PFAS IN CHARLESTON S.C.: A REVIEW OF POLLUTION, REGULATORY ISSUES AND POTENTIAL SOLUTIONS

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I. INTRODUCTION

The United States has a checkered history of environmental management and regulation. There has been significant improvement in the protection and overall quality of our air and water since the enactment of multiple environmental statutes in the 1960s and 70s. However, there have been multiple instances of regulatory failures and inaction, especially surrounding the regulation of industrial chemicals, frequently leading to tremendous health and environmental consequences. The most recent specter to emerge is PFAS and PFOS, forever chemicals linked to cancer, along with developmental and hormonal issues, and other chronic medical issues. Due to the insidious nature of PFAS pollution, and the complex history that has allowed the relatively unchecked manufacture and use of PFAS across multiple industries, this issue presents a particularly interesting opportunity to examine the grim reality of the United States' administrative system. This includes its ability and willingness to regulate, as well as the uphill legal battle facing states and private actors who wish to take action in the absence of meaningful regulation or action by federal agencies.

In very recent years, governments and regulatory bodies have finally reacted to the PFAS disaster currently plaguing the nation's waters. However, citizens, and environmental justice advocates need a more responsive legal framework to prevent and react to the future harms as the current administrative scheme is insufficient to prevent the next ecological disaster waiting to happen. While PFAS contamination is a nationwide issue, this Note will mainly discuss PFAS contamination in and around Charleston, S.C., as the it represents an example of severe PFAS contamination that is as of yet unresolved and unsettled. Further, the PFAS contamination within Charleston is a prime example of the environmental justice concerns associated with PFAS contamination. This Note will examine sources of the pollution, consider why the pollution has remained unchecked for such a long time, and analyze the strengths and weaknesses of relevant federal regulatory schemes which may have been used to affect an earlier and stronger response to the issue, including the Clean Water Act, Safe Drinking Water Act, and Toxic Substances Control Act. Finally, the Note will propose solutions aimed at providing a more responsive administrative state as well as considering whether common law actions provide a more effective pathway for the prevention and abatement of toxic chemical pollution of the nation's waters.

II. BACKGROUND

The presence perfluoroalkyl and polyfluoroalkyl substances, a class of over 9,000 chemical compounds collectively known as PFAS, in the United

States water supply has become a point of major concern and contention among environmental groups, government agencies, and the chemical industry.[1] The story of PFAS is similar to that of previous toxic and hazardous chemicals such as DDT and PCB: years of intensive production and widespread use, followed by revelations of adverse health and environmental effects far after the fact, and finally, after scientists and other concerned parties ring the alarm, the substance in question "garners federal attention, sometimes in the form of improved regulation or, more rarely, a full-stop ban."[2]

Labeled "forever chemicals," PFAS compounds take hundreds, if not thousands of years to break down in the environment, and once present in the human body persist for years, building up over time with increased exposure.[3] Studies have linked PFAS exposure to multiple serious health effects, including "altered immune and thyroid function, liver disease, lipid and insulin dysregulation, kidney disease, adverse reproductive and developmental outcomes, and cancer."[4]

Given the link between PFAS exposure and serious health effects, what is even more startling than the chemical class's persistence in the environment and human body is its pervasive presence in the modern world. Born out of the scientific developments associated with the nuclear arms race, PFAS was originally formulated in the 1940s and was being produced for commercial purposes by 3M in the 1950s, both for use in 3M's Scotchgard and for sale to other chemical companies.[5] One of the main industrial consumers of 3M's original PFAS compound, PFOA, was DuPont, which began purchasing the chemical for use in the manufacturing of Teflon (DuPont's patented PFAS compound, PTFE) in 1951.[6] Following the widespread manufacture and use of PFAS compounds in products ranging from firefighting foam to cookware, cosmetics, and carpet treatments, the presence of PFAS in the environment

1. Annie Sneed, *Forever Chemicals Are Widespread in U.S. Drinking Water*, SCI. AM. (Jan. 22, 2021), https://www.scientificamerican.com/article/forever-chemicals-are-widespread-in-u-s-drinking-water/ [https://perma.cc/LAB2-8T8G].

2. Bella Isaacs-Thomas, *Why Getting PFAS out of Our Products Is So Hard – and Why It Matters*, PBS (Mar. 14, 2023) https://www.pbs.org/newshour/science/pfas-are-everywhere-what-can-we-do-to-change-that.

3. Sneed, *supra* note 1.

4. Suzanne E. Fenton et al., *Per- and Polyfluoroalkyl Substance Toxicity and Human Health Review: Current State of Knowledge and Strategies for Informing Future Research*, 40 ENV'TL TOXICOLOGY AND CHEMISTRY 606, 606 (2020) https://doi.org/10.1002/etc.4890.

5. Tiffany Kary & Christopher Cannon, *Cancer-linked Chemicals Manufactured by 3M Are Turning up in Drinking Water*, BLOOMBERG, (Nov. 2, 2018) https://www.bloomberg.com/graphics/2018-3M-groundwater-pollution-problem/ [https://perma.cc/ZAW3-BNBX].

6. Nathaniel Rich, *The Lawyer Who Become DuPont's Worst Nightmare,* THE NY TIMES MAG. (Jan. 6, 2016) https://www.nytimes.com/2016/01/10/magazine/the-lawyer-who-became-duponts-worst-nightmare.html [https://perma.cc/F6WE-JYPR].

and in humans has become nearly ubiquitous, appearing in soil, surface water, the atmosphere, the deep ocean, and in the blood of the majority of Americans.[7]

A. Prominent Examples of Contamination

The manufacture and use of PFAS by 3M and DuPont have provided two of the most well-known and startling examples of the potential threat that PFAS contamination presents to communities across the country. DuPont's practice of disposing of PFAS compounds in unlined pits at its Parkersburg, West Virginia location, *despite its knowledge of the toxicity of the compounds*, resulted in the contamination of the drinking water of over 100,000 people, a lawsuit ending with a $671 million settlement on behalf of some 3,500 plaintiffs from the area, and a movie, *Dark Waters*, detailing the entire story.[8] In Washington County, Minnesota, home of 3M's PFAS manufacturing facility and multiple disposal sites, PFAS levels within drinking water reached levels of 1,163 parts per trillion (ppt), far above the EPA's former advisory level of 70 ppt.[9] Death records from one town within the county indicated that a child from who died there from 2003 to 2015 was 171 percent more likely to have had cancer compared to those in a larger tri-county area.[10] As in Parkersburg, West Virginia, PFAS compounds were being dumped in unlined trenches despite 3M's knowledge of the potential risks.[11] A lawsuit brought by the Minnesota attorney general resulted in a $850 million settlement, though no admission of wrongdoing by 3M.[12]

A pattern of industry deceit has been a major issue in the story of PFAS. Chemical companies such as 3M and DuPont have been aware of the toxic effects of PFAS and its potential to build up the human body since at least the 1960s but hid the information from both their employees and government agencies for decades.[13] It was not until 1998 that 3M initially divulged some

7. Sneed, *supra* note 1.

8. Alejandro De La Garza, *Dark Waters Tells the True Story of the Lawyer Who Took DuPont to Court and Won. But Rob Bilott's Fight Is Far From Over*, TIME (Nov. 25, 2019), https://time.com/5737451/dark-waters-true-story-rob-bilott/ [https://perma.cc/9QLN-Q4VY].

9. Kary & Cannon, *supra* note 5.

10. *Id.*

11. *Id.*

12. *Id.*

13. Jared Hayes & Scott Faber, *For decades, polluters knew PFAS chemicals were dangerous but hid risks from public*, ENV'TL WORKING GRP. (Aug. 29, 2019), https://www.ewg.org/research/decades-polluters-knew-pfas-chemicals-were-dangerous-hid-risks-public [https://perma.cc/4VCD-WLLK].

of its knowledge regarding the health hazards surrounding PFAS.[14] However, much more concerning than the years of industry deceit was the EPA's failure to react in any meaningful way for nearly twenty years after learning of the potential threat to human health posed by PFAS.[15]

While the EPA did issue fines to 3M and DuPont for concealing information regarding the dangerous nature of PFAS, the fines represented less than two percent of the profits earned on the use of PFAS within a single year.[16] In a similarly lackluster move, the EPA also issued a health advisory for public water systems to limit PFAS presence within drinking water to 70 ppt.[17] However, this suggested monitoring level was completely voluntary and unenforceable, and far above the recommended safe levels of 0-4 ppt indicated by independent researchers.[18] The EPA also brokered a deal with 3M, DuPont, and other companies within the industry to enter voluntarily phase out the use of certain PFAS compounds, yet at the same time issued statement that it was unaware of any links between current levels of the compounds and human health effects.[19]

In recent years multiple states and private parties have filed suits in relation to PFAS contamination and the EPA has published a road map laying out an action plan to promulgate regulations for the chemical class, yet high levels of PFAS contamination of both surface water and drinking water persist.[20] Further, chemical companies have continued to produce and use alternate PFAS compounds which have been shown to have the same or similar health effects as the phased-out compounds.[21]

B. PFAS Contamination in Charleston, S.C.

Charleston, S.C. has some of the highest rates of PFAS contamination in the United States.[22] One study found that estuarine sediments collected from

14. Scott Faber, *For 20-plus years, EPA has failed to regulate 'forever chemicals',* ENV'TL WORKING GRP. (Jan. 9, 2019), https://www.ewg.org/research/20-plus-years-epa-has-failed-regulate-forever-chemicals [https://perma.cc/E2SJ-TMMK].

15. *Id.*

16. Rich, *supra* note 6.

17. Faber, *supra* note 14.

18. *Id.*

19. *Id.*

20. *Id.*

21. Lisa Sorg, *EPA: GenX Far More Toxic That* [sic] *Originally Thought, Could Prompt NC to Significantly Reduce Health Advisory Goal*, NC NEWSLINE (Oct. 26, 2021), https://ncnewsline.com/2021/10/26/epa-genx-far-more-toxic-that-originally-thought-could-prompt-nc-to-significantly-reduce-health-advisory-goal/ [https://perma.cc/X7DP-3T5S].

