Clean Water Act, 33 U.S.C. § 1251; Safe Drinking Water Act of 1974, 42 U.S.C. § 300f; Toxic Substances Control Act, 15 U.S.C. § 2601.

45. Cheryl Hogue, *Trump EPA Takes Last-Minute Actions on PFAS*, C&EN (Jan. 21, 2021), <https://cen.acs.org/environment/Trump-EPA-takes-last-minute/99/i3>.

The EPA's record is rendered even more suspect upon review of its past actions on PFAS regulation. First, industry studies, which clearly demonstrated the potential harms of PFAS, have been available to the EPA since as early as the 1950s without the agency taking action.⁴⁶ In addition, while the EPA has recognized the inherent risks of these chemicals since the 1990s, the agency failed to take any action until 2006.⁴⁷ Even then, the agency opted for a wait-and-see approach, relying on the voluntary phaseout of PFAS by corporations rather than taking affirmative steps to regulate them.⁴⁸ Second, the EPA has generally allowed new types of PFAS, like GenX, onto the open market without substantial review.⁴⁹ This trend continued, and even worsened, when the Trump administration EPA issued an "action plan" which set regulatory goals for 2019 that were ultimately never met.⁵⁰

With this record in mind, it should be no surprise that, to date, the EPA has taken no definitive, binding action to restrict PFAS use. Instead, the agency has developed the previously mentioned "action plan" for researching PFAS contamination. The EPA Administrator has called for the creation of a "Council on PFAS," and as recently as March 10, 2021, the EPA has issued an advance notice of proposed rulemaking regarding PFAS.⁵¹ These preliminary actions, while important first steps for regulation, are a far cry from the sweeping regulatory action required to address the immediate threat of PFAS contamination. Instead, they demonstrate that the EPA, even under new leadership with the Biden administration, remains in the earliest stages of the regulatory process.⁵² Rather than waiting for regulatory action, which could be years away, some members of the United States Congress have proposed statutory restrictions on the use of PFAS, but these too remain unlikely to be successful in the short term.

46. COMM. ON ENERGY & COM., FACT SHEET FOR H.R. 2467 (July 2021), https://sarbanes.house.gov/sites/sarbanes.house.gov/files/FACT-SHEET_PFAS-Action-Act_2021.pdf#:~:text=H.R.%202467%2C%20the%20PFAS%20Action%20Act%20of%202021%2C,PFAS%20contamination%20in%20their%20air%2C%20land%2C%20and%20water.

47. *Id.*

48. *Id.*

49. *Id.*

50. *Id.*

51. *EPA Actions to Address PFAS*, U.S. ENV'T PROT. AGENCY, <https://www.epa.gov/pfas/epa-actions-address-pfas> (last visited Oct. 16, 2021).

52. *Id.*

The primary example of legislative action at the federal level is the PFAS Action Act of 2021.⁵³ At the time of this Comment's writing, this bill has been passed by the House of Representatives and is currently awaiting review by the Committee on Environment and Public Works before being submitted to the Senate.⁵⁴ While the existence of this bill is promising, especially in light of the environmental goals of the Biden administration and many Democratic proponents, its success is far from guaranteed. Among other things, the bill would establish grants and additional funding for research, testing, and outreach.⁵⁵ Most importantly, substantive restrictions would be placed on certain unsafe methods of disposing of PFAS as well as their use in products such as firefighting foams.⁵⁶ While this would be a significant departure from the existing wait-and-see approach, the bill is not without its shortcomings.

