PFAS AND THE GOVERNMENT CONTRACTOR DEFENSE: GLOBAL LESSONS FROM THE U.S. EXPERIENCE

by Allan Kanner, Shruti Gautam, David Ivy-Taylor, and Max Kanner

Allan Kanner is the founding member of Kanner & Whiteley in New Orleans. Shruti Gautam and David Ivy-Taylor are also with Kanner & Whiteley. Max Kanner is a graduate of the University of Pennsylvania.

Per- and polyfluoroalkyl substances (PFAS), or "forever chemicals," present a nearly unprecedented challenge to global health and the environment.[1] This challenge, in turn, raises recurring legal and scientific issues for court systems globally. This Comment examines the issue of whether manufacturers shared adequate information regarding the hazards of PFAS with their purchasers (and regulators), and delivers insights gained from decades of PFAS litigation in the United States and abroad.

As PFAS litigation becomes more common globally, advocates and courts will want to review related foreign rulings to advance the twin goals of justice and efficiency. To illustrate this point, the Comment addresses the legal question of whether government itself is totally or partially responsible for pollution resulting from PFAS as a purchaser, user, and polluter of aqueous film-forming foams (AFFF), which were used for decades in firefighting and training exercises and designed to meet government military specifications.

Specifically, we attempt to answer the question of whether the government's role in providing or participating in the development of military or other specifications for an AFFF product excuses or mitigates the manufacturers' liability for harm. In other words, is the manufacturer excused from liability because it followed governmentally mandated or requested product specifications?

This question arose in a summary judgment motion before U.S. District Judge Richard Gergel, who is managing the AFFF Multi District Litigation (AFFF MDL), where the parties introduced a great deal of evidence on the "government contractor defense."[2] In the United States, a product manufacturer may invoke a government contractor defense to product liability claims if the product was made for the federal government consistent with government-directed specifications. An exception to this rule exists when the manufacturer withheld material information regarding the hazard of a product or any of its constitutive parts.[3] At summary judgment, the manufacturers' burden was to show that there was no evidence of the withholding of material information, and so no question of fact for a jury to decide.

As noted by the court, a few issues of fact were uncontested: AFFF products manufactured by the defendants were initially designed to deal with potentially catastrophic fires aboard military aircraft carriers, and were subsequently widely used on military bases, airports, and in firefighter training programs. Many countries and their militaries also adopted these or similar specifications. In their underlying claims, the plaintiffs alleged that the AFFF products at issue in the litigation contained perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS), are harmful to human health and the environment, and constitute defects of AFFF. Defendants argued that since their prod-

Authors' Note: The views expressed in this Comment are the authors' and do not reflect the views of any client or business. Kanner & Whiteley represents or has represented parties in various cases discussed here, as noted in text and footnotes below.

1. Allan Kanner, *Emerging Trends in Perfluorinated Chemical Regulation and Litigation*, ABA Env't Energy Litig. Newsl. 447 (2017).

2. In re Aqueous Film-Forming Foams Prods. Liab. Litig., MDL No. 2:18-mn-2873-RMG (D.S.C.). As noted by Judge Gergel, "On December 7, 2018, the Judicial Panel on Multidistrict Litigation [JPML] created this MDL to centralize cases alleg[ing] that AFFF products used at airports, military bases, or certain industrial locations caused the release of PFOA or PFOS into local groundwater and contaminated drinking water supplies." In re Aqueous Film-Forming Foams Prods. Liab. Litig., 357 F. Supp. 3d 1991, 1394 (J.P.M.L. 2018). The MDL court is a special U.S. court that has discretion to centralize all federal cases that arise from a common question of law or fact. Among the common issues identified by the JPML were defendants' "government contractor defenses." [Editor's Note: Kanner & Whiteley represents the state of New Mexico and handles common benefit work in this case].

3. The government contractor defense established by *In re "Agent Orange" Product Liability Litigation*, 534 F. Supp. 1046 (E.D.N.Y. 1982), holds that the defense applies if "the government knows as much as or more than the defendant about the hazards of the product." By withholding information, a government contractor fails the three-pronged approach, as the government no longer has equivalent or superior knowledge. Charles E. Cantú & Randy W. Young, *The Government Contractor Defense: Breaking the Boyle Barrier*, 62 Alb. L. Rev. 403, 414, 433, 436 (1998).

ucts followed military specifications, they had a complete defense to liability.

The Comment first provides scientific and historic overviews of PFAS and AFFF, showing the global reach of the chemicals' contamination and the severity of human health and environmental impacts. Next, it covers PFAS litigation, turning to landmark cases, current advocacy, and the sheer lack of litigation in many countries. It discusses cases such as *State of Minnesota v. 3M Co.*, which spearheaded discovery for companies like 3M and DuPont that manufactured the most PFAS products and revealed their internal knowledge regarding PFAS toxicity.

The Comment then turns to the government contractor defense, also known as the *Boyle* defense, and *In re Aqueous Film-Forming Foams Products Liability Litigation*, an ongoing MDL where the court decided that AFFF producers were not entitled to summary judgment on the government contractor defense due to the government being misinformed and/or lacking knowledge of AFFF toxicity. Finally, it assesses the breadth and limitations of PFAS litigation globally, looking at countries where negating the equivalent of the government contractor defense would be beneficial to PFAS remediation and holding manufacturers accountable.

I. PFAS and AFFF

Many governments and nongovernmental organizations have recognized the health and environment crises PFAS have created.[4] PFAS are a set of thousands of man-made synthetic compounds found in a hugely wide variety of products. PFAS repel both oil and water and resist heat and friction, with strong elemental bonds that are next to impossible to destroy and do not degrade with the passage of time (the "forever" in "forever chemicals").

The chemicals' unique traits propelled widespread industrial use: PFAS can be found in everyday items such as cooking utensils, food wrappers, shampoo, floss, nail polish, pizza boxes, and wall paint, to name just a few.[5] But their incredibly stable structure also makes them lethally persistent in the environment and our bodies, building up over time. According to Scott Belcher, an associate professor at North Carolina State University who was part of a study positively testing contact lenses for PFAS, "this entire class of chemicals is probably the most persistent class of manmade chemicals that have ever been made . . . Every raindrop has PFAS in it."[6]

Numerous groups have mapped PFAS contamination, such as the Environmental Working Group's (EWG's) review of hundreds of wildlife species impacted by PFAS, finding over 600 such species around the world exposed.[7] "From the polar bear in the far reaches of the Arctic to the hawksbill turtle in the tropics of the Pacific Ocean, the world's most critically imperiled species have yet another danger to contend with: PFAS chemical pollution," said Dr. Nathan Donley, an environmental health science director at the Center for Biological Diversity.[8] PFAS contamination spreads through the food chain, affecting animals throughout their development and environment. Dr. Donley further remarked, "This exhaustive compilation of PFAS testing around the world has confirmed . . . [n]o living thing is safe from the scourge of our own pollution."[9]

PFAS equally affect human health and prosperity. Studies have established a high risk of exposure to these chemicals through air, water, and food sources, especially around industrial facilities and their nearby waterways.[10] In China, South Korea, and Japan, there is "a widespread presence of long-chain PFAS in human serum and breast milk."[11] In Brazil, PFOS (one of the most common and dangerous forms of PFAS) was the most frequently detected compound in soil and water samples from forest plantations, where it is used in a pesticide.[12]

Off the Red Sea Coast in Saudi Arabia, multiple lagoons with treated sewage effluents had unacceptably high PFAS levels. In Kenya, the Nairobi River is contaminated with PFAS chemicals due to industrial runoff. In South Africa, wastewater treatment effluents show high PFAS contami-

4. Stéphane Horel, *Revealed: The Massive Contamination of Europe by PFAS "Forever Chemicals,"* Le Monde (Feb. 23, 2023, updated Dec. 10, 2024), https://www.lemonde.fr/en/les-decodeurs/article/2023/02/23/revealed-the-massive-contamination-of-europe-by-pfas-forever-chemicals_6016906_8.html; Beatriz O. Martínez, *EU Leaders Contaminated With PFAS "Forever Chemicals,"* Eur. Env't Bureau (Oct. 6, 2025), https://eeb.org/eu-leaders-contaminated-with-pfas-forever-chemicals/; Nicole M. Brennan et al., *Trends in the Regulation of Per- and Polyfluoroalkyl Substances (PFAS): A Scoping Review*, 18 Int'l J. Env't Res. Pub. Health 10900 (2021), https://doi.org/10.3390/ijerph182010900.
5. Jeffrey Kluger, *All the Stuff in Your Home That Might Contain PFAS "Forever Chemicals*," TIME (May 19, 2023), https://time.com/6281242/pfas-forever-chemicals-home-beauty-body-products/. Many nations and states of the United States have begun regulating the use of PFAS in consumer products. Ren-Shou Yu et al., *A Global Overview of Per- and Polyfluoroalkyl Substance Regulatory Strategies and Their Environmental Impact*, 13 Toxics 251 (2025), https://doi.org/10.3390/toxics13040251; National Conference of State Legislatures, *Per- and Polyfluoroalkyl Substances (PFAS): State Legislation and Federal Action*, https://www.ncsl.org/environment-and-natural-resources/per-and-polyfluoroalkyl-substances, (last updated Feb. 13, 2026).
6. Kluger, *supra* note 5.
7. *Global Danger: Wildlife at Risk From PFAS Exposure*, EWG (Sept. 26, 2023), https://www.ewg.org/interactive-maps/pfas_in_wildlife/map/; Diana A. Grunfeld et al., *Underestimated Burden of Per- and Polyfluoroalkyl Substances in Global Surface Waters and Groundwaters*, 17 Nature Geoscience 340 (2024); Yu et al., *supra* note 5, at 251.
8. Press Release, EWG, Groundbreaking Map Shows Toxic "Forever Chemicals" in More Than 330 Wildlife Species (Feb. 22, 2023), https://www.ewg.org/news-insights/news-release/2023/02/groundbreaking-map-shows-toxic-forever-chemicals-more-330.
9. *Id.*
10. Sudarshan Kurwadkar et al., *Per- and Polyfluoroalkyl Substances in Water and Wastewater: A Critical Review of Their Global Occurrence and Distribution*, 809 Sci. Total Env't 151003 (2022), https://doi.org/10.1016/j.scitotenv.2021.151003; 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't Toxicology & Chemistry 606 (2021), https://doi.org/10.1002/etc.4890; Emma L. D'Ambro et al., *Characterizing the Air Emissions, Transport, and Deposition of Per- and Polyfluoroalkyl Substances From a Fluoropolymer Manufacturing Facility*, 55 Env't Sci. & Tech. 862 (2021), https://doi.org/10.1021/acs.est.0c06580.
11. Rai S. Kookana et al., *Human Exposure to Per- and Poly-Fluoroalkyl Substances (PFAS) in Asia and Contributing Factors, With a Focus on East Asia*, 27 Env't Sci.: Processes & Impacts 2614 (2025), https://doi.org/10.1039/D5EM00396B.
12. Yago Guida et al., *Environmental Occurrence of Perfluorooctanesulfonic Acid From Sulfluramid-Based Ant Bait Usage and Its Ecotoxicological Risks*, 279 Env't Rsch. 121851 (2025), https://doi.org/10.1016/j.envres.2025.121851.