22. Natasha D. White et al., *Elevated levels of perfluoroalkyl substances in estuarine sediments of Charleston, SC*, 521-22 SCI. OF THE TOTAL ENV'T 79, 79 (2015). http://dx.doi.org/10.1016/j.scitotenv.2015.03.078 [https://perma.cc/U9NP-WGLC].

the Charleston Harbor and the Ashley and Cooper Rivers revealed higher levels PFAS contamination than reported in any other U.S. urban areas.[23] And the contamination is not limited to surface waters as a 2019 sample of tap water in Charleston by the Environmental Working Group (EWG) found PFAS contamination levels of 33 parts per trillion, well above the EWG suggested limit of 1 ppt and the newly proposed EPA limit of 4 ppt.[24] But the problem of PFAS contamination in Charleston's waterways does not stop there. PFAS has been shown to accumulate and build up in marine species and in the species that eat them, including humans.[25]

The problem is of unique concern in a place like Charleston, S.C., as the coastal city is famous for its seafood and recreational fishing and many of its residents rely on the fish they catch to provide food for themselves and their families.[26] Yet, an October 2022 study conducted by the South Carolina Department of Health and Environmental Control (S.C. DHEC) found PFAS levels averaging 2,900 ppt in crab tissues taken from a popular fishing location in North Charleston.[27] Not only is this level 725 times greater than the EPA's proposed drinking water maximum contaminant level but S.C. DHEC indicated that "crabs appear to bioaccumulate less PFAS than fish because they eat much smaller organisms," implying that fish species in the "area — the same fish that some anglers are eating —might have even higher PFAS concentrations."[28]

The accumulation of PFAS in fish poses a significant risk of harm to recreational and subsistence fishing communities who often eat large quantities of fish from a few local sources and at rates far above state consumption advisories, if any exist.[29] Further, it "even where state consumption advisories are in place, anglers are often unaware of these advisories or choose to ignore them."[30] DHEC testing of freshwater fish in the

23. *Id.*

24. *See* Sydney Evans Et Al., *PFAS Contamination of Drinking Water Far More Prevalent Than Previously Reported* ENV'TL WORKING GRP. (Jan. 23, 2020), https://www.ewg.org/research/national-pfas-testing [https://perma.cc/75MV-YGYG].

25. *See* Chloe Johnson, *Industrial chemicals in Charleston Harbor taint fish — and those who eat them*, THE POST AND COURIER (Jun. 4, 2022), https://www.postandcourier.com/environment/industrial-chemicals-in-charleston-harbor-taint-fish-and-those-who-eat-them/article_b2b14506-bc19-11ec-83e5-7f2a8322d624.html [https://perma.cc/8VLB-ER8J].

26. *Id.*

27. Lily Levin, *Forever Chemicals in Fish Worry Charleston Anglers,* CHARLESTON CITY PAPER (Nov. 10, 2023), https://charlestoncitypaper.com/2023/11/10/how-are-lowcountry-residents-affected-by-pfas contamination/ [https://perma.cc/9BZR-S8BF].

28. *Id.*

29. *Id.*

30. Patricia A. Fair et al., *Perfluoroalkyl Substances (PFASs) in Edible Fish Species from Charleston Harbor and Tributaries, South Carolina, United States: Exposure and Risk Assessment*, 171 ENV'TL RSCH. 266 (Apr. 2019), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6943835/ [https://perma.cc/4E8B-6RAU].

Ashley River and Goose Creek Reservoir, both adjacent to Charleston found that "PFOS, one of the most harmful types of PFAS, averaged approximately 14,910 parts per trillion (ppt) in tissue samples of fish fillets."[31] For context, "[e]ating one eight-ounce serving of fish at this level is the same as drinking 40 liters of water per month with a level of about 85 PFOS ppt" which is more than twenty-two times greater than the amount that should be ingested per month, according to EPA proposed PFOS maximum contaminant level.[32] At greatest risk are subsistence fishing communities such as the Gullah and Geechee people, a unique ethnic group living along the intercoastal waterway of the southeast with a population of approximately one million people, for whom local seafood and subsistence fishing are dietary and cultural staples.[33] Members of the Gullah Geechee culture have been shown to have elevated PFAS levels and related health effects.[34]

The outsized effect of PFAS contamination on groups like the Gullah Geechee and other minority subsistence fishing groups raises important environmental justice or injustice issues and is reflective of larger nationwide trends.[35] Environmental injustice refers to the pattern of many minority communities and disadvantaged populations being differentially burdened by environmental hazards and unhealthy land uses.[36] "These burden disparities lead to exposure disparities, increased health risks, and environmental health disparities" and are "linked to the historic pattern of exploitation, commodification, and devaluation of place, space, and people, which leads to the production of unhealthy geographies and environmental disparities."[37]

While the issue of PFAS contamination is not limited to minority and low-income communities and the environmental justice context, the importance of the relationship between PFAS contamination levels and minority and low-income communities cannot be overstated. A recent study published in Environmental Science & Technology indicated that PFAS point sources, such as industrial facilities, military fire training areas, or airports are disproportionately sited adjacent to low-income communities and

31. Lily Levin, *Charleston Fish Show High Levels of Forever Chemicals,* CHARLESTON CITY PAPER (Oct. 27, 2023), https://charlestoncitypaper.com/2023/10/27/charleston-fish-show-high-levels-of-forever-chemicals/ [https://perma.cc/SHC7-FWBG].

32. *Id.*

33. Fair et al., *supra* note 30.

34. *Id.*

35. *See* Sacorby M. Wilson et al., *Assessment of the Distribution of Toxic Release Inventory Facilities in Metropolitan Charleston: An Environmental Justice Case Study*, 102 AM. J. P. HEALTH 10 (Oct. 2012), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3490646/ [https://perma.cc/6U7S-5J4V].

36. *Id.*

37. *Id.*

communities of color.[38] Each additional point source within a watershed was associated with a significant increase in PFAS concentrations within drinking water.[39] The study concluded that "[b]oth the locations of PFAS sources and PFAS concentrations in drinking water were positively and significantly associated with the proportion of non-Hispanic Black and Hispanic/Latino residents."[40]

Charleston represents a prime example of the correlation between hazardous land use and minority communities. Relevant studies of the area have displayed a positive association between presence of Toxic Release Inventory (TRI) facilities" and predominantly minority communities and a negative association between number of TRI facilities and heightened socioeconomic status.[41] North Charleston, which has predominantly black population and the highest percentage of non-white residents within the Charleston Metropolitan Statistical Area (MSA), is home a large number of TRI facilities.[42] With regards to likely PFAS point sources, North Charleston is home to a joint military base and civilian airport, a naval weapons station, and multiple shipyards, all of which have been linked to PFAS contamination.[43]

At the former Charleston Naval Base, along the Cooper River in North Charleston, "PFAS chemicals were sprayed in the air to suppress the spread of another toxic substance: chromium, used in ship plating."[44] Further, even though the naval base officially closed in 1996, "like other military installations, it was the site of repeated PFAS releases from fire drills where the foam was sprayed over and over . . . despite the fact that Navy scientists internally described the harms of firefighting foams as early as 1976."[45] Results of the testing indicate that "dangerous levels of PFAS have seeped into the groundwater flowing under the former base."[46] Meanwhile, recent testing by the Air Force at Joint Base Charleston, located along the Ashely River in North Charleston and home to both Air Force operations and a civilian airport, has revealed extremely high levels of PFAS on the base.[47] The Air Force has long used PFAS in firefighting foams known as aqueous film-forming foam or AFFF and has known of the potential toxicity of the

38. Jahred M. Liddie et al., *Sociodemographic Factors Are Associated with the Abundance of PFAS Sources and Detection in U.S. Community Water* Systems, 57 ENV'TL SCI. TECH. 7902, 7902 (2023), https://pubs.acs.org/doi/epdf/10.1021/acs.est.2c07255.

39. *Id.*

40. *Id.* at 7909.

41. Wilson et al., *supra* note 36.

42. *Id.*

43. Johnson, *supra* note 25.

44. *Id.*

45. *Id.*

46. *Id.*

47. *Id.*

foam since at least 1973.[48] Despite this, the military continued use of AFFF and repeatedly sprayed the foam at the base during firefighting drills.[49] The Air Force tests, initially conducted in 2018, "showed extreme levels of [PFAS] chemicals: a combined 1.15 million parts per trillion of two PFAS chemicals — an amount 16,428 times higher than EPA's health limit," making Joint Base Charleston one of only thirteen bases across the country with PFAS contamination of such a significant level.[50] And while "subsequent testing at the base has shown lower levels of these chemicals" a high risk of groundwater contamination remains.[51] On top of PFAS releases associated with military operations, there is evidence that discharge from sewage treatment plants and stormwater runoff from industrial sites further contribute to heightened PFAS concentrations in the area.[52]

As indicated above, industrial producers of PFAS chemicals, and industrial and government consumers of the chemicals have been aware of the dangers of PFAS for decades. Despite knowledge of the danger, the production and release of PFAS chemicals into the environment continued unchecked leading to the contamination the waterways, drinking water, marine species, and residents of Charleston, S.C. and of communities across the country.[53] Given the multitude of environmental laws and agencies designed to protect and restore the environment, one might wonder how the problem could have been allowed to grow to such a serious level. Further, the United States' checkered history of toxic harm, environmental degradation, associated public health issues and regulatory failures forces us to wonder what the next toxic pollutant will be to emerge and when it does, how long will it take for the responsible agencies to act.[54] The chemical industry bears a great deal of guilt for concealing its knowledge regarding the dangers of PFAS posed to human health and continuing to produce the chemicals and release them into the environment. However, it would be absurdly naïve to rely on industry to self-regulate. Therefore, we will examine the strengths and weaknesses of the current regulatory scheme and discuss several possible solutions aimed both at reacting to and remedying PFAS contamination in places like Charleston, S.C. as well as preventing and responding to the next industrial chemical crisis.