Even if the PFAS Action Act of 2021 was passed in its current form, the terms of the bill would still fail to address many issues relevant to North Carolina. The primary shortcomings of this bill are twofold. First, the terms of the bill contain few actual restrictions on the use of PFAS.⁵⁷ Aside from firefighting foams and certain disposal techniques, manufacturers will be able to continue to use existing PFAS—and even develop new types of PFAS—so long as they comply with relatively relaxed reporting and monitoring requirements.⁵⁸ Second, enforcement mechanisms are severely lacking due to a five-year grace period for industry compliance.⁵⁹ Before enforcement could begin, the EPA would need to promulgate rules under the bill's authority—a process which itself could take years.⁶⁰ Only then would the five-year grace period even begin to count down.⁶¹

This delay in enforcement could result in years of continued contamination before manufacturers can even be held accountable for violations. In addition, the delay would leave continued enforcement of the bill vulnerable to changes in the balance of

53. PFAS Action Act of 2021, H.R. 2467, 117th Cong. (2021).

54. *H.R. 2467 - PFAS Action Act of 2021*, CONGRESS.GOV, <https://www.congress.gov/bill/117th-congress/house-bill/2467/text> (last visited Oct. 16, 2021).

55. *Id.*

56. *Id.*

57. *Id.*

58. *Id.*

59. *Id.*

60. *Id.*

61. *Id.*

political power; the election of a president who views such regulations unfavorably might upend the entire process, as occurred previously with the Trump administration.⁶² While this bill would be a vital first step toward national regulation, it would also leave North Carolina and other states in a position similar to how they are without the bill; that is, the government would remain focused on research and monitoring while manufacturers continue to contaminate the state's water. The shortcomings of the federal approach to PFAS regulation make it clear that state action is required. However, as shown in Section II, relying on North Carolina's existing framework of enforcement is also far from ideal.

III. CAPE FEAR: LESSONS LEARNED

The inadequacy of North Carolina's current regulatory framework for managing contaminants like PFAS may be best exemplified by the state's handling of Cape Fear. To that end, this section addresses two primary questions. First, how exactly did the Cape Fear contamination event occur, and how did North Carolina regulators respond? A discussion of the circumstances surrounding the Cape Fear event, as well as the state's legal and regulatory action taken against Chemours, demonstrates the shortcomings of the state's current approach. Second, what steps have been taken by the North Carolina legislature to address these perceived shortcomings? The answers to these two questions demonstrate that regulatory and judicial action has failed to substantively alter the activities of Chemours, especially as it continues to violate corrective orders.⁶³ Additionally, legislative action has stalled out despite bipartisan support for legislation.⁶⁴ While the proposed method of regulating PFAS in the state is discussed in Section III, it is first essential to understand the current framework of regulation and enforcement before recommendations for improvements may be made.

62. COMM. ON ENERGY & COM., *supra* note 46.

63. See *DEQ Assesses Penalties of Nearly \$200,000 for Chemours Violations*, N.C. DEP'T ENV'T QUALITY (Mar. 31, 2019), <https://deq.nc.gov/news/press-releases/2021/03/31/deq-assesses-penalties-nearly-200000-chemours-violations>.

64. See H.R. 1108, 2019 Gen. Assemb., Reg. Sess. (N.C. 2019).

A. Cape Fear and Ongoing Litigation

Before discussing the litigation between North Carolina and Chemours, the background and scale of the Cape Fear contamination event must first be understood. The Cape Fear River Basin refers to a system of rivers and surface water sources—as well as the largest watershed in the state—which annually supplies between one and two million North Carolina residents with drinking water.⁶⁵ Of this number, approximately one million of these residents are affected by industrial contaminants, like GenX, on an annual basis as of 2019.⁶⁶ By way of comparison, this means that roughly one in ten North Carolina residents receive potentially contaminated water from the Cape Fear River watershed alone without even considering other sources of drinking water.⁶⁷ While contamination has been detected in this river system for decades, the exact source remained unknown until the City of Wilmington, North Carolina began an investigation of the corporation DuPont, which operated the factory upstream of the city.⁶⁸