nation that is not adequately filtered during treatment.[13] AFFF used for firefighting at military sites in Australia produced significantly high PFAS concentrations.[14] Belgium faces extreme PFAS pollution in the Antwerp region from a 3M plant.[15]

In the United States, 97% of men and women have some concentration of PFAS in their blood.[16] Kanner & Whiteley represents the state of New Mexico in claims arising from the Cannon U.S. Air Force Base, where AFFF used at the base was tied to elevated PFAS levels in workers' and residents' blood.[17] Twenty-six percent of participants in this PFAS study who live or work in the contaminated area had blood level concentrations "of the highest concentration tier used in national guidelines."[18] Examples of exposure can be found everywhere—PFAS has a global footprint.

PFAS toxicity has been causally correlated with rates of diabetes, immune deficiency, reproductive issues, and cancer.[19] The chemicals disrupt endocrine functions and can cause fetal developmental effects, with PFAS chemicals found in the umbilical cord.[20] PFAS also bioaccumulate, outcompeting metabolization in organisms and instead accumulating in living bodies by binding to proteins over time, even at low levels of exposure.[21] In *Jack W. Leach v. E.I. du Pont de Nemours & Co.*, where 80,000 Americans filed claims arising from PFAS contamination in their water in Southern Ohio and West Virginia, DuPont's pretrial settlement funded a research study panel known as the C8 Science Panel.[22] "C8" is a common way to refer to the PFOA chemical, made up of an 8-carbon atom chain.[23]

The panel studied DuPont workers and community members living near factories and found PFAS was linked to kidney cancer, as people exhibited high rates of renal disease and mortality.[24] The PFOA chemical was also positively linked to a serum known to be present in acute liver damage and heightened levels of testicular cancer.[25] When studying pregnancy, the C8 panel found PFOA to be associated with hypertension, causing preeclampsia and risk of preterm birth.[26] Exposure to PFAS has also been shown to aggravate the course of a COVID-19 (SARS-CoV-2) infection.[27]

Removing PFAS from the environment is difficult and costly. Less than a drop of PFAS in an Olympic-size swimming pool full of water is enough to make it undrinkable.[28] To completely remove PFAS contamination from municipal wastewater, costs range between $2.7 million and $18 million per pound.[29] Smaller wastewater treatment facilities face the higher end of costs.[30] It will cost the United States nearly $2-$3 billion per year to monitor and reduce PFAS levels to a safe level for drinking.[31] And a study in 2024 found that to remove and destroy PFAS in its totality, the cost would likely exceed the United States' gross domestic product of $106 trillion.[32]

13. Muyasu Grace Kibambe et al., *Evaluation of the Efficiency of Selected Wastewater Treatment Processes in Removing Selected Perfluoroalkyl Substances (PFASs)*, 255 J. Env't Mgmt. 109945 (2020), https://www.sciencedirect.com/science/article/abs/pii/S0301479719316639.
14. Kurwadkar et al., *supra* note 10.
15. *New Study Finds High Levels of Forever Chemicals in People Living Near Antwerp PFAS Plant*, CHEM Trust (Mar. 20, 2025), https://chemtrust.org/news/forever-chemicals-antwerp-factory/. [Editor's Note: Kanner & Whiteley represented the Flemish government in the underlying litigation.]
16. Ryan C. Lewis et al., *Serum Biomarkers of Exposure to Perfluoroalkyl Substances in Relation to Serum Testosterone and Measures of Thyroid Function Among Adults and Adolescents From NHANES 2011-2012*, 12 Int'l J. Env't Rsch. & Pub. Health 6098 (2015), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4483690/.
17. New Mexico Environment Department & New Mexico Department of Health, New Mexico PFAS Blood Testing Project Final Report (2025), https://www.env.nm.gov/wp-content/uploads/2025/08/2025-08-12-NMED-NM-PBT-Project-Report-Final-2.pdf.
18. *Id.* at 4.
19. Fenton et al., *supra* note 10.
20. Emiliano Panieri et al., *PFAS Molecules: A Major Concern for the Human Health and the Environment*, 10 Toxics 44 (2022), https://www.mdpi.com/2305-6304/10/2/44.
21. Carla A. Ng & Konrad Hungerbühler, *Bioaccumulation of Perfluorinated Alkyl Acids: Observations and Models*, 48 Env't Sci. & Tech. 4637 (2014), https://doi.org/10.1021/es404008g.
22. This class action and the associated PFAS-contaminating facility are featured in the acclaimed movie *Dark Waters* (Focus Features 2019). It also became an early PFAS MDL in the Southern District of Ohio. In re E.I. du Pont de Nemours & Co. C-8 Pers. Inj. Litig., No. 2:13-md-2433 (S.D. Ohio).
23. Harvard T.H. Chan School of Public Health, Region 1 New England Pediatric Environmental Health Specialty Unit & Pediatric Environmental Health Center, Poly- and Perfluoroalkyl Substances (PFAS)—Emerging Pollutants in New England: A White Paper 1 (Sept. 30, 2020). There is also a 6-carbon PFAS marketed as "safer," but still suspect. Recent studies show C6 PFAS has similar properties of persistence and bioaccumulation. Shruti V. Kabadi et al., *Internal Exposure-Based Pharmacokinetic Evaluation of Potential for Biopersistence of 6:2 Fluorotelomer Alcohol (FTOH) and Its Metabolites*, 112 Food & Chem. Toxicology 375 (2018), https://doi.org/10.1016/j.fct.2018.01.012.
24. Kyle Steenland & Susan Woskie, *Cohort Mortality Study of Workers Exposed to Perfluorooctanoic Acid*, 176 Am. J. Epidemiology 909 (2012), https://pubmed.ncbi.nlm.nih.gov/23079607/.
25. Susan R. Woskie et al., *Retrospective Exposure Assessment of Perfluorooctanoic Acid Serum Concentrations at a Fluoropolymer Manufacturing Plant,* 56 Annals Occupational Hygiene 1025 (2012), https://academic.oup.com/annweh/article-abstract/56/9/1025/165381; C8 Science Panel, Probable Link Evaluation of Cancer (Apr. 15, 2012), http://www.c8sciencepanel.org/pdfs/Probable_Link_C8_Cancer_16April2012_v2.pdf.
26. C8 Science Panel, Probable Link Evaluation of Pregnancy Induced Hypertension and Preeclampsia (Dec. 5, 2011), https://www.hpcbd.com/wp-content/uploads/sites/1605048/2021/01/Probable_Link_C8_PIH_5Dec2011.pdf.
27. Philippe Grandjean et al., *Severity of COVID-19 at Elevated Exposure to Perfluorinated Alkylates*, 15 PLoS One e0244815 (2020), https://pubmed.ncbi.nlm.nih.gov/33382826/.
28. Abrahm Lustgarten, *How the EPA and the Pentagon Downplayed a Growing Toxic Threat,* ProPublica (July 9, 2018), https://www.propublica.org/article/how-the-epa-and-the-pentagon-downplayed-toxic-pfas-chemicals.
29. Press Release, Minnesota Pollution Control Agency, Groundbreaking Study Shows Unaffordable Costs of PFAS Cleanup From Wastewater (June 6, 2023), https://www.pca.state.mn.us/news-and-stories/groundbreaking-study-shows-unaffordable-costs-of-pfas-cleanup-from-wastewater.
30. *Id.*
31. Between $2.66 billion and $3.48 billion. This number is based on the 2024 maximum contamination levels (MCLs) set by the U.S. Environmental Protection Agency (EPA). In 2025, a few of the MCLs were rolled back. Cost estimates have not been publicly updated for the new MCLs. Technical Memorandum, Black & Veatch and Corona Environmental Consulting, Estimating the National Cost to Remove PFAS From Drinking Water Using UCMR 5 Data (July 11, 2024), https://www.awwa.org/wp-content/uploads/Final-Technical-Memorandum-Updating-National-Cost-Estimate-for-PFAS-Standards-using-UCMR-5.pdf.
32. Alison L. Ling, *Estimated Scale of Costs to Remove PFAS From the Environment at Current Emission Rates*, 918 Sci. Total Env't (2024), https://pubmed.ncbi.nlm.nih.gov/38325453/.