48. White et al., *supra* note 22.
49. Johnson, *supra* note 25.
50. *Id.*
51. *Id.*
52. White et al., *supra* note 23.
53. *Id.*
54. Matthew J. Eckelman & Jodi Sherman, *Environmental Impacts of the U.S. Health Care System and Effects on Public Health*, NAT'L LIB. OF MED., June 9, 2016, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4900601/ [https://perma.cc/RMT7-XNEA].

III. RESPONSE TO PFAS CRISIS UNDER FEDERAL ENVIRONMENTAL ACTS

The pervasive and serious nature of the health effects associated with PFAS contamination and the sheer magnitude of PFAS contamination within our country's waters, forces one to wonder how the issue was permitted to grow into the crisis that it is today, especially given the plethora of agencies and environmental laws designed to prevent and remedy just such an issue. The EPA, and often individual states, are provided with the power and the duty to prevent and remedy water pollution and other ecological issues under several statutes including the Clean Water Act (CWA), Safe Drinking Water Act (SDWA) Toxic Substances Control Act (TSCA), among others.[55]

A. Clean Water Act

The CWA is the "primary Federal statute regulating the protection of the nation's water" and would provide one of the primary statutory bases for preventing the extraordinary levels of PFAS contamination of surface waters and the species within them.[56] Born from growing public awareness and concern regarding water pollution, the CWA became law in 1972 in the form of sweeping amendments to the Federal Water Pollution Control Act of 1948, the first major U.S. law to address water pollution.[57] Particularly relevant to our discussion is the primary objective of the 1972 legislation, which was declared to be "*the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters*."[58] Pursuant to that objective, the goals of achieving zero discharge of pollutants into the nation's waters and achieving, "*where possible water quality that is both 'fishable' and 'swimmable'*" were established.[59]

In order to achieve its ends, the CWA provided the EPA and, by delegation, the states with several authorities to address contaminants of emerging concern, such as PFAS.[60] The CWA granted statutory authority to the EPA and delegated states to implement pollution control programs, including wastewater standards for industry, and explicit provisions

55. Sources cited *infra* notes 56, 74, and 83.

56. *Enforcement, Clean Water Act (CWA) and Federal Facilities*, EPA, https://www.epa.gov/enforcement/clean-water-act-cwa-and-federal-facilities [https://perma.cc/RWC8-9WBT].

57. *History of the Clean Water Act*, EPA, https://www.epa.gov/laws-regulations/history-clean-water-act [https://perma.cc/HG8Z-LH6Q].

58. CLAUDIA COPELAND, CONG. RSCH. SERV., CLEAN WATER ACT: A SUMMARY OF THE LAW 2 (2016), https://crsreports.congress.gov/product/pdf/RL/RL30030 (emphasis added).

59. *Id.* (emphasis added).

60. ELENA HUMPHREYS ET AL., CONG. RSCH. SERV., FED. ROLE IN RESPONDING TO POTENTIAL RISKS OF PFAS 6 (2022), https://crsreports.congress.gov/product/pdf/R/R45986.

prohibiting the discharge any pollutant from a point source into the waters of the United States without a National Pollutant Discharge Elimination System (NPDES) permit obtained under the CWA.[61] The NPDES program is the primary tool established under the CWA to address water pollution by regulating point sources that discharge pollutants to waters of the United States and incorporates technology-based and water-quality-based requirements into issued permits.[62] The CWA also requires the EPA to establish Effluent Limitation Guidelines (ELGs), which are another a powerful tool to limit pollutants from entering the nation's waters.[63] ELGs establish national technology-based regulatory limits on the level of specified pollutants in wastewater discharged into surface waters and into municipal sewage treatment facilities.[64] The limits established by ELGs are incorporated into the NPDES permits issued by delegated states and the EPA.[65] Further, the CWA requires the EPA to conduct annual review all existing ELGs, identify categories of sources discharging toxic or nonconventional pollutants that do not have ELGs, and establish a schedule for promulgating ELGs for any newly identified categories.[66]

The CWA also makes unlawful the discharge of "toxic pollutants" into the nation's waters.[67] The term "toxic pollutant" covers pollutants which after discharge and upon exposure, either directly from the environment or indirectly by ingestion through food chains, will, on the basis of information available to the EPA, cause death, disease, cancer, genetic mutations, or physiological malfunctions in exposed organisms or their offspring and would seem to clearly apply to PFAS.[68] Finally, the CWA charges the EPA with conducting "research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of pollution" and the "harmful effects on the health or welfare of persons caused by pollutants."[69]

Given the tremendous regulatory potential provided by the CWA via the NPDES program, the promulgation of ELGs, research into the potentially harmful effects of pollutants, and the designation of toxic pollutants, it seems clear that earlier action was available prevent the extreme levels of PFAS contamination of the waterways in and around Charleston. While the CWA did not pass into law until 1972, the use and discharge of PFAS chemicals was

61. EPA, s*upra* note 57; *see also id.* at 24.
62. Humphreys et al., *supra* note 60, at 24.
63. *Id.* at 25.
64. *Id.* at 24.
65. *Id*. at 25.
66. *Id.*
67. 33 U.S.C. § 1317.
68. 33 U.S.C. § 1362.
69. 33 U.S.C. § 1254(a)-(c).

consistent at the Charleston Naval Base through its close in 1996 and at Joint Base Charleston through at least 2016.[70] And while the EPA remained plausibly ignorant of the potential harms of PFAS prior to 3M's 1998 disclosure of studies showing that PFAS built up overtime in the human body, this fact does not excuse the EPA's failure to promulgate regulations with regard to PFAS. The failure of the EPA to identify PFAS as a harmful pollutant flies in the face of the EPA's duties to conduct research and investigations into the harmful effects of pollutants and to establish ELGs for currently unregulated pollutants.[71] Even if the EPA could be excused for not investigating and identifying PFAS as a harmful pollutant prior to 1998, the failure of the EPA to take meaningful regulatory action under the CWA prior to the issuance of a December 2022 memo regarding the use of NPDES program to address PFAS pollution evidences an alarming level of regulatory inaction. Perhaps even more startling is that despite the fact that the CWA authorizes EPA to designate contaminants as toxic pollutants or hazardous substances, triggering actions under the CWA and other environmental acts, the EPA has not designated any PFAS as toxic pollutants or hazardous substances has not given any indication that it plans to do so.[72]

B. Safe Drinking water Act

While the CWA focuses on the protection of surface waters, the SDWA is the primary federal for ensuring the quality of America's drinking water.[73] Originally enacted in 1974, and later amended in 1986 and 1996, the SDWA authorizes the EPA to set national standards for drinking water to protect against health effects from exposure to naturally-occurring and man-made contaminants.[74] The national standards established under the SDWA generally include "an enforceable standard and associated monitoring, treatment, and reporting requirements" which must be implemented by both the EPA and delegated states acting pursuant to the SDWA.[75] Not only does the SDWA provide for the regulation of known contaminants but the act also requires the EPA to develop a list of unregulated contaminants that are known to or may occur in drinking water and to determine whether contaminants have harmful

70. *See* Johnson, *supra* note 25.

71. 33 U.S.C. § 1254.

72. LAURA GATZ, CONG. RSCH. SERV., REG. PFAS UNDER THE CLEAN WATER ACT 2 (2022), https://sgp.fas.org/crs/misc/IF12148.pdf.

73. *Background on Drinking Water Standards in the Safe Drinking Water Act*, EPA, https://www.epa.gov/sdwa/background-drinking-water-standards-safe-drinking-water-act-sdwa [https://perma.cc/7JAA-P7DN].

74. *Id.*

75. Humphreys et al., *supra* note 60, at 18.

effects which may necessitate regulation of the contaminant.[76] If the EPA Administrator determines that the contaminant has harmful effects the EPA is then required to publish a maximum contaminant level goal and promulgate a national primary drinking water regulation for the contaminant.[77]

As with the CWA, the failure of the EPA to implement its SDWA investigatory powers and duties with respect to PFAS in the years between the SDWA's 1974 enactment and 3M's 1998 disclosure is an alarming instance of regulatory failure in its own right. However, the extent of the EPA's failure is best demonstrated by a review of the EPA's action under the SDWA over the past 20 odd years.

As noted above, the SDWA requires the EPA to periodically (every five years) publish a "list of contaminants that are known or anticipated to occur in public water systems and may require regulation under the act."[78] Despite learning of the potential of PFAS chemicals to accumulate in the human body in 1998, the EPA did not include PFAS on such a list until 2009.[79] And despite having selected the chemical class for consideration of regulation, the EPA did not arrive at a regulatory determination with regard to PFAS until 2021.[80] In 2009 and 2016 the EPA also issued *non-enforceable* health advisories regarding PFAS, with the 2016 advisory setting a level of 70 parts per trillion of PFAS *far above the level suggested by independent researchers*.[81]

C. Toxic Substances Control Act

Enacted in 1976, the TSCA provides EPA with authority to require reporting, record-keeping and testing requirements, and restrictions relating to chemical substances and mixtures.[82] With particular relevance to industrial chemicals such as PFAS, the TSCA requires that "any person who manufactures, processes, or distributes in commerce a chemical substance . . . and who obtains information which reasonably supports the conclusion that such substance or mixture presents a substantial risk of injury to health or the environment shall immediately inform" the EPA of such information.[83] The

76. EPA, *supra* note 73.
77. 42 U.S.C. § 300g-1.
78. ELENA HUMPHREYS, CONG. RSCH. SERV., PFAS AND DRINKING WATER: SELECTED EPA AND CONG. ACTIONS (2022), https://sgp.fas.org/crs/misc/R45793.pdf.
79. *Id.*
80. *Id.*
81. *Id.*
82. *Summary of the Toxic Substances Control Act*, EPA, https://www.epa.gov/laws-regulations/summary-toxic-substances-control-act [https://perma.cc/BW98-AY6K].
83. 15 U.S.C. § 2607.