DuPont's factory, which would later merge with Chemours, had operated on the banks of the Cape Fear River in Fayetteville, North Carolina since the 1980s.⁶⁹ Some evidence, including testimony from former employees, suggests that the company had been allowing a variant of PFAS, known as PFOA, to be discharged into the Cape Fear River for decades.⁷⁰ In 2007, DuPont's activities became known, and two years later, in 2009, it switched from PFOA to its new compound, GenX, largely in response to health concerns voiced by the public and the EPA.⁷¹ However, evidence suggests that the company did not stop discharging contaminants into the Cape Fear River at any point; it simply replaced the dangerous PFOA with

65. Sheena Scruggs, *PFAS—A Problem in North Carolina Drinking Water*, NAT'L INST. ENV'T HEALTH SCI. (Mar. 2019), <https://factor.niehs.nih.gov/2019/3/feature/2-featurepfas/index.htm>; see also *Cape Fear River Basin*, N.C. DEP'T ENV'T QUALITY, <https://deq.nc.gov/cape-fear-river-basin> (last visited Feb. 26, 2022).

66. Scruggs, *supra* note 65.

67. See *id.*; *QuickFacts: North Carolina*, CENSUS.GOV, <https://www.census.gov/quickfacts/NC> (last visited Feb. 24, 2022) (indicating the population of North Carolina in early 2020 was roughly ten million).

68. See John Wolfe, *Part of the River: Anger and Uncertainty After Decades of Drinking Water Contamination*, SCALAWAG (May 22, 2018), <https://scalawagmagazine.org/2018/05/part-of-the-river-anger-and-uncertainty-after-decades-of-drinking-water-contamination>.

69. Scruggs, *supra* note 65.

70. *Id.*

71. *Id.*

the allegedly “safer” GenX.⁷² In 2012, GenX was first detected in the Cape Fear River, and in 2014, the City of Wilmington was finally able to pinpoint the upstream DuPont factory as the source.⁷³ Perhaps unsurprisingly, faced with criticism from regulators and the public at large, DuPont transferred ownership to its own spinoff company, Chemours, in 2015 as a means of avoiding negative publicity and liability.⁷⁴ Chemours, rather than DuPont, then became the object of North Carolina’s subsequent litigation.

The first and only major action taken against Chemours was the entry of a court-approved Consent Order in 2019, which, among other requirements, required Chemours to pay twelve million dollars in civil penalties and one million dollars in investigative costs to the DEQ.⁷⁵ While the order also included research and monitoring requirements, its primary requirements for Chemours were threefold. First, Chemours was required to provide permanent drinking water for affected residents.⁷⁶ Second, Chemours had to design and implement safer water treatment systems at its Fayetteville factory subject to approval by the DEQ.⁷⁷ And third, Chemours was prohibited from exceeding a predetermined wastewater outflow limit for contaminants.⁷⁸ These steps, taken together, seemed to ensure that North Carolina residents would be protected from immediate pollution in the short term even while research into the exact harms of GenX continued.

While the civil penalties, provision of drinking water for residents, and research and monitoring requirements contained in the Consent Order were certainly major steps in holding Chemours accountable, the required changes to the design and wastewater

72. *Id.*

73. See Vaughn Hagerty, *Toxins Taint CFPUA Drinking Water*, STAR NEWS, <https://www.starnewsonline.com/story/news/environment/2017/06/07/toxin-taints-cfpu-drinking-water/20684831007> (June 8, 2017, 10:38 AM).

74. Scruggs, *supra* note 65.

75. *State Officials Require Chemours to Provide Permanent Drinking Water and Pay \$12 Million Penalty*, N.C. DEP’T ENV’T QUALITY (Nov. 21, 2018), <https://deq.nc.gov/news/press-releases/2018/11/21/release-state-officials-require-chemours-provide-permanent-drinking>; see also *Attorney General Josh Stein Takes Legal Action Against DuPont Over PFAS Pollution*, N.C. DEP’T JUST. (Oct. 13, 2020), <https://www.ncdoj.gov/attorney-general-josh-stein-takes-legal-action-against-dupont-over-pfas-pollution> (signaling renewed efforts to hold Chemours accountable through judicial means).

