

PFAS IN BIOSOLIDS AND THE IMPACTS ON AGRICULTURE

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Abstract	216
I. Introduction.....	216
II. The PFAS Problem and Current Legal Framework.....	221
A. What are PFAS, How They Were Used in Industry, and Their Phaseout?.....	221
B. Why is PFAS a Concern to Human Health and The Environment? ...	225
C. What are Biosolids and How are They Regulated?	227
D. The Current Common Law Framework Applied to PFAS.	228
1. <i>Ryan v. Greif, Inc.</i>	229
2. <i>Higgins v. Huhtamaki, Inc.</i>	231
3. <i>Giordano v. Solvay Specialty Polymers USA, LLC</i>	232
4. <i>State ex rel. Stein v. EIDP, Inc.</i>	233
5. <i>Johnson v. 3M</i>	233
6. <i>Synagro Lawsuit</i>	234
7. Farmers and PEER’s Suit Against EPA	237
E. The Current Federal and State Statutory and Regulatory Framework for PFAS	237
1. EPA’s Strategic Roadmap for PFAS and Regulatory Actions	238
2. Federal Regulation of PFAS in Biosolids	240
3. State Regulation of Biosolids	242
4. Federal and State Regulation of PFAS at Contaminated Sites	244

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F. The Effects the Current Legal Framework Has on Agricultural Businesses	247
III. Addressing and Mitigating Risks from the PFAS Problem Under the Current Framework.....	248
A. Contractual Solutions and Risk Mitigation Measures	249
1. Express Warranties.....	249
2. Indemnification Clauses	250
3. Agreement to Insure Clauses.....	251
4. Limitations of Liability and Damages.....	251
5. Subrogation Waivers	251
B. Lawsuits Against Upstream Parties	252
C. Insurance Claims.....	252
D. Voluntary Reporting and Cleanup	255
IV. A New Framework.....	255
A. The Critical Role Agricultural Businesses Play in Our Society	256
B. A New Legal Framework That Accounts for the Essential Role Agricultural Businesses Play in our Lives	257
V. Conclusion.....	259

ABSTRACT

Agriculture businesses face lawsuits and regulatory action because of PFAS contamination. For years, many agriculture businesses bought, sold, or spread biosolids, believing this practice was an environmentally friendly way to improve soil health while lowering reliance on costly chemical fertilizers. But now, we know that PFAS are often present in biosolids. In the last few years, private party lawsuits and regulatory action regarding PFAS have increased, creating an existential risk for many businesses.

To address and mitigate risks from PFAS, agriculture businesses should explore (a) contractual solutions, (b) lawsuits against upstream parties, (c) insurance claims, and (d) voluntary reporting and cleanup. Yet simply mitigating risks under the current legal framework is not enough for many businesses. Thus, agriculture businesses should explore legislative changes that immunize them from PFAS contamination caused by biosolids before May 8, 2024, the date EPA published its final rule naming two types of PFAS as hazardous substances under CERCLA, unless they acted willfully and wantonly.

I. INTRODUCTION

Per- and polyfluoroalkyl substances (PFAS) are a large class of synthetic chemicals, numbering in the thousands, that are pervasive in the environment due

to their widespread use in consumer products beginning in 1950s and their resistance to biodegradation, earning them the name “forever chemicals.”¹ PFAS can be discharged in wastewater from industrial, residential, and municipal sources into sewers and, eventually, this wastewater is treated at wastewater treatment plants (WWTPs).² While WWTPs are designed to remove organic matter, nutrients, pathogens, and other pollutants from wastewater, the treatment process does not eliminate PFAS.³ Some PFAS are likely discharged in a WWTP’s treated effluent, especially from older facilities which often lack treatment technologies that can remove PFAS.⁴ Indeed, environmental regulatory agencies have only recently required WWTPs to supply data on PFAS which may be contained in influent feeding the WWTP (*i.e.*, pretreated wastewater from industrial sources) and effluent leaving the WWTP.⁵ Moreover, and more to the point of this article, some PFAS accumulate in the sewage sludge created from the treatment process.⁶

1. *Per- and Polyfluoroalkyl Substances (PFAS)*, AM. ASS’N FOR THE ADVANCEMENT OF SCI. (May 2, 2024), <https://www.aaas.org/epi-center/pfas> [<https://perma.cc/ZW58-EYEM>].

2. SARAH GRACE HUGHES, PFAS IN BIOSOLIDS: A REVIEW OF STATE EFFORTS & OPPORTUNITIES FOR ACTION, ENV’T COUNCIL OF THE STATES 1 (2023), <https://www.ecos.org/wp-content/uploads/2023/01/PFAS-in-Biosolids-A-Review-of-State-Efforts-and-Opportunities-for-Action.pdf> [<https://perma.cc/H2N2-V88E>].

3. *Id.* at 3.

4. U.S. ENV’T PROT. AGENCY, FACT SHEET: DRAFT SEWAGE SLUDGE RISK ASSESSMENT FOR PFOA AND PFOS: INFORMATION FOR FARMERS 1 (2025) [hereinafter FACT SHEET: DRAFT SEWAGE SLUDGE], <https://www.epa.gov/system/files/documents/2025-01/fact-sheet-draft-sewage-sludge-risk-assessment-pfoa-pfos.pdf> [<https://perma.cc/V326-CHBV>].

5. EPA issued an Information Collection Request (ICR) and began collecting and analyzing nationwide data on industrial discharges of PFAS to publicly owned treatment works (POTWs) as well as PFAS in POTW influent, effluent, and sewage sludge in January 2023. *See* Proposed Information Collection Request; Comment Request; POTW Influent PFAS Study Data Collection, 89 Fed. Reg. 20962, 20963 (Mar. 26, 2024); Publicly Owned Treatment Works (POTW) Influent Per- and Polyfluoroalkyl Substances (PFAS) Study and National Sewage Sludge Survey (NSSS), 89 Fed. Reg. 82238, 82238 (Oct. 10, 2024).

6. EPA defines “sewage sludge” as a:

[S]olid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works.

40 C.F.R. § 503.9(w) (2025). The terms “biosolids” and “sewage sludge” are often used interchangeably; however, the EPA generally uses the term “biosolids” to mean sewage sludge that has been treated to meet the requirements in 40 C.F.R Part 503, discussed below, and is intended to be applied to land as a soil amendment or fertilizer. Nevertheless, the EPA’s

WWTPs have three options to deal with their never-ending supply of sewage sludge: incineration, landfilling, and land application.⁷ While incineration and landfilling of PFAS-impacted sewage sludge result in their own environmental concerns (*e.g.*, air disposition and leachate), this article focuses on the environmental issues surrounding land application of sewage sludge.⁸ Sewage sludge is also referred to as “biosolids,” and “land application” is “the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil.”⁹

A massive amount of sewage sludge is applied as a soil amendment or fertilizer every year in the United States.¹⁰ The United States Environmental Protection Agency (EPA) “collects annual biosolids reports from roughly 2,250 larger facilities in the [United States] in the 41 states where the EPA is the permitting authority.”¹¹ Based on these reports, EPA estimates (for 2023) that approximately 2.39 million dry metric tons (dmts) of sewage sludge are land applied.¹² Of these 2.39 million dmts, approximately 1.24 million dmts are applied to agricultural land, approximately 32,000 dmts are applied to reclamation areas, and approximately 1.12 dmts are applied to “other” uses which include “home garden[s], landscaping, golf course[s],[.] etc.”¹³

The federal Clean Water Act (CWA) prohibits the disposal of sewage sludge from WWTPs that “would result in any pollutant from such sewage sludge entering the navigable waters” unless the disposal is governed by a National Pollutant Discharge Elimination System (NPDES) permit.¹⁴ The CWA also required the

rules and the CWA only use the term “sewage sludge.” *See* 40 C.F.R. § 503.9 (2025); 33 U.S.C. § 1345.

7. *Basic Information About Sewage Sludge and Biosolids*, U.S. ENV’T PROT. AGENCY (Mar. 12, 2025), <https://www.epa.gov/biosolids/basic-information-about-sewage-sludge-and-biosolids> [<https://perma.cc/4R8R-GU35>].

8. *See* AM. ASS’N FOR THE ADVANCEMENT OF SCI., *supra* note 1.

9. 40 C.F.R. § 503.11(h) (2025).

10. *Basic Information About Sewage Sludge and Biosolids*, *supra* note 7.

11. *Id.*

12. *Id.*

13. *Id.* It bears noting that EPA does not receive data from smaller facilities or those that use or dispose of their sewage sludge using alternate management practices except for voluntarily submitted information. Because the EPA does not currently receive data from some states that are authorized to implement the biosolids program or from smaller facilities, there is no definitive source that reports the amount of biosolids produced annually in the United States.

14. 33 U.S.C. § 1345(a).

EPA to “develop and publish” regulations governing “the disposal of sludge and the utilization of sludge for various purposes” after consultation with “appropriate [f]ederal and [s]tate agencies and other interested persons.”¹⁵ EPA promulgated these regulations, titled “Standards for the Use or Disposal of Sewage Sludge,” in 1993.¹⁶ EPA’s regulation contains management practices and pollutant limits that protect public health and the environment from reasonably anticipated adverse effects of 10 regulated pollutants in sewage sludge when the sewage sludge is land applied.¹⁷ Initially, those 10 regulated pollutants included arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, and zinc.¹⁸ The CWA requires EPA to review its land application regulations, “[f]rom time to time, but not less often than every [two] years,” to identify whether additional toxic pollutants are present in biosolids and should be regulated.¹⁹ As discussed in greater detail below, EPA is currently evaluating adding certain PFAS compounds to its land application regulations, but changes at the EPA instituted by the second Trump Administration will likely slow or reverse federal regulation of PFAS chemicals in biosolids.²⁰

Agricultural businesses should take aggressive action in response to the problems PFAS-contaminated biosolids pose. This Article is broken into three sections: (1) the PFAS problem and current legal framework applied to PFAS; (2) addressing and mitigating risks from the PFAS problem under the current framework; and (3) a proposed new legal framework that better accounts for the essential role agricultural businesses play in our lives.

15. *Id.* § 1345(d).

16. Standards for the Use or Disposal of Sewage Sludge, 58 Fed. Reg. 9387 (Feb. 19, 1993) (to be codified at 40 C.F.R. pt. 503).

17. 40 C.F.R. § 503.14 (2025).

18. OFF. OF ENF’T AND COMPLIANCE ASSURANCE, U.S. ENV’T PROT. AGENCY, EPA/831-B-93-002b, LAND APPLICATION OF SEWAGE SLUDGE 17 (1994), <https://www.epa.gov/sites/default/files/2018-11/documents/land-application-sewage-sludge.pdf> [<https://perma.cc/R5KS-DMGV>] (EPA deleted the pollutant concentration limit, cumulative pollutant loading rate, and annual pollutant loading rate for molybdenum from Part 503 effective February 19, 1994); Standards for the Use or Disposal of Sewage Sludge, 58 Fed. Reg. 9099 (Feb. 25, 1994) (to be codified at 40 C.F.R. pt. 503). In 1995, EPA removed chromium from the list of regulated pollutants. Standards for the Use or Disposal of Sewage Sludge, 60 Fed. Reg. 54769 (Oct. 25, 1995) (to be codified at 40 C.F.R. pt. 503).

19. 33 U.S.C. § 1345(d)(2)(C).

20. Julie Grant, *Trump Moves to Quickly Slash Federal Regulations, Target State and Corporate Climate Efforts*, THE ALLEGHENY FRONT (Apr. 17, 2025), <https://www.alleghenyfront.org/trump-climate-environmental-federal-cut-deregulation/> [<https://perma.cc/QCG7-3BZY>].

First, the PFAS problem and current legal framework applied to PFAS. This includes: (a) what are PFAS, how they were used in industry, and their phaseout; (b) why is PFAS a concern to human health and the environment; (c) what are biosolids and how are they regulated; (d) the current common law framework being applied to PFAS; (e) the current federal and state statutory and regulatory framework being applied to PFAS; and (f) the effects the current legal framework has on agricultural businesses. the common law being applied to PFAS.²¹

Second, the ways agricultural businesses can address the PFAS problem and mitigate their risks under the current legal framework. This includes: (a) contractual solutions; (b) lawsuits against upstream parties; (c) insurance claims; and (d) voluntary reporting and cleanup.²²

Third, the proposed new legal framework. Historically, the potential for PFAS-contaminated biosolids was not widely known.²³ In fact, it was not until May 8, 2024, that EPA published its final rule in the Federal Register naming just two types of PFAS, perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS), as hazardous substances under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).²⁴ And it was not until January 14, 2025, that EPA released a draft risk assessment evaluating the potential risks of PFOA and PFOS in biosolids.²⁵ The current legal framework fails to appreciate the critical role agricultural businesses play in our society. Unless agricultural businesses acted willfully and wantonly, they should not face potential ruin for alleged acts and omissions that pre-date EPA's promulgation of the final rule regulating PFOA and PFOS as CERCLA hazardous substances.²⁶ Immunizing agricultural businesses for PFAS contamination caused by biosolids before May 8, 2024, unless they acted willfully and wantonly, strikes an appropriate balance.²⁷

21. See *infra* Part I.

22. See *infra* Part II.

23. Ian Pepper et al., *Is PFAS from Land Applied Municipal Biosolids a Significant Source of Human Exposure via Groundwater?*, SCI. TOTAL ENV'T, Mar. 15, 2023, at 1.

24. Designation of Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) as CERCLA Hazardous Substances, 89 Fed. Reg. 39124, 39125 (May 8, 2024) (codified at 40 C.F.R. pt. 302).

25. *EPA Releases Draft Risk Assessment to Advance Scientific Understanding of PFOA and PFOS in Biosolids*, U.S. ENV'T PROT. AGENCY (Jan. 14, 2025), <https://www.epa.gov/newsreleases/epa-releases-draft-risk-assessment-advance-scientific-understanding-pfoa-and-pfos> [<https://perma.cc/U8R8-LMTP>].

26. See Designation of Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) as CERCLA Hazardous Substances, 89 Fed. Reg. at 39125.