EPA is also required to inventory or "compile, keep current, and publish a list" of each chemical substance manufactured or processed in the United States."[84] Further, the act requires the EPA to conduct testing on chemical substances or mixtures if the EPA finds that any such chemical may present an unreasonable risk of injury to health or the environment either in the manufacture, distribution, processing use or disposal of the chemical.[85] If the EPA determines that a chemical presents an unreasonable risk to health or the environment, the agency must immediately start the risk management process to reduce or eliminate these risks, up to and including prohibiting the manufacture, processing, or distribution of the chemical.[86] The EPA may also determine that the use of a particular chemical constitutes a "significant new use" and promulgate a "Significant New Use Rule" (SNUR) requiring that any person wishing to manufacture or process the chemical submit notice of intent to manufacture or process the chemical and comply with any restrictions or limitations set by the EPA.[87] The TSCA is perhaps the federal environmental act which the EPA has used to the greatest effect in the regulation of PFAS, though even under the TSCA action has been largely limited and has not placed significant restrictions on the release of PFAS into the environment.[88]

Pursuant to 3M's 1998 report of PFAS toxicity, the EPA used the information-gathering authorities of TSCA, to obtain "information on the risks of various PFAS to assess if such risks may be unreasonable to warrant regulation under the statute."[89] Following the investigation the EPA obtained a $10.25 million settlement against DuPont for violations of TSCA Section 8(e), requiring "that companies report to EPA substantial risk information about chemicals they manufacture, process or distribute in commerce."[90] However, it is important to note that while the fine represented "the largest

84. 15 U.S.C. § 2607.

85. 15 U.S.C. § 2603.

86. *Assessing and Managing Chemicals under TSCA*, EPA, https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/risk-management-existing-chemicals-under-tsca [https://perma.cc/KK7H-PTS3].; *see also* 15 U.S.C. § 2605.

87. 15 U.S.C. § 2604.

88. *See Reference News Release: EPA Settles PFOA Case Against DuPont for Largest Environmental Administrative Penalty in Agency History*, EPA, https://static.ewg.org/reports/2020/pfas-epatimeline/2005_EPA_Fines_DuPont_Over_PFOA.pdf [https://perma.cc/F9DN-JYXM]; 40 CFR § 721 (2020).

89. Humphreys et al., *supra* note 60, at 12.

90. *Reference News Release: EPA Settles PFOA Case Against DuPont for Largest Environmental Administrative Penalty in Agency History*, EPA, https://static.ewg.org/reports/2020/pfas-epa-timeline/2005_EPA_Fines_DuPont_Over_PFOA.pdf [https://perma.cc/F9DN-JYXM]; *see also* 15 U.S.C. § 2607.

civil administrative penalty EPA has ever obtained under any environmental statute," the fine was less than 2 percent of the annual profit generated by PFAS manufacturing within a given year.[91]

Under the TSCA's inventory requirement, the EPA added a limited number of PFAS to the TSCA inventory "soon after the original enactment of TSCA in 1976, and added others over time as manufacturers notified the agency of the intent to introduce new PFAS into commerce."[92] In 2006 the EPA launched the PFOA Stewardship Program under the TSCA in response to concerns about the impact of "*PFOA and long-chain PFASs* on human health and the environment, including concerns about their persistence, presence in the environment and in the blood of the general U.S. population, long half-life in people, and developmental and other adverse effects in laboratory animals."[93] As part of the Stewardship Program, the EPA reached an agreement with a group of manufacturers, including 3M and DuPont, that produced "PFOA and related perfluoroalkyl carboxylate chemicals for the voluntary phase-out of these chemicals over a 10-year period."[94] During the same time period, the EPA also promulgated several SNURs with regard to certain PFAS chemicals included in the voluntary phase outs, thereby requiring notification to the agency before reintroducing the phased out chemicals into commerce and before repurposing existing PFAS chemicals to entirely new uses.[95]

Following the implementation of the PFOA Stewardship program and associated voluntary phase-out of PFOA and long chain PFOS chemicals, as well as the EPA's adoption of SNURs for certain PFAS chemicals, the bloodstream levels of PFOS and PFOA decreased in sampled Americans.[96] However, not only do both substances remain detectable in the blood streams of many Americans, but those particular PFAS chemicals were replaced with "other PFAS, including shorter-chain homologues, such as perfluorobutane sulfonate (PFBS), and long-chain precursors, such as "GenX," the trade name

91. Rich, *supra* note 6; *Reference News Release*, *supra* note 90.

92. Humphreys, *supra* note 60, at 12.

93. *Fact Sheet: 2010/2015 PFOA Stewardship Program*, EPA, https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/fact-sheet-20102015-pfoa-stewardship-program [https://perma.cc/PPZ4-S7C9] (emphasis added).

94. *Id.*; CONG. RSCH. SERV., FEDERAL ROLE IN RESPONDING TO POTENTIAL RISKS OF PFAS 10 (David M. Bearden et al. eds., 2019)

95. *Fact Sheet*, *supra* note 93; Nicole Brennan et al., *Trends in the Regulation of Per- and Polyfluoroalkyl Substances (PFAS): A Scoping Review*, INT. J. RSCH. PUB. HEALTH 5 (Oct. 17, 2021), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8536021/ [https://perma.cc/SYC9-ADE4].

96. Brennan et al., *supra* note 95.

given to a processing technology used to generate chemicals that replace[d] PFOA."[97] While short chain PFAS chemicals were initially believed to be a safer alternative to the phased out long-chain PFAS, a 2018 study by the EPA found that both GenX and PFBS were associated with harmful effects on the kidneys, immune system, liver, reproductive system, and organ development.[98] Further, studies have shown that "short-chain PFAS are more widely detected, more persistent and mobile in aquatic systems, and thus may pose broader risks on the human and ecosystem health."[99]

As the foregoing discussion makes clear, the EPA, as well as the individual states, have multiple tools and avenues by which they may effectively regulate PFAS and prevent cases with extraordinary potential for human harm such as the current PFAS contamination crisis in Charleston, S.C. Ironically, perhaps the best illustration of the EPA's ability to effectively regulate in the area are the steps that the EPA has outlined and taken in its PFAS Strategic Roadmap. In the roadmap the EPA has proposed to take action under the CWA by using a "proactive approach to restrict PFAS discharges from multiple industrial categories [and] to make significant progress in its ELG regulatory work by the end of 2024."[100] The EPA also indicated its intent to "[l]everage federally-issued NPDES permits to reduce PFAS discharges" and to "[i]ssue new guidance to state permitting authorities to address PFAS in NPDES permits."[101] Pursuant to its power under the SDWA, in March 2023 the "EPA took a key step to protect public health by proposing to establish legally enforceable levels for six PFAS known to occur in drinking water, fulfilling a foundational commitment in the Agency's PFAS Strategic Roadmap."[102] Further, in October 2023, the EPA published a final rule under the TSCA that will provide the "EPA, its partners, and the public with the largest-ever dataset of PFAS manufactured and used in the United States."[103] The rule will require "all manufacturers (including importers) of PFAS and PFAS-containing articles in any year since 2011 to report information to EPA

97. *Id.*

98. *Id.*

99. Fan Li et al., *Short-chain per- and polyfluoroalkyl substances in aquatic systems: Occurrence, impacts and treatment,* 358 CHEM. ENG'G. J. (Jan. 15, 2020), https://www.sciencedirect.com/science/article/abs/pii/S1385894719319096 [https://perma.cc/2HB3-8CTL].

100. PFAS STRATEGIC ROADMAP: EPA'S COMMITMENTS TO ACTION 2021-2024, EPA 13 (2021), https://www.epa.gov/pfas/pfas-strategic-roadmap-epas-commitments-action-2021-2024 [https://perma.cc/QRP6-S5ZM].

101. *Id.* at 14.

102. *Key EPA Actions to Address PFS,* EPA, https://www.epa.gov/pfas/key-epa-actions-address-pfas [https://perma.cc/H9F9-PHDS].

103. *Id*.

on PFAS uses, production volumes, disposal, exposures, and hazards."[104] The recent actions by the EPA, as well as recent lawsuits undertaken by individual states, are certainly necessary and admirable. However, the question remains of how such an insidious problem went unreported, unnoticed, and unchecked for such a long period of time despite the plethora of environmental laws designed to address and prevent this very kind of issue, and what other toxins are receiving the same treatment.

IV. REASONS FOR REGULATORY INACTION

Of course, a great deal of the blame lies with the parties involved in the manufacture and use of PFAS and who long concealed their knowledge of the potential harm PFAS could cause. But this does not satisfactorily explain or excuse the failure of agencies like the EPA to investigate and regulate with regard to the issue, as it would be absurd to rely on industry to self-report and self-regulate when it comes to the choice between profits and public health. So, what then explains the failure?

A. Agency Capture

A likely answer lies in the phenomenon of agency capture. Put simply, agency capture occurs when a regulatory agency becomes largely influenced by the parties or industries that the agency is charged with regulating.[105] The phenomenon of agency capture has become "widely accepted, not only by public interest lawyers, but by academic critics, legislators, judges, and even by some agency members."[106]

Agencies charged with regulating large and complex industries, like the chemical industry, are at particularly high risk of capture. These industries are well-financed and highly organized and are much better positioned than the general public and even public interest groups to monitor and challenge agency actions contrary to the industry's interests.[107] Industry groups are also well positioned to contribute to political campaigns and create effective lobbies, creating substantial influence with the "agency's legislative overseers on the relevant oversight committees."[108] The monetary and political

104. *Id*.