II. PFAS Litigation

Historically, the two largest companies manufacturing PFAS were 3M and DuPont, both based in the United States.[33] PFAS began spreading with DuPont's first trademarked version—specifically, the fluoropolymer PTFE Teflon—in 1938, which was used to manufacture warheads, pipes to transport uranium, and nuclear technologies.[34] DuPont bought PFOA (C8) from 3M to use as a processing aid in Teflon production.[35] After a few years of PFOA production, 3M began manufacturing its own chemical called PFOS. This became the main component of protective coatings, such as Scotchgard. In the 1950s and 1960s, in response to shipboard fires, the U.S. Naval Research Laboratory and 3M developed a new type of firefighting agent utilizing PFAS: AFFF.[36]

In 1969, the Naval Sea Systems Command promulgated a Military Specification (MilSpec) that, until a revision in 2019, required their AFFF manufacturing contractors to use PFAS fluorocarbon surfactants in their product.[37] The other military branches later adopted the same MilSpec. From 1970 until very recently, the U.S. military used AFFF for both firefighting and fire training exercises, often involving a discharge of the substance into the environment. The resulting PFAS contamination at and around U.S. military bases has been documented globally. MilSpec AFFF also became the standard for firefighting foams for allies globally, but the U.S. military is the largest user of AFFF.[38]

The U.S. Department of Defense's (DOD's) PFAS Task Force has examined 723 active and former military installations and facilities in the United States and its territories and found that most of them require serious cleanup.[39] Part of their cleanup efforts focuses on contaminated private drinking water wells, all located adjacent to and down gradient from military installations.[40] In the meantime, the military has been looking for other firefighting agents to use in substitution for equipment built specifically to AFFF and implementing spill response plans.[41]

Litigation against DuPont for PFAS pollution started in the United States in *Tennant v. DuPont* (1999-2001), where Wilbur Tennant, a West Virginia farmer, successfully sued DuPont for chemical exposure that caused his cattle to die.[42] Mr. Tennant's farm was near a DuPont waste site, and over the years the chemicals disposed of there infiltrated the local water supply.[43] Throughout the *Tennant* case, an in-house lawyer for DuPont wrote e-mails to his son sharing thoughts on DuPont's lack of business ethics.

Through discovery, these e-mails revealed the lawyer's and DuPont's knowledge of hazardous contamination, and that the company had not reported or remedied the contamination after finding high levels of C8 in nearby water.[44] Bernard Reilly e-mailed his son multiple times, complaining that DuPont should have checked for these effects years ago while also pointing to the growing concern from locals and environmental agencies.[45] Mr. Reilly's e-mails showed the extent of DuPont's knowledge and disinformation surrounding C8 surfactant and became a key piece of evidence for the class action suit of almost 80,000 people with contaminated drinking water.[46]

The discovery process, or pretrial exchange of information, from *Tennant* also led to the release of DuPont documents showing DuPont's intimate knowledge with the toxicity of PFAS chemicals.[47] As early as 1961, a DuPont

33. "DuPont" refers to E.I. du Pont de Nemours and Company and its successor entities, including DuPont de Nemours, Inc., Corteva, Inc., Chemours Company, and other spinoff entities. In 2017, DuPont merged with Dow Chemical to form DowDuPont. Press Release, DuPont, DowDuPont Merger Successfully Completed (Sept. 1, 2017), https://www.investors.dupont.com/news-and-media/press-release-details/2017/DowDuPont-Merger-Successfully-Completed/default.aspx. DowDuPont then separated into three companies in 2019: Dow Inc. (materials science), Corteva Inc. (agriculture), and DuPont de Nemours, Inc. (specialty products). Press Release, DuPont, DuPont de Nemours, Inc., DowDuPont Board of Directors Approves Separation of Materials Science Division, Creating the New Dow (Mar. 8, 2019), https://www.investors.dupont.com/news-and-media/press-release-details/2019/DowDuPont-Board-of-Directors-Approves-Separation-of-Materials-Science-Division-Creating-the-New-Dow/default.aspx.

    Most recently, in 2025, Corteva announced it would split into two independent, publicly traded companies: "New Corteva" (crop protection business) and "SpinCo" (seed business, including the Pioneer brand), with the separation expected to be complete in the second half of 2026. Michael Hawthorne, *The Origin of These Highly Toxic Man-Made Chemicals,* Chi. Trib. (July 10, 2022), https://www.chicagotribune.com/2022/07/10/the-origin-of-these-highly-toxic-man-made-chemicals/.
34. Daniel Renfrew & Thomas W. Pearson, *The Social Life of the "Forever Chemical,"* 12 Env't & Soc'y: Advances Rsch. 146 (2021), https://www.berghahnjournals.com/view/journals/environment-and-society/12/1/ares120109.xml.
35. Neil MacKay, A Chemical History of 3M, 1933-1990, at 3-5 (3M Chemical, Film & Allied Products Group 1991).
36. Renfrew & Pearson, *supra* note 34, at 149.
37. Quick Search, Fire Extinguishing Agent, Aqueous Film-Forming Foam (AFFF) Liquid Concentrate, for Fresh and Sea Water (Apr. 7, 2020) (MIL-PRF-24385), https://quicksearch.dla.mil/qsDocDetails.aspx?ident_number=17270.
38. John Horst et al., *Transitioning Per- and Polyfluoroalkyl Substance Containing Fire Fighting Foams to New Alternatives: Evolving Methods and Best Practices to Protect the Environment*, 41 Groundwater Monitoring & Remediation 19 (2021), https://doi.org/10.1111/gwmr.12444; Bridger J. Ruyle et al., *Centurial Persistence of Forever Chemicals at Military Fire Training Sites*, 57 Env't Sci. & Tech. 8096 (2023), https://pmc.ncbi.nlm.nih.gov/articles/PMC10233753/.
39. DOD, *PFAS Data: Cleanup of PFAS*, https://www.acq.osd.mil/eie/eer/ecc/pfas/data/cleanup-pfas.html (last updated Mar. 31, 2025).
40. *Id.*
41. DOD, Certification for the Waiver on the Prohibition of AFFF Use (July 31, 2025), https://acqweb.staging.acqebiz.mil/eie/eer/ecc/pfas/docs/reports/Cert%20for%20the%20Waiver%20of%20Prohib%20of%20AFFF%20Use%20508.pdf.
42. Tennant v. E.I. du Pont de Nemours & Co., No. 6:99-0488 (S.D. W. Va.); Nathaniel Rich, *The Lawyer Who Became DuPont's Worst Nightmare*, N.Y. Times (Jan. 6, 2016), https://www.nytimes.com/2016/01/10/magazine/the-lawyer-who-became-duponts-worst-nightmare.html. *See also* Dark Waters (Focus Features 2019). This movie followed the farmer's and lawyer's battle against DuPont, exemplifying the far reach impact of PFAS litigation and disinformation in U.S. society.
43. Meredith Waugh, *The Forever Chemical: Man's Greatest Achievement or Greatest Horror?*, 23 Appalachian J. L. 1 (2025), https://appalachian.scholasticahq.com/article/133491-the-forever-chemical-man-s-greatest-achievement-or-greatest-horror.
44. Sharon Lerner, *Part 2: The Teflon Toxin,* Intercept (Aug. 17, 2025), https://theintercept.com/2015/08/17/teflon-toxin-case-against-dupont/.
45. E-mails from Bernard J. Reilly to Bernard Reilly Jr. ("Bern") (2001), Trial Exs. P1.4, P1.184, In re E.I. du Pont de Nemours & Co. C-8 Pers. Injury Litig., No. 2:13-md-02433 (S.D. Ohio).
46. Lerner, *supra* note 44.
47. E-mail from Bernard J. Reilly re: Lawyer for Farmer Going to the Press to Settle (Aug. 13, 2000) (LYPW0228) (on file at UCSF Industry Documents

toxicologist found that PFAS chemicals can enlarge rat and rabbit livers, and in 1965, DuPont scientists conducted a study with rats that showed liver damage and enlarged spleens.[48] In 1975, DuPont first warned 3M about PFAS toxicity in food packaging, though as indicated below, 3M had similar data at least by the 1950s. In any event, the industry's knowledge and its internal exchange of knowledge far preceded that of regulators and the public.[49]

In 1981, DuPont's C8 blood study found that two children of exposed workers were born with eye and facial defects, and a third worker had PFAS in their umbilical cord blood.[50] Yet, that same year, both DuPont and 3M denied that their workers could be exposed at levels of PFAS to cause adverse health risks.[51] 3M's and DuPont's practice of concealing documents concerning the occurrence and health effects of PFAS, from regulators and consumers alike, prevented those parties from avoiding the risks and injuries posed by the products. As the publicized documents came out, there were discussions in public health about corporations' accountability in sharing scientific findings, consistent with historic battles with the tobacco, pharmaceutical, lead, and polyvinyl chloride industries.[52]

In *State of Minnesota v. 3M Co*. (2010), Minnesota, home to 3M's global headquarters, sued 3M for damage to its drinking water and natural resources. 3M settled for $850 million.[53] The lawsuit led to the release of over 2,000 documents gathered in discovery, sharing with the world some of 3M's research and internal communication regarding the known hazards of PFAS and its health effects.[54] 3M was fully aware of the spread of PFAS into human blood and the toxicity and ailments the chemicals were capable of, with far-reaching blood sampling and extensive research on animal models.[55]

In 1950, 3M studies first found that PFAS chemicals were toxic.[56] 3M accepted PFAS as toxic in 1963, when a 3M technical manual referred to the chemicals as toxic.[57] In 1966, 3M studied rats and found that PFAS cause "acute oral toxicity."[58] In 1970, 3M studied the effects of the AFFF "Light Water" through a series of controlled field tests, where fish were put in tanks with a foam concentrate and tap water mixture.[59] The study revealed a lethal dose of PFAS in fish at 1 part per million, the lowest concentration tested, which interfered with fish's stability mechanism and caused them to drown.[60] The entire program was ultimately abandoned to avoid "severe local stream pollution."[61]

In 1975, 3M discovered that PFAS builds up in human blood samples, and in 1977, it measured workers for PFAS and found remarkably high levels in their blood.[62] In 1981, 3M and DuPont reassigned female workers after animal studies showed that PFAS damage the eyes of the developing fetus.[63] In 1987, a 3M PFOA animal study found tumors, and in 1989, they found elevated cancer rates among PFAS workers.[64] In 1998, 3M scientists reported that PFAS moves through the food chain.[65]

It was not until 1998 that 3M finally shared its knowledge with the U.S. Environmental Protection Agency (EPA): evidence that PFAS accumulate in blood. But even then, 3M did so in tandem with other scientific publications that divorced PFAS exposure from adverse health effects.[66] Less than one year later, a 3M scientist resigned as an environmental specialist, citing 3M's irresponsible management of PFOS and saying that PFOS was "the most insidious pollutant since [polychlorinated biphenyls] PCB. It is probably more damaging than PCB because it does not degrade, whereas PCB does; it is more toxic to wildlife; and its sink in the environment appears to be biota and not soil and sediment, as is the case with PCB."[67]

Library). In the United States, discovery materials are often exchanged confidentially and only become public when used in court or as a condition of settlement.