76. N.C. DEP’T ENV’T QUALITY, *supra* note 75.

77. Consent Order, *State v. Chemours Co. FC, LLC* (Feb. 25, 2019) (No. 17 CVS 580), <https://files.nc.gov/ncdeq/GenX/2019-02-25-Consent-Order—file-stamped-and-fully-executed—b—w-.pdf>.

78. *Id.*

outflow of the factory itself was the cornerstone of the order; without these changes, the order could not viably safeguard the public in the long term.⁷⁹ And so, the violation of these two requirements in 2021 by Chemours—just two years after the order was put into effect—severely undercut the state’s efforts to safeguard the public.⁸⁰

In response to Chemours’ violations, the DEQ and other regulatory bodies levied fines totaling approximately \$200,000 against Chemours for failing to adequately design and implement its water treatment system and for exceeding the minimum threshold for wastewater discharge.⁸¹ In effect, Chemours opted to pay the state’s relatively minimal fines rather than to pay the hefty expenses associated with these substantial alterations to its factory.⁸² The reason for this decision becomes obvious when considering the income of Chemours, the costs of alterations, and the relatively limited size of the fines for violating the Consent Order. According to Chemours’ annual report, the company’s adjusted net income for the year in question was approximately \$400 million.⁸³ The \$200,000 worth of fines levied against the company, even after including the \$13,000,000 in initial penalties, account for only 3.3% of the company’s annual income.⁸⁴ The primary shortcoming of North Carolina’s regulatory framework is therefore one of means: agencies, whose primary authority for enforcement is to issue fines, are simply incapable of holding companies as profitable as Chemours truly accountable until legislators grant them additional authority to do so.

B. Legislative Response

In light of the perceived shortcomings of North Carolina regulators to effectively force compliance from companies like

79. N.C. DEP’T ENV’T QUALITY, *supra* note 75 (explaining the civil penalties, provision of drinking water for residents, and research and monitoring requirements contained in the Consent Order).

80. Press Release, N.C. Dep’t of Env’t Quality, DEQ Assess Penalties of Nearly \$200,000 for Chemours Violation (Mar. 31, 2021), <https://deq.nc.gov/news/press-releases/2021/03/31/deq-assesses-penalties-nearly-200000-chemours-violations>.

81. *Id.*

82. *Id.*

83. CHEMOURS, CHEMOURS COMPANY 2020 ANNUAL REPORT 71–73 (2020), https://s21.q4cdn.com/411213655/files/doc_financials/2020/ar/2020-Chemours-Annual-Report.pdf.

84. *Id.*

Chemours, some state legislators have proposed new laws. In particular, there are two bills which have yet to be passed, one introduced in the House and the other in the Senate, and each would address PFAS in drastically different ways. To start, the House bill, known by the short title “PFAS Contamination Mitigation Measures,” was introduced in 2019 and has since stalled out in committee.⁸⁵ While the likelihood of this bill becoming law in its present form is unlikely, its terms may be instructive for future attempts to restrict PFAS in the state. This bill’s requirements are twofold. First, companies who manufacture or use PFAS in their industrial processes would be required to notify state agencies and, more importantly, “eliminate” PFAS from their wastewater before allowing it to enter state waterways.⁸⁶ Second, the DEQ would be required to conduct large-scale surveys and research of PFAS in the state with additional action pending based on their findings.⁸⁷ While the elimination of all PFAS from wastewater would certainly be an improvement over current standards, the bill itself does not establish any explicit penalty or enforcement mechanism for violations.⁸⁸ This omission alone clearly undercuts the effectiveness of such legislation and fails to address the concerns regarding regulatory enforcement that have become apparent following Cape Fear.