105. Paul M. Johnson, *A Glossary of Political Economy Terms*, AUBURN UNIV., https://webhome.auburn.edu/~johnspm/gloss/captured_agency.phtml [[https://perma.cc/2H7V-493A].

106. Richard B. Stewart, The Reformation of American Administrative Law, 88 HARV. L. REV. 1667, 1713 (1975).

107. Rachel E. Barkow, *Insulating Agencies: Avoiding Capture Through Institutional Design*, 89 TEX. L. REV. 15, 21 (2010).

108. *Id.* at 22.

influence that regulated industries have over agencies is further exacerbated by the frequency with which agency employees enter the regulated industry, creating a "revolving door" between the agency and the regulated industry.[109] And while agency capture is "neither corruption nor control," the result is a "surplus of passivity and reactivity, and a deficit of curiosity and creativity . . . evidenced by a body of commission decisions or nondecisions—about resources, procedures, priorities, and policies, where what the regulated entity wants has more influence than what the public interest require."[110]

The role agency capture has played in the EPA's failure to regulate PFAS or the companies producing the chemicals seems clear to see. As noted previously, the EPA was notified of the potential health hazards associated with PFAS in 1998, yet it has largely failed to set any meaningful or enforceable regulations on the manufacture of PFAS or its presence in the human environment.[111] The EPA's initial reaction to the threat of PFAS was limited to paltry fines and the construction of a "voluntary agreement with DuPont, 3M and other companies to phase out the use of PFOS and PFOA."[112] The voluntary agreement was accompanied by a contemporaneous statement by the EPA that "to date, EPA is not aware of any studies specifically relating current levels of PFOA exposure to human health effects."[113] Further, despite its own findings that PFAS was a "likely human carcinogen" the EPA did not issue any health advisory in response to the findings for nearly 3 years.[114] If agency capture can be described as a "surplus of passivity and reactivity, and a deficit of curiosity and creativity . . . evidenced by a body of commission decisions or nondecisions" then the EPA's actions and decisions in regard to PFAS seem to evidence a deluge of "passivity and reactivity" and an incredible absence of "curiosity and creativity."[115]

B. Flaws within Federal Environmental Acts

While agency capture presents a major obstacle to efficient and effective agency action, even where the EPA has a desire to act, Congress has often designed or modified the acts in a manner that hamstring the EPA's ability to

109. Haris Tabakovic & Thomas G. Wollman, *From Revolving Doors to Regulatory Capture? Evidence from Patent Examiners*, at 2 (Nat. Bur. Econ. Rsch. Working Papers Series, May 2018) https://www.nber.org/system/files/working_papers/w24638/w24638.pdf [https://perma.cc/PUL6-5SE8].

110. Scott Hempling, *"Regulatory Capture": Sources and Solutions*, 1 EMORY CORP. GOVERNANCE & ACCOUNTABILITY REV. 23, 25 (2014), https://scholarlycommons.law.emory.edu/cgi/viewcontent.cgi?article=1003&context=ecgar [https://perma.cc/4F6T-PEC6].

111. Faber, *supra* note 14.

112. *Id.*

113. *Id.*

114. *Id.*

115. Hempling, *supra* note 110.

promulgate effective regulation.[116] The CWA, SDWA, and TSCA should be among the primary vehicles for any attempt by the EPA to regulate PFAS, but the EPA's ability to address contaminants of emerging concern (CECs), such as PFAS, under the Acts is hampered by several factors.[117]

1. CWA

As described previously, the CWA charges the EPA with adopting or revising Effluent Limitations Guidelines (ELGs) that will result in reasonable progress towards the goal of eliminating the discharge of all pollutants via the "application of the best practicable control technology currently available."[118] However, the revision of ELGs in response to CECs is slowed by data gathering requirements beyond simple identification of pollutants of concern, including "evaluating the levels, prevalence, and sources of those pollutants of concern; determining whether the pollutants are in treatable quantities and whether effective treatment technologies are available; and developing economic data to project the cost of treatment."[119] Adding to the challenges is the fact that it is often difficult for the EPA to "keep pace with the growth of new chemicals in commerce."[120] The EPA itself has noted that there is often a lack of data "on the levels of the contaminant in dischargers' effluent and/or in the receiving surface waters" and that the "two sources of data most readily available to EPA—discharge monitoring report data and toxic release inventory data—*are limited to specific contaminants on which industry is required to report*."[121] Creating a problematic situation in which the agency responsible for oversight of a regulated industry is reliant upon an industry, already shown to have concealed information on this specific issue, to report information that will likely be used to increase the regulatory burden on the industry.

Even after research stage has been completed, the determination of whether to actually revise ELGs is subject to a cost benefit analysis on "the reasonableness of the relationship between the costs of attaining a reduction in effluents and the effluent reduction benefits derived."[122] EPA officials have stated that "identifying demonstrated treatment technologies and documenting their efficiency is especially challenging" and that "the most

116. *Id.* at 33

117. LAURA GATZ, CONG. RSCH. SERV., CONTAMINANTS OF EMERGING CONCERN UNDER THE CLEAN WATER ACT, at 1 (2021), https://crsreports.congress.gov/product/pdf/R/R45998.

118. 33 U.S.C. 1314(b)(1)(A).

119. Gatz, *supra* note 117, at 10–11.

120. *Id.* at 11 (footnote omitted).

121. *Id.* (emphasis added).

122. 33 U.S.C. § 1314(b).

difficult task is showing that any technology selected as the basis for an ELG is economically achievable for the industry."[123] While economic concerns and const benefit analyses certainly have their place within the field environmental regulation, their inclusion within the CWA only serve to exacerbate the potential for inaction in response to industry and political pressure.

2. SDWA

The SDWA provides another example of an act whose effectiveness and potential to respond to pollutants like PFAS has been severely limited, in this case due to congressional modifications to the act. As noted previously, while the CWA protects the nation's surface waters, the SDWA focuses on ensuring the safety and quality of the nation's drinking water.[124] Originally passed in 1974, the SDWA was modified in 1996 to impose a number of hurdles that must be cleared before the EPA can promulgate new regulations for pollutants and to disincentivize agency action in the area.[125]

While the amended SDWA requires that the EPA publish a list of currently unregulated contaminants, which may require regulation under the purposes of the SDWA, the EPA's decision of whether or not to select an unregulated contaminant for consideration of regulation is exempted from judicial review.[126] Further, even where a contaminant has been listed for consideration of regulation, it is not necessary for the EPA to make a determination of whether or not actually promulgate regulations.[127] The EPA may leave a proposed contaminant under consideration for an indefinite period of time. In fact, the EPA has had the PFAS compounds of PFOA and PFOS listed as candidates for regulation since 2009, but did not make a regulatory determination with regard to either compound until March of 2021.[128]

Even where the EPA has decided to regulate a given contaminant, the SDWA imposes multiple considerations that must be met prior to issuing a regulation. Most restrictive to agency action is the requirement of a Health Risk Reduction and Cost Analysis as part of the process for promulgating

123. Gatz, *supra* note 117, at 11.

124. *Enforcement, Safe Drinking Water Act (SDWA) and Federal Facilities*, EPA (Oct. 18, 2023) https://www.epa.gov/enforcement/safe-drinking-water-act-sdwa-and-federal-facilities [https://perma.cc/66FR-BJZF].

125. Erik Olson, *The Broken Safe Drinking Water Act Won't Fix the PFAS Crisis*, NRDC (Sep. 12, 2019), https://www.nrdc.org/bio/erik-d-olson/broken-safe-drinking-water-act-wont-fix-pfas-crisis [https://perma.cc/WR5E-335A].

126. 42 U.S.C. § 300g-1(b)(1)(B)(i)(III).

127. *Id.* § 300g-1(a)(1).

128. ELENA H. HUMPHREYS, CONG. RSCH. SERV., REGULATING DRINKING WATER CONTAMINANTS: EPA PFAS ACTIONS (2023); 40 C.F.R. 141 (2021).

regulations with respect to a previously unregulated pollutant.[129] The analysis requires the EPA to consider whether there is factual basis in the rulemaking record to conclude that potential health risk reduction benefits can be attributed *solely to the proposed regulation*, rather than from compliance with other enacted or proposed regulations.[130] The potential benefits of the proposed regulation must then be weighed against costs associated with implementing and enforcing the regulation.[131] As may be imagined, "it is far harder to establish and monetize the economic and other benefits of improved public health as compared to quantifying costs, thus tilting the playing field in favor" of regulated industries and their proponents.[132]

3. TSCA

Similar to the CWA, the TSCA contains a flaw in the fact that it relies on a "toxicity honor system" in order to produce the information necessary to regulate potentially toxic chemicals.[133] In other words, it places the burden on private entities to affirmatively report to the EPA any chemical that presents a substantial risk of harm rather than mandating report of any new chemicals or requiring testing of chemicals prior to widespread production and introduction to the marketplace.[134] Further, the specific language of the TSCA, which mandates notice only where the regulated entity "obtains information which *reasonably supports* the conclusion that such substance or mixture presents *a substantial risk* of injury to health or the environment," leaves a great deal of discretion to regulated entities.[135] The duty to report is therefore "only as effective as the corporations' willingness to disclose harmful chemicals," an unsettling thought given that "corporations are often powerfully incentivized to not fully disclose an underlying chemical's harm" and in the case of 3M and DuPont, have a proven track record of failure to disclose.[136]

4. Lack of Mandatory Language & Effect on Citizen Suits

Weaknesses and modifications to environmental acts not only limit agency ability to act but prevent effective use of the citizen suit provisions included within most acts. Originating with the environmental acts of the

129. Olson, *supra* note 125.
130. *Id.*
131. *Id.*
132. *Id.*
133. Mark P. Nevitt & Robert V. Percival, *Can Environmental Law Solve the "Forever Chemical" Problem?*, 57 WAKE FOREST L. REV. 239, 284 (2022).
134. *Id.* at 284.
135. *Summary of the Toxic Substances Control Act*, *supra* note 82 (emphasis added).
136. Nevitt & Percival, *supra* note 133.