48. EWG, For 50 Years, Polluters Knew PFAS Chemicals Were Dangerous but Hid Risks From Public (2019), https://static.ewg.org/reports/2019/pfa-timeline/3M-DuPont-Timeline_sm.pdf.
49. *Id.*
50. DuPont, C-8 Blood Sampling Results (1981) (XNPW0228) (on file at UCSF Industry Documents Library).
51. R.D. Ingalls et al., C8 Perfluorooctonate—Employee Communication Package (1981) (KYPW0228) (on file at UCSF Industry Documents Library).
52. Nadia Gaber et al., *The Devil They Knew: Chemical Documents Analysis of Industry Influence on PFAS Science,* 89 Annals Glob. Health 37 (2023); Jenny B. White & Lisa A. Bero, *Corporate Manipulation of Research: Strategies Are Similar Across Five Industries*, 21 Stan. L. & Pol'y Rev. 105 (2010).
53. Sharon Lerner, *Toxic Gaslighting: How 3M Executives Convinced a Scientist the Forever Chemicals She Found in Human Blood Were Safe*, ProPublica (May 20, 2024), https://www.propublica.org/article/3m-forever-chemicals-pfas-pfos-inside-story; State v. 3M Co., No. 27-CV-10-28862 (Hennepin Cnty. Dist. Ct. Feb. 20, 2018). [Editor's Note: Kanner & Whiteley consulted for Minnesota on this litigation].
54. Office of Minnesota Attorney General Keith Ellison, *State's Second Amended Exhibit List*, https://www.ag.state.mn.us/Office/Cases/3M/StatesExhibits.asp (last visited Mar. 17, 2026) [hereinafter *Exhibit List*].
55. *Id.*; Lerner, *supra* note 44.
56. *Exhibit List*, *supra* note 54 (Pl.'s Ex. 1009, PFBA LD50 Test (3M Toxicology)).
57. *Id.* (Ex. 1042, Technical Information 3M Brand Fluorochemical Surfactants FC95, FC-98, FC-128, FC-134, FX-161, FC-170, FX-172).
58. *Id.* (Ex. 1053, Report to Minnesota Mining and Manufacturing Company Acute Oral Toxicity Studies on Two Materials).
59. *Id.* (Ex. 1083, 3M Letter to the Editor of *Fire Journal* re: Lightwater).
60. *Id.*
61. *Id.*
62. *Id.* (Ex. 1118, G.H. Crawford to L.C. Krogh et al., Record of a Telephone Conversation With William Guy of the University of Florida re: Fluorocarbon in Blood Samples From Texas and New York) (Ex. 1145, 3M Interoffice Correspondence From L.C. Krogh to J.D. La Zerte, 3M re: Presentation to Corporate Responsibility Committee on Progress—Fluorochemicals in Blood).
63. *Id.* (Ex. 1253, Third Draft FC-143 Decatur Standby Press Statement by L. Ludford re: Moving Female Workers).
64. *Id.* (Ex. 1342, 3M Phone Conversation Report of Robert Gail with Roger Perkins re: Review of FC-143 Final Report: Leydig Cell Tumor Incidence) (Ex. 1357, Letter From J. Mandel to L. Zobel (3M) re: Results of the Comparison of Cancer Incidence Between the Minnesota Population and the U.S. With Attachment Table 5: Observed and Expected Deaths by Cause, Standardizes Morality Ratio (SMR), 95 Percent Confidence Limits and CHi Square Values, Males, Chemical Division).
65. *Id.* (Ex. 1533, E-mail From R. Purdy to G. Adams re: Risk to the Environmental Due to the Presence of PFOS With Attachment Pioneer Food Chain Risk Assessment of PFO).
66. *Id.* (Ex. 1535, Science Publication Strategy). This strategy memo outlined different studies that should be published in 1998/1999 to help with press on PFAS chemicals. These studies reported that there were "no adverse biological health effects from exposure to PFOS, based on medical monitoring of workers" and "exposure to high doses of PFOS to pregnant animals does not cause birth defects in the offspring." The prospective studies were also to come up with more ways to measure levels of PFAS in blood serum.
67. *Id.* (Ex. 1001, Letter From R. Purdy to 3M re: Resignation).

These revelatory documents were only released because of Minnesota's discovery process, and they have laid another important foundation for the onslaught of PFAS litigation since. Companies have been settling for hundreds of millions of dollars, and the majority of U.S. states' attorneys general have initiated lawsuits against PFAS manufacturers, for both environmental and public health damages.[68] As of 2025, there are over 10,000 active PFAS cases in the United States, spanning the gamut from personal injury to property damage to natural resources damage.

There has been some PFAS litigation outside of the United States as well, though at a much slower pace. In 2021, the Flemish government issued a safety order for 3M to cease operations, after residents of Antwerp were found to have significantly high PFAS blood concentrations, and in 2022, 3M agreed to spend more than 571 million euros on cleanup and studies.[69] That same year, a Belgian family in Zwijndrecht sued 3M for compensation, after all four family members living near the local 3M facility found 100 times the government's maximum recommended level of PFAS in their blood, concentrations "more typically found in industrial wastewater."[70]

The Dutch Fisherman's Union and the Dutch government are currently pursuing action against 3M, arguing the company is responsible for pollution in the Western Scheldt, where the Union has advised against fishing shrimp and crustaceans due to PFAS contamination.[71] In addition, the European Union has begun regulating the amount of PFAS in foods, including seafood, which threatens the livelihood of fishermen.[72] An Australian class action suit targeted the Commonwealth's Department of Defence for allowing PFAS contamination to spread from its bases.

Bentham, North Yorkshire, a rural town in the United Kingdom (U.K.) that is home to AFFF manufacturer Angus Fire, was found to have some of the highest PFAS concentrations in the country.[73] A U.K. law firm represented one of the families in a pre-action settlement and submitted an inquiry on behalf of the area to the federal Environmental Audit Committee.[74] Communities neighboring a Daikin Industries plant filed the first case in Japan, after reports of PFAS contamination in groundwater that was significantly higher than government health standards.[75]

In the U.S. AFFF MDL, there are over 10,000 lawsuits pending.[76] MDLs are a procedural mechanism where court cases presenting common questions of fact are consolidated in one district for pre-trial proceedings.[77] In 2018, Tyco Fire Products and Chemguard requested that the Judicial Panel on Multidistrict Litigation (JPML) centralize the pre-trial proceedings for 75 product liability lawsuits, all targeting AFFF manufacturers and involving PFAS contamination in groundwater. The JPML found that each case presented common factual questions and moved to consolidate them—and the incoming slew of AFFF cases filed across the country—into one MDL to promote efficiency. The resultant MDL, *In Re: Aqueous Film-Forming Foams Products Liability Litigation*, contains cases ranging from personal injury to claims brought by states and water providers.[78]

In September 2022, the AFFF MDL's Judge Gergel of the U.S. District Court for the District of South Carolina denied a motion for summary judgment filed by PFAS and AFFF manufacturers, who claimed that they were immune to liability because they were contractors for the government since AFFF was manufactured pursuant to military specifications.[79] This meant that material questions of fact remained for the factfinder, especially on the

68. Press Release, Safer States, More Than Half of U.S. State Attorneys General Have Taken Action Against PFAS Manufacturers and Key Users (Aug. 24, 2023), https://www.saferstates.org/press-room/more-than-half-of-us-state-attorneys-general-have-taken-action-against-pfas-manufacturers-and-key-users; Craig T. Liljestrand, *PFAS Exposure: A Comprehensive Look at Emerging Facts and Studies, Risk and Liability Assessment, Litigation History, Evolving Regulations and Future Predictions*, 89 Def. Couns. J. 2 (2022), https://www.iadclaw.org/defensecounseljournal/pfas-exposure-a-comprehensive-look-at-emerging-facts-and-studies-risk-and-liability-assessment-litigation-history-evolving-regulations-and-future-predictions/.

69. Stéphane Horel & Raphaëlle Aubert, *Excavating Soil, Changing Lake Water, No Playing Outside: PFAS-Contaminated Flanders' Dystopian Disaster*, Le Monde (Jan. 15, 2025), https://www.lemonde.fr/en/les-decodeurs/article/2025/01/15/excavating-soil-changing-lake-water-no-playing-outside-pfas-contaminated-flanders-dystopian-disaster_6737059_8.html. [Editor's Note: Kanner & Whiteley was part of the Flemish government's legal team in its case regarding releases of PFAS from a 3M facility].

70. Stephanie Baker, *3M's "Forever Chemicals" Crisis Has Come to Europe*, Bloomberg (June 10, 2022), https://www.bloomberg.com/graphics/2022-3m-pfas-toxic-forever-chemicals-europe/; *PFAS Pollution: 3M Ordered to Compensate Affected Family*, Brussels Times (May 16, 2023), https://www.brusselstimes.com/506509/pfas-pollution-3m-ordered-to-compensate-affected-family.

71. *Napoli Shkolnik Supports Milberg Amsterdam in Filing Complaint on Behalf of Dutch Fisherman Union Against 3M for PFAS Contamination in the Western Scheldt River*, Napoli Shkolnik PLLC (Jan. 2, 2025), https://www.napolilaw.com/en/article/napoli-shkolnik-supports-milberg-amsterdam-in-filing-complaint-on-behalf-of-dutch-fisherman-union-against-3m-for-pfas-contamination-in-the-western-scheldt-river/; Stephanie van den Berg, *Dutch Government to Hold 3M Liable for "Forever Chemicals" Damage*, Reuters (May 23, 2023), https://www.reuters.com/business/environment/dutch-government-hold-3m-liable-forever-chemicals-damage-2023-05-23/.