The Senate bill, known by the short title “PFAS Manufacture/Use/Sale Ban,” was introduced in 2021 and is currently awaiting committee review.⁸⁹ While this bill is more likely to become law, at least in some form, its success is far from guaranteed.⁹⁰ Regardless, a brief study of its terms will be equally useful for crafting future legislation, and, unlike the House bill, this one is remarkably straightforward. Rather than bothering with monitoring and reporting requirements, the Senate bill simply restricts all manufacture, use, and distribution of PFAS in the state.⁹¹ However, a complete ban on PFAS would come with a price. The most immediate issue with this approach would be the economic impact on state revenue from manufacturing. Because

85. H.R. 1108, 2019 Gen. Assemb., Reg. Sess. (N.C. 2019).

86. *Id.*

87. *Id.*

88. *Id.*

89. S. 638, 2021 Gen. Assemb., Reg. Sess. (N.C. 2021).

90. *Id.*

91. *Id.*

PFAS are such ubiquitous chemicals, a total ban would almost certainly damage North Carolina's ability to keep current manufacturers in the state, let alone attract new ones.⁹² Additionally, the bill's enforcement measures are severely lacking.⁹³ First-time violations may result in civil fines of no greater than \$5,000 while repeat offenses may reach as high as \$10,000, but no company may be fined in excess of \$200,000 in any single month.⁹⁴ While these fines may be sufficient to force compliance from smaller companies, larger corporations like Chemours are unlikely to be similarly deterred.

Similar to Chemours' lack of compliance with the previously discussed Consent Order, a corporation's annual income renders these civil fines wholly inadequate as a means of deterrence. Without a method of punishing companies beyond fines, such as ordering factories to close until compliance is met, companies may opt to simply pay their fines and continue operation as usual. For instance, even the maximum \$200,000 of fines monthly, which would equal an annual penalty of \$2,400,000, would account for only 0.6% of Chemours' annual adjusted income.⁹⁵ Without similar restrictions both at the federal level and in other states that Chemours operates in, the deterrence provided by these fines would likely be minimal. These attempts at legislation, while important steps toward addressing PFAS, are still inadequate to protect the state from ongoing and future contamination. A new approach is essential.

IV. REGULATIONS AND REMEDIES

Having established the health and environmental risks of PFAS in Section I and the shortcomings of current safeguards in North Carolina in Section II, the most effective means of regulating PFAS may now be analyzed and recommended. This section first addresses another approach to regulation, namely the recognition of civil liability, before turning to the primary topic of state action. By demonstrating the practical issues associated with the

92. See *PFOA, PFOS, and Other PFAS*, U.S. ENV'T PROT. AGENCY, <https://www.epa.gov/pfas/basic-information-pfas> (last visited Oct. 16, 2021) (noting the ubiquity of PFAS in many sectors of consumer good production).

93. *Id.*

94. *Id.*

95. CHEMOURS, *supra* note 83.

establishment of private rights of action against companies, the necessity of expanding regulatory authority at the state level becomes even clearer, and a final recommendation, informed by the previously discussed legislative bills, is made.

A. Practicality of Tort Liability and “Citizen Suits”

The recognition of private civil liability against companies that violate environmental standards, either as torts or as civil suits to enforce environmental standards, has been repeatedly recommended as an effective means of deterring pollution, and it is certainly not without its merits.⁹⁶ Such an approach would allow states to reduce their own regulatory costs by pushing monitoring and enforcement onto private actors.⁹⁷ Additionally, the threat of civil liability from harmed plaintiffs, especially in the form of class action lawsuits, could serve as a more effective deterrent than simple fines levied by regulatory agencies. While citizen suits that rely on private actors to enforce violations of statutes could prove effective, tort liability, on the other hand, would face substantial practical hurdles in North Carolina.