27. See *id.*

II. THE PFAS PROBLEM AND CURRENT LEGAL FRAMEWORK

In broad terms, there are three aspects to the current legal framework being applied to PFAS: the common law, federal laws and regulations, and state laws and regulations. Each of these aspects will be addressed in turn. But before doing so, this Article provides background on what PFAS are and why so many people are concerned about them. This Part concludes with a discussion about why we have the current legal framework we do and how it is affecting agricultural businesses. Once there is an understanding of the PFAS problem, the current legal framework, and why have we the current framework, Part II addresses risk mitigation opportunities.²⁸

A. What are PFAS, How They Were Used in Industry, and Their Phaseout?

PFAS is an umbrella term for a family of synthetic chemicals, first discovered in the 1940s, that have been used in numerous industries and consumer products since the 1950s.²⁹ There are thousands of chemicals in the PFAS family that vary in their physical and chemical properties.³⁰ Some estimates put the total number of PFAS chemicals between 4,700 and 12,000 distinct chemical substances.³¹ Chemically speaking, PFAS are characterized as having carbon atoms bonded to each other and to fluorine atoms whereby the fluorination imparts properties to the molecule.³² The carbon atoms may be fully fluorinated (perfluorinated) or partially fluorinated (polyfluorinated).³³ This chemical structure means that PFAS have unique physical and chemical properties that repel oil, water, stains, and soil, provide chemical and thermal stability, and reduce friction.³⁴ This chemical structure—the “strong carbon-fluorine bonds in the ‘tail

28. See *infra* Part II.

29. Designation of Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) as CERCLA Hazardous Substances, 89 Fed. Reg. at 39125; see *PFAS (Per- and Polyfluoroalkyl Substances)*, U.S. DEP'T OF ENERGY (July 20, 2025), <https://www.energy.gov/pfas/pfas-and-polyfluoroalkyl-substances> [<https://perma.cc/5XRN-2ZWB>].

30. *Per- and Polyfluoroalkyl Substances (PFAS)*, INTERSTATE TECH. & REGUL. COUNCIL 11 (Sept. 2023) [hereinafter *IIRC Report*], <https://pfas-1.itrcweb.org/wp-content/uploads/2023/12/Full-PFAS-Guidance-12.11.2023.pdf> [<https://perma.cc/QB99-8CGK>].

31. *IIRC Report*, *supra* note 30, at 11.

32. *Id.*

33. *Id.*

34. *EPA Releases Interim Guidance on Destroying and Disposing of Certain PFAS and PFAS-Containing Materials*, U.S. ENV'T PROT. AGENCY (Dec. 18, 2020), <https://www.epa.gov/newsreleases/epa-releases-interim-guidance-destroying-and-disposing-certain-pfas-and-pfas> [<https://perma.cc/U7VU-FGML>].

group” —also make PFAS “extremely resistant to degradation”³⁵ and results in PFAS persisting in the environment.³⁶ This environmental persistence, and the concomitant tendency for PFAS to bioaccumulate in humans and biota, has resulted in referring to PFAS as “forever chemicals.”³⁷

The two most widely used and studied PFAS chemicals are PFOA and PFOS.³⁸ PFOA and PFOS, known as “long-chain” PFAS,³⁹ have a variety of properties that lead to their heavy use, including water resistance, grease resistance, and stain resistance.⁴⁰ Historically, PFOA and PFOS were used in “carpets, clothing, fabrics for furniture, packaging for food and cookware, and firefighting foam” and in “a wide range of industrial processes.”⁴¹ Specifically, PFOA and PFOS have been used in food packaging and preparation, and for a variety of other uses, including:

- PFAS-containing materials (e.g., fast-food sandwich wrapping, microwaveable popcorn bags, pizza boxes, paper coffee cups, and other paper and paperboard food packaging);
- Household products, including nonstick products (e.g., frying pans, baking sheets, and cookware), stain- and water-repellent fabrics, polishes, paints, waxes, and cleaning products;

35. Designation of Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) as CERCLA Hazardous Substances, 89 Fed. Reg. 39124, 39126 (May 8, 2024).

36. *Id.*

37. *Id.*; *PFAS and Your Health*, AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY (Nov. 12, 2024), https://www.atsdr.cdc.gov/pfas/about/?CDC_AAref_Val=https://www.atsdr.cdc.gov/pfas/activities/index.html [<https://perma.cc/8HWW-3DM5>]; *Our Current Understanding of the Human Health and Environmental Risks of PFAS*, U.S. ENV'T PROT. AGENCY (Nov. 26, 2024), <https://www.epa.gov/pfas/our-current-understanding-human-health-and-environmental-risks-pfas> [<https://perma.cc/2F4T-4Z6V>].

38. *Our Current Understanding of the Human Health and Environmental Risks of PFAS*, *supra* note 37.

39. *IIRC Report*, *supra* note 30, at 30 (long-chain PFAS include a mixture of linear and branched perfluoroalkyl carboxylates (PFCAs) with eight or more fully fluorinated carbons (e.g. PFOA), and perfluoroalkyl sulfonates (PFSAs) with six or more fully fluorinated carbons (e.g., PFOS and perfluorohexane sulfonate (PFHxS)), their salts, and precursor compounds that are capable of forming long-chain PFAAs).

40. Designation of Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) as CERCLA Hazardous Substances, 87 Fed. Reg. 54415, 54417 (Sept. 6, 2022).

41. Designation of Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) as CERCLA Hazardous Substances, 89 Fed. Reg. 39124, 39126 (May 8, 2024) (codified at 40 C.F.R. pt. 302).

- Firefighting foams or aqueous film-forming foams (AFFF); and for
- “[C]hrome plating, electronics manufacturing, textile manufacturing or oil recovery,” food processing equipment, insecticides, adhesives, “carpet cleaners, auto washes and electronics,” semiconductor manufacturing, paints, varnishes and inks, and more.⁴²

Concerns over potential health and environmental impacts, as well as increased regulatory scrutiny by EPA and other federal agencies and increased litigation risk,⁴³ caused some United States-based companies to phase out the use and manufacture of certain long-chain PFAS.⁴⁴ For instance, in 2000, 3M, who was the predominate global manufacturer and sole manufacturer of PFOS in the United States, announced a voluntary phaseout of certain long-chain PFAS, including PFOS, PSHxS, perfluorodecane sulfonic acid (PFDS), PFOA, and related precursors.⁴⁵ Then, in 2022, 3M announced it would exit PFAS manufacturing entirely and work to discontinue the use of PFAS across its portfolio of products by the end of 2025.⁴⁶ In 2006, EPA began the “2010/2015 PFOA Stewardship Program” and announced that eight PFOA manufacturers and companies process PFOA would reduce the use of PFOA, other long-chain PFCAs,

42. Designation of Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) as CERCLA Hazardous Substances, 87 Fed. Reg. at 54418–19.

43. See e.g., 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> [<https://perma.cc/FN78-XWF5>]; Press Release, Governor Mike DeWine, State Secures \$110 Million Settlement with DuPont for Environmental Restoration Along Ohio River (Nov. 29, 2023), <https://governor.ohio.gov/media/news-and-media/state-secures-111-million-settlement-with-dupont-for-environmental-restoration-along-ohio-river> [<https://perma.cc/5V5X-SFH7>]; Press Release, 3M, 3M Resolves Claims by Public Water Suppliers, Supports Drinking Water Solutions for Vast Majority of Americans (June 22, 2023, at 17:00 ET), <https://investors.3m.com/news-events/press-releases/detail/1784/3m-resolves-claims-by-public-water-suppliers-supports> [<https://perma.cc/BLZ6-3LWY>]; Arathy S. Nair, *DuPont Settles Lawsuits Over Leak of Chemical Used to Make Teflon*, REUTERS (Feb. 13, 2017, at 10:44 CT), <https://www.reuters.com/article/us-du-pont-lawsuit-west-virginia-idUSKBN15S18U> [<https://perma.cc/84SX-JCQU>]; Jeff Mordock, *Jury Orders DuPont to Pay \$500K in Punitive Damages*, DEL. ONLINE (July 8, 2016, at 14:45 ET), <https://www.delawareonline.com/story/news/2016/07/08/jury-orders-dupont-pay-500k-punitive-damages/86862354/>.

44. See Press Release, 3M, *supra* note 43.

45. *ITRC Report*, *supra* note 30, at 42.

46. Press Release, 3M, 3M to Exit PFAS Manufacturing by the End of 2025 (Dec. 20, 2022), <https://news.3m.com/2022-12-20-3M-to-Exit-PFAS-Manufacturing-by-the-End-of-2025> [<https://perma.cc/FF6P-XMUZ>].

and related precursors by 2010 and 2015.⁴⁷ Nevertheless, although “[d]omestic production and import of PFOA has been phased out in the United States by the companies participating in the 2010/2015 PFOA Stewardship Program[,]” EPA acknowledges that “[s]mall quantities of PFOA may be produced, imported, and used by companies not participating in the PFOA Stewardship Program and some uses of PFOS are ongoing.”⁴⁸

Further, despite the phase out of longer chain PFAS, like PFOA and PFOS, manufacture and use of so-called shorter chain PFAS remains.⁴⁹ PFOA has eight carbon atoms, which makes it a “longer chain” PFAS whereas other PFAS, like hexafluoropropylene dimer acid (HFPO-DA), also known as “GenX” has six carbon atoms, which makes it a “shorter chain” PFAS.⁵⁰ “GenX is a trade name for a processing aid technology used to make high-performance fluoropolymers without the use of PFOA.”⁵¹ EPA reports that “GenX chemicals can be used as a replacement for PFOA,” so “they may be used in a similar fashion in the manufacture of the same or similar fluoropolymer end products.”⁵² Research, however, shows that certain waters and animals are contaminated with GenX.⁵³ Notably, EPA states that studies show that oral exposure to GenX “have shown

47. The eight companies included: Arkema, Asahi, BASF Corporation (successor to Ciba), Clariant, Daikin, 3M/Dyneon, DuPont, and Solvay Solexis. See *Fact Sheet: 2010/2015 PFOA Stewardship Program*, U.S. ENV’T PROT. AGENCY (Mar. 6, 2025), <https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/fact-sheet-20102015-pfoa-stewardship-program> [<https://perma.cc/2CJH-BBEA>].

48. *Questions and Answers About Designation of PFOA and PFOS as Hazardous Substances Under CERCLA*, U.S. ENV’T PROT. AGENCY (Apr. 14, 2025), <https://www.epa.gov/superfund/questions-and-answers-about-designation-pfoa-and-pfos-hazardous-substances-under-cercla> [<https://perma.cc/SV4P-7CKJ>].

49. U.S. ENV’T PROT. AGENCY, EPA/822/R-22/005, DRINKING WATER HEALTH ADVISORY: HEXAFLUOROPROPYLENE OXIDE (HFPO) DIMER ACID (CASRN 13252-13-6) AND HFPO DIMER ACID AMMONIUM SALT (CASRN 62037-80-3), ALSO KNOWN AS “GENX CHEMICALS” 4 (June 2022), <https://www.epa.gov/system/files/documents/2022-06/drinking-water-genx-2022.pdf> [<https://perma.cc/ET7Q-87Z2>].

50. U.S. ENV’T PROT. AGENCY, FACT SHEET: HUMAN HEALTH TOXICITY ASSESSMENT FOR GENX CHEMICALS (June 26, 2025, at 8:58 CT) [hereinafter FACT SHEET: HUMAN HEALTH TOXICITY ASSESSMENT], <https://www.epa.gov/system/files/documents/2023-03/GenX-Toxicity-Assessment-factsheet-March-2023-update.pdf> [<https://perma.cc/64X9-M5V5>].

51. *Id.*

52. *Id.*

53. Wasel et al., *Differential Developmental Neurotoxicity and Tissue Uptake of the Per- and Polyfluoroalkyl Substance Alternatives, GenX and PFBS*, 57 ENV’T SCI. & TECH. 19274, 19275 (2023); Heidari et al., *GenX is Not Always a Better Fluorinated Organic Compound than PFOA: A Critical Review on Aqueous Phase Treatability by Absorption and its Associated Cost*, WATER RSCH., Oct. 15, 2021, at 1.

health effects including on the liver, kidneys, the immune system, development of offspring, and an association with cancer.”⁵⁴

As will be discussed later, EPA has regulated GenX (HFPO-DA) under federal drinking water standards.⁵⁵ It is anticipated there might be additional regulation of so-called shorter chain PFAS in the future.⁵⁶ But it is unclear whether such regulations will occur during the second Trump Administration.

B. Why is PFAS a Concern to Human Health and The Environment?

Regulatory agencies, and plaintiffs’ counsel, are relying on an increasingly robust body of scientific literature to conclude that a growing number of PFAS can harm human health and the environment. A PubMed search for “pfas exposure” returns 3,163 articles that have been peer reviewed and published in various scientific journals.⁵⁷ Moreover, the National Center for Environmental Health (NCEH), an office within the Centers for Disease Control, has assessed exposure to 12 PFAS compounds (including PFOS and PFOA) “in a representative 2003–2004 sample of the general [United States] population” and found PFAS in more than 98% of the samples collected.⁵⁸ Likewise, the Agency for Toxic Substances Disease Registry (ATSDR), the lead agency within the United States Public Health Service for enforcing the health-related provisions of CERCLA, conducted PFAS exposure assessments (EA) at 10 communities that are near current or former military bases and where PFAS levels in their community drinking water supplies exceeded 70 parts per trillion (ppt).⁵⁹ The ATSDR’s EA found average, age-adjusted PFAS blood levels to be higher in the EA communities than national levels reported by the NCEH.⁶⁰ Finally, studies investigating the global

54. FACT SHEET: HUMAN HEALTH TOXICITY ASSESSMENT, *supra* note 50, at 2.

55. See discussion *infra* Section I.E.i; *Drinking Water Health Advisories for GenX Chemicals and PFBS*, U.S. ENV’T PROT. AGENCY (Apr. 8, 2025), <https://www.epa.gov/sdwa/drinking-water-health-advisories-genx-chemicals-and-pfbs> [<https://perma.cc/NRZ3-S7V5>].

56. See AM. ASS’N FOR THE ADVANCEMENT OF SCI., *supra* note 1.

57. See PUBMED, NAT. LIB. OF MED., “PFAS Exposure”, 3,163 results (July 20, 2025) (on file with the *Drake Journal of Agricultural Law*), <https://pubmed.ncbi.nlm.nih.gov/?term=pfas+exposure> [<https://perma.cc/4J77-89UA>].

58. Calafat et al., *Polyfluoroalkyl Chemicals in the U.S. Population: Data from the National Health and Nutrition Examination Survey (NHANES) 2003–2004 and Comparisons with NHANES 1999–2000*, 115 ENV’T HEALTH PERSP. 1596, 1596 (2007).

59. NAT’L CTR. FOR ENV’T HEALTH, AGENCY FOR TOXIC SUBSTANCES DISEASE REGISTRY, PFAS EXPOSURE ASSESSMENTS FINAL REPORT: FINDINGS ACROSS TEN EXPOSURE ASSESSMENT SITES 4–5 (2022), <https://www.atsdr.cdc.gov/pfas/docs/PFAS-EA-Final-Report-508.pdf> [<https://perma.cc/2Y6K-LLML>].