72. Press Release, European Environmental Bureau, Damning New Report: EU Fish Polluted With "Forever Chemicals," While Governments Seek to Delay Action (Sept. 9, 2025), https://eeb.org/en/damning-new-report-eu-fish-polluted-with-forever-chemicals-while-governments-seek-to-delay-action/.

73. Pippa Neill, *Yorkshire Town May Bring First "Forever Chemicals" Legal Case in UK*, Guardian (Nov. 18, 2024), https://www.theguardian.com/environment/2024/nov/18/yorkshire-town-may-bring-first-forever-chemicals-legal-case-in-uk.

74. Press Release, Leigh Day, Concerns Over Regulation of "Forever Chemicals" Submitted to Inquiry (May 27, 2025), https://www.leighday.co.uk/news/news/2025-news/concerns-over-regulation-of-forever-chemicals-submitted-to-inquiry/; Press Release, Leigh Day, Bentham PFAS Claims Joint Statement (Sept. 29, 2025), https://www.leighday.co.uk/news/news/2025-news/bentham-pfas-claims-joint-statement/.

75. *Residents to Seek PFAS Pollution Mediation Against Daikin in Japan 1st*, Japan Today (Sept. 26, 2025), https://japantoday.com/category/national/residents-to-seek-pfas-pollution-mediation-against-daikin-in-japan-1st.

76. United States District Court District of South Carolina, *Aqueous Film-Forming Foams (AFFF) Products Liability Litigation MDL No. 2873: Introduction*, https://www.scd.uscourts.gov/mdl-2873/index.asp (last visited Mar. 27, 2026).

77. *See* Andrew Eller, *Multidistrict Litigation & Choice of Federal Law*, 2023 U. Chi. Legal F. 341 (2024).

78. In re Aqueous Film-Forming Foams Prods. Liab. Litig., MDL No. 2:18-mn-2873-RMG (D.S.C.).

79. Order and Opinion, In re Aqueous Film-Forming Foams Prods. Liab. Litig., 2022 U.S. Dist. LEXIS 168634 (D.S.C. Sept. 16, 2022) (No. 2:18-mn-2873-RMG).

issue of industry actions to defraud regulators. The court found that being a government contractor was not enough to absolve the companies from their liability, because they knew about the hazards of PFAS before and better than any government agent.[80]

The importance of this decision cannot be understated: shortly thereafter, 3M agreed to a $12 billion settlement, funding public water systems in 300 cities across the nation for the cost to remove and clean up contamination.[81] DuPont, Chemours, and Corteva agreed to a $1.185 billion settlement to resolve all claims from the class of public water systems across the country.[82] Tyco, which sold AFFF, and BASF, which sold PFAS chemicals to AFFF producers, agreed to pay around $750 million and $312 million, respectively, to active public water systems.[83]

These decisions mark a tipping point in PFAS litigation. The lessons from this case should inform attorneys worldwide of the potential of PFAS litigation, and how to handle defendants' attempts to blame the government for response delays to PFAS contamination.

III. The Government Contractor Defense

In the United States, defendants who are hired by the government can avoid possible resulting liability through the "government contractor defense." This defense emerged first in *Yearsley v. W.A. Ross Construction Co.*, where the U.S. Supreme Court did not hold a contractor liable for erosion of private riparian land because they were under federal government contract.[84] Since *Yearsley*, government contractors that are part of public works projects and act as government agents or officers can claim the government's immunity.[85] The government contractor defense rests on the idea that being able to hold these contractors liable would undermine government immunity, targeting the federal relationship between the military and its operations. In *Stencel Aero Engineering Corp. v. United States*, the Court held that a trial allowing a military serviceman and fighter jet manufacturer to bring an indemnity action would involve judicial powers second-guessing military orders.[86]

In *In re "Agent Orange" Product Liability Litigation (Agent Orange II)*, veterans filed a suit based on injuries from exposure to the "Agent Orange" chemical used in the Vietnam War.[87] Here, the court again applied the government contractor defense, stating that "courts should not require suppliers of ordnance to question the military's needs or specifications for weapons during wartime."[88] Clearly, the court need not question the military's decisions and orders, and ask for military agents and officers to testify about their decisions. However, it did set standards in this case for when the defendant could invoke the government contractor defense: if (1) the government reasonably decided the design and military specifications, (2) the manufacturer followed and conformed to the government's specifications, and (3) the government knew as much or more than the manufacturer about the risk associated with the design and product.[89]

In *Boyle v. United Technologies Corp.*, a product manufacturer's invocation of the government contractor defense protected a defendant if the product was made by the manufacturer for government consistent with military specifications.[90] The government contractor defense (now also referred to as the "*Boyle* defense") allowed a contractor to claim immunity when meeting the standards mentioned in *Agent Orange II*. However, the *Boyle* defense does not completely absolve any contractor from any and all liability. These standards allowed for an exception, where the manufacturer withheld information regarding the hazard of a product or any of its constitutive parts and did not warn the government about the known hazards.[91]

In the MDL, the defendants invoked *Boyle* to argue that despite knowledge of PFAS' risks, the defendants were required by the U.S. Navy and other government agencies to meet the MilSpec specifications in manufacturing AFFF. Defendants claimed that governments at federal, state, and local levels had authorized the actions, and thus their contractors are not responsible for the acts under their direction. During oral argument, defense counsel asserted that "the government dictated every material aspect of AFFF's chemical formulation and testing," leaving contractors "no discretion whatsoever."[92] Judge Gergel, however, questioned whether the evidence demonstrated such specificity, noting that "the Navy specifications identify performance criteria rather than a precise chemical formula."[93]

Defendants further argued that they followed government guidance and prevailing scientific research, claiming there was no recognized scientific basis for PFAS toxicity during their years of use. 3M claimed they had shared

80. It was not until 2016 that DOD began investigating PFAS contamination. DOD, Aqueous Film Forming Foam Report to Congress (2017) (C-88F-50EC), https://www.denix.osd.mil/derp/denix-files/sites/26/2017/11/Aqueous-Film-Forming-Foam-AFFF-Report-to-Congress_DENIX.pdf.
81. Kris Maher & John Keilman, *3M Settles "Forever Chemicals" Litigation for Up to $12.5 Billion*, Wall St. J. (June 22, 2023), https://www.wsj.com/us-news/3m-settles-forever-chemicals-litigation-for-up-to-12-5-billion-abbeba36.
82. Press Release, DuPont, Chemours, DuPont, and Corteva Reach Comprehensive PFAS Settlement With U.S. Water Systems (June 2, 2023), https://www.dupont.com/news/chemours-dupont-and-corteva-reach-comprehensive-pfas-settlement-with-us-water-systems.html.
83. *Tyco & BASF—PFAS Settlements Enter Preliminary Approval*, MWRA Advisory Bd. (July 31, 2024), https://www.mwraadvisoryboard.com/tyco-basf-pfas-settlements-enter-preliminary-approval/.
84. 309 U.S. 18 (1940). *See* Martha L. Jeffrey, *The Government Contractor Defense: A Weapon for Nonmilitary Government Contractors*—Boyle v. United Technologies Corp., 9 Miss. Coll. L. Rev. 317, 318 (1989).
85. *Id.* at 319.
86. 431 U.S. 666, 673 (1977); Jeffrey, *supra* note 84, at 321.
87. 506 F. Supp. 757, 768-69 (E.D.N.Y. 1980).
88. In re "Agent Orange" Prod. Liab. Litig., 534 F. Supp. 1046, 1054 n.1 (E.D.N.Y. 1982).
89. *Id.* at 1055; Jeffrey, *supra* note 84, at 323.
90. 487 U.S. 500 (1988). *See* Cantú & Young, *supra* note 3, at 403, 418.
91. Cantú & Young, *supra* note 3, at 433, 436.
92. Transcript of Oral Argument at 15-16, In re Aqueous Film-Forming Foams Prods. Liab. Litig., No. 2:18-mn-2873-RMG (D.S.C. Aug. 19, 2022) [hereinafter Transcript of Oral Argument].
93. *Id.* at 25.

much of the research by 2000, and the government did not make any significant transitions away from PFAS, citing lack of action after a 1982 Air Force study found some toxicity with PFAS. The defendants argued that their disclosure of internal studies regarding PFAS would not have made a difference, as the government did not immediately act after 1982 or when the defendants shared information in 2000.[94] The defendants (who paid millions to lobbyists) contended that delays in government action rendered any argument about an alleged withholding of information immaterial.[95] But these arguments failed to answer the core of the plaintiffs' rebuttal: that the defendants misled the government, the scientific community, and the public.

The plaintiffs argued that the government MilSpec was just a performance specification; the actual product design was up to the contractor's discretion (as opposed to a specific guideline on what should be used, which would have been a design specification).[96] In 1969, when the AFFF MilSpec was defined, there were hundreds of different types of fluorocarbon surfactants that could have been chosen.[97] The MilSpec did not dictate that manufacturers only use PFOA or PFOS.

Moreover, the plaintiffs argued that the defendants' failure to disclose information pertinent to their products was incompatible with government contractor immunity. Despite defendants' arguments about the government's delayed response, the plaintiffs asserted that if 3M had shared the risks of PFAS with the U.S. government when they had first learned of them, then PFAS would have been heavily regulated and limited. The plaintiffs cited that in 1975, two independent toxicologists found that an organic fluorine compound was found in human blood.[98] 3M claimed ignorance.

Yet, a year later, a 3M scientist authored an internal company report that the fluorine compound found in the study closely resembled PFOS (manufactured exclusively by 3M).[99] 3M told no one outside of the company about this finding. And in 1981, 3M scientist Jon Belisle published an article in *Science*, falsely claiming that the mystery compound was not made but rather was naturally occurring.[100] During the early decades of PFAS usage and innovation, only 3M and DuPont had any understanding of the risks associated with the set of chemicals. Thus, 3M withheld information on the pervasive nature of PFOS in people's blood, and its employee Belisle sought to discredit public inquiries into the subject.