First, there would be an immediate issue regarding the proof necessary to establish that the plaintiff suffered a harm as a result of PFAS. As discussed in Section I, research surrounding PFAS, especially newer compounds like GenX, is still in its infancy.⁹⁸ Demonstrating that any particular harm was caused by PFAS, let alone a specific compound from a specific company, would prove exceedingly difficult. Second, the nature of PFAS emissions in North Carolina, specifically their ability to pollute water sources beyond those with direct sources of industrial wastewater, would also make it difficult for plaintiffs to trace the source of their harm.⁹⁹ Because PFAS can be found in surface and groundwater sources as a result of air emissions and rainwater, plaintiffs would be hard-pressed to identify any individual company which could be held responsible for their harm.¹⁰⁰ For these reasons, North Carolina

96. See generally Goot, *supra* note 14 at 646–47; Quackenbush, *supra* note 14 at 10907.

97. See S. 638, 2021 Gen. Assemb., Reg. Sess. (N.C. 2021); H.R. 1108, 2019 Gen. Assemb., Reg. Sess. (N.C. 2019) (both relying on substantial appropriations of funds for monitoring compliance in the state).

98. PFOA, PFOS, and Other PFAS, *supra* at note 92.

99. Jewell, *supra* note 9.

100. *Id.*

would be better served by an alternate approach, relying on state action rather than private action.

B. Expanding State Regulatory Authority

Rather than relying on federal regulations or the recognition of tort liability in the form of “citizen suits,” the North Carolina legislature should focus on expanding its existing regulatory framework. Any future legislative action ought to be informed by the previous bills, which have been introduced at both the state and federal levels to address PFAS contamination. First, it should be noted that an outright ban on all PFAS in the state, as was recommended by the North Carolina Senate bill previously discussed, should be avoided.¹⁰¹ PFAS are simply too pervasive and useful in industrial manufacturing to reasonably be banned, especially when manufacturers may simply pay fines and continue their operations unchanged. The better option would be to restrict the emissions of PFAS from factories as the North Carolina House Bill suggested.¹⁰² That option, however, leads to a second important point: harsher enforcement mechanisms are required to ensure compliance with these restrictions.

Due to the sheer financial power of companies like Chemours, enforcement mechanisms must go beyond simple fines. For compliance to be successful, agencies like the DEQ must be able to exercise greater control over offending companies, even to the point of pausing operations until compliance is met. Lastly, legislation should incorporate some aspects of the federal PFAS Action Act of 2021 in order to be most effective in combatting PFAS contamination.¹⁰³ Specifically, provisions relating to community outreach and ongoing research into the harms of PFAS should be expanded.¹⁰⁴ This would also include additional funding for the NC PFAS Testing Network and the required reporting of PFAS levels in annual municipal water quality reports.¹⁰⁵ These additions to any proposed legislation, informed by past attempts at legislation as well the lessons learned from Cape Fear, will help to ensure that future laws are able to effectively address PFAS in North Carolina.

101. S. 638.

102. H.R. 1108.

103. PFAS Action Act of 2021, H.R. 2467, 117th Cong. (2021).

104. *Id.* § 1459(e).

105. *What Is the NC PFAS Testing Network?*, *supra* note 40.

V. CONCLUSION

This Comment demonstrates the dire need for state action to regulate and restrict PFAS in North Carolina. Section I provided a comprehensive explanation of PFAS and their impacts on human health and the environment, which further highlighted the state's need for regulatory intervention. Section II provided the background of the Cape Fear contamination event, the ongoing legislative and regulatory action relating to Chemours, and the shortcomings of North Carolina's existing regulatory framework. Lastly, Section III provided a final recommendation for the manner and method by which the North Carolina legislature can combat PFAS contamination in the state. State action is not only the most effective means by which North Carolina can address PFAS contamination in the state but also the most achievable method of protecting North Carolina citizens in the future. The strengthening of North Carolina's existing regulatory framework to allow for (1) expanded oversight of PFAS-related industries, (2) greater authority to levy effective fines and force compliance among offending companies, and (3) public research and outreach to mobilize public opinion toward demanding change is the surest means by which water can remain safe for generations to come.