60. *Id.* at 60.

distribution of PFAS demonstrate that PFAS has been “widely distributed on a global scale” and “are widely detected in” rivers, lakes, and streams.⁶¹ In addition, “PFOS was detected in 91% of the 290 fish fillet composite samples analyzed” under the 2018-2019 National Rivers and Streams Assessment.⁶²

When promulgating its final rule designating PFOA and PFOS as “hazardous substances” under CERCLA, EPA stated that exposure to these substances “is linked to a broad range of adverse health effects, including developmental effects to fetuses during pregnancy or to infants (*e.g.*, low birth weight, accelerated puberty, skeletal variations), liver effects (*e.g.*, tissue damage), immune effects (*e.g.*, antibody production and immunity), and other effects (*e.g.*, cholesterol changes).”⁶³ Additionally, “PFOA and PFOS may cause carcinogenic effects.”⁶⁴ In fact, EPA’s January 2025 Draft Sewage Sludge Risk Assessment for PFOA and PFOS notes these chemicals are “*likely to be carcinogenic to humans*,” and “toxicological evidence indicates that they adversely impact developmental, cardiac, hepatic, and immune systems.”⁶⁵

Moreover, EPA reports there “are recent, well-documented examples of significantly elevated PFOA and PFOS concentrations in [United States] sewage sludge contaminated by industrial sources to wastewater treatment plants.”⁶⁶ For example, “Statewide surveys of sewage sludge also find that PFOA and PFOS are consistently detected at wastewater treatment plants that do not receive wastewater from industrial users of the chemicals.”⁶⁷ EPA believes the cause of this contamination “is likely due to the historic or ongoing presence of PFOA, PFOS, and their precursors in consumer, commercial, and industrial products.”⁶⁸

61. Designation of Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) as CERCLA Hazardous Substances, 89 Fed. Reg. 39124, 39147, 39163 (May 8, 2024) (codified at 40 C.F.R. pt. 302).

62. *Id.* at 39126.

63. *Id.* at 39125.

64. *Id.*

65. HEALTH & ECOLOGICAL CRITERIA DIV., ENV’T PROT. AGENCY, EPA-820P25001, DRAFT SEWAGE SLUDGE RISK ASSESSMENT FOR PERFLUOROOCTANOIC ACID (PFOA) CASRN 335-67-1 AND PERFLUOROOCTANE SULFONIC ACID (PFOS) CASRN 1763-23-1, at iv (2025) [hereinafter DRAFT SEWAGE SLUDGE RISK ASSESSMENT], <https://www.epa.gov/system/files/documents/2025-01/draft-sewage-sludge-risk-assessment-pfoa-pfos.pdf> [<https://perma.cc/EHJ7-XTBS>].

66. *Id.*

67. *Id.*

68. *Id.*

Notably, in 2022, approximately 56% of biosolids generated by publicly owned treatment works (POTWs) were land applied.⁶⁹ This matters because PFOA and PFOS “have been detected in soils, groundwater, livestock, crops, surface water, and game” after land application of biosolids.⁷⁰ EPA has found that “there may be human health risks associated with drinking contaminated groundwater sourced near a surface disposal site when sewage sludge containing 1 ppb of PFOA or sewage sludge containing 4 to 5 ppb of PFOS is disposed in an unlined or clay-lined surface disposal unit.”⁷¹

C. What are Biosolids and How are They Regulated?

The key focus of this Article is regulation and litigation surrounding biosolids, meaning sewage sludge intended to be applied to land as a soil amendment or fertilizer. When sewage from households and businesses is sent to a WWTP or a POTW, the liquids are separated from solids producing a nutrient-rich product referred to as “sewage sludge” or “biosolids.”⁷² For purpose of this article, we refer to this product being applied to land as “biosolids.”⁷³ Biosolids can be particularly valuable as fertilizer because they contain significant amounts of nitrogen, phosphorous and organic matter.⁷⁴ Accordingly, biosolids often are distributed to farms for land application.⁷⁵ Currently, federal rules allow the application of biosolids to pastures, feed crops, forests, tree farms, golf courses, turf farms, and other types of land.⁷⁶ Biosolids can also be packaged and sold to stores for distribution to the general public for use on lawns and gardens.⁷⁷ However, in lieu of distributing for land application, some WWTPs incinerate biosolids or send them to landfills.⁷⁸

69. *Id.* at 3.

70. *Id.* at iv.

71. *Id.* at v.

72. *Id.* at 9.

73. *Id.*

74. FACT SHEET: DRAFT SEWAGE SLUDGE, *supra* note 4, at 1.

75. *Id.*

76. *Id.*

77. DRAFT SEWAGE SLUDGE RISK ASSESSMENT, *supra* note 65, at 39.

78. *Id.* at iii.

At the federal level, the CWA⁷⁹ regulates standards for the use or disposal of biosolids in 40 C.F.R. § 503 (generally referred to as “Part 503”).⁸⁰ The regulatory provisions include pollutant limits, requirements for pathogen and vector attraction reduction, management practices, monitoring and reporting, and other requirements, and applies to any person or treatment works that prepares, applies, or incinerates sewage sludge, and the owners and operators of surface disposal sites.⁸¹ Under Part 503, EPA also reviews the sewage sludge regulations every two years to identify any additional pollutants that occur in biosolids and can set regulations for those pollutants.⁸² EPA is currently evaluating PFOA and PFOS for potential regulation under Part 503.⁸³

D. The Current Common Law Framework Applied to PFAS.

Several different common law theories are being applied to PFAS, including negligence, nuisance, trespass, and ultrahazardous/strict liability. Recent rulings in cases alleging PFAS-related harm illustrate how these common law theories pose risks to agricultural businesses.⁸⁴ Science is not settled on the harms different types of PFAS can cause or on the levels and duration of exposure necessary for an adverse health effect to result.⁸⁵ To date, judges have erred on the side of letting allegations of harm suffice when challenged by a Rule 12(b)(6) motion to dismiss claims on the pleadings.⁸⁶

Thus, if PFAS-related lawsuits are initiated against agricultural businesses, it is anticipated, under the current case law, that agricultural businesses will have to undergo the costly, time-consuming, and arduous discovery phase of a lawsuit. Moreover, given the technical and scientific nature of toxic tort cases in general and PFAS specifically, agricultural businesses may need to retain a multitude of experts to rebut plaintiffs’ claims.⁸⁷ And even after completing discovery and

79. 40 C.F.R. § 503 (2025); *Sewage Sludge Laws and Regulations*, ENV’T PROT. AGENCY (Jan. 6, 2025) [hereinafter *Sewage Sludge Laws and Regulations*], <https://www.epa.gov/biosolids/sewage-sludge-laws-and-regulations> [<https://perma.cc/V8VC-X8SP>].

80. *Sewage Sludge Laws and Regulations*, *supra* note 79.

81. *Id.*

82. *Id.*

83. See *Key EPA Actions to Address PFAS*, U.S. ENV’T PROT. AGENCY (Jan. 24, 2025), <https://www.epa.gov/pfas/key-epa-actions-address-pfas> [<https://perma.cc/ZUP2-ANDB>].

84. See *Higgins v. Huhtamaki, Inc.*, No. 1:21-CV-00369-JCN, 2024 WL 4008257 at *8 (D. Me. Aug. 30, 2024).

85. See FACT SHEET: HUMAN HEALTH TOXICITY ASSESSMENT, *supra* note 50, at 2.

86. See discussion *infra* Sections I.D.i, I.D.iv.

87. See generally FED. R. EVID. 702.

retaining experts, it is uncertain whether agricultural businesses will be able to defeat PFAS-related claims before trial via a motion for summary judgment. These rulings are discussed below.

I. Ryan v. Greif, Inc.

In *Ryan v. Greif, Inc.*, the United States District Court of Massachusetts denied many aspects of defendants' motion to dismiss a putative class action regarding PFAS contamination.⁸⁸ Plaintiffs sued several different defendants alleging they discharged and distributed PFAS, which contaminated their groundwater wells.⁸⁹ The claims plaintiffs asserted against defendants included negligence, products liability, private nuisance, public nuisance, ultrahazardous activity/strict liability, and willful and wanton conduct.⁹⁰ Defendants filed motions to dismiss for failure to state a claim under Federal Rule of Civil Procedure 12(b)(6).⁹¹

The court denied the motions to dismiss as to the negligence counts.⁹² It did so, holding that “facilities that use and dispose of PFAS-contaminated materials, knowing of risks associated with PFAS ingestion and the risks of environmental contamination following improper disposal, owe foreseeable victims of such contamination a duty of care.”⁹³ The court concluded that defendants fell within this description and “therefore owe a duty of care to foreseeable victims of PFAS contamination, which include the Plaintiffs in this case.”⁹⁴

Of note were three defendants—Seaman Paper, Otter Farm, and MassNatural. Seaman Paper “operated a paper mill in central Massachusetts since 1947[.]”⁹⁵ Historically, it used PFAS when producing its paper products.⁹⁶ Seaman paper owned 240 acres of land, created Otter Farm in 2002, and conveyed its rights to that property to Otter Farm.⁹⁷ Otter Farm then leased the property to

88. *Ryan v. Greif, Inc.*, 708 F. Supp. 3d 148, 185–86 (D. Mass. 2023).

89. *Id.* at 158.

90. *Id.* at 164–178.

91. *Id.* at 158.

92. *Id.* at 185–186.

93. *Id.* at 164.

94. *Id.* at 164–65.

95. *Ryan v. Greif, Inc.*, No. 22-CV-40089-MRG, 2023 WL 5979711, at *23 (D. Mass. Sept. 1, 2023), *report and recommendation adopted in part, rejected in part*, 708 F. Supp. 3d 148 (D. Mass. 2023).

96. *Id.* at *2.

97. *Id.*

MassNatural to use as a composting facility.⁹⁸ MassNatural composted organic material, including “short paper fiber” and marketed its products, which allegedly contained PFAS, to garden centers, landscapers, and homeowners.⁹⁹ Seaman Paper deposited its PFAS-contaminated waste from its manufacturing processes at the Otter Farm property.¹⁰⁰ When denying the motion to dismiss as to these defendants, the court concluded that plaintiffs sufficiently alleged a negligence claim when stating defendants “arranged for the transport, disposal, storage or treatment of hazardous material’ to or at MassNatural’s . . . operations,” the hazardous material “was mishandled and allowed to leach into groundwater[,]” and the “byproducts were incorporated into compost and other retail products which, when used by consumers, separately leached into groundwater, in each case causing contamination.”¹⁰¹

As to products liability, plaintiffs asserted a failure to warn claim against 3M. The court held that “upstream manufacturers of PFAS, like 3M, owe a duty to Plaintiffs who are foreseeable victims of environmental contamination caused by PFAS.”¹⁰² When describing the scope of that duty, the court said, “That duty is the duty to warn immediate purchases [sic] and downstream manufacturers, like the Paper Manufacturing Defendants, of the dangers of PFAS when not disposed of properly.”¹⁰³ Ultimately, when denying 3M’s motion to dismiss the failure to warn claim, the court stated, “Plaintiffs have plausibly alleged that 3M has a duty to warn the Paper Manufacturing Defendants and other downstream manufacturers incorporating 3M PFAS into their products of the dangers of PFAS and the risk of environmental contamination if not disposed of properly.”¹⁰⁴

When discussing the private nuisance claim against the paper manufacturer, the court held that it “had a duty to the Plaintiffs to use reasonable care to ensure that its paper sludge waste, which it knew or should have known contained toxic PFAS, was properly disposed of.”¹⁰⁵ But it failed “to prevent or abate the PFAS contamination through ensuring proper disposal” which “is sufficient to state a claim for private nuisance.”¹⁰⁶ Further, the court stated that the paper manufacturer

98. *Id.*

99. *Id.*

100. *Id.*

101. *Id.* at *23.

102. *Ryan v. Greif, Inc.*, 708 F. Supp. 3d 148, 170 (D. Mass. 2023).

103. *Id.*

104. *Id.* at 172.

105. *Id.* at 174.

106. *Id.*

2025]

PFAS in Biosolids

231

“‘substantially participated’ in the nuisance by supplying the toxic PFAS waste without ensuring proper disposal methods.”¹⁰⁷

As to public nuisance, the court rejected defendants’ argument that “Plaintiffs’ public nuisance claims must fail because Defendants’ lack of control over the instrumentality of the nuisance”¹⁰⁸ Instead, the court held that “there is no requirement that the offending defendant control the instrumentality of contamination” to maintain a public nuisance claim.¹⁰⁹

Notably, when discussing the ultrahazardous activity/strict liability claim, the court considered “the routine of receiving, improperly disposing, and repurposing materials the defendants know or have reason to know is toxic to humans and can migrate into groundwater” to be an ultrahazardous activity.¹¹⁰ Ultimately, the court stated it would “allow Plaintiffs to proceed to discovery to determine ‘whether the PFAS disposal is in fact the kind of abnormally dangerous activity to which strict liability should be applied.’”¹¹¹

2. *Higgins v. Huhtamaki, Inc.*

In *Higgins v. Huhtamaki, Inc.*, the United States District Court for the District of Maine denied defendants’ motion for judgment on the pleadings.¹¹² Plaintiffs were homeowners that alleged defendants, which included a paper mill operator and three chemical companies, contaminated their groundwater wells and property with PFAS.¹¹³ Previously, the court had denied much of defendants’ motion to dismiss.¹¹⁴ Plaintiffs brought seven counts against defendants, negligence, nuisance, statutory nuisance, negligent infliction of emotional distress, medical monitoring, trespass, and abnormally dangerous activity/ultrahazardous activity/strict liability.¹¹⁵

In their motion to dismiss, defendants argued that plaintiffs failed to plausibly allege causation, requiring dismissal of the entire complaint.¹¹⁶ Relying

107. *Id.*

108. *Id.* at 174–175.

109. *Id.* at 175.

110. *Id.* at 176.

111. *Id.* at 177.

112. *Higgins v. Huhtamaki, Inc.*, No. 1:21-CV-00369-JCN, 2024 WL 4008257, at *1 (D. Me. Aug. 30, 2024).

113. *Id.*

114. *Higgins v. Huhtamaki, Inc.*, No. 1:21-CV-00369-NT, 2022 WL 2274876, at *13 (D. Me. June 23, 2022).

115. *Id.* at *3.