1970s, citizen suit provisions were originally included in environmental laws to create greater rights and opportunities for public participation in administrative action and can act as a counterweight to the effects of agency capture by regulated industries.[137] Not only do citizen suit provisions allow citizens to respond to private parties who are in violation of the act but they provide for citizens to bring action against agencies for failure to execute mandatory duties under relevant enabling statutes.[138] Citizen suits allow public interest groups to effect agency enforcement practice by deterring future captive relations between agencies and regulate parties.[139] A citizen suit against an alleged violator can prompt an agency to act more aggressively as by inserting itself into regulatory action, the citizen plaintiff can keep the agency honest, denying it the benefits of cooperative enforcement.[140]

However, use of citizen suits has been conspicuously rare with regard to PFAS despite the multiple environmental laws, and corresponding citizen suit provisions, that would apply to the issue. A primary obstacle to compelling agency action via citizen suit is the limiting language within most environmental regulatory acts (including the CWA, SDWA, and TSCA) that allows suits regarding agency inaction only with respect to mandatory or non-discretionary acts or duties.[141] For example, under the CWA the EPA is authorized to identify and regulate "toxic pollutants" taking into account the "account toxicity of the pollutant, its persistence, degradability, the usual or potential presence of the affected organisms in any waters, the importance of the affected organisms, and the nature and extent of the effect of the toxic pollutant on such organisms."[142] However, while congress identified an initial

137. Barry Boyer & Errol Meidinger, *Privatizing Regulatory Enforcement: A Preliminary Assessment of Citizen Suits Under Federal Environmental Laws*, 34 BUFF. L. REV. 833, 843–44 (1985).

138. *Id.* at 850.

139. Matthew D. Zinn, *Policing Environmental Regulatory Enforcement: Cooperation, Capture, and Citizen Suits*, 21 STAN. ENV'T L.J. 81, 134 (2002).

140. *Id.*

141. *See, e.g.*, 33 U.S.C § 1365(a)(2) (noting that any person may "commence civil action . . . against the Administrator where there is alleged a failure of the Administrator to perform any act or duty under this subchapter which is not discretionary with the Administrator");Pres. Endangered Areas of Cobb's Hist., Inc. v. U.S. Army Corps of Eng'rs, 915 F. Supp. 378, 381 (N.D. Ga. 1995) (holding that the "plain language of the citizen's suit provision of the statute makes it clear that the EPA Administrator cannot be sued for misfeasance or nonfeasance in regard to a *discretionary* function") (emphasis in original).

142. "From time to time thereafter, the Administrator *may* revise such list and the Administrator is authorized to add to or remove from such list any pollutant . . . The Administrator, *in his discretion*, may publish in the Federal Register a proposed effluent standard (which may include a prohibition) establishing requirements for a toxic pollutant which, if an effluent limitation is applicable to a class or category of point sources, shall be applicable to such category or class only if such standard imposes more stringent requirements." 33 U.S.C. § 1317 (a)(1) (emphasis added).

list of toxic pollutants which the EPA was charged with regulating, the duty of the EPA to revise the list and to add or remove newly identified pollutants to the toxic pollutant list is completely discretionary.[143] Accordingly, an individual bringing a citizen suit on the EPA's failure to revise and update the toxic pollutant list would lack standing to pursue the issue. It is worthwhile to note that the EPA has not added any pollutants to the list in forty-seven years.[144]

C. APA Review and Limitations

While non-discretionary duties within environmental acts pose a barrier to the citizen suits which might compel effective agency action on industrial pollution, the Administrative Procedure Act (APA) may offer a path forward for parties who wish to challenge agency action, or in this case failure to act, with regard to a discretionary duty. Section 702 of the APA provides that "[a] person suffering legal wrong because of agency action, or adversely affected or aggrieved by agency action within the meaning of a relevant statute, is entitled to judicial review thereof."[145] Section 706 provides for the compulsion of "agency action unlawfully withheld or unreasonably delayed" and for courts to "hold unlawful and set aside agency action" that is "arbitrary, capricious, *an abuse of discretion*, or otherwise not in accordance with law."[146] However, while the APA may be used to challenge discretionary agency action or failure to act, a party seeking APA review of agency action or inaction faces multiple challenges. APA review only applies to actions which are final and discrete in nature, preventing judicial review an agency's "general deficiencies in compliance" with its statutory duties.[147] And despite the fact that agency inaction may be reviewed for unreasonable delay, the limitation of APA review to "final agency action" allows agencies to delay and avoid review for extended periods of time.[148] Further, the arbitrary and capricious standard is very deferential to agency decision making and requires

143. *Id.*

144. *EPA Petitions to Update 47-Year-Old Toxic Pollutant* List, CTR FOR BIOLOGICAL DIVERSITY, https://biologicaldiversity.org/w/news/press-releases/epa-petitioned-to-update-47-year-old-toxic-pollutant-list-2023-07-31/ [https://perma.cc/UP47-SYJG].

145. 5 U.S.C. § 702.

146. 5 U.S.C. § 706 (emphasis added).

147. *See* Norton v. S. Utah Wilderness All., 542 U.S. 55, 62–63, 66 (2004).

148. *See In re* Nat. Res. Def. Council, Inc., 956 F.3d 1134, 1136 (9th Cir. 2020). Suit brought by the NRDC due to EPA inaction on a petition regarding toxic harm of flea and tick collars. Following an NRDC petitioned to cancel the registration of the collars the EPA avoided reaching a final action for nearly 20 years. While the suit resulted in a court order to compel agency action, the intervening period between the initial petition and the court order demonstrates the extent to which agency action and judicial review thereof can be delayed.

only that the agency show a rational connection between the facts found and the choice made.[149]

D. Military Use of PFAS

An issue of particular significance in responding to PFAS contamination in and around Charleston is the fact that a major source of the contamination is the military.[150] Not only do "courts already afford the military a certain amount of deference, allowing the military to potentially sidestep environmental oversight," but often state and local governments, who would otherwise have both the ability and the incentive to bring claims in response to contamination cases may be reluctant to bring claims against the military.[151] And while the citizen suit provisions of relevant environmental statutes, the APA, and the Federal Tort Claims Act all provide avenues by which a claim may be brought against the federal government, the fact that no federal environmental statute as of yet "prohibits or affirmatively regulates PFAS, makes it exceedingly difficult to litigate against the [military] for PFAS violations."[152] This difficulty is illustrated by the following example:

> The SDWA delegates broad authorities to states to enforce drinking water standards and establish an enforceable regulatory standard. All federal agencies--including the DoD--are subject to, and must comply with, all federal, state, interstate, and local requirements respecting the protection of wellhead areas, public water systems, and underground "injection[s]" into the water systems. Under the SDWA's sovereign immunity waiver, *citizens* and states are authorized to bring a *civil suit* against the DoD for violations of any SDWA **requirement**. But the EPA has not imposed a national drinking water standard, and *PFAS* from military bases enter larger bodies of water via a process called "venting groundwater," not point source charges. As states sue military departments for *PFAS* contamination and remediation, the DoD is arguing that any sovereign immunity waiver must originate from clear and affirmative federal legal requirements. None of the six federal statutes discussed above clearly regulate *PFAS*, so the sovereign immunity waivers fall short. For example, *PFAS* are not considered a point source discharge under the Clean Water Act, and *PFAS* are not defined as "hazardous

149. Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 56 (1983).
150. Johnson, *supra* note 25.
151. Nevitt & Percival, *supra* note 133, at 269 (emphases in original).
152. *Id*. at 273.

substances" under the [relevant federal statute]--a point recently made by the Air Force in response to [state] regulatory efforts.[153]

V. SOLUTIONS AND ALTERNATIVES

A. Statutory Modifications

As illustrated above, agency capture is likely a significant factor in the lack of response by agencies on the PFAS issue. Multiple authorities have discussed solutions to agency capture ranging from the creation of agency watchdog groups,[154] increasing agency insulation from interest group pressures,[155] to the introduction of new legislation designed to reduce regulated party influence on agency rulemaking processes, increase transparency and efficiency in agency action, and improve the ability of the public to hold agencies and regulated parties accountable.[156]

Alternatively, the potential and the effectiveness of citizen suit provisions could be improved by modifying statutes to include more mandatory, rather than discretionary, duties, allowing enforcement via citizen suit provisions. Environmental statutes could also be strengthened by removing or limiting the scope of provisions such as the cost-benefit analysis requirement within the SDWA so that agencies can act with a greater emphasis on public health and welfare, rather than hard to define economic considerations.[157]

However, statutory modifications and changes in agency structure are largely a function of politics and policy making, and are subject to some of the same lobbying and political pressures associated with agency capture and inaction. And while legislative and political solutions have resulted in incredible victories in the field of environmental protection and regulation, the weakening of the SDWA over the years perfectly illustrates the fact that we cannot rely on legislative and administrative solutions alone when facing the ever-expanding threat of toxic pollution such as PFAS. So, what then are the alternatives?

B. Nuisance Doctrine

Before the promulgation of the federal environmental and pollution control statutes which emerged out of the 1960s and 70s, common law

153. *Id.* at 273–74 (added emphasis in italics).

154. Gerard J. Caprio, *Regulatory Capture: Why It Occurs, How to Minimize It*, 18 N.C. BANKING INST. 39 (2013).

155. *See generally* Barkow, *supra* note 107.