3M delayed disclosure of its PFOS and PFOA studies to EPA, exposing the public to these chemicals without awareness of safe thresholds. Despite conducting research on PFAS since the 1950s and finding extensive harmful health effects, 3M falsely claimed that its products were completely safe.[101] Over the years, EPA had required 3M to disclose some of these studies, but 3M consciously and successfully misled the government and the public regarding the implications of these studies.

In 1978, 3M released an advertising brochure for AFFF, claiming that the product was "environmentally neutral," as it was "biodegradable, low in toxicity, and . . . [could] be treated in biological treatment systems."[102] 3M made this claim to sell its product and preserve market share: it knew since the early 1960s that PFAS were toxic while simultaneously branding its PFAS-laden products as safe. In an internal memo, in 1988, a 3M environmental specialist stated that it was not "in 3M's long-term interest to perpetuate the myth that these fluorochemical surfactants are biodegradable."[103]

EPA was not made aware of how harmful existing levels of PFAS were at the time, as studies focused on simulated trials of highly concentrated PFOS and 3M successfully convinced the public that this meant the studies did not pertain to the lower levels that existed in human blood. The plaintiffs argued that 1998 was the first time the government was remotely aware of blood pollution throughout the country, when 3M disclosed its findings and also falsely reported that the discovery of PFOS in the blood was new information.[104] The plaintiffs claimed that "EPA has been swimming upstream against a powerful industry current of denial."[105]

It was not until 2000 that 3M began to discontinue PFOS materials, but it maintained that it was "absolutely confident that [its] products [were] safe" and there were "no long-term consequences to human health."[106] Between 1998 and 2000, 3M released over 1,200 reports and studies on PFOS, and the scientific community has published thousands of articles on PFOS since, a stark uptick from the handful of articles before 1998.[107] The District of South Carolina found that it was not until 3M's disclosure that

94. *Id.*
95. *Id.* at 25-26, 32, 75.
96. Order and Opinion, In re Aqueous Film-Forming Foams Prods. Liab. Litig., 2022 U.S. Dist. LEXIS 168634, at *20-21 (D.S.C. Sept. 16, 2022) (No. 2:18-mn-2873-RMG).
97. *Id.* at *24.
98. Warren S. Guy et al., *Organic Fluorocompounds in Human Plasma: Prevalence and Characteristics*, *in* Biochemistry Involving Carbon-Fluorine Bonds 117 (R. Filler ed., Am. Chem. Soc'y 1976); Transcript of Oral Argument, *supra* note 92, at 35-36.
99. Ex. LP68 to Deposition of John Gerber (Chronology) (Dkt. No. 2063-20), In re Aqueous Film-Forming Foams Prods. Liab. Litig. (D.S.C. filed Dec. 22, 2021) (No. 2:18-mn-2873-RMG).
100. Jon Belisle, *Organic Fluorine in Human Serum: Natural Versus Industrial Sources*, 212 Science 1509 (1981).
101. Letter from 3M to EPA at 2 (Dkt. No. 2063-51), In re Aqueous Film-Forming Foams Prods. Liab. Litig. (D.S.C. filed Dec. 22, 2021) (No. 2:18-mn-2873-RMG).
102. Ex. 101 at 6 (Dkt. No. 2063-102), In re Aqueous Film-Forming Foams Prods. Liab. Litig. (D.S.C. filed Dec. 22, 2021) (No. 2:18-mn-2873-RMG).
103. Ex. 72 at 2 (Dkt. No. 2409-73), In re Aqueous Film-Forming Foams Prods. Liab. Litig. (D.S.C. filed Dec. 22, 2021) (No. 2:18-mn-2873-RMG).
104. *Exhibit List*, *supra* note 54 (Pl.'s Ex. 1025, Memorandum From J. Brown to H. Wessel re: Proposed Dump Site); Transcript of Oral Argument, *supra* note 92, at 38.
105. Transcript of Oral Argument, *supra* note 92, at 50.
106. David Barboza, *E.P.A. Says It Pressed 3M for Action on Scotchgard Chemical*, N.Y. Times (May 19, 2000), http://www.nytimes.com/2000/05/19/business/epa-says-it-pressed-3m-for-action-on-scotchgard-chemical.html.
107. Ex. 267, Slides—3M Continued Use/Prong 3 Timeline at 3 (Dkt. No. 2063-7) and Ex. 6, Linda Birnbaum Declaration ¶ 24 (Dkt. No. 2560-12), In re Aqueous Film-Forming Foams Prods. Liab. Litig. (D.S.C. filed Dec. 22, 2021) (No. 2:18-mn-2873-RMG).

EPA began seriously investigating PFOS and PFOA for the first time.[108]

EPA soon proposed new rules on the manufacture or import of PFOS.[109] DOD also added PFOS to its list of emerging chemicals of environmental concern. However, the government still did not implement widespread PFAS regulations.[110] The plaintiffs argued that this, too, was because of the defendants' strategic disinformation campaign. Swearing off PFOS, 3M exited the telomer manufacturer market, where manufactured fluorotelomers were used for water-resistant products like AFFF. At that time, the AFFF manufacturers that used a different manufacturing process, known as telomerization, saw the opportunity created by 3M's withdrawal.[111]

EPA knew little about telomer-based AFFF, which the telomer manufacturers, also defendants in the MDL, knew transformed into PFOA in the environment. These defendants formed the Fire Fighting Foam Coalition (FFFC) to lobby regulators on their behalf.[112] Its red herring message was clear: telomer-based AFFF does not contain PFOS or PFOA like 3M's abandoned product.[113]

However, PFOS was exclusively manufactured by 3M, and by focusing on PFOS, the FFFC misled EPA. 3M AFFF also contained PFOA, and the FFFC ignored the fact that they knew that their products could degrade to PFOA.[114] The FFFC also represented to DOD that telomer-AFFF was made with C-6, not C-8.[115] The telomer manufacturers used this difference to convince the government that some PFAS products were still safe, even though no studies supported this argument.[116] For the FFFC, PFOA was critical for the survival of the telomer-based foam industry.[117]

Many of the telomer manufacturers in the MDL claimed to not have knowledge of the toxicity and linkage between AFFF and PFOA, facts the court found disputed due to the plaintiffs' inquiry into internal and governmental conversations.[118] Despite ongoing AFFF usage on military installations, in 2009, EPA published a Provisional Health Advisory for both PFOS and PFOA, claiming that the health outcomes were inconclusive.[119] This was replaced with a Lifetime Health Advisory in 2016.[120]

In 2016, after years of governmental and independent scientific research corroborating PFAS and AFFF toxicity, the federal government finally decided to discontinue use of AFFF at military bases for training practices, reserving the foam for emergencies.[121] It was a decision significantly delayed by the FFFC lobbying to convince EPA that their product was safe and 3M's decades-long refusal to disclose its research.[122]

The court denied defendants' summary judgment motion, striking down the argument for a government contractor defense.[123] It found that in the event the plaintiffs were able to prove that 3M's withholding of scientific information led to the continued use of 3M AFFF, then the defendants would not be able to employ the *Boyle* defense. Implicitly, the District of South Carolina said that a reasonable jury could find that the defendants misled the government. The court held that factual disputes remained regarding whether the military "approved reasonably precise specifications" and whether the AFFF products "conformed to those specifications."[124] The defendants needed to show not just mere government awareness of general performance requirements, but evidence that federal officials exercised meaningful discretion and control over the design choices alleged to cause the injuries.[125]