116. *Id.* at *4.

heavily on the standard of review, the court rejected defendants' argument.¹¹⁷ The court highlighted how "Plaintiffs allege four methods of disposal—discharge into wastewater treatment facilities, discharge as surface water, placement into landfills, and usage as fertilizers or soil enhancers—that contributed to the contamination of their land."¹¹⁸ These allegations made it "plausible that the contamination of the Properties resulted from chemicals produced at the Defendants' nearby Mills."¹¹⁹

Additionally, the court rejected defendants' motion to dismiss plaintiffs' public nuisance claim.¹²⁰ In doing so, the court relied on plaintiffs' allegation that they "need to decontaminate their properties and water."¹²¹ The court held this was an allegation of "special harm," warranting the denial of the motion to dismiss.¹²²

Finally, the court denied the motion to dismiss plaintiffs' strict liability claim.¹²³ The court stated that whether the activities at issue were abnormally dangerous "are intensely factual inquiries."¹²⁴ Thus, it was "not possible to resolve this issue at the motion to dismiss stage."¹²⁵

3. *Giordano v. Solvay Specialty Polymers USA, LLC*

In *Giordano v. Solvay Specialty Polymers USA, LLC*, plaintiffs alleged contamination of their private water wells with PFAS.¹²⁶ Plaintiffs' claims against defendants included negligence, private nuisance, strict liability for an abnormally dangerous activity, strict liability for failure to warn, strict liability for defective design, and punitive damages.¹²⁷ The United States District Court for the District of New Jersey denied defendants' motion to dismiss except for the stand-alone punitive damages count (but let it proceed as allowed by underlying claims).¹²⁸

In doing so, the court highlighted plaintiffs' allegation that, "despite being aware of the toxicity of PFAS, Defendants continued to manufacture or release

117. *Id.* at *5–6.

118. *Id.* at *5.

119. *Id.*

120. *Id.* at *9.

121. *Id.*

122. *Id.*

123. *Id.* at *12.

124. *Id.*

125. *Id.*

126. *Giordano v. Solvay Specialty Polymers USA, LLC*, 522 F. Supp. 3d 26, 29 (D.N.J. 2021).

127. *Id.* at 31.

128. *Id.* at 38–40.

them into the environment.”¹²⁹ Further, plaintiffs alleged they ingested PFAS, likely have high levels of PFAS in their blood that may cause adverse health effects, lost property value, and incurred expenses because of the contamination.¹³⁰ In conclusion, the court stated, “Considering the variable nature of groundwater and air and the extensive chemicals discharged over time, this group of Plaintiffs has sufficiently pleaded its claims against all Defendants.”¹³¹

4. State *ex rel.* Stein v. EIDP, Inc.

In *State ex rel. Stein v. EIDP, Inc.*, plaintiff sued, in North Carolina state court, in its “*parens patriae* capacity to protect the health, safety, security, and well-being of its residents and its natural resources[,]” and in its “capacity as an owner of real property[,]” and “capacity as a creditor.”¹³² Defendants filed 12(b)(6) motions to dismiss.¹³³ The court denied the motions.¹³⁴

Plaintiff alleged that “PFAS Defendants, as manufacturers of PFAS, have positive duties to: (1) take adequate precautions to prevent PFAS from contaminating the soil, water, and air; (2) remove PFAS they have discharged from the environment; (3) warn authorities and the public of the presence and potential threats posed by PFAS; and (4) handle, treat, store and dispose of PFAS in a way that would not endanger human health and the environment.”¹³⁵ The court concluded the “[c]omplaint adequately alleges that PFAS Defendants did not exercise ordinary care in manufacturing and discharging PFAS.”¹³⁶ It denied defendants’ motion to dismiss as to plaintiff’s public nuisance, trespass, fraudulent concealment, and fraudulent transfer claims too.¹³⁷

5. Johnson v. 3M

In *Johnson v. 3M*, the United States District Court for the Northern District of Georgia was faced with claims against “Manufacturing Defendants,” a term that included “carpet manufacturing companies and others directly connected to the carpet industry that use PFAS at their facilities and discharge industrial wastewater

129. *Id.* at 33.

130. *Id.*

131. *Id.* at 40.

132. *State ex rel. Stein v. EIDP, Inc.*, No. 20 CVS 5612, 2023 WL 2326101, at *1 (N.C. Super. Mar. 2, 2023).

133. *Id.* at *2–3.

134. *Id.* at *9.

135. *Id.* at *6.

136. *Id.* at *7.

137. *Id.* at *9.

containing PFAS[.]” and “Supplier Defendants,” a term that included “companies that manufacture and supply PFAS to the carpet manufacturers.”¹³⁸ Defendants filed “a deluge of motions to dismiss, 12 total, drowning the Court in more than 900 pages of briefing.”¹³⁹

As to the Manufacturing Defendants, the court concluded they:

[H]ave a duty to exercise reasonable care in their use and disposal of unreasonably dangerous chemicals such as PFAS and/or products containing PFAS in operating their various carpet manufacturing facilities to avoid pollution of the State’s waterways and injury to members of the downstream public who consume the water as part of their public drinking water supply.¹⁴⁰

Importantly, however, the court did not reach the same conclusion as to the Supplier Defendants.¹⁴¹ It reasoned that those defendants were “not alleged to have discharged wastewater from manufacturing (or landfill) operations[.]” but that the plaintiffs sought to hold them liable as “mere sellers of PFAS-containing products to the carpet manufacturers.”¹⁴² The court noted that plaintiff failed to cite any authority from Georgia courts that supported imposing such a duty on the Supplier Defendants or point to “any authority from Georgia establishing a duty on the part of a chemical supplier to protect an unknown third-party, rather than its consumer, from harm resulting from the negligent use or disposal of the chemical.”¹⁴³

Nevertheless, the court concluded that plaintiff adequately pled a nuisance claim against the Supplier Defendants, noting the allegation that their “actions in continuously selling and supplying the PFAS chemicals, while knowing of the downstream contamination, were a ‘cause or concurrent cause’ of the creation and continuance of the nuisance.”¹⁴⁴

6. Synagro Lawsuit

Another lawsuit in its infancy that will garner significant interest from agricultural businesses utilizing biosolids is a case brought against Synagro Technologies, Inc. (Synagro), which uses biosolids from WWTPs to produce

138. Johnson v. 3M, 563 F. Supp. 3d 1253, 1273 (N.D. Ga. 2021), *aff’d sub nom.*, Johnson v. 3M Co., 55 F.4th 1304 (11th Cir. 2022).

139. *Id.* at 1268.

140. *Id.* at 1324.

141. *Id.*

142. *Id.*

143. *Id.* at 1325.

144. *Id.* at 1343.

fertilizer.¹⁴⁵ The lawsuit was brought in Maryland state court by five Texas farmers alleging damages due to land application of Synagro’s fertilizer (Granulite®) on an adjacent property in Johnson County, Texas.¹⁴⁶ Similar to the other cases, the farmers asserted causes of action for strict liability—product defect (abnormally dangerous/failure to warn/defective design), negligence, and private nuisance.¹⁴⁷ The complaint notes that Detective Dana Ames, Johnson County’s Environmental Crimes Investigator, opened an investigation and performed sampling of various media.¹⁴⁸ It was this investigation and accompanying sampling results that led to the suit against Synagro.¹⁴⁹ Moreover, on February 11, 2025, Johnson County declared a state of emergency for the PFAS contamination, citing the outcome of this investigation and its discovery of PFAS contamination.¹⁵⁰

The farmers allege in their initial complaint that “Synagro Granulite was left in ‘smoking’ piles smelling like ‘death and sewage’” at the adjacent property.¹⁵¹ The farmers note that the County’s sampling showed PFAS in drinking water wells, fish, calf tissue, soils and surface waters.¹⁵² Plaintiffs further allege that, because of the presence of PFAS in these items, they “have suffered significant health consequences,” and suffered damages “to their livestock and rendered the land where they live and work nearly worthless.”¹⁵³ Although Synagro’s headquarters are located in Maryland, Synagro moved to dismiss for improper venue given that the actions allegedly causing the contamination occurred in

145. First Amended Complaint and Election of Jury Trial at 2, *Farmer v. Synagro Techs., Inc.* No. C-03-CV-24-000598 (Cir. Ct. for Balt. Cnty. Feb. 27, 2024).

146. *Id.* at 2.

147. *Id.* at 19, 22, 25.

148. *Id.* at 13–14.

149. *Id.*

150. Press Release, Christopher Boedeker, Johnson County Judge, Johnson County Declares State of Disaster Due to PFAS Contamination of Agricultural Land (Feb. 11, 2025), <https://www.johnsoncountytexas.org/home/showpublisheddocument/17869/638748887032130000> [<https://perma.cc/2E8B-JJVE>]; see discussion *infra* Section I.F.

151. First Amended Complaint and Election of Jury Trial, *supra* note 145, at 13.

152. *Id.* at 14–15.

153. *Id.* at 3.

Texas.¹⁵⁴ The case ultimately was transferred to the Northern District of Texas.¹⁵⁵ Synagro recently filed a 12(b)(6) motion to dismiss, which remains pending.¹⁵⁶

In March 2025, Synagro also released conclusions of a study conducted by an independent engineering firm in collaboration with a professor at Purdue University.¹⁵⁷ The study analyzed the environmental impact of the application of Synagro's Granulite fertilizer on the farm adjacent to the Plaintiffs' farms.¹⁵⁸ The report concluded that the fertilizer could not be the source of the PFAS levels found in samples from the adjacent properties.¹⁵⁹ Among other conclusions, the report notes that "[t]he May/June 2024 analytical laboratory test data for soil, water, and plant and fish tissue samples collected on the Grandview Farm show small-to-below limits of quantitation and detection PFAS levels on the site where Synagro's Granulite® product was land applied in late December 2022/early January 2023" and "provide no evidence to explain the PFAS on the two adjacent farms reported by PEER."¹⁶⁰ According to the report, with one exception, all PFAS chemical concentrations were within background concentrations for soils across the United States or below limits set by the EPA for drinking water.¹⁶¹ Detective Ames has disputed the report's conclusions, asserting: "There is no safe level of exposure, full stop, period."¹⁶²

154. Defendants' Motion to Dismiss for Forum Non Conveniens and Improper Venue, Farmer v. Synagro Techs., Inc., No. C-03-CV-24-000598 (Cir. Ct. for Balt. Cnty. Apr. 22, 2024).

155. *See generally id.*

156. Synagro Defendants' Motion to Dismiss Pursuant to Rule 12(b)(6) and Brief in Support Thereof at 1, Alessi v. Synagro Techs., Inc., No. 3:25-CV-0445-K (N.D. Tex. Mar. 14, 2025).

157. Press Release, Synagro, Synagro Releases Conclusions of Independent Scientific Study on Biosolids in Johnson County, Texas (Mar. 18, 2025), <https://www.synagro.com/2025/03/18/synagro-releases-conclusions-of-independent-scientific-study-on-biosolids-in-johnson-county-texas> [<https://perma.cc/XTK8-9AFC>].

158. *Id.*

159. *Id.*

160. *Id.*

161. *Id.*

162. Jacob Wallace, *Synagro Seeks to Dismiss Lawsuit Over PFAS in its Biosolids, Citing New Research*, WASTEDIVE (Mar. 19, 2025), <https://www.wastedive.com/news/synagro-johnson-county-pfas-lawsuit-study/742927/> [<https://perma.cc/J3HM-G2ZK>].

7. *Farmers and PEER's Suit Against EPA*

The same farmers that sued Synagro have also sued EPA.¹⁶³ They claim that EPA has failed to perform its duty to identify and regulate at least 18 PFAS substances in sewage sludge under Rule 503.¹⁶⁴ Public Employees for Environmental Responsibility (PEER) filed the suit on behalf of the farmers against EPA.¹⁶⁵ The lawsuit remains pending.¹⁶⁶

E. *The Current Federal and State Statutory and Regulatory Framework for PFAS*

Beginning in 2021 with its Strategic Roadmap, EPA has taken a comprehensive approach to addressing the various concerns regarding PFAS.¹⁶⁷ EPA has acted under several regulatory programs, including CERCLA, CWA, and the Toxic Substances Control Act (TSCA).¹⁶⁸ However, although EPA has completed a draft risk assessment for PFAS in biosolids, EPA has not yet enacted or proposed regulations addressing PFAS in biosolids.¹⁶⁹ Similarly, although EPA has designated the two most prevalent PFAS compounds, PFOA and PFOS, as hazardous substances under CERCLA, EPA has not developed any soil or groundwater cleanup standards for addressing sites contaminated with PFAS.¹⁷⁰ Moreover, with the new Trump Administration, which has already begun to roll-back certain regulations and proposed to cut EPA funding, it is uncertain what approach the Administration will take to addressing PFAS issues and whether additional rescission of regulations will occur.¹⁷¹ For example, will EPA finalize the draft risk assessment for biosolids after it receives public comments? Will EPA propose any regulation under Part 503 to place limits on land application of biosolids?

163. Complaint for Declaratory and Injunctive Relief at 1, *Farmer v. EPA*, No. 1:24-CV-01654 (D.D.C. June 6, 2024).

164. *Id.* at 2.

165. Press Release, Public Employees for Environmental Responsibility, EPA Sued to Remove PFAS from Biosolid Fertilizers (June 6, 2024), <https://peer.org/epa-sued-to-remove-pfas-from-biosolid-fertilizers/> [<https://perma.cc/ZUJ2-CJXP>].

166. See Wallace, *supra* note 162.

167. See *PFAS Strategic Roadmap: EPA's Commitments to Action 2021-2024*, U.S. ENV'T PROT. AGENCY (June 11, 2025) [hereinafter *EPA's Commitments to Action*], <https://www.epa.gov/pfas/pfas-strategic-roadmap-epas-commitments-action-2021-2024> [<https://perma.cc/E6Q4-VTCV>].

168. ENV'T PROT. AGENCY, EPA'S PFAS STRATEGIC ROADMAP: THREE YEARS OF PROGRESS 2-3 (2024) [hereinafter *THREE YEARS OF PROGRESS*], <https://nepis.epa.gov/Exe/ZyPDF.cgi/P101CK5V.PDF?Dockey=P101CK5V.PDF> [<https://perma.cc/Q8HF-5DJL>].

169. FACT SHEET: DRAFT SEWAGE SLUDGE, *supra* note 4, at 1.

170. *THREE YEARS OF PROGRESS*, *supra* note 168, at 2-3.

171. Grant, *supra* note 20.

As a result of this uncertainty, it currently is up to states to develop and apply standards for PFAS in biosolids and addressing PFAS remediation at contaminated sites.¹⁷² The early results show a patchwork of regulations and/or guidance across the country, subjecting agricultural businesses to different standards depending on the state.¹⁷³ A brief overview of federal and state standards for biosolids and contaminated sites is provided below.