156. *House Progressives Debut Regulatory Reform Bill,* PUBLIC CITIZEN (Dec. 1, 2021), https://www.citizen.org/article/stopcorpcapture/ [https://perma.cc/YM9X-BP7Q]

157. *See* Olson, *supra* note 125.

nuisance doctrine was the primary source of action for environmental law and protection.[158] While the use of the doctrine in response to environmental issues has faded over the years, it has seen renewed interest for its potential to respond to gaps both in environmental statutes themselves and in agency enforcement of the statutes.[159]

Nuisance doctrine has been broken into two categories, private and public nuisance. Given a broad definition "[a] nuisance has been defined as 'anything which works hurt, inconvenience, or damages; anything which essentially interferes with the enjoyment of life or property.'"[160] A nuisance qualifies as public, rather than private, if it is one that is "so general in its character—that is, affects a sufficient number of persons—to justify its characterization as a 'public nuisance.'"[161] There is "no doubt that a nuisance is public if it affects the entire community or neighborhood, or any considerable number of persons."[162]

While both private and public nuisance can be used to respond to environmental harms, public nuisance is better suited to use in response to toxic pollutants such as PFAS as a private nuisance claim limits both restricts both the number of potential plaintiffs and the potential for a broad and impactful remedy.[163] This is because the "traditional concept of private nuisance requires the plaintiff to demonstrate that the defendants unreasonably interfered with their ownership or possession of the land."[164] Accordingly, the number of plaintiffs who can bring a private nuisance claim in response to any particular harm is limited to private property owners and requires those bringing suit to show interference with the enjoyment of that property.[165] Further, even where private landowners can show the necessary interference the remedy is limited to what is necessary to address the specific

158. J.B. Ruhl, *Making Nuisance Ecological*, 58 CASE W. RES. L. REV. 753, 753–54 (2008).

159. David R. Hodas, *Private Actions for Public Nuisance: Common Law Citizen Suits for Relief from Environmental Harm*, 16 ECOLOGY L.Q. 883, 887 (1989).

160. Shaw v. Coleman, 373 S.C. 485, 496, 645 S.E.2d 252, 258 (Ct. App. 2007).

161. State v. Turner, 198 S.C. 487, 18 S.E.2d 372, 375 (1942).

162. *Id*.

163. Gwyn Goodson Timms, *Statutorily Awarding Attorneys' Fees in Environmental Nuisance Suits: Jump Starting the Public Watchdog*, 65 S. CAL. L. REV. 1733, 1738 (1992) (internal citations omitted) (noting that although "the requisites of a nuisance cause of action may be somewhat rigorous, the public nuisance doctrine remains an effective means to combat pollution . . . The Pennsylvania Supreme Court [has] found that public nuisance [is] a necessary supplement to environmental regulations. The current method of regulation is simply not working. Administrative agencies do not have the resources to enforce the environmental statutes to the extent many desire. Citizens are not bringing suit against polluters to the degree the government expected when it implemented citizen suits in the environmental statutes.").

164. O'Cain v. O'Cain, 322 S.C. 551, 561, 473 S.E.2d 460, 466 (Ct. App. 1996).

165. Hodas, *supra* note 159, at 903.

property at issue.[166] This limits the usefulness of private nuisance doctrine as much of the danger of PFAS comes from its proliferation in the public water supply. Even where there is potential for a class action on a private nuisance claim, the class is limited to those who are similarly situated as the class representative, leading to the same issues of limiting the potential plaintiff pool and breadth of remedy available.

Public nuisance, on the other hand, has much more potential for use in response to toxic pollutants as a public nuisance claim does not necessarily rely on interference with the enjoyment of private property, but allows for action on interference with public rights and goods, especially those relating to public health and safety or causing substantial inconvenience or annoyance to the public.[167] The applicability of the public nuisance cause of action for interference with the use of public goods renders it an extremely useful tool to confront PFAS due to its impact on the public water supply both in the context of drinking water and those who use public waters for recreational and subsistence fishing purposes. Public nuisance also "presents some unique attractions" by *offering "the prospect of direct compensation to clients and communities*, unlike federal environmental statutes that allow only injunctive relief or that require civil penalties be paid to the United States Treasury, not to the plaintiffs."[168] Public nuisance doctrine also allows for a jury trial, providing the "unusual opportunity for obtaining lucrative punitive damages."[169] Further, "[u]nlike many environmental cases that focus on procedure or what defendants call 'technical violations,' public nuisance focuses squarely on the merits and is brought directly against the source, not the government."[170] And, because public nuisance claims allow action on behalf of whole communities, the cause of action eliminates some of complications associated with class actions, such as certification of the class.[171]

Despite the many advantages presented by a public nuisance cause of action in response to PFAS contamination, the use of the doctrine can be hampered by the fact that public nuisance claims are generally limited to being

166. W. Page Keeton et al., Prosser and Keeton on the Law of Torts, § 86, at 618 (5th ed. 1984) ("The remedy for [private nusinace] lies in the hands of the individual whose rights have been disturbed").

167. Robert Abrams Val Washington, *The Misunderstood Law of Public Nuisance: A Comparison with Private Nuisance Twenty Years After Boomer*, 54 ALB. L. REV. 359, 364 (1990).

168. Denise E. Antolini, *Modernizing Public Nuisance: Solving the Paradox of the Special Injury Rule*, 28 ECOLOGY L.Q. 755, 884 (2001) (emphasis added).

169. *Id*.

170. *Id.*

171. *Id.*

brought by state governments, rather than private parties.[172] Of course, this is no issue where state governments are diligent in the protection of their resources or, as is more likely the case, finally respond to growing public awareness surrounding issues like PFAS. In fact, many states, including South Carolina, have begun to pursue public nuisance claims against manufacturers of PFAS.[173] But relying on action by a state government is a waiting game little better than relying on congressional or federal agency action, as states are subject to the same risks of capture and financial and political pressure as federal actors.[174]

This point is likely all the more true in situations where environmental justice concerns are significant. Mirroring the effect of agency capture and associated political and financial influence in hampering effective action in response to environmental harms, the lack of political power and influence common to many of the minority communities subject to harms from environmental injustice may prevent political pressure and public awareness from spurring early and effective action when such harms occur. Fortunately, an exception to the general rule that only the State may bring a cause of action to remedy a public nuisance exists in certain circumstances.[175]

1. Private Suits for Public Nuisance and the Special Injury Rule

Generally, a *private party may bring a public nuisance cause of action where the private party has suffered a "special injury"* resulting in "special" or "particular" damage to the plaintiff.[176] A special injury has been defined as "individual or specific damage in addition to that suffered by the public" that

172. Carnival Corp. v. Historic Ansonborough Neighborhood Ass'n., 407 S.C. 67, 78, 753 S.E.2d 846, 852 (2014).

173. *See* Complaint at at ¶171, State of South Carolina v. 3M et al., Civil Action No.: 2023-CP-40-_, (S.C. Ct. C.P. Aug. 7, 2023) (setting forth a public nuisance cause of action noting that "[d]efendants have manufactured, marketed, distributed, promoted, and/or sold [PFAS] in a manner that created or participated in creating a public nuisance that unreasonably endangers or injures the property, health, safety, and welfare of the general public and the State of South Carolina causing inconvenience and annoyance . . . Defendants, by their negligent, reckless, and willful acts and omissions set forth herein, have, among other things, knowingly unleashed long-lasting [PFAS] contamination of State natural resources and property throughout South Carolina.").

174. *See* Neal v. Darby, 282 S.C. 277, 285, 318 S.E.2d 18, 20 (Ct. App. 1984) (noting that local governments are also free to bring public nuisance claims against polluters and have done so). However, even though county and municipal governments may be more receptive to the concerns of local citizens, these governments are not free from the same financial and political concerns acknowledged above.

175. *See Carnival*, 407 S.C. at 78, 753 S.E.2d at 852.

176. Michael C. Skotnicki, *Private Actions for Damages Resulting from an Environmental Public Nuisance: Overcoming the Barrier to Standing Posed by the "Special Injury" Rule*, 16 AM. J. TRIAL ADVOC. 591, 593 (1992) (emphasis added).

is "of a special character, distinct and different from the injuries suffered by the public generally."[177] A particularized injury is one that "affect[s] the plaintiff in a personal and individual way."[178] As applied by the courts, the special injury requirement has traditionally "created a significant barrier to standing for private plaintiffs suing for an environmental public nuisance that has caused them injury."[179] However, today it appears that public nuisance is slowly undergoing "a metamorphosis into a cause of action quite useful to private plaintiffs who have suffered damages because of an environmental harm."[180]

a. Parris v. 3M

The potential applicability of private cause of action on a public nuisance for the abatement and remediation of PFAS pollution as a public nuisance is demonstrated by a recent case from the Northern District of Georgia, *Parris v. 3M Company*. The case arose from PFAS contamination of surface waters and drinking water in Chattooga County, Georgia.[181] Among the Plaintiff's allegations were charges that 3M and other "Manufacturing Defendants" "manufactured and supplied the PFAS that [were] discharged into" the local water supply by other defendants and that *the PFAS contamination caused by the defendants unreasonably interfered with "a right common to the general public—the use and enjoyment of [local waters]."*[182] Further, the plaintiff alleged special damages in the form of: "(1) the diminished value of their properties; (2) interference with their use and enjoyment of their properties; (3) upset, annoyance and inconvenience; (4) increased rates and surcharges as [local] ratepayers; and (5) costs incurred to obtain alternate potable water supplies."[183]

Despite the defendants' contention that "the Plaintiff [could] not show any special damages where . . . his alleged injuries are shared by other members of the public" the court found that an "injured person does not lose this right because others in the vicinity have similar causes of action" and that the alleged "*real and personal property damages [gave] rise to a private cause of*

177. *Carnival*, 407 S.C. at 78, 753 S.E.2d at 852.

178. Sea Pines Ass'n for Prot. of Wildlife, Inc. v. S.C. Dep't of Nat. Res., 345 S.C. 594, 602, 550 S.E.2d 287, 292 (2001).

179. Skotnicki, *supra* note 176, at 593.

180. *Id*. at 606.