108. Ex. 167, 4/26/06 E-mail Chain re News Release at 3 (Dkt. No. 2409-41), In re Aqueous Film-Forming Foams Prods. Liab. Litig. (D.S.C.) (No. 2:18-mn-2873-RMG); Order and Opinion, In re Aqueous Film-Forming Foams Prods. Liab. Litig., 2022 U.S. Dist. LEXIS 168634, at *33 (D.S.C. Sept. 16, 2022) (No. 2:18-mn-2873-RMG).
109. Plaintiffs' Opposition to Defendants' Motion for Partial Summary Judgment on the First Element of the Government Contractor Immunity Defense at 44, In re Aqueous Film-Forming Foams Prods. Liab. Litig., No. 2:18-mn-2873-RMG (D.S.C. filed Dec. 22, 2021); Ex. 107 at 2-3 (Dkt. No. 2063-108), In re Aqueous Film-Forming Foams Prods. Liab. Litig. (D.S.C. filed Dec. 22, 2021) (No. 2:18-mn-2873-RMG).
110. Ex. 109 at -004 (Dkt. No. 1971-9), In re Aqueous Film-Forming Foams Prods. Liab. Litig. (D.S.C. filed Nov. 5, 2021) (No. 2:18-mn-2873-RMG).
111. Plaintiffs' Opposition to Defendants' Motion for Partial Summary Judgment on the First Element of the Government Contractor Immunity Defense at 19, In re Aqueous Film-Forming Foams Prods. Liab. Litig., No. 2:18-mn-2873-RMG (D.S.C. filed Dec. 22, 2021). These defendants included Tyco, Chemguard, Kidde, National Foam, and Buckeye.
112. Ex. 89 at 29 (Dkt. No. 2063-90), In re Aqueous Film-Forming Foams Prods. Liab. Litig. (D.S.C. filed Dec. 22, 2021) (No. 2:18-mn-2873-RMG).
113. *Id.*
114. Ex. 236, 10/18/02 E-mail From Dowling at 2 (Dkt. No. 2409-113), In re Aqueous Film-Forming Foams Prods. Liab. Litig. (D.S.C. filed June 17, 2022) (No. 2:18-mn-2873-RMG); Ex. 147, 3/7/01 E-mail Chain re Foam Nasties at 2 (Dkt. No. 2409-21) and Ex. 235, 4/18/01 E-mail Chain re EPA Meeting Comments at 2-3 (Dkt. No. 2409-112), In re Aqueous Film-Forming Foams Prods. Liab. Litig. (D.S.C. filed June 17, 2022) (No. 2:18-mn-2873-RMG).
115. Ex. 146, 9/15/08 E-mail Chain re DOD Memo on PFOA (Dkt. No. 2409-20), In re Aqueous Film-Forming Foams Prods. Liab. Litig. (D.S.C. filed June 17, 2022) (No. 2:18-mn-2873-RMG) (internal memo saying that FFFC had been "economical with the truth" when it led "EPA to believe that firefighting foam agents were only made with C6 surfactants.").
116. Transcript of Oral Argument, *supra* note 92, at 67, 69.
117. *Id.* at 81.
118. Telomer MILSPEC AFFF Manufacturers' Memorandum of Law in Support of Defendants' Motion for Partial Summary Judgment on the Second and Third Elements of the Government Contractor Immunity Defense at 25, In re Aqueous Film-Forming Foams Prods. Liab. Litig., No. 2:18-mn-2873-RMG (D.S.C. filed May 13, 2022); Ex. 238, Chemguard's Technical Bulletin at 3 (Dkt. No. 2409-115), In re Aqueous Film-Forming Foams Prods. Liab. Litig. (D.S.C. filed June 17, 2022) (No. 2:18-mn-2873-RMG).
119. Plaintiffs' Opposition to Defendants' Motion for Partial Summary Judgment on the First Element of the Government Contractor Immunity Defense at 48, In re Aqueous Film-Forming Foams Prods. Liab. Litig., No. 2:18-mn-2873-RMG (D.S.C. filed Dec. 22, 2021).
120. Ex. 123 (Dkt. No. 1971-23), In re Aqueous Film-Forming Foams Prods. Liab. Litig. (D.S.C. filed Nov. 5, 2021) (No. 2:18-mn-2873-RMG).
121. Ex. 131 at 8 (Dkt. No. 1971-31), In re Aqueous Film-Forming Foams Prods. Liab. Litig. (D.S.C. filed Nov. 5, 2021) (No. 2:18-mn-2873-RMG); Ex. 119 at 2, 4 (Dkt. No. 2063-120), In re Aqueous Film-Forming Foams Prods. Liab. Litig. (D.S.C. filed Dec. 22, 2021) (No. 2:18-mn-2873-RMG); Ex. 96 at 3 (Dkt. No. 2063-97), In re Aqueous Film-Forming Foams Prods. Liab. Litig. (D.S.C. filed Dec. 22, 2021) (No. 2:18-mn-2873-RMG).
122. Transcript of Oral Argument, *supra* note 92, at 68.
123. Order and Opinion, In re Aqueous Film-Forming Foams Prods. Liab. Litig., 2022 U.S. Dist. LEXIS 168634, at *1 (D.S.C. Sept. 16, 2022) (No. 2:18-mn-2873-RMG).
124. Boyle v. United Technologies Corp., 487 U.S. 500, 512-13 (1988).
125. Order and Opinion, In re Aqueous Film-Forming Foams Prods. Liab. Litig., 2022 U.S. Dist. LEXIS 168634, at *23 (D.S.C. Sept. 16, 2022) (No. 2:18-mn-2873-RMG).

Judge Gergel found that the factual disputes were enough to necessitate a trial. The defendants withheld information knowingly, and the government continued to use AFFF despite knowledge of its risks, but then ended its practice when more information became available about PFOS and PFOA. The conflicting issues of risk and knowledge made government contractor immunity unavailable via summary judgment motion-practice. The court's decision to reject a summary judgment eventually led to a $12 billion settlement, with money going toward public water infrastructure across the country.[126]

IV. Global Application

The rejection of the government contractor defense in the AFFF MDL provides a roadmap for PFAS litigation worldwide. While the *Boyle* defense is a uniquely American doctrine, the MDL's core finding of AFFF manufacturers' conduct translates across legal systems. Foreign litigants can hold AFFF manufacturers accountable by focusing on the global scope of PFAS contamination from military and military-standard firefighting operations and the manufacturers' universal concealment and disinformation campaign. As global entities set up regulatory restrictions and standards for firefighting foams (such as the EU's restriction on PFAS-containing firefighting foams from the market and limit values for different foam concentrates), litigation against the manufacturers for disinformation regarding AFFF should follow.[127]

It is estimated that DOD operates around 750 military bases in more than 80 countries.[128] In Japan, military bases were known to use AFFF and neighboring communities faced extreme levels of PFAS pollution.[129] Two thousand feet away from the Kadena Air Base in Okinawa, the Yara Ubuga spring registered PFAS levels 36 times that of Japan's provisional safety standard.[130] The Futenma Marine Corps Air Station, also in Okinawa, has contaminated surrounding residential areas, with particularly high concentrations found in wells and agricultural water sources.[131] Near Yokota Air Base outside Tokyo, municipal water supplies have been contaminated, forcing water treatment plant shutdowns and driving residents to purchase bottled water.[132]

Around all of these U.S. military bases, communities face the same contamination and challenges that are seen in the United States. Residents who seek accountability are faced with the Status of Forces Agreement (SOFA) between the United States and Japan, which generally shields U.S. military personnel and operations from Japanese legal process.[133] However, the SOFA would not protect the PFAS manufacturers, such as 3M and DuPont.[134] Judge Gergel's rejection of the government contractor defense in the AFFF MDL could be relevant for contamination near these U.S.-Japan military bases. The PFAS disinformation campaign was global and would similarly be evidentiary support for Japanese plaintiffs.

Communities neighboring U.S. military bases face a similar fate in South Korea, which hosts U.S. military bases such as Camp Humphreys, Osan Air Base, and Kunsan Air Base, and where the Korean people are left with the cleanup responsibility.[135] PFAS contamination from these installations has been documented in groundwater, surface water, and agricultural soils.[136] As in Japan, the U.S.-South Korea SOFA allows the U.S. military to evade binding responsibility for remediation, but leaves manufacturer liability unaffected.[137]

The United States also has a large military presence in Germany, and a study in 2023 identified 20 different types of PFAS in German streams and rivers near U.S. military installations, with concentrations far exceeding both German and EU safety thresholds.[138] In the SOFA between Germany and the United States, the United States is stated to be aware of the "importance of environmental protection in context of all the activities of their forces," but they are not bound to meet any standard for said protection.[139] In this case, turning to the manufacturers may help fund remediation.

126. Maher & Keilman, *supra* note 81.
127. Commission Regulation 2025/1988, *Amending Annex XVII to Regulation (EC) No 1907/2006 of the European Parliament and of the Council as Regards Per- and Polyfluoroalkyl Substances in Firefighting Foams*, 2025 O.J. (L 1988).
128. David Vine et al., *Drawdown: Improving U.S. and Global Security Through Military Base Closures Abroad*, Quincy Inst. for Responsible Statecraft (Sept. 20, 2021), https://quincyinst.org/research/drawdown-improving-u-s-and-global-security-through-military-base-closures-abroad/#.
129. Marybeth Collins, *U.S. Military Removes Toxic Firefighting Foam From Bases in Japan*, Env't & Energy Leader (Nov. 19, 2024), https://www.environmentenergyleader.com/stories/us-military-removes-toxic-firefighting-foam-from-bases-in-japan,57628.
130. Matthew M. Burke & Keishi Koja, *Okinawa to Expand PFAS Testing After Samples Showed High Levels Near US Bases*, Stars & Stripes (July 19, 2023), https://www.stripes.com/theaters/asia_pacific/2023-07-19/okinawa-pfas-testing-military-bases-10784021.html.
131. *Protecting Americans at Risk of PFAS Contamination and Exposure: Hearing Before the Subcomm. on Env't & Climate Change of the H. Comm. on Energy & Commerce*, 116th Cong. 165 (2019) (statement of Masami Kawamura, Director, Informed-Public Project, Okinawa, Japan), https://www.congress.gov/116/meeting/house/109746/documents/HHRG-116-IF18-20190515-SD005.pdf.
132. Naoki Nakayama, *Toxic Chemicals May Have Leaked From Yokota Base in August*, Asahi Shimbun (Oct. 8, 2024), https://www.asahi.com/ajw/articles/15457876.
133. Agreement Under Article VI of the Treaty of Mutual Cooperation and Security Between the United States and Japan, Regarding Facilities and Areas and the Status of United States Armed Forces in Japan, U.S.-Japan, Jan. 19, 1960, 11 U.S.T. 1652; *Editorial: U.S. Military, Japan Need to Combat PFAS Health Threat*, Asahi Shimbun (Feb. 9, 2024), https://www.asahi.com/ajw/articles/15157045.
134. *Id.*
135. Jia Hong & Erica Jung, *The Sacrifice of Human Health and Environment in South Korea Under US Military Occupation*, 25 Sci. for People No. 3 (2023), https://magazine.scienceforthepeople.org/vol25-3-killing-in-the-name-of/the-sacrifice-of-human-health-and-environment-in-south-korea-under-us-military-occupation/.
136. Yuna Kim et al., *Occurrence of Per- and Polyfluoroalkyl Substances (PFAS) in Potable Groundwater Near Military Bases in South Korea*, 12 Env't Sci. & Tech. Letters 440 (2025).
137. Hong & Jung, *supra* note 135.
138. Vanessa Ingold et al., *Screening for 26 Per- and Polyfluoroalkyl Substances (PFAS) in German Drinking Waters With Support of Residents*, 2 Eco-Env't & Health 235 (2023).
139. Agreement to Supplement the Agreement Between the Parties to the North Atlantic Treaty Regarding the Status of Their Forces With Respect to Foreign Forces Stationed in the Federal Republic of Germany art. 54A(1), Aug. 3, 1959 (as amended Mar. 18, 1993, effective Mar. 29, 1998).

Similarly to the United States, the EU's recent restrictions on PFAS-containing firefighting foams may have been delayed for decades by manufacturer disinformation. Had 3M disclosed rather than concealed its PFAS research, European regulation would have developed far earlier, potentially preventing much of the contamination Germany now faces. The United States also has a slew of closed military bases abroad, and the lack of direct management exacerbates issues of remediation, distancing the responsible party with resources for cleanup from affected communities. Targeting the PFAS manufacturers directly could offer a legal avenue that currently does not exist for those affected by pollution from closed military bases.