1. EPA's Strategic Roadmap for PFAS and Regulatory Actions

In April 2021, EPA Administrator Michael Regan established the EPA Council on PFAS and charged the Council to develop a bold, strategic, whole-of-EPA strategy to protect public health and the environment from potential impacts of PFAS.¹⁷⁴ “The Council is comprised of senior technical and policy leaders from across EPA program offices and Regions.”¹⁷⁵ The PFAS Council developed a strategic roadmap (titled the “PFAS Roadmap”) to lay out EPA’s whole-of-agency approach to addressing PFAS and set timeline by which the Agency planned to take concrete actions during the Biden Administration.¹⁷⁶ The PFAS Roadmap is structured around three overarching goals.¹⁷⁷ First, restrict, which involves “[p]ursuing a comprehensive approach to proactively prevent PFAS from entering air, land and water at levels that can adversely impact human health and the environment.”¹⁷⁸ Second, remediate, which includes “[b]roadening and accelerating the cleanup of PFAS contamination to protect human health and ecological systems.”¹⁷⁹ Third, research, which consists of “[i]nvesting in research, development, and innovation to increase understanding of PFAS methods, human health and environmental risks, and technologies.”¹⁸⁰

Pursuant to the Roadmap, EPA has taken action and developed regulations to address these goals under certain regulatory programs.¹⁸¹ Pursuant to the CWA, in early 2021 EPA began collecting and making publicly available data on 29 different PFAS compounds in drinking water at approximately 10,000 water

172. PFAS IN BIOSOLIDS: A REVIEW OF STATE EFFORTS & OPPORTUNITIES FOR ACTION, *supra* note 2, at 4.

173. *Id.* at 5–22.

174. THREE YEARS OF PROGRESS, *supra* note 168, at 2.

175. *EPA's Commitments to Action*, *supra* note 167.

176. THREE YEARS OF PROGRESS, *supra* note 168, at 2.

177. *Id.*

178. *Id.*

179. *Id.*

180. *Id.*

181. *Id.*

systems under its Fifth Unregulated Contaminant Monitoring Rule.¹⁸² In April 2024, EPA enacted the first federal drinking water standards for several PFAS compounds, including PFOA and PFOS.¹⁸³ This PFAS Drinking Water Standard requires public drinking water systems to monitor for the identified PFAS compounds to assess whether action is needed to reduce contamination.¹⁸⁴ The final Maximum Containment Level for PFOA and PFOS was set at 4.0 parts per trillion and 10 ppt for the other compounds (PFHxS, PFNA, HFPO-DA).¹⁸⁵ If a public water system determines through its monitoring program that levels in its drinking water exceed these thresholds, the systems must take action to reduce the levels of PFAS, beginning in 2029.¹⁸⁶

Also under the CWA, EPA released recommendations for how EPA Regions and states can use key CWA permitting authorities to collect information on PFAS discharges, consider and incorporate PFAS-reduction measures, and set technology-based effluent limits, with rules to be proposed that codify final analytical methods and require PFAS be disclosed in CWA permit applications.¹⁸⁷ The EPA has been working to establish technology-based Effluent Limitations Guidelines (ELGs) for PFAS manufacturers, and it is expected proposed rules for metal finishers and landfills will follow.¹⁸⁸ In October 2024, EPA finalized recommended water quality criteria for the protection of aquatic life from the effects of PFOA and PFOS as well as water quality benchmarks for other PFAS and released a recommended list of PFAS to monitor for in state and Tribal fish and shellfish advisory programs.¹⁸⁹ The Trump Administration, however, rescinded the proposed EPA rule to set ELGs for discharge of the identified PFAS compounds into waterways.¹⁹⁰ Thus, states likely will need to establish these limits on their own.

182. *Id.* at 6.

183. *Id.*

184. *Id.*

185. *Per- and Polyfluoroalkyl Substances (PFAS), Final PFAS National Primary Drinking Water Regulation*, ENV'T PROT. AGENCY (May 21, 2025), <https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas> [<https://perma.cc/PE4J-NQ8W>].

186. *Id.*

187. *See generally* Memorandum from Radhika Fox, Assistant Administrator, to EPA Regional Water Division Directors, Regions 1-10 (Dec. 5, 2022), https://www.epa.gov/system/files/documents/2022-12/NPDES_PFAS_State%20Memo_December_2022.pdf [<https://perma.cc/RF6N-258U>]; THREE YEARS OF PROGRESS, *supra* note 168, at 4.

188. *See generally* Memorandum from Radhika Fox, *supra* note 187; THREE YEARS OF PROGRESS, *supra* note 168, at 4.

189. THREE YEARS OF PROGRESS, *supra* note 168, at 4.

190. Zachary Turner, *Trump Withdraws Proposed 'Forever Chemicals' Discharge Limits from Consideration*, WUNC N.C. PUB. RADIO (Feb. 5, 2025, at 12:01 ET),

EPA also has taken action under the TSCA placing requirements on manufactures and processors of PFAS compounds.¹⁹¹ “For PFAS for which manufacture and processing has ceased, the EPA issued a Significant New Use Rule (SNUR) to prevent resumed manufacture or processing of hundreds of inactive PFAS without a robust up-front EPA safety review.”¹⁹² “The EPA has also issued SNURs to ensure that existing protections imposed on submitters of PFAS through the EPA’s Toxic Substances Control Act (TSCA) new chemicals program are more broadly applicable to all future manufacturers and processors of those chemicals.”¹⁹³ “And to ensure adequate review of new PFAS, or chemicals not previously in commerce, the EPA announced policy changes in April 2021 and proposed regulations in May 2023 to close premarket review exemptions for PFAS and other . . . toxic chemicals.”¹⁹⁴

Of particular interest to agricultural business, EPA has taken action under CWA Part 503 and CERCLA to address PFAS in biosolids and remediation at contaminated sites. EPA’s action under Part 503 and CERCLA are discussed below.¹⁹⁵

2. Federal Regulation of PFAS in Biosolids

There currently is no specific federal regulation of PFAS in biosolids.¹⁹⁶ The first step in the process is an EPA risk assessment for PFAS in biosolids under Part 503.¹⁹⁷ On January 14, 2025, EPA released its “Draft Sewage Sludge Risk

<https://www.wunc.org/2025-02-05/trump-withdraws-proposed-forever-chemicals-discharge-limits-from-consideration> [<https://perma.cc/T9DU-FZCD>].

191. *Risk Management for Per- and Polyfluoroalkyl Substances (PFAS) under TSCA*, U.S. ENV’T PROT. AGENCY (Apr. 11, 2025), <https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/risk-management-and-polyfluoroalkyl-substances-pfas> [<https://perma.cc/9269-7WJQ>].

192. *Biden-Harris Administration Finalizes Rule to Prevent Inactive PFAS from Reentering Commerce*, ENV’T PROT. AGENCY (Jan. 8, 2024), <https://www.epa.gov/newsreleases/biden-harris-administration-finalizes-rule-prevent-inactive-pfas-reentering-commerce> [<https://perma.cc/F7AK-VFFZ>]; THREE YEARS OF PROGRESS, *supra* note 168, at 3.

193. THREE YEARS OF PROGRESS, *supra* note 168, at 3.

194. *Id.*

195. *See* discussion *infra* Section I.E.iv.

196. PFAS IN BIOSOLIDS: A REVIEW OF STATE EFFORTS & OPPORTUNITIES FOR ACTION, *supra* note 2, at 1.

197. DAVID TOBIAS, OFF. OF WATER, U.S. ENV’T PROT. AGENCY, EPA TOOLS AND RESOURCES WEBINAR: CHEMICAL RISK ASSESSMENT FOR PFOA/PFOS IN BIOSOLIDS 9 (2023), https://www.epa.gov/system/files/documents/2023-07/508%20Compliant%20-%20PFAS%20in%20Biosolids_Tobias%20%28final%29.pdf [<https://perma.cc/8GK2-WK5Z>].

2025]

PFAS in Biosolids

241

Assessment for PFOA and PFOS.”¹⁹⁸ The draft risk assessment focuses on limited exposure scenarios and a narrow population of people that EPA considers most likely to be exposed to PFOA and PFOS.¹⁹⁹ Specifically, the draft risk assessment focuses on people living on or near impacted farms or those that rely primarily on their products.²⁰⁰ The draft risk assessment does not model risks for the general public.²⁰¹

The EPA found there may be human health risks exceeding the EPA’s acceptable thresholds for certain, specific modeled scenarios when land-applying biosolids that contain 1 part per billion (ppb) of PFOA or PFOS (see EPA chart below).²⁰² Although environmental advocacy groups certainly will seize upon EPA’s finding of human health risk under certain scenarios, it is important to note that the risk assessment pertains to limited populations under specifically modeled scenarios and do not pertain to the general public.²⁰³ For farms in particular, the modeled scenario assumed an annual application of biosolids at a rate of 10 dry-metric-tons per hectare and 40 consecutive years at this same rate.²⁰⁴ Thus, a farm could assert that the draft risk assessment does not show risk to human health if the application rate or number of applications is less than the modeled scenario for concentrations at or below 1 ppb.²⁰⁵

198. DRAFT SEWAGE SLUDGE RISK ASSESSMENT, *supra* note 65, at 1.

199. *See id.* at iii.

200. *Id.*

201. *Id.*

202. U.S. ENV’T PROT. AGENCY, DRAFT SEWAGE SLUDGE RISK ASSESSMENT FOR PFOA AND PFOS: PUBLIC WEBINAR 11 (2025), <https://www.epa.gov/system/files/documents/2025-01/draft-ra-public-webinar-slides.pdf> [<https://perma.cc/3BPV-AB7X>].

203. *Id.* at 10.

204. *Id.* at 11.

205. *See id.*

Application Rates for Exposure Scenarios				
Scenario	Concentration of PFOA or PFOS	Application Rate	Number of Applications	Human Exposure Duration
Farm – pasture-raised livestock	1 part per billion (ppb)	10 dry metric tons (DMT) per hectare (ha)	Once annually for 40 years	10 years – cancer 1 year – noncancer
Farm – food crops (fruits and vegetables)	1 ppb	10 DMT/ha	Once annually for 40 years	10 years – cancer 1 year – noncancer
Land reclamation sites	1 ppb	50 DMT/ha	One application only	10 years – cancer 1 year – noncancer
Sewage sludge surface disposal sites (sewage monofills)	1 ppb	Flow rate 4×10^{-6} m ³ /sec	Disposal site operating for 50 years	10 years – cancer 1 year – noncancer

Estimated risks scale linearly with the starting concentration of PFOA or PFOS in sewage sludge, assuming all other factors are held constant. As such, sewage sludge containing ten times more PFOA or PFOS (i.e., 10 ppb) would yield risk estimates that are ten times greater than those presented in the draft risk assessment.


 United States Environmental Protection Agency Office of Water

Figure 1—Source: EPA Draft Sewage Sludge Risk Assessment for PFOA and PFOS, Public Webinar, January 15, 2025.²⁰⁶

EPA accepted comments on the draft risk assessment through April 16, 2025 (extended from the original March 17, 2025 deadline).²⁰⁷ At some point following submission of comments, EPA presumably will issue a final risk assessment.²⁰⁸ However, it is unclear how the Trump Administration will handle PFAS legislation. A spokesperson for EPA recently told *Inside PFAS Policy* that EPA does not want to comment on how the Administration will address PFAS contamination until the new PFAS lead joins EPA; it currently is not known who the new PFAS lead will be and when the lead will begin working with the agency.²⁰⁹

3. State Regulation of Biosolids

Given the uncertainty regarding EPA's regulation of biosolids, with no clear timeline for when regulation of biosolids may occur under Part 503, it may be up

206. *Id.*

207. Two Actions Published by the Environmental Protection Agency with Comment Periods That Close February 24, 2025, and March 17, 2025; Notice of Comment Period Extensions, 90 Fed. Reg. 10078 (Feb. 21, 2025).

208. *Id.*

209. *Awaiting New 'Lead,' Trump EPA Appears Uncertain on Regulating PFAS*, INSIDE EPA: INSIDE PFAS POLICY (Mar. 14, 2025), <https://insideepa.com/pfas-policy-share/249513>.

to each state to develop their own regulations regarding handling of biosolids.²¹⁰ Multiple states already have enacted regulations or guidance for biosolids and many more are expected to do so in the near future.²¹¹ The problem with this state-by-state approach is that we will likely see a hodge-podge of regulations with different standards such as testing requirements, land application limits and application rates, and prohibitions.²¹² This can prove challenging for parties land applying and distributing biosolids because they are often doing so in multiple states.²¹³

For example, Maine currently prohibits any land application of biosolids.²¹⁴ Michigan, on the other hand, has developed interim strategy requirements to guide WWTPs and landowners/farmers who land apply biosolids containing PFOA or PFOS, employing different standards for land application based on the level of PFAS in the biosolids.²¹⁵

If testing shows biosolids with PFOA and PFOS below 20 ppm, there are no additional requirements imposed beyond submitting the testing results.²¹⁶ Biosolids with a PFOS or PFOA concentration at or above 20 ppb but below 100 ppb are considered elevated and trigger additional requirements, such as land application rate, additional sampling and implementing a source reduction plan.²¹⁷ If biosolids contain a PFOA or PFOS concentration at 100 ppb or higher, the biosolids are deemed “industrially impacted” and cannot be land applied.²¹⁸ Several other states, such as Colorado, Minnesota, and New Hampshire, have developed monitoring requirements but have not yet developed land application standards like Michigan.²¹⁹

210. PFAS IN BIOSOLIDS: A REVIEW OF STATE EFFORTS & OPPORTUNITIES FOR ACTION, *supra* note 2, at 1.

211. *Id.* at 4–5.

212. *See generally id.*

213. *Id.* at 11.

214. *Id.* at 8.

215. *Michigan Biosolids PFAS-Related Information and Links*, DEP’T OF ENV’T, GREAT LAKES, AND ENERGY (Apr. 11, 2025, at 10:13 CT), <https://www.michigan.gov/egle/about/organization/water-resources/biosolids/pfas-related> [<https://perma.cc/AJT7-2HAC>].

216. *Id.*

217. *Id.*

218. *Id.*

219. *See* PFAS IN BIOSOLIDS: A REVIEW OF STATE EFFORTS & OPPORTUNITIES FOR ACTION, *supra* note 2, at 1 (reviewing state efforts on PFAS in biosolids; although issued in January 2023 and not fully up to date, the publication illustrates the range of actions taken at the state level).

Some states previously were waiting for direction from EPA in developing standards for PFAS, including standards for biosolids and contaminated sites.²²⁰ However, recent indications suggest that numerous states will consider developing PFAS policies in 2025.²²¹ In a recent article from *Inside PFAS Policy*, it stated that “[a]t least 29 states are expected to consider policies in 2025 to address PFAS contamination, according to an analysis from an alliance of environmental organizations[.]”²²² Again, the requirements may vary from state to state with some considering banning PFAS in products, some “identifying safer alternatives, and [some] setting drinking water limits for PFAS[.]”²²³ In the absence of a final risk assessment and regulations on PFAS on biosolids, Safer States, a national alliance of environmental health organizations and coalitions focused on toxic chemical policies, also states that at least 29 states are likely to “consider solutions to the challenge of PFAS in sludge.”²²⁴ Although the Environmental Council of the States, a national association of state and territorial environmental agency leaders, and EPA issued a policy entitled “Joint Principles for Preventing and Managing PFAS in Biosolids,”²²⁵ it is unclear whether these general principles will continue to be followed and whether the states will continue to work cooperatively to develop more consistent policies for PFAS.²²⁶

4. Federal and State Regulation of PFAS at Contaminated Sites

On April 17, 2024, EPA provided notice that it was designating PFOA and PFOS as CERCLA hazardous substances.²²⁷ Less than one month later, on May 8,

220. *Id.* at 9.