181. Parris v. 3M Co., 595 F. Supp. 3d 1288, 1306 (N.D. Ga. 2022)

182. *Id*. at 1306, 1341 (emphasis added).

183. *Id.* at 1341.

action for public nuisance."[184] In reaching its decision, the Court cited previous Georgia precedent noting that the:

> public cannot be said to enjoy health or suffer sickness . . . . Whatever affects his health affects him specially, and him alone. Such damage is special damage within the meaning of the [law], and the fact that other citizens suffer similar special damages does not convert his injury into the nature of public damages. So, too, *anything which damages a particular plaintiff's property, or renders it unfit for use, is not lost in the general and public nuisance.*[185]

b. South Carolina Precedent

While other jurisdictions have moved towards recognizing a private cause of action for injuries suffered due to an environmental public nuisance, South Carolina precedent related to the issue is less than favorable. Under South Carolina precedent, a plaintiff must clear a high bar in order to sufficiently allege the special injury necessary to bring a private cause of action on a public nuisance. This high bar is demonstrated by the holding in *Carnival Corp. v. Historic Ansonborough Neighborhood Ass'n*, the most modern South Carolina to address a private cause of action related to a public nuisance.

The plaintiffs in *Carnival*, composed of a collection of local citizens' groups, alleged the defendant's operation of a cruise ship terminal within the Charleston Historic District caused "traffic congestion, pollution emissions, road closures, large crowds, loud noises, and obstructed views" inconsistent with the area's historic and residential character.[186] The plaintiffs further alleged that the defendants injured the plaintiffs "*use and enjoyment* of the local environment . . . *including their homes*, neighborhoods and protected structures" and "jeopardize[d] the integrity, setting, and context" which led to the district's National Register designation.[187] The court found that the plaintiffs failed to allege any particularized injury or that they had "suffer[ed] these harms in any personal, individual way" and further stated that the allegations were "simply complaints about inconveniences suffered broadly by all persons residing in or passing through" the area.[188] Accordingly, when addressing the merits of the public nuisance claim, the court held that as the plaintiffs did not "set forth any injury . . . different from the injury suffered by

184. *Id.* (emphasis added).
185. *Id.* at 1340.
186. *Carnival*, 407 S.C. at 77, 753 S.E.2d at 851.
187. *Id.* (emphasis added).
188. *Id*.

the public generally . . . the public nuisance cause of action [did] not provide Plaintiffs with the standing they otherwise lack[ed]."[189]

The significance of the *Carnival* holding lies in the fact that by denying the plaintiffs a private cause of action despite the alleged *injury to the use and enjoyment of their homes*, the court seemingly ignored its previous holding in *Brown v. Hendricks* that *injury to private property is by nature "special and peculiar" no matter how many others may be injured in the same way*.[190] This might suggest that the court simply upped the ante in regard to a private cause of action on a public nuisance claim. But, the *Carnival* court also denied the plaintiffs standing as a general matter and held that the plaintiffs failed to allege a particularized injury in fact and that the plaintiffs allegations were "simply complaints about inconveniences suffered broadly by all persons suffered residing or passing through" Charleston."[191] This would run contrary to previous South Carolina holdings that "merely because an injury is widely held does not necessarily render it abstract and thus not judicially cognizable . . . So long as the plaintiff himself has a concrete and particularized injury, it does not matter that legions of other persons have the same injury."[192] This may indicate that the holding in *Carnival* was based on the plaintiffs' failure to detail concrete, individualized harms with proper specificity, rather than the actual nature of the harms suffered.

Significantly, later discussion of *Carnival* in *Pres. Soc'y of Charleston v. S.C. Dep't of Health & Env't Control*, notes that standing was denied in *Carnival* "because the allegations of injury in fact advanced by the plaintiffs were insufficient" and that the nuisance claim failed due to the "absence of allegations that the [plaintiffs] had personally and individually suffered" the

189. *Id*., at 78, 753 S.E.2d at 852; It should also be noted that modern South Carolina precedent has held that "the special or particular injury requirement . . . is satisfied *only by injury to the individual's real or personal property*" rather than recognizing purely personal injuries as meeting the special injury requirement. *Overcash v. S.C. Elec. & Gas Co*., 364 S.C. 569, 575, 614 S.E.2d 619, 622 (2005) (emphasis added). This represents a departure from not only prior South Carolina precedent but also from the precedent of neighboring jurisdictions. A dissenting opinion in *Overcash* noted that the conclusion was "illogical and flies in the face of basic hornbook law . . . [P]ersonal injuries are sufficient to show an individual's peculiar injury as required to maintain an action for public nuisance and injuries to a person's health are by their nature special and peculiar for the purposes of maintaining such an action." *Overcash*, at 577, 614 S.E.2d at 623 (Toal, C.J., dissenting in part) (internal citations omitted). In the context of a private suit for public nuisance related to PFAS, this change is particularly disappointing as it removes the ability of plaintiffs to allege any of the medical harms related to PFAS contamination and exposure as the basis for a "special injury."

190. Brown v. Hendricks, 211 S.C. 395, 401, 45 S.E.2d 603, 606 (1947) (emphasis added).

191. *See Carnival*, at 77, 753 S.E.2d at 851.

192. Town of Arcadia Lakes v. S.C. Dep't of Health & Env't Control, 404 S.C. 515, 531, 745 S.E.2d 385, 393–94 (Ct. App. 2013) (citing Pye v. U.S., 269 F.3d 459, 469 (4th Cir.2001)).

alleged harms.[193] Further, the *Pres. Soc'y* court noted that the plaintiffs in *Carnival* "*did not submit affidavits regarding individualized harm,*" whereas the plaintiffs in *Pres. Soc'y* submitted individual affidavits complaining of specific and individual effects.[194] From this it appears that, perhaps, the door is still open for a well pled private cause of action for a public nuisance claim.

c. Application

As mentioned above, the state of South Carolina has itself brought public nuisance claims against PFAS manufacturers. However, no private individual has done so and accordingly the standing of a private plaintiff to bring a public nuisance claim against a PFAS manufacturer in South Carolina remains untested.[195]

If a private plaintiff from the Charleston area were to bring a public nuisance suit related to PFAS pollution, a multitude of harms that be legitimately alleged. Based on the PFAS contamination in the waters in and around Charleston described above, and as reflected by the *Parris* case, a private plaintiff might allege "(1) the diminished value of their properties; (2) interference with their use and enjoyment of their properties; (3) upset, annoyance and inconvenience; (4) increased rates and surcharges [as utility customers]; and (5) costs incurred to obtain alternate potable water supplies."[196] It is almost certain that any defendants would argue that these injuries are barred by the special injury rule because such injuries are shared by the public generally.[197] But, as noted in *Paris*, "anything which damages a particular plaintiff's property, or renders it unfit for use, is not lost in the general and public nuisance."[198] And while the recent South Carolina precedent in *Carnival* seems to stop short of ruling on the issue, earlier cases, such as *Brown v. Hendricks*, explicitly embrace the principal, noting that:

> *injury to private property . . . is in its nature special and peculiar* [and that] where by reason of a nuisance, however public, substantial injury is inflicted on the [property] of the individual it will be found that another sort of right—more intimate, personal and important—has been invaded, *for which the sterile satisfaction of public*

193. *See* Pres. Soc'y of Charleston v. S.C. Dep't of Health & Env't Control, 430 S.C. 200, 214–15, 845 S.E.2d 481, 488–89 (2020).

194. *Id.* at 215 (emphasis added).

195. Boyer & Meidinger, *supra* note 137, at 838.

196. Parris v. 3M Co., 595 F. Supp. 3d 1288, 1341 (N.D. Ga. 2022).

197. *See id*. at 1339; *Carnival*, at 78, 753 S.E.2d at 852.

198. *Parris*, 595 F. Supp. 3d at 1288.

> *indictment, or abatement of the nuisance will not afford compensation; neither did the law so intend*.[199]

On the other hand, the unwillingness of the *Carnival* court to recognize a special injury despite allegations that the Defendant's actions injured the Plaintiffs in the case by "reducing their use and enjoyment of . . . their homes" cuts against the assertion that the injuries alleged by the plaintiffs in *Paris* would satisfy the special injury requirement as applied by South Carolina courts. However, as discussed above, it seems that the *Carnival* court based its ruling on the insufficiency of the complaint in alleging concrete, individualized harms, rather than the actual nature of the potential injuries. If this is the case, then a private plaintiff in South Carolina who could *sufficiently allege individualized harm to his property* either in deprivation of real property value or perhaps even personal property harm in the form of increased expenses from utility rates or other measures necessary to ensure potable water supplies may have suffered the necessary special injury to bring a public nuisance suit as a private plaintiff.

VI. CONCLUSION

PFAS and other toxic pollutants pose—and will continue to pose—a major threat to the environment and human health but agency and government response has been slow and ineffective. It is futile to rely on industry to self-regulate or self-report. While politics and policy may change and bring statutory and administrative reform, that change is unpredictable and uncertain. Further, patterns of environmental injustice often mean that environmental harms such as PFAS pollution occur in communities which may lack the political influence and resources to demand quick and effective reaction when the harm is discovered. Therefore, a method of responding to PFAS and future threats must be found by those who care to act. The common law action of public nuisance has been heralded as a solution and may have validity. The legal hurdle to the use of the doctrine imposed by the special injury rule will require rigorous legal argument to allow effective use of public nuisance doctrine by private or public interest actors. However, the necessity of a response and the successful use of the doctrine, as demonstrated in other jurisdictions, legitimize consideration of bringing a private suit for the public nuisance of PFAS contamination in Charleston, S.C.

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199. Brown v. Hendricks, 211 S.C. 395, 401, 45 S.E.2d 603, 605, 606 (1947) (citing Hampton v. North Carolina Pulp Co., 223 N.C. 535, 27 S.E.2d 538, 544 (1943)) (emphasis added).