Many non-U.S. military bases also adopted the U.S. MilSpec for AFFF or other PFAS-containing AFFF, making the bases prime targets for similar litigation against PFAS manufacturers. Despite the contamination coming from federal grounds, following the U.S. example, the manufacturers' disinformation regarding PFAS and AFFF allows the possibility of directly holding them responsible. The Royal Australian Air Force (RAAF), the Royal Australian Navy, and Australian Defence Force (ADF) used AFFF as well, with similar military specifications to U.S. MIL-F-24385F.[140] PFAS contamination has been documented at and near dozens of current and former defense bases, including RAAF Base Williamtown, RAAF Base Tindal, and Army Aviation Centre Oakey.[141]

Residents have settled class actions against the Commonwealth for damages to property devaluation and personal injury, and the New South Wales Environment Protection Authority ordered an Australian subsidiary of 3M to clean up an abandoned quarry.[142] In the U.K., contamination from Royal Air Force bases has raised concerns similar to those in the United States and Australia, leading to formal inquiries into PFAS contamination and regulation across the country from the Environmental Audit Committee.[143] In both polities, as is true for government at large, the militaries were led to believe that AFFF would not be as toxic as they have proved to be.

For non-U.S. military bases, following the MDL's logic could be beneficial, but there would need to be country-specific discovery to see how the government reacted to scientific studies and discourse with PFAS manufacturers. For example, in 1987, the ADF was given a warning by a consultant to handle AFFF as a toxic waste.[144] And in 1991, it had an internal investigation on AFFF and impact on groundwater quality near Oakey Base, and they learned of probable environmental contamination.[145] These dates, however, are well after 3M's and DuPont's knowledge of toxicity from studies in the 1960s and 1970s.

In a potential suit against PFAS manufacturers and/or the ADF, a discovery process could show the relationship between PFAS manufacturers' disinformation campaign and governmental delay. The manufacturers may not be safeguarded by their contractor status, and governmental communication could shed light on the negligence associated with PFAS pollution and lack of cleanup. The U.K. government, too, has been trailing behind in PFAS regulation and litigation. Similarly considering PFAS manufacturers in lawsuits could procure evidence on the U.K. military's knowledge of PFAS, and what knowledge manufacturers did or did not share with the U.K. military.

The AFFF MDL's decision is also beneficial in the case of private military contractors (PMCs), creating a way for people affected by PFAS pollution to hold PFAS manufacturers liable. The United States has historically contracted PMCs to supplement their own capacity, supporting troops in operational activities. The Logistics Civil Augmentation Program (LOGCAP) is the U.S. Army's primary vehicle for contracting comprehensive logistical support in contingency operations.

Under LOGCAP III (2001-2008), Kellogg Brown & Root (KBR) served as the sole contractor, and under LOGCAP IV (2008-2019) and LOGCAP V (2019-present) it served as one of multiple contractors, providing services ranging from base operations to firefighting at hundreds of U.S. military facilities, including in Iraq, Afghanistan, Djibouti, and Poland.[146] The Haliburton subsidiary KBR

140. Mike Willson, Submission to Joint Standing Committee on Foreign Affairs, Defense & Trade Parliamentary Inquiry: Management of PFAS in and Around Defence Bases, Submission No. 16 at 16 (June 29, 2018).

141. Australian Government of Defence, *PFAS Management Sites*, https://www.defence.gov.au/about/locations-property/pfas/pfas-management-sites (last visited Mar. 19, 2026); 9 News Australia, *Forever Chemical Fight: Australians Still Living on Contaminated Land*, YouTube (Oct. 29, 2025), https://www.youtube.com/watch?v=hsnwxhLBRYw&t=7s; Robert King, *Military Base Water Contamination Lawsuit—March 2026 Update*, King Law (Mar. 16, 2026), https://www.robertkinglawfirm.com/personal-injury/military-base-water-contamination-lawsuit/.

142. Isobel Roe et al., *Commonwealth Settles $132.7 Million Class Action Over PFAS Contamination Across Australia*, ABC News (May 14, 2023), https://www.abc.net.au/news/2023-05-15/pfas-class-action-commonsettlement-reached-with-30-000-claimants/102346274; *Australia Orders 3M to Clean Up PFAS Pollution at Former Firefighting Foam Site*, Env't Health News (June 2, 2025), https://www.ehn.org/australia-orders-3m-to-clean-up-pfas-pollution-at-former-firefighting-foam-site.

143. Julia Robinson, *Concerns Raised About PFAS Leaking From Three UK Military Bases*, Chemistry World (Apr. 23, 2025), https://www.chemistryworld.com/news/concerns-raised-about-pfas-leaking-from-three-uk-military-bases/4021400.article.

144. Christopher Knaus, *Australian Defence Force Warned About Toxic Firefighting Foam 30 Years Ago*, Guardian (Oct. 9, 2017), https://www.theguardian.com/australia-news/2017/oct/09/australian-defence-force-warned-about-toxic-firefighting-foam-30-years-ago.

145. Christopher Knaus, *Defence Knew of Firefighting Foam Dangers at Queensland Base in 1991, Class Action Alleges*, Guardian (July 31, 2017), https://www.theguardian.com/australia-news/2017/aug/01/defence-knew-of-firefighting-foam-dangers-at-queensland-base-in-1991-class-action-alleges.

146. Sharon Weinberger, *Military Logistics: The $37 Billion (Non)Competition*, Wired (Aug. 30, 2011), https://www.wired.com/2011/08/military-logistics-the-37-billion-noncompetition/; Army Sustainment Command Public Affairs, *LOGCAP V Performance Contractors Selected*, U.S. Army (Apr. 15, 2019), https://www.army.mil/article/220353/logcap_v_performance_contractors_selected; *LOGCAP IV Logistics Contract Awarded Through Full and Open Competition*, U.S. Army (Apr. 17, 2008), https://www.army.mil/article/8567/logcap_iv_logistics_contract_awarded_through_full_and_open_competition; Sharon Weinberger, *Windfalls of War: KBR, the Government's Concierge*, Ctr. For Pub. Integrity (Aug. 30, 2011), https://publicintegrity.org/national-security/windfalls-of-war-kbr-the-governments-concierge/; André Verlöy & Daniel Politi, *Halliburton Contracts Balloon*, Ctr. For Pub. Integrity (Aug. 18, 2004), https://publicintegrity.org/national-security/halliburton-contracts-balloon/; *KBR Provides*

was responsible for everything from dining facilities and living quarters to airfield operations and firefighting, and due to the MilSpec, would have used AFFF.[147]

AFFF used by PMCs would be most likely supplied from the same few manufacturers at issue in the MDL (3M, Tyco, Chemguard, etc.), and the PMCs were involved in the same PFAS disinformation campaign as the U.S. military. KBR also has subcontracted firefighting services to other companies, such as Wackenhut Services, Inc. and Sallyport Global.[148] These sub-tier contractors purchased AFFF either through KBR or directly from manufacturers. The lengthening chain of contractors could create complications for assigning liability for any contamination. Yet in each case, PFAS manufacturers were the ones selling the U.S. military the same toxic products with the same false safety claims.

Affected parties from AFFF pollution near these bases could employ the same arguments as in the AFFF MDL, bringing in PFAS manufacturers as responsible parties. These military bases also often operate in active conflict zones where there are limited environmental controls. The PMCs would use AFFF during firefighting training, emergency response, and as a flame suppressant during combat operations.[149] The areas around these military outposts are thus likely contaminated by AFFF; however, in many countries, this is under-studied or not investigated at all. Discovery through pertinent cases could lead to attention in areas that unknowingly may be incredibly contaminated.

V. Conclusion

Product liability litigation and regulation in the United States have spawned concerted corporate efforts by various industries to conspire and create scientific doubt where none legitimately exists in order to continue selling a bad product or product component. This has occurred famously in tobacco litigation and most recently in climate change litigation.[150] As can be seen from the above, the PFAS story follows this deceptive pattern.

However, the inapplicability of the government contractor defense in the United States shows that plaintiffs can hold manufacturers accountable for their hazardous misrepresentations. PFAS litigation in the United States serves as foundational reference for foreign litigation in combatting PFAS. Litigators must question government contractor defenses for the widespread cases of PFAS pollution from government programs for firefighting operations.

PFAS have a global presence, and PFAS manufacturers' disinformation campaign also was global. The lessons learned from the AFFF MDL are not isolated to the United States, offering another path forward for residents and advocates in other countries fighting against decades of PFAS pollution.

Unmatched Responsiveness to U.S. Army in Europe, KBR (Aug. 23, 2017), https://www.kbr.com/en/insights-news/stories/kbr-provides-unmatched-responsiveness-us-army-europe.

147. *The Department of Defense's Management of Costs Under the Logistics Civil Augmentation Program (LOGCAP) Contract in Iraq: Hearing Before the Committee on Armed Services United States Senate*, 110th Cong. (2007); Press Release, KBR, KBRwyle Wins Additional LOGCAP IV Work, Will Continue to Support Operation Inherent Resolve in Iraq (June 11, 2018), https://www.kbr.com/en/insights-news/press-release/kbrwyle-wins-additional-logcap-iv-work-will-continue-support-operation; Verlöy & Politi, *supra* note 146.

148. Complaint for Damages and Declaratory and Injunctive Relief, Hill v. Wackenhut Servs. Int'l, Inc., No. 1:11-cv-02158 (D.D.C. Dec. 6, 2011); Sallyport Global, *Sallyport Global Awarded $400 Million Contract to Support F-16 Program at Balad Air Base*, PR Newswire (Jan. 31, 2018), https://www.prnewswire.com/news-releases/sallyport-global-awarded-400-million-contract-to-support-f-16-program-at-balad-air-base-300591569.html.

149. *The Department of Defense's Management of Costs Under the Logistics Civil Augmentation Program (LOGCAP) Contract in Iraq: Hearing Before the Committee on Armed Services United States Senate*, *supra* note 147.

150. Naomi Oreskes & Erik M. Conway, Merchants of Doubt 10-35, 169-215 (Bloomsbury Press 2010) (tobacco at 10-35; climate change at 169-215).