221. *Analysis Finds 29 States Expected to Address PFAS Contamination in 2025*, INSIDE EPA (Feb. 6, 2025), <https://insideepa.com/pfas-news/analysis-finds-29-states-expected-address-pfas-contamination-2025>.

222. *Id.*

223. *Id.*

224. *Phasing Out PFAS Use: Insights and Predictions into 2025*, SAFER STATES (Apr. 11, 2025, at 14:00 CT), <https://www.saferstates.org/resource/2025-analysis-of-state-policy-addressing-toxic-chemicals-and-plastics/phasing-out-pfas-use/> [<https://perma.cc/ZL7Y-LKK9>].

225. *Joint Principles for Preventing and Managing PFAS in Biosolids*, U.S. ENV'T PROT. AGENCY (Jan. 23, 2025), <https://www.epa.gov/biosolids/joint-principles-preventing-and-managing-pfas-biosolids> [<https://perma.cc/5CX5-UMDE>].

226. *Id.*

227. PRE-PUBLICATION NOTICE OF DESIGNATION OF PERFLUOROCTANOIC ACID (PFOA) AND PERFLUOROCTANESULFONIC ACID (PFOS) AS CERCLA HAZARDOUS SUBSTANCES, EPA-HQ-OLEM-2019-0341, (signed Apr. 17, 2024) (to be codified at 40 C.F.R. pt. 302) [hereinafter PRE-PUBLICATION NOTICE], https://www.epa.gov/system/files/documents/2024-04/pre-publication_final-rule-cercla-pfoa-pfos-haz-sub.pdf [<https://perma.cc/2NS8-TT2E>].

2024, EPA published its final rule designating two types of PFAS compounds, PFOA and PFOS, as CERCLA hazardous substances.²²⁸ The rule had an effective date of July 8, 2024.²²⁹ This designation is important because it creates potential liability and significant financial risk for all four categories of potentially responsible parties under CERCLA: (1) current owners and operators of land contaminated with PFAS or PFOS; (2) former owners and operators at the time PFOA or PFOS were disposed; (3) generators and arrangers of PFAS or PFOS; and (4) transporters of PFOA or PFOS.²³⁰

CERCLA (also known as Superfund) is a federal statute that casts a wide liability net and exposes parties to hefty cleanup costs.²³¹ It imposes liability *retroactively*, so parties may be held liable for acts that pre-date its enactment in 1980.²³² It imposes liability *strictly*, so parties with no fault may be held liable. It imposes liability *joint and severally*, so one party may be held liable for all cleanup costs even though others are at fault.²³³ Notably, there is no minimum quantity requirement, meaning the presence of a hazardous substance in any amount exposes parties to liability.²³⁴

Under CERCLA, the federal government (EPA) can perform the cleanup then sue potentially responsible parties (PRPs) for cost recovery, compel PRPs to perform the cleanup, or settle with PRPs that agree to perform all or some of the cleanup.²³⁵ In addition, states can bring natural resources damages lawsuits under CERCLA.²³⁶ Further, private parties can bring citizen suits under CERCLA.²³⁷ Given the recent designation of PFOA and PFOS, parties identified as one of the four categories of responsible parties by EPA, can now be compelled to address

228. *Designation of Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) as CERCLA Hazardous Substances*, U.S. ENV'T PROT. AGENCY (May 8, 2024), <https://www.epa.gov/superfund/designation-perfluorooctanoic-acid-pfoa-and-perfluorooctanesulfonic-acid-pfos-cercla> [<https://perma.cc/N6BN-FRKH>].

229. *Id.*

230. *See id.*

231. *See* 42 U.S.C. § 9601.

232. *Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)*, LEGAL INFO. INST., CORNELL L. SCH. (Sept. 2023), https://www.law.cornell.edu/wex/comprehensive_environmental_response_compensation_and_liability_act_%28cercla%29 [<https://perma.cc/T65F-L9EC>].

233. *Id.*

234. *Id.*

235. *Id.*

236. 42 U.S.C. § 9607(a)(4)(C).

237. *See id.* § 9607(a)(4)(B).

PFOA and PFOS, among other hazardous substances found at a contaminated site.²³⁸

On April 19, 2024, EPA released its PFAS Enforcement Discretion and Settlement Policy Under CERCLA memorandum.²³⁹ In this memo, EPA announces that it will focus its enforcement action on “responsible entities who significantly contributed to the release of PFAS into the environment, including parties that manufactured PFAS or used PFAS in the manufacturing process[.]”²⁴⁰ EPA says it “does not intend” to seek response actions or costs under CERCLA for those entities “where equitable factors” do not support it.²⁴¹ EPA listed “farms where biosolids are applied to the land” as an example of the type of entity where the equitable factors do not support agency pursuit under CERCLA.²⁴² However, there is still risk of lawsuits filed by private parties under Section 9607 of CERCLA.²⁴³ Moreover, there is risk of contribution lawsuits filed by potentially responsible parties under Section 9613 of CERCLA.²⁴⁴ Thus, even if EPA adheres to its 2024 memorandum, the risk of PFAS-related lawsuits against agricultural businesses remains.²⁴⁵

EPA, however, has not developed any standards for remediation of soil or groundwater containing PFAS compounds.²⁴⁶ As a result, such responsibility will fall to individual states.²⁴⁷ Some states have developed regulations or guidance for cleanup of sites with PFAS compounds.²⁴⁸ But again, these regulations can and do differ from state to state, with different standards for remediation of soil or groundwater depending on the state where the contaminated site is located.²⁴⁹

238. PRE-PUBLICATION NOTICE, *supra* note 227, at 14.

239. See Memorandum from David M. Uhlmann, Assistant Adm’r for Enf’t & Compliance Assurance, U.S. Env’t Prot. Agency, to Reg’l Adm’rs, Deputy Reg’l Adm’rs, Reg’l Couns. & Deputy Reg’l Couns. (Apr. 19, 2024), <https://www.epa.gov/system/files/documents/2024-04/pfas-enforcement-discretion-settlement-policy-cercla.pdf> [<https://perma.cc/F8Q2-276M>].

240. *Id.* at 2.

241. *Id.*

242. *Id.*

243. See 42 U.S.C. § 9607.

244. See *id.* § 9613.

245. See Memorandum from David M. Uhlmann, *supra* note 239.

246. See SARAH GRACE HUGHES, PROCESSES & CONSIDERATIONS FOR SETTING STATE PFAS STANDARDS 1 (2023), <https://www.ecos.org/wp-content/uploads/2023/03/2023-ECOS-PFAS-Standards-Paper-Update.pdf> [<https://perma.cc/2HFV-CESC>].

247. See *id.*

248. See *id.*

249. See *id.* at 8.

ECOS has published an article on states' efforts to set standards for PFAS in drinking water, groundwater, soil and surface based on a survey provided to the states.²⁵⁰ Again, ECOS's publication shows the wide range of actions taken with respect to PFAS standards across the states.²⁵¹ As of April 2024, ECOS stated that 13 states had no PFAS standards, while 29 states had guidelines for at least one PFAS in at least one environmental medium, although what media was being regulated, and at what level, varied from state to state.²⁵²

F. The Effects the Current Legal Framework Has on Agricultural Businesses

The current legal framework imposes significant risks and costs on agricultural businesses. For example, in Maine, a dairy farmer had to dispose of "every drop of milk" he produced because the milk was contaminated with PFAS.²⁵³ This caused "financial ruin," and it is believed that the PFAS on his farm came from the spreading of biosolids.²⁵⁴

Unfortunately, this is not a unique story. In New Mexico, a farmer discovered the well water used to irrigate crops and water cows was contaminated with PFAS.²⁵⁵ This forced him to euthanize his cows and ruined his farming business.²⁵⁶ In Michigan, a farm was shut down by the state after PFAS were found in beef sold by the farm.²⁵⁷ The farmer says he is broke and has not earned a dollar in two years because of the PFAS contamination.²⁵⁸ Like the farm in Maine, it is

250. *See generally id.*

251. *See id.* at 9–12.

252. *See id.* at 9–16.

253. *PFAS: The Water Contaminant that Scientists Say Isn't Going Away*, CBS NEWS (Aug. 21, 2022, at 9:26 ET), <https://www.cbsnews.com/news/pfas-the-water-contaminant-that-scientists-say-isnt-going-away/> [<https://perma.cc/ZY75-K77K>].

254. Richard Valdmanis & Joshua Schneyer, *The Curious Case of Tainted Milk from a Maine Dairy Farm*, REUTERS (Mar. 19, 2019, at 11:19 CT), <https://www.reuters.com/article/us-usa-dairy-chemicals/the-curious-case-of-tainted-milk-from-a-maine-dairy-farm-idUSKCN1R01AJ/> [<https://perma.cc/PP78-TEKT>].

255. Sara Van Note, *Back Forty: For One New Mexico Farmer, A Slow-Moving PFAS Disaster*, FOOD & ENV'T REPORTING NETWORK (April 11, 2025, at 9:46 CT), https://thefern.org/blog_posts/back-forty-for-one-new-mexico-farmer-a-slow-moving-pfas-disaster/ [<https://perma.cc/5GXR-4JHC>].

256. *Id.*

257. Kyle Kaminski, *Farmers Call for Federal 'Safety Net' After Toxic Sludge Sinks Michigan Cattle Farm*, THE 'GANDER (Nov. 28, 2023), <https://gandernewsroom.com/2023/11/28/farmers-call-for-federal-safety-net-after-toxic-sludge-sinks-michigan-cattle-farm/> [<https://perma.cc/T434-LM9J>].

258. *Id.*

believed that contaminated biosolids used as fertilizer were the culprit for the contamination.²⁵⁹ Many other farmers have similar stories.

Recently, on February 11, 2025, Johnson County, Texas declared a “state of disaster” due to PFAS contamination on agricultural land.²⁶⁰ The declaration states there has been “the discovery of widespread PFAS contamination in local agricultural land, stemming from the application of contaminated biosolids used as fertilizer.”²⁶¹ It continues to state, “The contamination has already resulted in reported deaths of fish and cattle in the affected areas as well as the contamination of groundwater . . . [t]esting has confirmed PFAS contamination in soil, groundwater, surface water, and animal tissue throughout the affected area of the county.”²⁶² The declaration further notes that “well water near biosolid application sites has tested positive for PFAS at levels several hundred times higher than the EPA’s safe drinking water limits.”²⁶³

These stories demonstrate the risks and costs the current legal framework imposes on agricultural businesses are significant. Further, when promulgating its rule designating PFOA and PFOS as CERCLA hazardous substances, “EPA recognize[d] that some parties that do not bear primary responsibility for litigation may be sued and face uncertain litigation costs as a consequence” of its designation.²⁶⁴ EPA stated, however that it “does not believe that these potential costs will outweigh the substantial advantages from the rule.”²⁶⁵ Notably, the estimated average cost of cleaning up a site on the National Priorities List is between \$35 million and \$50 million.²⁶⁶

III. ADDRESSING AND MITIGATING RISKS FROM THE PFAS PROBLEM UNDER THE CURRENT FRAMEWORK

There are several ways agricultural businesses can and should address and mitigate the risk from PFAS under the current legal framework. Risk mitigation

259. *Id.*

260. Press Release, Christopher Boedeker, *supra* note 150.

261. *Id.*

262. *Id.*

263. *Id.*

264. Designation of Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) as CERCLA Hazardous Substances, 89 Fed. Reg. 39124, 39130 (proposed May 8, 2024) (to be codified at 40 C.F.R. pt. 302).

265. *Id.*

266. AM. ACAD. OF ACTUARIES, COSTS UNDER SUPERFUND 2 (Sep. 1995), <https://www.actuary.org/sites/default/files/pdf/casualty/superfun.pdf> [<https://perma.cc/6L7V-GC4G>].

techniques include having contractual provisions that will hopefully prevent PFAS contamination in the first place.²⁶⁷ And even if PFAS contamination does occur, there are additional types of contractual provisions that agricultural businesses can use to insulate themselves from liability and damages.²⁶⁸ Moreover, at least two federal courts have concluded that insurance policies provide coverage against PFAS, supporting the use of insurance policies, insurance claims, and insurance coverage litigation as additional risk mitigation measures.²⁶⁹ Lastly, voluntary remediation and cleanup, especially if there is PFAS contaminated land in a state with a program that offers immunity for voluntary reporting and remediation, may be an appropriate method of addressing and mitigating risks from the PFAS problem.²⁷⁰

A. Contractual Solutions and Risk Mitigation Measures

There are numerous different contractual ways agricultural businesses can address and mitigate risk from the PFAS problem.²⁷¹ The precise contractual language used depends on the type of business, from where its risk from PFAS derives, and the governing state law.²⁷² This section discusses how agricultural businesses can use the following types of contractual provisions to address the PFAS problem under the current legal framework: (i) express warranties; (ii) indemnification clauses; (iii) agreement to insure clauses; (iv) limitations of liability and damages; and (v) subrogation waivers.²⁷³

1. Express Warranties

Including express warranties regarding PFAS in contracts with sellers of biosolids can protect agricultural businesses and mitigate risks.²⁷⁴ A seller of a

267. *Key EPA Actions to Address PFAS*, *supra* note 83.

268. Joe Quarantello, *PFAS Liability: How the Latest EPA Ruling Affects Your Business*, RISK STRATEGIES (July 8, 2024), <https://www.risk-strategies.com/blog/pfas-liability-how-the-latest-epa-ruling-affects-your-business> [https://perma.cc/VU8H-NVCH].

269. *See generally* *Wolverine World Wide, Inc. v. Am. Ins. Co.*, No. 1:19-CV-00010-JTN-ESC, 2021 WL 5548103, at *13 (W.D. Mich. Jun. 15, 2021); *Colony Ins. Co. v. Buckeye Fire Equip. Co.*, No. 3:19-CV-00534-FDW-DSC, 2020 WL 6152381, at *4 (W.D.N.C. Oct. 20, 2020), *aff'd*, No. 20-2208, 2021 WL 5397595 (4th Cir. Nov. 18, 2021).

270. *See, e.g.*, IND. DEP'T. OF ENV'T. MGMT., VOLUNTARY REMEDIATION PROGRAM GUIDE 4 (2022), https://www.in.gov/idem/legal/files/rules_erb_20221109_npd_waste_0077_guide.pdf [https://perma.cc/W83Y-VFCU].

271. Quarantello, *supra* note 268.

272. *Id.*

273. *See* discussion *infra* Sections II.A.1–4.

274. *Representation & Warranty Insurance for PFAS Liability*, AARON HALL ATT'Y (Apr. 24, 2025, at 13:24 CT), <https://aaronhall.com/representation-warranty-insurance-pfas->

good creates an express warranty when they make an “affirmation of fact or promise” that “relates to the goods and becomes part of the basis of the bargain.”²⁷⁵ That affirmation of fact or promise “creates an express warranty that the goods shall conform to the affirmation or promise.”²⁷⁶ If the seller breaches their express warranty, the seller may be liable for damages caused by the breach.²⁷⁷

As to PFAS, a contract might include an express warranty that the concentration of PFAS in the biosolids is a non-detect or less than state and federal regulatory levels.²⁷⁸ Such a contractual provision can provide defenses against claims that agricultural businesses had a duty or breached their duty.²⁷⁹ Further, such a contractual provision can provide a cause of action against the seller if they breach the contract.²⁸⁰

2. Indemnification Clauses

Indemnification clauses are contractual provisions “under which one party will be liable to the other in the event a third party sustains damages.”²⁸¹ These clauses typically relate to prospective liability and are “rooted in the very nature of allocating *risk*.”²⁸² As to PFAS, a contract might include an indemnification clause where the seller of biosolids indemnifies the buyer if the buyer is later sued by a third party alleging the biosolids were contaminated with PFAS and damaged the third party.²⁸³

liability/#Understanding_PFAS_and_Its_Impact_on_Corporate_Liability
[<https://perma.cc/2786-Y7UM>].

275. IND. CODE ANN. § 26-1-2-313(a) (West 2025); U.C.C. § 2-313(a) (A.L.I. & UNIF. L. COMM’N 2022).

276. IND. CODE ANN. 34, § 26-1-2-313(a).

277. *See generally* Belden Inc. v. Am. Elec. Components, Inc., 885 N.E.2d 751, 764 (Ind. Ct. App. 2008).

278. *See generally* Michigan Biosolids PFAS-related Information and Links, *supra* note 215.

279. *See The Basics of Warranties*, L. OFFS. OF STIMMEL, STIMMEL & ROESER (Apr. 24, 2025, at 13:25 CT), <https://www.stimmel-law.com/en/articles/basics-warranties> [<https://perma.cc/QL3B-FDFQ>].

280. *See generally* Belden Inc., 885 N.E.2d at 764.

281. U.S. Automatic Sprinkler Corp. v. Erie Ins. Exch., 204 N.E.3d 215, 222 (Ind. 2023).

282. *In re* Ind. State Fair Litig., 49 N.E.3d 545, 549 (Ind. 2016).

283. Quarantello, *supra* note 268.

3. *Agreement to Insure Clauses*

Agreement to insure clauses remove the contracting parties “from exposure to liability and, instead, shift the risk of loss to insurance.”²⁸⁴ Stated differently:

With agreements to insure, the risk of loss is not intended to be shifted to one of the parties; it is intended to be shifted to an insurance company in return for a premium payment. Neither party intends to assume a potential liability; rather both are demonstrating “normal” business foresight in avoiding liability and allocating it to an insurer.²⁸⁵

As to PFAS, businesses may want to include agreement to insure clauses in their contracts if they are selling products that may contain PFAS, thereby shifting the risk of loss to insurance companies.²⁸⁶

4. *Limitations of Liability and Damages*

Contracts may contain limitation of liability and damages clauses that limit “one party’s liability to the other only for damages that arise in a specific manner.”²⁸⁷ For example, a contract may include an “exculpatory clause or an express agreement from the other party to release the promisee from his duty or to assume the risk.”²⁸⁸ When applicable and enforceable, exculpatory clauses protect a party from liability.²⁸⁹

In addition to clauses that limit liability, a contract may contain clauses that limit the amount of damages one can recover from another.²⁹⁰ Agricultural businesses may want to include contractual clauses that limit their exposure to liability and damages if they are selling products that may contain PFAS.

5. *Subrogation Waivers*

Lastly, similar to an agreement to insure clause, “a subrogation waiver signifies the contracting parties’ intent to recover damages ‘through insurance

284. U.S. Automatic Sprinkler Corp., 204 N.E.3d at 222.

285. *Morsches Lumber, Inc. v. Probst*, 388 N.E.2d 284, 287 (Ind. Ct. App. 1979).

286. *Id.*

287. U.S. Automatic Sprinkler Corp., 204 N.E.3d at 222.

288. *Pinnacle Comput. Servs., Inc. v. Ameritech Publ’g, Inc.*, 642 N.E.2d 1011, 1014 (Ind. Ct. App. 1994).

289. *Anderson v. Four Seasons Equestrian Ctr., Inc.*, 852 N.E.2d 576, 584 (Ind. Ct. App. 2006).

290. *See, e.g., Byrton Dairy Prods., Inc. v. Harborside Refrigerated Servs., Inc.*, 991 F. Supp. 977, 984 (N.D. Ill. 1997) (holding that \$50 per shipment limit of liability was enforceable and thus limiting recoverable damages to \$50 per shipment).

claims, not lawsuits’—but perhaps more explicitly.”²⁹¹ Notably, when applicable and enforceable, “it makes no difference whether the theory of recovery is negligence or breach of contract—the waiver of subrogation provision bars recovery.”²⁹² Thus, like many other types of contractual provisions, agricultural business may want to include contractual clauses that limit their exposure to liability and damages if they are selling products that may contain PFAS.

B. Lawsuits Against Upstream Parties

Lawsuits against upstream parties present another opportunity for agricultural businesses to address and mitigate risks from the PFAS problem. Settlement agreements between PFAS manufacturers and public water systems demonstrate how agricultural businesses can use lawsuits against upstream parties to tackle their PFAS problem. Certain PFAS manufacturers, including DuPont, settled PFAS-related drinking water claims for certain public water systems, and these manufacturers of PFAS will contribute \$1.185 billion to a settlement fund.²⁹³ 3M, another PFAS manufacturer, settled its liability to public water systems for approximately \$10.3 billion.²⁹⁴

In addition, many of the aforementioned caselaw decisions involve lawsuits against upstream parties and provide guidelines on the types of claims and allegations that can be brought.²⁹⁵ Again, these claims can include: common law claims, like negligence; claims under federal statutes, like CERCLA; and claims under state statutes, like state cleanup statutes.²⁹⁶ Lawsuits and contractual protections, however, are not the only way agricultural businesses can protect themselves from the PFAS problem.

C. Insurance Claims

Having insurance and making insurance claims is another way agricultural business can protect themselves and mitigate risks from PFAS. A decision from

291. U.S. Automatic Sprinkler Corp., 204 N.E.3d at 222.

292. S.C. Nestel, Inc. v. Future Constr., Inc., 836 N.E.2d 445, 451 (Ind. Ct. App. 2005).

293. Press Release, Dupont, *supra* note 43.

294. Press Release, 3M, *supra* note 43.

295. See generally Higgins v. Huhtamaki, Inc., No. 1:21-CV-00369-JCN, 2023 WL 6516538 (D. Me. Oct. 5, 2023); State *ex rel.* Stein v. EIDP, Inc., No. 20 CVS 5612, 2023 WL 2326101 (N.C. Super. Mar. 2, 2023); Giordano v. Solvay Specialty Polymers USA, LLC, 522 F. Supp. 3d 26, 31 (D.N.J. 2021); Johnson v. 3M, 563 F. Supp. 3d 1253, 1324 (N.D. Ga. 2021), *aff’d sub nom.* Johnson v. 3M Co., 55 F.4th 1304 (11th Cir. 2022).

296. See generally Anderson v. Four Seasons Equestrian Ctr., Inc., 852 N.E.2d 576, 584 (Ind. Ct. App. 2006); Byrton Dairy Prods., Inc. v. Harborside Refrigerated Servs., Inc., 991 F. Supp. 977, 984 (N.D. Ill. 1997).

the Western District of North Carolina, which the Fourth Circuit Court of Appeals affirmed, illustrates this point.²⁹⁷ In that case, the court granted summary judgment in defendant's (the insured) favor and concluded defendant's insurer needed to defend it against certain PFAS claims.²⁹⁸ Defendant had been sued hundreds of times regarding its manufacture of fire equipment that contained AFFF, a type of fire suppression foam known to contain PFAS.²⁹⁹ In those cases, plaintiffs sued defendant for bodily injury or property damage caused by AFFF exposure.³⁰⁰ Defendant's insurer argued the Hazardous Materials Exclusion in the policy precluded coverage.³⁰¹ The court rejected the insurer's argument, however, because "the relevant underlying complaints allege injury caused by something other than traditional environmental pollution, which the policy exclusion requires as a matter of law."³⁰²

Relatedly, the Northern District of California recently considered whether an insurer must defend its insured against claims relating to PFAS in its AFFF products.³⁰³ The court concluded that the insured was entitled to a defense in one type of case, was not entitled to a defense in two other cases, and there were factual issues preventing summary judgment for either party as to other cases.³⁰⁴ The court held the insured was entitled to a defense in a case where plaintiffs alleged direct exposure to AFFF (and therefore PFAS) and an injury resulting from that direct exposure.³⁰⁵ The insurer needed to provide a defense even though the insurance policy contained a pollution exclusion.³⁰⁶ The court held, "The pollution exception does not apply because of the plaintiffs' theory of harm (*i.e.*, direct exposure to the products) and there is potential indemnity because the plaintiffs allege an accident."³⁰⁷ Specifically, "plaintiffs allege direct exposure to National Foam's products during their ordinary use, which is not pollution."³⁰⁸

297. *Colony Ins. Co. v. Buckeye Fire Equip. Co.*, No. 3:19-CV-00534-FDW-DSC, 2020 WL 6152381, at *1 (W.D.N.C. Oct. 20, 2020), *aff'd*, No. 20-2208, 2021 WL 5397595 (4th Cir. Nov. 18, 2021).

298. *Id.* at *4.

299. *Id.*

300. *Id.*

301. *Id.*

302. *Id.* at *3.

303. *Nat'l Foam, Inc. v. Zurich Am. Ins. Co.*, 768 F. Supp. 3d 1009, 1012–13, (N.D. Cal. 2025).

304. *Id.* at 1021.

305. *Id.* at 1017.

306. *Id.*

307. *Id.* at 1016.

308. *Id.*

On the other hand, the court concluded the insurer owed no defense as a matter of law in two of the underlying cases.³⁰⁹ One was a case where a city was the sole plaintiff and alleged PFAS contaminated its property, watershed, and water system.³¹⁰ The other was a case where plaintiffs alleged they were exposed to PFAS in an indirect way, through contaminated drinking water.³¹¹ The insurer owed no defense because the pollution exclusion applied.³¹² The court reasoned that indirect exposure to PFAS via contaminated water “is generally understood as pollution, so the exception provides clear notice of a policy exclusion.”³¹³

Finally, in *Navigators Specialty Insurance Company v. Inhance Technologies, LLC*, an insurance company filed a declaratory judgment action against its insured, requesting the court to declare that it does not owe a duty to defend or indemnify its insured against the claims made in an underlying lawsuit.³¹⁴ The Complaint describes the underlying lawsuit as “seeking damages arising out the alleged contamination of Clarke’s liquid mosquito product with chemical compounds known as [PFAS].”³¹⁵ Specifically, the plaintiff in the underlying suit alleged that it purchased plastic containers for the purpose of shipping its product to its customers, and “those containers were fluorinated by the Inhance defendants.”³¹⁶ Plaintiff further alleges these containers were contaminated with PFAS, which caused the products stored in the containers to become contaminated with PFAS as well.³¹⁷ Plaintiff claims it suffered damages exceeding \$5,400,000.³¹⁸ The Inhance defendants tendered the claim to its insurer, which in turn, filed a declaratory judgment action.³¹⁹ On June 13, 2025, the parties filed a joint stipulation of dismissal with prejudice, indicating they settled the case.³²⁰

With PFAS issues and lawsuits continuing to emerge, additional coverage lawsuits are likely to occur. Ultimately, whether an insurance policy covers PFAS

309. *Id.* at 1021.

310. *Id.* at 1019.

311. *Id.*

312. *Id.*

313. *Id.* at 1020.

314. See Complaint for Declaratory Relief at 1, 29, *Navigators Specialty Ins. Co. v. Inhance Techns., LLC*, No. 4:23-CV-02867 (S.D. Tex., Aug. 4, 2023).

315. *Id.* at 12.

316. *Id.* at 12.

317. *Id.*

318. *Id.* at 14.

319. *Id.* at 17.

320. See generally Stipulation of Dismissal with Prejudice, *Navigators Specialty Ins. Co. v. Inhance Techns., LLC*, No. 4:23-CV-02867 (S.D. Tex., June 13, 2025).

claims will depend on the language of the insurance policy, the facts giving rise to the insurance claim, and the applicable state law.³²¹ Nevertheless, coverage decisions involving PFAS indicate there will be coverage in certain situations.³²² Thus, the use of insurance claims, and potential insurance coverage lawsuits, is a way to mitigate and protect agricultural businesses against the risk of PFAS under the current legal framework.

D. Voluntary Reporting and Cleanup

Lastly, certain state statutes or programs might provide immunity or other defense to agricultural businesses.³²³ For example, in Indiana, it is anticipated that people who own PFAS contaminated land might be eligible to participate in Indiana's Voluntary Remediation Program in the future.³²⁴ An applicant that is accepted into and completes this program receives protection from lawsuits.³²⁵

IV. A NEW FRAMEWORK

Sometimes implementing risk mitigation techniques is not enough to protect agricultural businesses from the adverse effects of PFAS. Contractual provisions can be breached, resulting in litigation.³²⁶ Insurance companies can deny coverage, also resulting in litigation.³²⁷ Litigation costs time and money, and positive litigation outcomes cannot be guaranteed. Even if an agricultural business has meritorious defenses against PFAS-related claims, courts around the country have routinely rejected attempts to defeat PFAS-related claims on the pleadings.³²⁸ Thus, agricultural businesses, if sued, will likely be forced to spend time and money on discovery and experts. This situation is untenable for many agricultural businesses.

The current legal framework fails to appreciate the critical role agricultural businesses play in our society. It also fails to appreciate the slim profit margins and heavy debt load that many farmers deal with.³²⁹ This section highlights their

321. *See generally id.* at 18.

322. *See id.*

323. *See, e.g.,* IND. DEP'T. OF ENV'T. MGMT., *supra* note 270, at 19.

324. *See id.* at 7.

325. *Id.* at 19.

326. *See generally* Complaint for Declaratory Relief *supra* note 314, at 15.

327. *See id.* at 2–3.

328. *See* *Giordano v. Solvay Specialty Polymers USA, LLC*, 522 F. Supp. 3d 26, 34 (D.N.J. 2021).

329. CHRISTINE WHITT ET AL., ECON. RSCH. SERV., U.S. DEPT. OF AGRIC., ECON. INFO. BULL. NO. 263, AMERICA'S FARMS AND RANCHES AT A GLANCE 2023 EDITION 8–12 (2023),

importance.³³⁰ It then proposes a new legal framework that accounts for the essential role they play in our society.³³¹

A. The Critical Role Agricultural Businesses Play in Our Society

Agricultural businesses are the backbone of society, providing essential food and products necessary to live.³³² Each United States farm feeds approximately 169 people annually.³³³ Farming makes up about 1% of the United States' gross domestic product.³³⁴ Farm employment generates approximately 2.6 million jobs, which is about 1.3% of total employment in the United States.³³⁵ Additionally, a robust nationwide food production apparatus provides national security.³³⁶

United States Department of Agriculture reports that most United States farms are considered small family farms, and “these farms operate on 46[%] of [United States] agricultural land and account for 19[%] of the total value of production”³³⁷ Yet “[m]ost small family farms have an [Operating Profit Margin] of less than 10[%]”³³⁸ The Operating Profit Margin (OPM) is “the share of gross income that is profit”³³⁹ It “is one way to gauge a farm’s financial performance.”³⁴⁰ The fact that most small family farms operate with an OPM of less than 10% indicates financial vulnerability.³⁴¹ In contrast, “most midsize, large, and very large family farms reported OPMS above 10[%] in 2022.”³⁴²

https://ers.usda.gov/sites/default/files/_laserfiche/publications/108074/EIB-263.pdf?v=82514 [<https://perma.cc/5BDR-VVDZ>].

330. See discussion *infra* Section III.A.

331. See discussion *infra* Section III.B.

332. See *Fast Facts About Agriculture & Food*, AM. FARM BUREAU FED’N (Apr. 11, 2025, at 10:03 CT), <https://www.fb.org/newsroom/fast-facts> [<https://perma.cc/HF2L-X9UR>].

333. *Id.*

334. *Id.*

335. MARK WHITE & ANDREW VAN LEUVEN, FARMDOC DAILY, CHANGES IN FARM EMPLOYMENT, 1969 TO 2021, at 1 (2023), <https://farmdocdaily.illinois.edu/wp-content/uploads/2023/07/fdd071423.pdf> [<https://perma.cc/87CK-J3SP>].

336. See *Fast Facts About Agriculture & Food*, *supra* note 332.

337. WHITT ET AL., *supra* note 329 at 5.

338. *Id.* at 8.

339. *Id.*

340. *Id.*

341. *Id.*

342. *Id.*

It is well-known that “farming is capital-intensive.”³⁴³ In 2022, approximately 26% of United States farms had debt, and small family farms with debt possessed average loan amounts that, depending on the lender type, ranged from \$87,000 to \$164,000.³⁴⁴ The combination of low OPMs and debt load can place small family farms in a precarious financial position.³⁴⁵ Thus, any disruption, such as a PFAS-related lawsuit or regulatory action, against small family farms can cause them financial ruin. But the current legal framework underappreciates this necessary and essential agriculture industry. It exposes agricultural businesses to lawsuits and regulatory action for PFAS contamination that occurred before there was widespread knowledge of what PFAS even are, let alone their potential harm.³⁴⁶ Legislatures should establish a new legal framework that recognizes the importance of agricultural businesses to the country.

B. A New Legal Framework That Accounts for the Essential Role Agricultural Businesses Play in our Lives

This Article proposes that states or the federal government pass laws providing limited immunity for agricultural businesses against PFAS related claims. Specifically, unless agricultural businesses acted willfully and wantonly, they should be immune from liability for any PFAS related contamination or damages that occurred before May 8, 2024. That is the date when EPA published its final rule designating PFOA and PFOS as CERCLA hazardous substances in the Federal Register.³⁴⁷ Simply put, if the federal government did not know enough about PFAS to regulate it under CERCLA until May 8, 2024, agricultural businesses should not be liable.

Additionally, EPA already has recognized that “farms where biosolids are applied to the land” is an industry “where equitable factors do not support seeking response actions or costs under CERCLA.”³⁴⁸ Stated differently, EPA has concluded that it would be unfair for farms to bear the brunt of any PFAS related CERCLA costs.³⁴⁹ But as discussed previously, EPA’s non-binding memorandum,

343. *Id.* at 10.

344. *Id.*

345. *Id.* at 8.

346. Dave Dickey, *PFAS Pollution a Growing Problem for U.S. Farmers*, INVESTIGATE MIDWEST (Sept. 18, 2024), <https://investigatemidwest.org/2024/09/18/pfas-lawsuits-forever-chemicals-farmers/> [<https://perma.cc/U3KD-8T5N>].

347. Designation of Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) as CERCLA Hazardous Substances, 89 Fed. Reg. 39124, 39124 (May 8, 2024) (to be codified at 40 C.F.R. pt. 302).

348. Memorandum from David M. Uhlmann, *supra* note 239, at 2.

349. *Id.*

even if adhered to by EPA, will not prevent private parties from suing agricultural businesses under CERCLA, state statutes, or the common law.³⁵⁰

Moreover, providing certain critical industries with immunity is not uncommon.³⁵¹ That is especially true when the industries face the threat of lawsuits that would result in financial ruin.³⁵² The point of this Article is not to judge the appropriateness of other industry grants of immunity. Rather, it is to point out the historical precedent of legislative grants of immunity, especially when the life and stability of an industry seen as essential is threatened with tort lawsuits.

On the other hand, a blanket grant of immunity for any type of action at any point in time would be inappropriate. Willful and wanton behavior is “an intentional act done with reckless disregard of the natural and probable consequence of injury to a known person under the circumstances known to the actor at the time”³⁵³ It also includes “an omission or failure to act when the actor has actual knowledge of the natural and probable consequence of injury and his opportunity to avoid the risk.”³⁵⁴ Immunizing willful and wanton behavior creates bad incentives, is unfair to those damaged by willful and wanton behavior, and is bad public policy. Thus, if an agricultural business’s conduct prior to May 8, 2024, arose to this level, it should not be immunized. Procedural rules requiring that “factual contentions have evidentiary support” or “will likely have evidentiary support after a reasonable opportunity for further investigation or discovery”³⁵⁵ and fee-shifting statutes when a lawsuit is groundless, unreasonable, or in bad faith³⁵⁶ should insulate agricultural businesses against the risk that plaintiffs allege willful and wanton prior to May 8, 2024, simply to get around the proposed immunity provision.

Likewise, the increasing knowledge and awareness of PFAS and their potential harms weighs against providing immunity for PFAS-related damages resulting from acts or omissions that occurred on or after May 8, 2024. EPA published its proposed designation of PFOA and PFOS as CERCLA hazardous

350. *See supra* Section I.E.

351. *See, e.g.*, 15 U.S.C. § 7902(a); *see also* 42 U.S.C. § 300aa–22(b)(1).

352. *See, e.g.*, 15 U.S.C. §§ 7901–7903 (immunizing certain manufacturers, sellers, and importers of firearms and ammunition); 42 U.S.C. § 300aa–22(b)(1) (vaccines); *Bruesewitz v. Wyeth LLC*, 562 U.S. 223, 229 (2011) (discussing vaccine manufacturer immunity); *Calvary Temple Church of Evansville, Inc. v. Kirsch*, 251 N.E.3d 1056, 1057 (Ind. 2025) (describing immunity provided to churches against certain premises liability lawsuits).

353. *Sportsdrome Speedway, Inc. v. Clark*, 49 N.E.3d 653, 661 (Ind. Ct. App. 2016).

354. *Id.*

355. *See, e.g.*, FED. R. CIV. P. 11(b)(3).

356. *See, e.g.*, IND. CODE ANN. § 34-52-1-1(b) (West 2025).

substances on September 6, 2022, about a year-and-a-half before it published its final rule.³⁵⁷ But EPA's published material and announcements regarding PFAS started even earlier, with significant agency action starting in 2021.³⁵⁸ Providing a limited grant of immunity to agricultural businesses for acts or omissions occurring before May 8, 2024, that were not willful and wanton appropriately weighs the essential nature of the agriculture industry with the rationales of tort liability, which are: "(a) to give compensation, indemnity or restitution for harms; (b) to determine rights; (c) to punish wrongdoers and deter wrongful conduct; and (d) to vindicate parties and deter retaliation or violent and unlawful self-help."³⁵⁹

In addition to this limited immunity, agricultural businesses should push for legislation that focuses on upstream producers of PFAS and biosolids (*e.g.*, PFAS manufacturers, industrial dischargers, and WWTPs). Agricultural businesses are, in essence, inheriting the problem that upstream producers have created. It is these upstream producers that should be tasked with reducing PFAS in their products and discharges. Agricultural businesses can collectively work to lobby legislators for such action.

V. CONCLUSION

Approximately 56% of biosolids generated by publicly owned treatment works are land applied, and approximately 2.39 million dry metric tons of sewage sludge are land applied every year.³⁶⁰ Historically, many believed land application of biosolids was an environmentally conscious and economically sound way to deal with a never-ending stream of waste.³⁶¹ Land application of biosolids increases crop yields, reduces reliance on commercial fertilizers, and improves soil structure.³⁶² It further avoids landfilling and incinerating biosolids, the two other primary disposal methods.³⁶³

357. *Designation of Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) as CERCLA Hazardous Substances*, *supra* note 228.

358. *Key EPA Actions to Address PFAS*, *supra* note 83.

359. RESTATEMENT (SECOND) OF TORTS § 901 (A.L.I. 1979).

360. DRAFT SEWAGE SLUDGE RISK ASSESSMENT, *supra* note 65; *Basic Information About Sewage Sludge and Biosolids*, *supra* note 7.

361. *Basic Information About Sewage Sludge and Biosolids*, *supra* note 7.

362. See 40 C.F.R. § 503.11(h) (2025); *Land Application of Biosolids*, U.S. ENV'T PROT. AGENCY (Jan. 6, 2025), <https://www.epa.gov/biosolids/land-application-biosolids> [<https://perma.cc/G64L-8E69>].

363. *Basic Information About Sewage Sludge and Biosolids*, *supra* note 7.

But sampling results confirm that biosolids often are contaminated with PFAS.³⁶⁴ The question is how the state and federal governments should respond to this issue. EPA has yet to regulate the amount of PFAS that are allowed in biosolids.³⁶⁵ As a result, there has been a wide range of state regulation of PFAS in biosolids, ranging from a complete ban to no regulation.³⁶⁶ This state-by-state approach creates challenges for parties land applying and distributing biosolids because they are often doing so in multiple states.

EPA, however, has regulated PFOA and PFOS, two types of PFAS, under CERCLA, designating them as CERCLA hazardous substances in April 2024.³⁶⁷ This designation poses risks to agricultural businesses that sell biosolids, spread biosolids, or receive biosolids on their land. CERCLA lacks a minimum quantity requirement, meaning the presence of a hazardous substance in any amount exposes parties to liability.³⁶⁸ It casts a wide liability net and exposes parties to hefty cleanup costs, imposing liability retroactively, strictly, and joint and severally.³⁶⁹ Although EPA issued a memorandum stating it does not intend to pursue farms under CERCLA for PFOA and PFOS contamination, agricultural businesses still face the risk of private party lawsuits under Sections 9607 and 9613 of CERCLA.³⁷⁰

CERCLA lawsuits are not the only litigation risk to agricultural businesses for alleged damages caused by PFAS. Courts around the country consistently allow lawsuits relating to PFAS to survive 12(b)(6) motions to dismiss, meaning they advance to the costly discovery stage.³⁷¹ Due to the technical and scientific nature of PFAS, property contamination cases, and toxic tort cases, defendants in such lawsuits often will need to retain experts to defend themselves, which, of course, costs more money.³⁷² If that were not enough, agricultural businesses face lawsuits

364. DRAFT SEWAGE SLUDGE RISK ASSESSMENT FOR PERFLUOROOCTANOIC ACID (PFOA) CASRN 335-67-1 AND PERFLUOROOCTANE SULFONIC ACID (PFOS) CASRN 1763-23-1, *supra* note 69, at iv.

365. PFAS IN BIOSOLIDS: A REVIEW OF STATE EFFORTS & OPPORTUNITIES FOR ACTION, *supra* note 2, at 1.

366. *Id.* at 4.

367. PRE-PUBLICATION NOTICE, *supra* note 227.

368. *See generally* 42 U.S.C. §§ 9601–75.

369. *Superfund Liability*, U.S. ENV'T PROT. AGENCY (April 10, 2025), <https://www.epa.gov/enforcement/superfund-liability> [<https://perma.cc/4AT4-FPUF>].

370. *See* Memorandum from David M. Uhlmann, *supra* note 239; *see* 42 U.S.C. §§ 9607, 9613.

371. *See* discussion *supra* Section I.D.

372. *See generally* FED. R. EVID. 702.

under state statutes, whether that be under states' "mini-CERCLA" statutes, like Indiana's Environmental Legal Action statute, or products liability statutes.³⁷³

This current legal framework threatens the livelihood of agricultural businesses, many of which are family-owned. There are, however, steps agricultural businesses can and should take to address and mitigate their risks relating to PFAS. They can add protective language to contracts. They can take the offensive and sue upstream manufacturers of PFAS. They can make insurance claims. They can enroll in their state's voluntary remediation program, if such a program exists for their state.

Yet even if these steps are taken, which they should in many cases, the current legal framework imposes a hefty burden on agricultural businesses. Parties can breach contracts. Lawsuits against upstream manufacturers require a significant investment of time and capital. Insurance companies can deny claims.

We need a new legal framework that appreciates the critical role agricultural businesses play in our society and slim profit margins under which many operate. This Article proposes the federal government—or, perhaps more realistically, the states—immunize agricultural businesses from actions or omissions that allegedly caused PFAS-related damages before May 8, 2024, unless there was willful and wanton misconduct. May 8, 2024, is the date EPA promulgated its final rule designating PFOA and PFOS as CERCLA hazardous substances.³⁷⁴ Simply put, if EPA lacked the knowledge (or willpower) to regulate these substances under CERCLA until May 8, 2024, then agricultural businesses should not face liability either. But since that designation, knowledge regarding PFAS generally, and PFOA and PFOS specifically, has become more well-known, including their presence in biosolids.³⁷⁵ This limited grant of immunity appropriately weighs the essential nature of the agriculture industry with the rationales of tort liability.

Regardless of the approach taken, agricultural businesses should act now to protect themselves from the ever increasing regulatory and litigation burden caused by PFAS. Whether that be actions to mitigate their risk under the current legal framework, working with legislators to establish a new legal framework, or both, doing nothing creates enormous risks for agricultural businesses.

373. See discussion *supra* Section I.E.ii.

374. *Designation of Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) as CERCLA Hazardous Substances*, *supra* note 228.

375. DRAFT SEWAGE SLUDGE RISK ASSESSMENT, *supra* note 65, at iii.